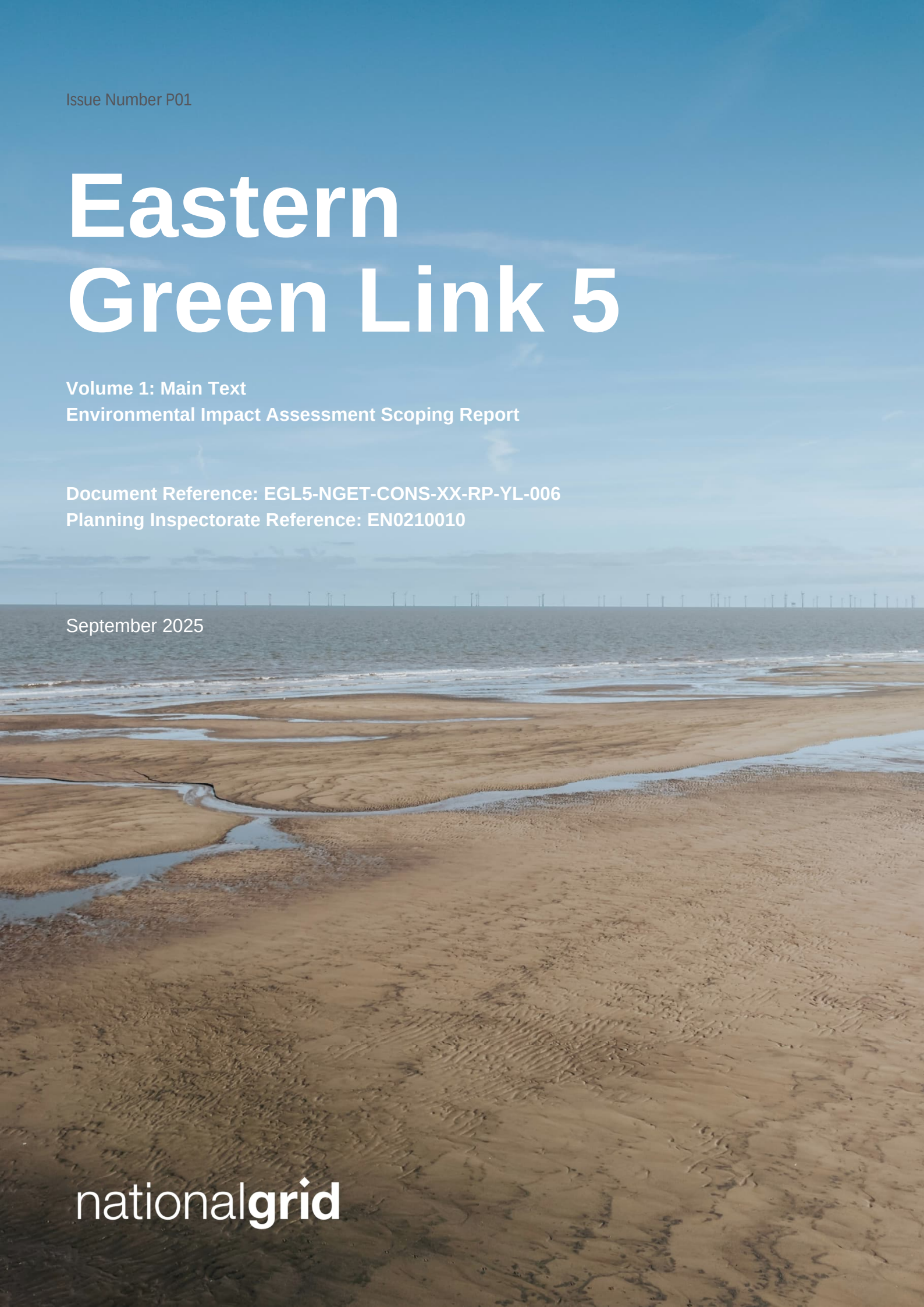
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nationalgrid

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Eastern Green Link 5
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Glossary

Term	Definition
2WS	A 400 kilovolt (kV) double circuit overhead line transmission route from Spalding Substation, in Spalding, to a Tee-Point along the 4ZM 400 kV double circuit overhead line transmission route.
4ZM	A 400 kV double circuit overhead line transmission route from West Burton Substation in Bassetlaw to the Burwell Substation in East Cambridgeshire via the Walpole Substation in Kings Lynn and West Norfolk.
Abnormal Indivisible Loads (AIL)	Large loads to be delivered to the construction site which by their nature cannot be broken into smaller multiple deliveries.
Above Ordnance Datum (AOD)	An Ordnance Datum or OD is a vertical datum used by an ordnance survey as the basis for deriving altitudes on maps. A spot height may be expressed as AOD. Usually mean sea level is used for the datum.
Access points	A location connecting a construction site to the public highway.
Access routes	Public highway used by construction traffic to access a construction site.
Accidents and safety	In the context of traffic and transport, the risk of accidents occurring due to a change in the character of traffic resulting from the Project.
Acoustic environment	The sound with contribution from all sources, as modified by the current environment and associated conditions. This is related to the ambient sound, which is the totally encompassing sound in a given situation at a given time, usually composed of sound from many sources near and far.
Additional measures	Actions that will require further activity to achieve the anticipated outcome. Where additional measures are required, an assessment of the residual effects is subsequently undertaken.
Admiralty Chart	Nautical charts issued by the United Kingdom Hydrographic Office (UKHO) and subject to Crown Copyright.
Agricultural Land Classification (ALC)	A standardised method for classifying agricultural land according to its versatility, productivity, and workability, based upon inter-related parameters including climate, relief, soil characteristics and drainage. These factors form the basis for classifying agricultural land into one of five grades (with Grade 3 land divided into Subgrades 3a and 3b), ranked from excellent (Grade 1) to very poor (Grade 5). ALC is determined using the Ministry of Agriculture, Fisheries and Food (MAFF) Agricultural

Term	Definition
	Land Classification of England and Wales: Revised guidelines and criteria for grading the quality of agricultural land,1988 (Ref 1.1).
Agri-environment scheme	Government programme set up to help farmers manage their land in environmentally friendly way.
Air Quality Management Areas (AQMAs)	If a local authority finds any places where the Air Quality Objectives (AQO) are not likely to be achieved, it must declare an AQMA there. This area could be just one or two streets, or it could be much bigger. Then the local authority will put together a plan to improve the air quality - a Local Air Quality Action Plan (AQAP).
Air Quality Strategy Objectives (AQSO)	The AQSO are policy targets often expressed as a maximum ambient concentration not to be exceeded, either without exception or with a permitted number of exceedances, over a specified averaging period.
Air Quality Standards (AQS)	The AQS Regulations report limit values at differing averaging periods for certain pollutants. There are limits provided for the protection of human health for sulphur dioxide (SO_2), nitrogen dioxide (NO_2), benzene, carbon monoxide (CO) and lead (Pb). Target values have been set for the concentration of particulate matter (PM) 2.5.
Alternating Current (AC)	The electrical current changes direction in a cycle. Mains electricity is alternating current.
Anchorage area	A place where boats and ships or other water vessels can safely drop anchor.
Anchor handling vessel or Anchor Handling Tug Supply (AHTS)	Anchor Handling Tug Supply (AHTS) vessels are mainly built to handle anchors for oil rigs, tow them to location, and use them to secure the rigs in place.
Ancient woodland	Land that has been continually wooded since at least 1600 CE in England. Regarded as irreplaceable habitat' in national planning guidance. Ancient woodland greater than 2 ha is recorded on the Ancient Woodland Inventory.
Annex 1 habitat	Annex 1 habitat refers to a habitat as defined under the European Union (EU) Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora, which is transposed into United Kingdom (UK) law through the Habitats Regulations. These regulations, primarily the Conservation of Habitats and Species Regulations 2017, ensure the protection of these habitats within the UK, including its offshore marine areas. The UK also utilises the Wildlife and Countryside Act 1981 to implement aspects of the Habitats Directive.
Aquifer	Water-bearing rock or sediment below the soil layer.

Term	Definition
Archaeological interest	A heritage asset with value from the potential to hold evidence about the past that can be retrieved though specialist investigation.
Archaeological remains	The material remains of human activity from the earliest persons of human evolution to present. These may be buried traces of human activities, sites visible above ground, or moveable artifacts.
Architectural/Artistic Interest	A heritage asset with value from contemporary appreciation of a heritage asset's aesthetics.
Artificial ground	Deposits that have accumulated or been placed through human activity.
Associated development	Development pursuant to section 115(1b) of the Planning Act 2008, which is associated with a Nationally Significant Infrastructure Project (NSIP) or with development for which development consent is required pursuant to sections 35(1) and 35ZA of the Planning Act 2008. Associated development should be subordinate to, and necessary for, the construction and/or the effective operation of the Authorised development that is the subject of the Development Consent Order (DCO) application.
Authorised development	The development that will be described in Schedule 1 (authorised development) of the draft Development Consent Order.
Auger bore	A form of trenchless crossing in which a pit is created either side of the constraint or infrastructure being crossed and a bore is created by auguring from one pit to the other.
Automatic Identification System (AIS)	The identification, position, speed and course of nearby vessels in a radar-like display format.
Background sound/noise level	A weighted Sound Pressure Level (SPL) that is exceeded by the residual sound at the assessment location for 90% of a given time interval, T, measured using time weighting F and quoted to the nearest whole number of decibels. This represents the underlying sound level in the absence of contributions from the sound source under assessment relating to the residual sound level but characterised by $L_{A90,T}$.
Baseline	The situation prevailing before the Project is commenced (the current baseline), and also to the situation that would prevail in the future without the Project (the projected future baseline).
Basic Noise Level (BNL)	A reference noise level at 10 m from the nearside carriageway, calculated as a function of traffic flow, percentage of Heavy Goods Vehicles (HGVs), average speed, road gradient and road surface.
Bathymetry	Bathymetry is the information that describes the topography of the seabed. It is an essential component in understanding the

Term	Definition
	dynamics of the marine environment, both in terms of sediment transport but also in the prediction of tides, currents and waves.
BCE	Before Common Era
Bellmouth (onshore)	An access point from the public highway for construction purposes.
Bellmouth (offshore)	Temporary cone shaped collar fitted to the end of the Horizontal Directional Drilling (HDD) duct to support pull in of the cable through the HDD duct.
Benthic	Refers to anything associated with the bottom of a body of water such as the sea or a lake. The term encompasses the seabed, and the habitats and species on it.
Best and Most Versatile (BMV) agricultural land	Defined as land of excellent (ALC Grade 1), very good (Grade 2) and good (Subgrade 3a) agricultural quality. BMV agricultural land is afforded a degree of protection against development within planning policy.
Biodiversity	The variability among living organisms from all sources including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part: this includes diversity within species, between species and of ecosystems.
Biodiversity Net Gain (BNG)	BNG is an approach to development which aims to leave nature in a measurably better state than it was before the project was completed. National Grid has made a commitment to delivering a BNG target of 10% above baseline on its development projects (as agreed with Ofgem).
Biodiversity Action Plan Amended (BAP)	A strategy for conserving and enhancing wild species and wildlife habitats in the UK.
Biosecurity	Measures aimed at preventing the spread of harmful organisms (e.g. viruses and bacteria) to crops and livestock in order to reduce the risk of transmission of infectious diseases.
Birds of Conservation Concern	Quantitative criteria are used to assess the population status of bird species found in the UK, which are placed on the red, amber or green list. With those on the red list being at most risk.
Bronze Age	-2,600 to -700 Before Common Era (BCE).
Cable	An insulated conductor designed for underground installation.
Cable Lay Barge	A Cable Laying Barge (cable layer or cable ship) is a sea-going vessel specially designed to lay underwater cables (telecommunications, electric power transmission, or other). A barge as opposed to a vessel has a flat bottom allowing it to operate in water depths <10 m.

Term	Definition
Cable Lay Vessel (CLV)	A CLV (cable layer or cable ship) is a sea-going vessel specially designed to lay underwater cables (telecommunications, electric power transmission, or other).
Cable Sealing End Compound (CSEC)	Electrical infrastructure used as the transition point between overhead lines and underground cables. A compound on the ground acts as the principal transition point.
CE	Common Era
Cetacean	A marine mammal of the order *Cetacea* i.e., a whale, dolphin or porpoise
Chronic Health Effect	An adverse health effect that occurs as a result of long-term regular or continuous exposure to a causative factor (e.g. soil contamination).
Circuit	A set of wires along which current flows and returns. It is necessary to have a complete circuit for current to flow.
Code of Construction Practice (CoCP)	A CoCP sets out the standards and procedures to which a developer or contractor must adhere to manage the potential environmental impacts of construction works.
Concrete mattress	A rectangular unit made of concrete blocks joined together by polypropylene ropes. The mattress is flexible in two dimensions and is available in a range of thicknesses to suit the conditions required. Concrete mattresses are used for the anchorage and protection of underwater pipelines and cables and for protecting the foundations of structures against water scouring.
Conductor	A material that allows electricity to flow through it. These are the wires or cables for overhead lines and underground cables.
Conservation Area	An area of special architectural or historic interest, the character or appearance of which it is desirable to preserve or enhance as defined in Section 69(1)(a) in the Planning (Listed Building and Conservation Areas) Act 1990.
Construction Environmental Management Plan (CEMP)	The purpose of the CEMP is to outline how construction of the Project will avoid, minimise or mitigate effects on the environment and surrounding area. The CEMP will detail the implementation of measures in accordance with environmental commitments outlined in the Environmental Statement (ES). It is a 'live' document which is to be reviewed and updated at regular intervals throughout the Project's life cycle.
Construction Traffic Management Plan (CTMP)	A Construction Traffic Management Plan (CTMP) sets out the requirements for the management of construction traffic.
Contaminated land	Land where substances are causing or could cause significant harm to people, property or protected species or could cause significant pollution of surface waters or groundwater.

Term	Definition
Control of Major Accident Hazards (COMAH)	Regulations ensuring that businesses take all necessary measures to prevent major accidents involving dangerous substances and limit the consequences to people and the environment of any major accidents which do occur.
Converter Station	A converter station is part of a High Voltage Direct Current (HVDC) system and converts HVDC to High Voltage Alternating Current (HVAC) and vice versa.
Corridor	A broad area, within which a new underground cable or subsea cable could be routed.
County Wildlife Site	Non-statutory designated areas of land important for their wildlife and nature conservation value
Countryside and Rights of Way Act 2000	The Countryside and Rights of Way Act 2000 (CROW Act) is an act to make provision for public access to the countryside; to amend the law relating to public rights of way; to enable traffic regulation orders to be made for the purpose of conserving an area's natural beauty; to make provision with respect to the driving of mechanically propelled vehicles elsewhere than on roads; to amend the law relating to nature conservation and the protection of wildlife; to make further provision with respect to areas of outstanding natural beauty; and for connected purposes.
Cumulative effects	There are two types of effect as identified by the Planning Inspectorate Advice on Cumulative Effects Assessment (Ref 1.2): in-combination effects and cumulative effects. The former occurs as a result of two or more impacts acting together (i.e. combined), to result in a new or changed effect on a single receptor. The latter arise as a result of the Project in combination with other large-scale developments or projects.
Decibel (dB)	Noise is conventionally measured in decibels (dB). The ratio between the quietest audible sound and the loudest tolerable sound is a million to one in terms of the change in sound pressure. Due to this wide range, a scale based on logarithms is used in noise level measurement. The scale used is the dB scale which extends from 0 to 140 dB corresponding to the intensity of the SPL.
Deemed Marine Licence (DML)	Section 149A of the Planning Act 2008 enables development consent orders for nationally significant infrastructure projects to include provisions deeming a marine licence to have been issued under Part 4 of the Marine and Coastal Access Act 2009.
Demographic	Relating to the structure of populations.
Design and Control measures	Modifications to the location, design or operation of the Project to mitigate against environmental impacts. These can be an inherent part of the project (primary), additional action post-consent (secondary), or actions resulting from processes

Term	Definition
	external to the EIA (tertiary). This includes legislative requirements.
Development Consent Order (DCO)	The consent required for a NSIP or for a project that has been deemed to be of national significance, pursuant to sections 35(1) and 35ZA of the Planning Act 2008.
Development Plan Document (DPD)	DPDs are planning policy documents which make up the Local Development Framework (LDF) within a local authority. They help to guide development within a local planning authority area by setting out the detailed planning policies, which planning officers use to make their decisions on planning applications.
Dewatering	The removal of groundwater (e.g. by pumping) to keep a below-ground works area dry. This can be used during construction of the underground cable sections.
Direct-buried	Direct burial of cables involves excavating trenches into which the cables are installed on a bed of sand or cement bound sand with the use of winches or power rollers. Sheet piling or timber is used to support the sides of the trenches during construction.
Direct effects	Direct effects are those that result directly from the Project.
Direct Current (DC) electricity transmission	Electric power transmission in which the voltage is continuous. This is most commonly used for long distance point-to-point transmission
Disaster	A disaster is a man-made/external hazard (such as an act of terrorism) or a natural hazard (such as an earthquake) with the potential to cause an event or situation that meets the definition of a major accident.
Distribution Network Operator (DNO)	A Distribution Network Operator is the company that owns and operates the overhead power lines and infrastructure that connects the National Grid electricity transmission system to properties and businesses. The DNOs in proximity to the Project are Northern Power Grid (NPG), National Grid Electricity Distribution Plc (NGED) and UK Power Networks (UKPN).
Dredging vessels	Dredging vessels are used for the removal of sediments and debris from the bottom of lakes, rivers, harbours, and other water bodies. It is a routine necessity in waterways around the world because sedimentation—the natural process of sand and silt washing downstream—gradually fills channels and harbours.
Driver delay	Traffic delays to non-development traffic.
Ducting	The installation of ducts (pipes) within which a cable can be pulled through.
Dust	Generic term used to describe larger non-respirable airborne particulates (typically those which are deposited rapidly and

Term	Definition
	normally associated with soiling / marking of property, cars, vegetation etc.).
Early Medieval	410 to 1066 Common Era (CE).
Earth Wire	Wire strung between the tops of towers used for lightning and system protection. May also be used to carry telecommunication signals.
Easement	An easement is a right benefiting a piece of land (known as the dominant land) that is enjoyed over another piece of land owned by someone else (the servient land). Usually, an easement allows the owner of the dominant land to do something on the servient land, such as use a right of way, or run services over it.
Eastern Green Link 3 (EGL 3)	Eastern Green Link 3 (EGL 3) is being developed by National Grid Electricity Transmission (NGET) and Scottish Hydro Electric – Transmission (SHE-Transmission), who are operating and known as Scottish and Southern Electricity Networks Transmission (SSEN Transmission). EGL 3 comprises a 2 GW HVDC system linking Peterhead in Scotland and Norfolk in England. EGL 3 comprises the following Schemes: Scottish Onshore; Scottish Offshore; English Offshore; and English Onshore.
Eastern Green Link 4 (EGL 4)	Eastern Green Link 4 (EGL 4) is being developed by National Grid Electricity Transmission (NGET) and Scottish Power Transmission (SPT) who are operating and known as Scottish Power Energy Networks (SPEN). EGL 4 comprises a 2 GW HVDC system linking Fife in Scotland and Norfolk in England. EGL 4 comprises the following Schemes: Scottish Onshore; Scottish Offshore; English Offshore; and English Onshore.
Eastern Green Link 5 (EGL 5) 'the Project'	Located between Scotland and England, the Project represents major reinforcement of the electricity transmission system to meet the requirements of generation connections in Scotland. EGL 5 is expected to comprise of the following component projects: Scottish Onshore, Scottish Offshore, English Offshore and English Onshore. EGL 5 is expected to comprise a new converter station, HVDC and HVAC underground cables, and HVDC subsea cables.
Ecological feature	Habitats, species or ecosystems (including designated and non-designated sites).
Ecosystem	A dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit.
Effects	For the purposes of the Environmental Impact Assessment (EIA) and this Scoping Report, the term 'effects' are the consequences of changes (e.g. habitat becomes degraded by changes in drainage pattern).

Term	Definition
EIA Regulations	EIA is a legal requirement for certain public and private projects in EU countries under Directive 2014/52/EU. This directive is transposed into English law for NSIPs by the Infrastructure Planning (EIA) Regulations 2017.
Electricity transmission system	The electricity transmission system is made up largely of 400 kV, 275 kV and 132 kV assets connecting separately owned generators and interconnectors with the demand for electricity fed directly from the transmission system, and distribution systems. The 'transmission' classification applies to assets at 132 kV or above in Scotland or offshore. In England and Wales, it relates to assets at 275 kV and above. The electricity transmission system is designed to make sure there is sufficient transmission capacity to ensure that the system can be operated in an economic and efficient way by the NESO, ensuring power can be moved from where it is generated to demand centres across Great Britain. This planning and development of the electricity transmission system is governed by the Security and Quality of Supply Standard (SQSS) which ensures that the network is developed and operated securely and is resilient to any foreseeable network faults and disruption.
Electromagnetic Compatibility	The interaction of electrical equipment with its electromagnetic environment and with other equipment.
Electromagnetic fields (EMF)	Electric fields are created by differences in voltage: the higher the voltage, the stronger will be the resultant field. Magnetic fields are created when electric current flows: the greater the current, the stronger the magnetic field. An electric field will exist even when there is no current flowing. If current does flow, the strength of the magnetic field will vary with power consumption but the electric field strength will be constant.
English Scheme	All components of EGL 5 in England (Offshore and Onshore) that will be subject to a Development Consent Order (DCO) application.
English Offshore Scheme	All components of EGL 5 within the English marine environment up to the Mean High Water Springs (MHWS) in England that will be subject to a DCO application. The English Offshore Component of EGL 5 is expected to comprise new HVDC subsea cables.
English Offshore Scheme Scoping Boundary	The boundary for EIA Scoping that encompasses the English Offshore Scheme.
English Onshore Scheme	All components of EGL 5 between the electricity transmission connection point in England and the Mean Low Water Springs (MLWS) in England. The English Onshore Component of EGL 5 is expected to comprise a new converter station, HVDC and HVAC underground cables.

Term	Definition
English Onshore Scheme Scoping Boundary	The boundary for EIA Scoping that encompasses the English Onshore Scheme.
Enhancement	Enhancement measures comprise additional measures which do not form part of the Project for which development consent is being sought. NGETs commitment to delivering 10% BNG will likely result in additional tree planting, which would offer enhancement compared to the current baseline.
Environmental Gain (EG)	NGET has defined ‘Environmental Gain’ with Ofgem as being an amalgam of BNG and the status of Natural Capital (NC). This sees a simple formula being used to calculate overall EG.
Environmental Impact Assessment (EIA)	An EIA is a tool for systematically examining and assessing the impacts and effects of a development on the environment. The objective of the EIA is to identify any likely significant effects which may arise from a project and identify measures to prevent, reduce or offset any adverse effects.
Environmental Statement (ES)	The outcome of the EIA process is reported within a document called an ES.
European Protected Species (EPS)	Animals and plants listed under the Habitats Directive and protected under the Conservation of Habitats and Species Regulations 2017, as amended or the Conservation of Offshore Marine Habitats and Species Regulations 2017 as amended.
Fall pipe vessel (FPV)	A FPV is a self-propelled vessel that is equipped with a flexible fallpipe. The vessel's design allows the fallpipe to be lowered into the water beneath the vessel allowing it to position rock with extreme accuracy down to a depth of 1,500 meters.
Fear and intimidation	In the context of traffic and transport, these may be experienced by people as a result of an increase in traffic volume and its proximity or the lack of protection caused by such factors as narrow pavement widths.
Fisheries Liaison Officer (FLO)	FLOs liaise between fishing vessels and Clients, using local knowledge and fisheries experience to encourage co-operation and help ensure operations run smoothly and efficiently.
Flood Risk Assessment (FRA)	The FRA will assess the flood risk both to and from the Project and demonstrate how that flood risk will be managed over the Project’s lifetime.
Flood Zone 1	Land assessed as having a less than 1 in 1,000 annual probability of river or sea flooding (<0.1%).
Flood Zone 2	Land assessed as having between a 1 in 100 and 1 in 1,000 annual probability of river flooding (1% – 0.1%), or between a 1 in 200 and 1 in 1,000 annual probability of sea flooding.

Term	Definition
Flood Zone 3	Land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%), or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year.
Frac-out	The unintentional return or inadvertent loss of drilling fluids from the borehole to the ground surface from points other than its entry and exit points, during a drilling operation.
Fragmentation	Breaking up of, for example, an area of land or habitat resulting in difficulties in accessing or using some or all of that land.
Future baseline	This is the theoretical situation that would exist in the absence of the Project. This is based upon extrapolating the current baseline using technical knowledge of likely changes over the identified period (for example anticipated habitat change over time, climate change projections, traffic and waste volume growth over time, etc.).
Future Energy Scenarios (FES)	Published annually by the ESO to indicate future power requirements and where future connections may occur across the network.
Gas Insulated Switchgear (GIS)	A Gas Insulated Switchgear (GIS) is the name for a unit that houses electrical components and circuits in a single gas tank with a compact footprint.
Geographic Information Systems (GIS)	GIS is a framework for gathering, managing and analysing data. It analyses spatial location data and organises layers of information into visualisations on maps.
Good practice measures	Actions that would occur with or without input from the EIA feeding into the design process. These include actions that will be undertaken to meet other existing legislative requirements or actions that are considered to be standard practice used to manage commonly occurring environmental effects. These are referred to as ‘tertiary measures’ in accordance with the Institute of Environmental Management and Assessment IEMA guidelines (Ref 1.3) and would form part of the Design and Control Measures for the Project.
Graduated Swathes	Indicate the broad areas where the components of the new underground cables, converter stations, substations and landfall forming part of the English Onshore Scheme are likely to be located with the areas considered more likely to be developed shown as a darker colour.
Grid Supply Point (GSP)	A point of supply from the transmission system to a distribution network or transmission-connected load. Typically, only large industrial loads are directly connected to the transmission system.
Grimsby to Walpole Project (GtW)	Located in the Humber and East Midlands region of England, the Grimsby to Walpole Project will increase the capability of the

Term	Definition
	electricity transmission system to carry clean green energy from the north of England to the Midlands and East Anglia. It is also required to connect and carry power from offshore windfarms, interconnectors, solar/battery storage proposals and high voltage direct current (HVDC) links that are planned to connect to the electricity transmission system. The Grimsby to Walpole Project (Ref 3.4) is expected to comprise the construction and operation of approximately 140 km of new 400,000 volt (400 kV) overhead electricity transmission line, new 400 kV substations at Grimsby West and Walpole, together with new connection substations in Lincolnshire. There will be associated works to connect the new route into substations at either end, or to alter existing infrastructure crossed by the route, including crossings of existing 400 kV transmission lines.
Ground gas	A general term to include all gases occurring and generated within the ground whether originating from Made Ground or from natural soil or rock. Typically used to mean only potentially hazardous ground gases, such as carbon dioxide, methane, hydrogen sulphide, carbon monoxide and radon.
Groundwater Dependent Terrestrial Ecosystems	A category of wetlands whose vegetation is critically dependent on groundwater.
Guard vessel	During the construction stage of a cable route, the construction site needs to be secured by a guard vessel. The vessel must constantly monitor marine traffic near the construction site visually and with radar and Automatic Identification System (AIS).
Guidelines for Landscape and Visual Impact Assessment (GLVIA)	Provides guidance relevant to the assessment of potentially significant effects on landscape and visual amenity receptors.
Habitat of Principal Importance (HPI)	Habitats identified as of principal importance for the purpose of conserving biodiversity in England, under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 (Ref 1.4). These are based on the UK Biodiversity Action Plan Priority Habitats. The term is interchangeable with ‘UK Priority BAP Habitat’, ‘Section 41 habitat’, ‘priority habitat’ and ‘NERCs 41 habitat’.
Habitats Regulations Assessment (HRA)	A HRA refers to the several distinct stages of assessment which must be undertaken in accordance with the Conservation of Habitats and Species Regulations 2017 (as amended) (Ref 1.5) and the Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended) (Ref 1.6) to determine if a plan or project may affect integrity of the National Site Network (Special Protection Areas (SPAs), and potential SPAs (pSPAs), Special Areas of Conservation (SACs), and candidate or possible SACs (cSACs or pSACs); and Ramsar Sites) in the UK

Term	Definition
	before deciding whether to undertake, permit or authorise the plan or project.
Habitat Suitability Index (HSI)	A technique used for evaluating the suitability of habitats for great crested newt in order to assess the likelihood of their presence or absence.
Habitat Suitability Modelling	A statistical technique that predicts the suitability of habitat for a given species e.g. bats. This can be used to assess distribution of a species from environmental variable data and presence records. Resulting in heat maps, identifying the most important flight paths and habitat connections for bats. The model identifies which of the environmental variables assessed (such as roads, the presence of woodland, or water) will most affect the distribution of a species.
Heavy Duty Vehicle / Heavy Goods Vehicle (HDV) / (HGV)	Goods vehicles and buses >3.5 t gross vehicle weight.
Hectare	Unit of area in the metric system equivalent to 10,000 square metres.
Heritage asset	A building, monument, site, place, area or landscape identified as having a degree of significance meriting consideration in planning decisions, because of its heritage interest. Heritage assets include designated heritage assets and assets identified by the local planning authority (including local listing).
Heritage significance	The significance of a heritage asset is the product of the value it holds for this and future generations as a result of its historic, archaeological, architectural or artistic interests.
High Water Springs or Mean High Water Springs (MHWS)	MHWS is the highest level that spring tides reach on the average over a period of time. The height of MHWS is the average throughout the year of two successive high waters during those periods of 24 hours when the range of the tide is at its greatest.
Historic buildings	Architectural, designed, or other structures with a significant historical value. These may include structures that have no aesthetic appeal or structures not usually thought of as buildings, such as milestones or bridges.
Historic Environment Records (HER)	These contain details on local archaeological sites and finds, historic buildings and historic landscapes and are regularly updated. This information is usually held in a database with a digital mapping system (Geographic Information System). There are over 80 HERs in England which are maintained and managed by local authorities.
Historic landscape	The current landscape, whose character is the result of the action and interaction of natural and/or human factors.

Term	Definition
Historical Interest	A heritage asset with value from its association with past events or past people; or where a heritage asset is illustrative of a particular asset type, theme, or period.
Holford Rules	A series of guideline rules around overhead line routeing. The guidelines were initially developed in 1959 and have been reviewed on a number of occasions by NGET and by the other UK transmission licence holders. One of the reviews was against the Electricity Act 1989. The Guidelines provide a set of design criteria that have stood the test of time and become accepted industry best practice in overhead line routeing. The guidelines now form an important part of national planning policy relating to the development of electricity networks, as set out in National Policy Statement EN-5 (Ref 1.7).
Horizontal Directional Drilling (HDD)	A method of cable installation where the cable is drilled beneath a feature without the need for trenching.
Horlock Rules	A series of guideline rules for the siting and design of new substations, or substation extensions, converter stations and includes consideration of line entries and sealing end compounds (SECs). The guidelines were initially developed in 2003 and have been reviewed on a number of occasions by NGET, with a revised version issued in 2009. The Horlock Rules provide a set of principles which avoid, or reduce the environmental impacts associated with the development of substation infrastructure.
Hydromorphology	The physical character and water content of water bodies.
Impacts	For the purposes of the EIA and this Scoping Report, the term ‘impacts’ is used to describe the changes that arise as a result of the Project (e.g. changes in drainage pattern).
In-combination effects	In-combination effects occur as a result of two or more impacts acting together (i.e. combined), to result in a new or changed effect on a single receptor
Index of Multiple Deprivation (IMD)	The IMD is the official measure of relative deprivation for small areas (neighbourhoods) in England. The IMD are calculated based on the following factors: income deprivation, employment, health and disability, education, skills and training, barriers to housing and services, crime and living environment.
Indicative Alignment	The alignment of the underground cables that have been identified through the options appraisal process to date.
Indirect and secondary effects	Indirect and secondary effects are those which are not caused immediately by the Project but arise as a consequence of it. As such they would normally occur later in time or at locations farther away than direct effects. An example would be where water or gas pipes are damaged as a result of the Project, and

Term	Definition
	the consequence of that damage is fire or flood risk to other receptors.
Infiltration	Incident rainfall that percolates into the ground, rather than evaporating or running off.
Institute of Environmental Management and Assessment (IEMA) (Now known as Institute of Sustainability and Environmental Professionals (ISEP))	The global professional body for individuals and organisations working and studying in sustainability and the environment.
Insulator	Insulators are part of an insulator set which in turn supports the conductors, which carry the electrical power and are at a high voltage, from the pylon steelwork which is taken to be at zero or earth potential (i.e. 0V). Insulators can be made of porcelain or toughened glass.
Inter-project effects	Arise as a result of the Project in combination with other large-scale developments or projects.
Intra-project effects	Effects that occur as a result of two or more impacts acting together (i.e. combined, to result in a new or changed effects on a single receptor).
Interim Report	Produced to provide a record of archaeological features that have been excavated, showing where these features are and offering preliminary interpretation.
Intertidal area	The area that lies between MHWS and Mean Low Water Springs (MLWS), where the terrestrial and marine planning regimes overlap.
Invasive Non-Native Species (INNS)	An INNS is any non-native animal or plant that has the ability to spread, causing damage to the environment, the economy, health, and way of life.
Iron Age	-800 Before Common Era (BCE) to 43 Common Era (CE).
Jack-up barge	A jack-up barge or a self-elevating unit is a type of mobile platform that consists of a buoyant hull fitted with a number of movable legs, capable of raising its hull over the surface of the sea. Often used as a base for servicing other structures such as cable pull in operations.
Joint bay	Underground structures constructed at regular intervals along the onshore cable route to join sections of cable and facilitate installation of the cables into the buried ducts.
Kilometre (km)	A unit of linear measurement (1,000 metres).
Kilovolts (kV)	A unit of electromotive force, equal to 1,000 volts.

Term	Definition
$L_{Aeq\ T}$	The A-weighted L_{eq} sound level measured over a specified period of time.
Land cover	The surface cover of the land, usually expressed in terms of vegetation cover or lack of it. Related to but not the same as land use.
Landfall	The identified section of the intertidal area where the offshore and onshore components of the Project meet and transition from subsea cables to land cables.
Landfall study area	A search area of 1 km around each of the identified preliminary landfall areas and associated preliminary offshore subsea cable routes.
Landform	The shape and form of the land surface resulting from combinations of geology, geomorphology, slope, elevation and physical processes.
Land use	What land is used for, based on broad categories of functional land cover such as urban and industrial use and the different types of agricultural and forestry.
Landscape	An area, as perceived by people, the character of which is the result of the action and integration of natural and/or human factors.
Landscape character	A distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse.
Landscape Character Area (LCA)	Discrete geographical areas of a particular landscape type with a broadly consistent character, which might include: pattern of topography, land use, vegetation cover, geology, cultural and ecological features, pattern of evolution, visual and perceptual qualities and habitats.
Landscape Character Type (LCT)	Generic, typically homogenous types of landscape that may occur in different parts of the country. They have similar geology, topography, drainage patterns, vegetation, land use, patterns of settlement and aesthetic character.
Landscape susceptibility	The ability of the landscape (whether it be the overall character or quality/condition of a particular landscape type or area, or an individual element and/or features, or a particular aesthetic and perceptual aspect) to accommodate the Project without undue consequences for the maintenance of the baseline situation.
Landscape value	The relative value that is attached to different landscapes by society. A landscape may be valued by different stakeholders for a whole variety of reasons.
Light Duty Vehicle / Light Goods Vehicle (LGV)	Cars and small vans <3.5 t gross vehicle weight.

Term	Definition
Likely Working Area	All working areas required to facilitate the construction of the English Onshore Scheme.
Limit of Deviation	Identify a maximum distance or measurement of variation within which the permanent works must be constructed. These comprise lateral (i.e., on the ground) and vertical limits (in relation to height).
Lincolnshire Connection Substation (LCS)	A proposed 400 kV substation, located in East Lindsey considered as part of the NGET Grimsby to Walpole Project.
Listed Building	A building or structure of special historical or architectural/artistic interest. Designated by the Department for Digital, Culture, Media and Sport. All buildings built before 1700 CE which survive in anything like their original condition are likely to be listed, as are most buildings built between 1700 CE and 1850 CE.
Local Development Framework (LDF)	A set of spatial planning strategy documents which will guide future development within a local authority.
Local Geological Sites	A non-statutory designation for regionally important geological and geomorphological sites that have been identified as being of importance locally.
Local Nature Reserve (LNR)	Sites dedicated by the local authority under Section 21 of the National Parks and Access to the Countryside Act 1949 for nature conservation which have wildlife or geological features that are of special interest locally.
Local Planning Authority	A LPA is the public authority whose duty it is to carry out specific planning functions for a particular area.
Local Wildlife Site (LWS)	Non-statutory nature conservation sites of local value.
Low Water or Mean Low Water Springs (MLWS)	The height of MLWS is the average throughout a year of the heights of two successive low waters during those periods of 24 hours (approximately once a fortnight) when the range of the tide is greatest.
Lower Layer Super Output Area (LSOA)	LSOAs are a geographic hierarchy designed to improve the reporting of small area statistics in England and Wales.
Lowest Observed Adverse Effect Level (LOAEL)	This is the level above which adverse effects on health and quality of life can be detected.
Macroinvertebrate	Any invertebrate organism which can be seen with the naked eye.
Macrophyte	Aquatic plants that grow in or near water.
Made ground	Made ground is land where natural and undisturbed soils have largely been replaced by man-made or artificial materials.

Term	Definition
Magnetic field	A measure of the force experienced by a moving electric charge, due to the motion of other charges.
Magnitude of change	A term that combines judgements about the size and scale off the effect, the extent of the area over which it occurs, whether it is reversible or irreversible and whether it is short or long term in duration.
Major accident	A major accident is an event that threatens immediate or delayed serious environmental effects to human health, welfare and/or the environment and requires the use of resources beyond those of the client or its appointed representatives (i.e. contractors) to manage. Major accidents can be caused by disasters resulting from both man-made and natural hazards
Main river	Usually, larger rivers and streams that the Environment Agency maintain and improve to manage flood risk.
Marine Conservation Zone (MCZ)	Marine areas that protect a range of nationally important, rare or threatened habitats and species.
Mean High Water Springs (MHWS) or High Water Springs	MHWS is the highest level that spring tides reach on the average over a period of time. The height of MHWS is the average throughout the year of two successive high waters during those periods of 24 hours when the range of the tide is at its greatest.
Mean Low Water Springs (MLWS) or Low Water Springs	The height of MLWS is the average throughout a year of the heights of two successive low waters during those periods of 24 hours (approximately once a fortnight) when the range of the tide is at its lowest.
Mechanical ploughing	A mechanical plough is a device towed along the seabed and is optimised to help deliver reductions in the cost of offshore wind installation and to minimise project risk by combining operations to reduce the time required to install subsea cables.
Medieval	1066 to 1540 Common Era (CE).
Mesolithic	-10,000 to -4,000 Before Common Era (BCE).
Metocean	Metocean conditions refer to the combined wind, wave and climate (etc.) conditions as found on a certain location.
Metre (m)	A unit of linear measurement.
Micro bore	A type of trenchless crossing technique in which a pit is created either side of the constraint or infrastructure being crossed and a micro bore is created from one pit to the other.
Mineral reserve	Mineral deposit whose extraction is economically feasible.
Mitigation	Mitigation is an alternative term used to refer to Design and Control Measures (modifications to the location, design or operation of the Project to mitigate against environmental

Term	Definition
	impacts) and typically comprises measures to avoid, prevent, reduce or if possible, offset the likely significant adverse effects on the environment. NGET has taken the approach of, where possible, embedding measures into the Project's design to reduce effects, for example avoiding ancient woodland and veteran trees through appropriate design ensuring for example, permanent infrastructure or construction working areas avoid such features.
Mobile elevating work platforms	A type of equipment that allows working at height comprising a working platform on an extending structure and chassis, with controls for operation.
Modern	1901 to present.
Mooring	Lassoing, tethering, tying, or otherwise securing a boat to a fixed object, such as a mooring buoy, rather than dropping an anchor to secure a vessel.
National Cycle Network (NCN)	The NCN is a UK-wide network of signed paths and routes for walking, cycling, wheeling and exploring outdoors.
National Grid Group	In addition to National Grid Electricity Transmission (NGET), the wider National Grid Group comprises several other businesses, including National Grid Ventures and National Grid Electricity Distribution. These businesses are not licenced Transmission Owners and do not develop the national transmission system.
National Grid Electricity Distribution Plc (NGED)	In June 2021 Western Power Distribution was acquired by National Grid Group. It remains a separate company from National Grid Electricity Transmission (NGET), operating within the wider National Grid Group and recently rebranded as National Grid Electricity Distribution. NGED is a Distribution Network Operator (DNO) operating in proximity to the Project.
National Grid Electricity Transmission (NGET)	NGET operates the national electricity transmission network across Great Britain and own and maintain the network in England and Wales, providing electricity supplies from generating stations to local distribution companies. NGET does not distribute electricity to individual premises, but its role in the wholesale market is vital to ensuring a reliable, secure, and quality supply to all. NGET is the Applicant for the Development Consent Order (DCO).
National Landscape (NL)	An NL is land protected by the Countryside and Rights of Way Act 2000 (CROW Act). It protects the land to conserve and enhance its natural beauty.
National Nature Reserve (NNR)	Sites that are dedicated by the statutory country conservation agencies, under the National Parks and Access to the Countryside Act 1949 and the Wildlife and Countryside Act 1981, for nature conservation and which have wildlife or geological features that are of special interest nationally.

Term	Definition
National Planning Policy Framework (NPPF)	National Planning Policy Framework sets out government's planning policies for England and how these are expected to be applied.
National Policy Statement (NPS)	Government planning policy relating to the development of Nationally Significant Infrastructure Projects (NSIPs) is set out in the relevant National Policy Statement (NPS). NSIPs should be developed in accordance with the relevant NPS. In the case of new electricity transmission routes, the relevant energy-related NPS' are EN-1 Overarching NPS for Energy (Ref 1.8) and EN-5 Electricity Networks (Ref 1.7).
National Site Network (NSN)	Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) in the UK no longer form part of the EU's Natura 2000 ecological network. The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 have created a NSN on land and at sea, including both the inshore and offshore areas in the UK. The NSN includes: Appendix A Existing SACs and SPAs; and Appendix B New SACs and SPAs designated under these Regulations. Designated Wetlands of International Importance (known as Ramsar sites) do not form part of the NSN. Many Ramsar sites overlap with SACs and SPAs and may be designated for the same or different species and habitats. All Ramsar sites remain protected in the same way as SACs and SPAs.
Nationally Significant Infrastructure Project (NSIP)	Project as defined in Part 3 of the Planning Act 2008, which must be consented by a Development Consent Order (DCO).
National Vegetation Classification	System of classifying natural habitat types in Great Britain according to their vegetation types.
Natural Capital (NC)	The total stock of natural resources and services provided by natural assets which benefit people.
Natural High Ground	Any extent along a watercourse or coastline which completes the line of continuous defence, but has not been modified in any way, so does not qualify as any of the other defence asset types.
Natural Superficial Deposits	Geologically recent deposits that consist of various sediments (clay, sand, gravel etc.) and sit on top of the bedrock.
Nautical Mile (NM)	A NM is a unit of measurement used in air, marine, and space navigation, and for the definition of territorial waters. It is based on the circumference of the earth and is equal to one minute of latitude. It is slightly more than a statute (land measured) mile (1 nautical mile = 1.1508 statute miles). Nautical miles are used for charting and navigating.

Term	Definition
Navigational dredging sites	Dredging sites to deepen berths and channels for the purpose of navigation. Navigational dredging will usually require a licence but there is an exemption available for low volume dredging and harbour authorities in certain circumstances.
Navigational Risk Assessment (NRA)	Navigation (Marine) Risk Assessment identifies and assesses the hazards and risks affecting vessel navigation, before considering current controls to mitigate risks and further controls that could be adopted to minimise risk as low as reasonably practicable (ALARP).
Neolithic	-4,000 to -2,200 Before Common Era (BCE).
National Electricity System Operator (NESO)	The NESO plans and operates the transmission system in Great Britain but does not own the transmission assets such as the overhead lines and substations. These are developed, owned and maintained by National Grid Electricity Transmission (NGET) and other 'Transmission Owner' companies. Generation and interconnector customers apply to NESO when they wish to connect to the network.
Nitrous Dioxide (NO_2)	Reddish brown gas (in high concentrations), respiratory irritant and precursor to photochemical processes which produce other pollutants, photochemical smog and contribute to global warming.
Nitrous Oxide (NOx)	Inert product of combustion, which does not contribute to local air pollution.
Noise and Vibration Management Plan	Noise and Vibration Management Plan (NVMP) incorporates the measures proposed and procedures for the management of noise and vibration arising from the construction of the Project.
Noise Important Area	Determined via strategic noise maps and highlight the residential areas experiencing the highest 1% of noise levels from road and rail sources in England.
Non-Road Mobile Machinery (NRMM)	A broad category which includes mobile machines, and transportable industrial equipment or vehicles which are fitted with an internal combustion engine and not intended for transporting goods or passengers on roads.
Non-statutory consultation	Non-statutory consultations are consultations that are not held pursuant to Section 42 and 47 of the Planning Act 2008. For the Project, this was held in 2025.
Non-statutory designated site	A site designated at a local level for its biodiversity and/or geological value. These are not underpinned by legislation.
Notice to Mariners (NtM)	A notice to mariners advises mariners of important matters affecting navigational safety, including new hydrographic information, changes in channels and aids to navigation, and

Term	Definition
	other important data. Over 60 countries which produce nautical charts also produce a notice to mariners.
Nursery ground	An area that is particularly suitable for young fish to grow.
Office of Gas and Electricity Markets (Ofgem)	Ofgem, supporting the Gas and Electricity Markets Authority, is the government regulator for the electricity and downstream natural gas markets in Great Britain.
Optical Ground Wire	A type of cable which runs between the tops of the pylons. The conductive part of the cable serves to bond adjacent pylons to earth ground or ground potential and shields the high-voltage conductors from lightning strikes. The optical fibres within the cable can be used for high-speed transmission of data.
Options appraisal	A robust and transparent process used to compare options and to assess the positive and negative effects they may have across a wide range of criteria including environmental, socio-economic, technical and cost factors. The outcome is to identify a Strategic Proposal for the Project.
Options Identification and Selection	Work undertaken to determine the preferred corridor and preliminary routeing and siting options for the Project. It is intended to demonstrate how NGETs statutory duties, licence obligations, policy considerations, environmental, socio-economic, technical, cost, and programme issues have been considered and provide information on the approach to the identification and appraisal of route corridors and siting locations.
Order Limits	The extent of the area within which the Project may be constructed and operated.
Ordinary watercourse	Watercourses that are not main rivers, and that Lead Local Flood Authorities (LLFAs), district councils and Internal Drainage Boards (IDBs) maintain.
Outage	A period of interruption to electricity supply.
Outline Soil Management Plan	The Outline Soil Management Plan (Outline SMP) sets out principles and procedures for general good practice mitigation tailored to specific soil types, for the handling, storage and reinstatement of soil to be used for the Project to minimise adverse effects on the nature and quality of the soil resource.
Overhead line	Infrastructure carrying electric current, strung from pylon to pylon.
Palaeolithic	-1,000 000 to -10,000 Before Common Era (BCE).
Particulate matter (PM_{10} and $PM_{2.5}$)	PM is the term used to describe condensed phase (solid or liquid) particles suspended in the atmosphere. Their potential for causing health problems is directly linked to the size of the particles. PM_{10} is particulate matter with a diameter of 10

Term	Definition
	microns or less (also referred to as micrometres or 1/1000th of a meter). $PM_{2.5}$ is particulate matter 2.5 microns or less in diameter.
Pathway (for contamination)	A route or means by which a receptor could be, or is, exposed to or affected by a contaminant.
Peak Particle Velocity	A measurement of vibration level, being the maximum rate of displacement of the vibration propagation medium (such as the ground) for a given event, such as the impact of a piling hammer, at specific locations.
Pedestrian amenity	The effect on the relative pleasantness of a pedestrian journey as a result of changes in traffic flow, traffic composition and pavement width / separation from traffic.
Pedestrian delay	The ability of people to crossroads as a result of changes in traffic volume, composition and speed, the level of pedestrian activity, visibility and general physical conditions.
Permanent effects	These are effects that will remain even when the Project is complete, although these effects may be caused by environmental changes that are permanent or temporary.
Phytotoxic	Displaying toxicity towards plants.
Pipe jack	A type of trenchless crossing technique in which a pit is created wither side of the constraint or infrastructure being crossed and applying force to push a pipe through from one pit to the other.
Pinnipeds	An aquatic mammal of the order *Pinnipedia* such as seal or walrus.
Planning Act 2008 (PA2008)	Guidance on the process for carrying out a review of existing National Policy Statements
Planning Inspectorate (PINS)	The Planning Inspectorate deals with planning appeals, national infrastructure planning applications, examinations of local plans and other planning-related and specialist casework in England.
Post Lay Burial	This is the final stage of the cable laying process where the subsea cable is buried.
Post Medieval	1540 to 1901 Common Era (CE).
Potential roost feature (PRF)	PRFs are features with the potential to be used as bat roosts. These can be associated with buildings, structures and trees.
Power control devices	Power control devices are designed to increase or decrease the apparent reactance of a line, thereby pushing power away from or pulling more power towards the circuit on which they are installed.
Pre-lay grapnel run	The Pre-lay Grapnel Run – or PLGR – occurs a few days before the installation. The ship dredges a grapnel to clear any

Term	Definition
	obstacle that could obstruct the plough, such as fishing nets, ropes, lines.
Pre-sweep dredging	Before installation of a cable, pre-sweeping of sandwaves may be required to level the seabed. One or more dredgers may do the pre-sweeping with the cable laying vessels following behind. The pre-sweeping operation prepares a smooth enough seabed upon which to lay the cable.
Preliminary Environmental Information Report (PEIR)	A report containing Preliminary Environmental Information (PEI) as set out in The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017.
Primary measure	Measures which comprise modifications to the location, design or operation of the Project made during the pre-application phase so are an inherent part of the Project, and do not require additional action to be taken. Examples include locating a cable so as to avoid an effect on a designated site or sensitive receptor.
Priority Hazardous Substance	Substances which are toxic and persistent in the water environment, defined by the Water Framework Directive (WFD).
Project (‘the Project’)	The Project is the term used to refer all elements of EGL 5 which is the subject of this Scoping Report i.e. the English Onshore Scheme and the English Offshore Scheme.
Project Need Case	Sets out the reasons why the Project is required.
Protected Lane	Country lanes and byways of historic and landscape value that make an important contribution to rural character, which have been designated as having ‘Protected Lane’ status in development planning policy.
Protected wreck	A shipwreck designated under the Protection of Wrecks Act 1973.
Public Rights of Way (PRoW)	These are designated routes under the CroW Act 2000, which the public can use at any time.
Public Rights of Way Management Plan (PRoWMP)	PRoWMP sets out NGET’s approach to managing Public Rights of Way throughout the duration of the Project.
Pylon	Metal structure used to carry overhead electrical conductors, insulators and fittings.
Radon	A naturally occurring radioactive chemical element, which occurs as a gas.
Ramsar sites	Wetlands of international importance designated under the Ramsar Convention (1971) (the intergovernmental treaty that provides the framework for the conservation and wise use of wetlands and their resources).

Term	Definition
Rating (electricity)	This term refers to the maximum amount of power that the equipment within a substation can safely operate in.
Rating level (noise)	The specific sound level, with the addition of character corrections to consider certain acoustic features that could potentially increase the significance of impact. If no acoustic features are present then the rating level is equal to the specific sound level.
Receptor	A component of the natural or man-made environment such as water or a building that is affected by an impact.
Reconductoring	The replacement of old conductors (wires), insulators, earthwires, etc on an existing overhead line and may also require pylon steelwork and foundations to be strengthened or replaced.
Registered Battlefield	Register of nationally significant military engagements maintained and designated by Historic England.
Registered Park and Garden	Sites of particular historic significance typically comprising gardens, grounds and other planned open spaces, such as town squares and identified on the Register of historic parks, gardens, grounds, and planned open spaces is maintained and designated by Historic England.
Reinstatement	Reinstatement generally refers to restoring conditions and features to their previous condition once construction work for the Project is complete. For example, reinstating soil or land drains to ensure that ground conditions are the same as before the Project commenced. With regards to habitat, tree and hedgerows that have been removed during construction works this refers to where such features would be re-instated to their original location or as close to that as possible, and original condition (except for example, where vegetation removed was diseased). For example, sections of hedgerow may need removing for a temporary period for construction works to install an access road. Where possible these would be reinstated once construction works are completed, and the temporary access removed. With reference to planting the terms 'reinstatement' and 'replacement' are used interchangeably within the DCO application and ES.
Riparian	Relating to or situated on the banks of a watercourse.
Road links	A linear spatial object that describes the geometry and connectivity of a road network between two points in the network.
Rochdale Envelope	The 'Rochdale Envelope' or 'Design Envelope' is an approach to consenting and EIA, named after a UK planning law case, which allows the promoters of projects to broadly define their projects within agreed parameters to retain flexibility of design.

Term	Definition
Rock placement vessel	A rock placement vessel or FPV is a self-propelled vessel that is equipped with a flexible fallpipe. The vessel's design allows the fallpipe to be lowered into the water beneath the vessel. Uniquely, the fallpipe vessel can position rock with extreme accuracy down to a depth of 1,500 meters.
Romano-British	43 to 410 Common Era (CE).
Root Protection Area (RPA)	A notional area of tree root spread (as calculated per BS5837) considered as the minimum volume necessary to ensure tree health and function.
Section 41 of Natural Environment and Rural Communities Act 2006	Section 41 of the Natural Environment and Rural Communities Act 2006 (NERC Act 2006) lists species and habitats of principal importance in England for the purpose of conserving biodiversity.
Sandbank	A raised area of sand within the sea or river which may also be visible a low tide.
Sandwave	A seabed structure formed by currents.
Sandwave clearance	The process of clearing sandwaves by dredging or use of a controlled flow excavator prior to cable installation.
Schedule 1 Species	Bird species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) (Ref 1.9), for which it is an offence to intentionally or recklessly disturb birds and their young at, on or near an ‘active’ nest.
Scheduled Monument	Nationally important archaeological and heritage assets and sites protected by the Ancient Monuments and Archaeological Areas Act 1979 (Ref 1.10). Designated by the Department for Digital, Culture, Media and Sport. These can be above or below-ground and do not need to be ancient.
Scoping Opinion	In the context of Development Consent Order (DCO) applications, a Scoping Opinion is requested from the Planning Inspectorate on behalf of the relevant SoS, to inform the requirements of EIA process and ultimately the ES which will be submitted as part of the application for development consent. Through the scoping process the views of the statutory consultees and other relevant organisations on the proposed scope of the EIA are sought.
The Project Scoping Boundary	The Project Scoping Boundary is defined at an early stage of a project at scoping, to represent the likely maximum extent of development at that time. Following the receipt of a Scoping Opinion and further design development, the Project Scoping Boundary will be refined and replaced by the Order Limits.
Security and Quality of Supply Standard (SQSS)	The SQSS sets out a coordinated set of criteria and methodologies that the Transmission Licences shall use in the

Term	Definition
	planning and operation of the national electricity transmission system.
Sensitivity	A term applied to specific receptors, combing judgements of the susceptibility of the receptors to the specific type of change or development proposed and the value related to that receptor.
Setting	The surroundings in which a heritage asset is experienced. Its extent is not fixed and may change as the asset and its surroundings evolve. Elements of a setting may make a positive or negative contribution to the significance of an asset, may affect the ability to appreciate an asset, or may be neutral.
Severance	The separation of people from places and other people and places or impede pedestrian access to essential facilities.
Side-Scan Sonar surveys	Side-scan sonar produces a detailed picture of the seafloor or riverbed, regardless of water clarity. The system, which may be towed from a surface vessel or mounted on a ship's hull, emits fan shaped pulses down towards the seafloor across a wide angle, perpendicular to the path of the sensor through the water.
Significance	A measure of the importance or gravity of the environmental effect, defined by significance criteria specific to the environmental topic.
Significant Observed Adverse Effect Level (SOAEL)	This is the level above which significant adverse effects on health and quality of life occur.
The Site	Term used describe all the land within the Project Scoping Boundary. The term will be used to describe all land within the Order Limits, which will replace the Project Scoping Boundary.
Site of Special Scientific Interest (SSSI)	An area of land designated by Natural England as being of special interest by reason of its flora, fauna or geological or physiographical features. SSSIs are designated and legally protected under the Wildlife and Countryside Act 1981 (as amended).
Siting Area	An area of land within which a converter station, substation or switching station could be sited.
Siting Zone	An area of land within which multiple Siting Areas could be located.
Soil association	Represent a group of soil series (soil types) which are typically found occurring together in the landscape.
Soil compaction	Degradation of soil structure, which can be caused by heavy loading, resulting in a reduction in the voids within the soil.
Soil stockpiles	Mounds of soil created through the storage of soil materials which have been stripped from an area of construction.

Term	Definition
Source (of contamination)	A substance that is in, on or under the land and that has the potential to cause harm or to cause pollution of Controlled Waters.
Source Protection Zone	A defined area around a drinking water source that carries statutory protection from damaging activities.
Spawning ground	A specific location where fish release their eggs
Special Area of Conservation (SAC)	Protected areas in the UK designated under the Conservation of Habitats and Species Regulations 2017 (as amended) in England and Wales.
Special Protection Area (SPA)	Protected areas for birds in the UK classified under the Wildlife & Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017 (as amended) in England and Wales. Areas classified under regulation 15 of the Conservation of Habitats and Species Regulations 2017, which have been identified as being of international importance for the breeding, feeding, wintering or the migration of rare and vulnerable species of birds.
Species of Principal Importance (SPI)	Species identified as of principal importance for the purpose of conserving biodiversity in England, under Section 41 of the NERC Act 2006. These are based on the UK Biodiversity Action Plan Priority Species. The term is interchangeable with 'UK Priority BAP Species', 'Section 41 species', 'priority species' and 'NERCs 41 species'.
Specific Sound Level (SPL)	The equivalent continuous A-weighted SPL produced by a specific sound source (i.e. the sound source under assessment in accordance with BS 4142:2014) at the assessment location over a given reference time interval, Tr.
Statutory Consultation	Consultation required by law with defined stakeholders, as required under Section 42 to Section 44 of the Planning Act 2008. Statutory Consultation for the Project is expected to take place in 2026.
Statutory designated site	A site which receives protection by means of legislation in recognition of its biodiversity and/or geological value.
Strategic Proposal	The outcome of the strategic options appraisal; the Strategic Proposal is then taken forward to the Options Identification and Selection stage.
Strategic Road Network (SRN)	The SRN is made up of motorways and trunk roads (the most significant 'A' roads).
Study Area	Area over which data has been collected and a technical assessment in the Environmental Impact Assessment (EIA) has

Term	Definition
	been undertaken. The extent of the Study Area varies depending on the type of assessment and nature of the project.
Subsea plough	Subsea cable ploughs are used for the process of pre-trenching cable routes and backfilling the seabed and are designed to work in a seabed consisting mostly of sands and clays, where the seabed is well known and understood.
Substation	Electrical equipment in an electric power system through which electrical energy is passed for transmission, transformation, distribution or switching.
Subsoil	The layer of soil under the topsoil on the surface of the ground, lacking in the levels of organic matter found in topsoil.
Super Grid Transformer	Used at substations along the electricity transmission system to increase or reduce voltage.
Superficial geology	Uncemented sediments, such as alluvium, immediately beneath the soil and above the bedrock.
Suspended Particulate Matter (SPM)	SPM are finely divided solids or liquids that may be dispersed through the air from combustion processes, industrial activities or natural sources.
Suspended Sediment Concentration (SSC)	SSC is defined as the total value of both mineral and organic material carried in suspension by a water body.
System Boundaries	A boundary splits the national electricity transmission system into two parts, crossing critical circuit paths that carry power between areas and where power flow limitations may be encountered. Boundaries help identify regions where reinforcement is most needed by enabling analysis of power transfers between separated areas. They can be local boundaries, which are small areas of the Transmission System with a high concentration of generation, or wider boundaries, which are large areas containing significant amounts of both generation and demand.
Tee	The point at which two electrical routes connect together.
Temporary effects	These are effects that are related to environmental changes associated with a particular activity and that will cease when that activity finishes.
Tensioning site	A site where the new conductor is fed out from during construction. This also includes a tensioning winch to keep the conductor off the ground.
Tertiary measures	Measures that would occur with or without input from the EIA feeding into the development process. These include actions that will be undertaken to meet other existing legislative requirements or actions that are considered to be standard practice used to manage commonly occurring environmental

Term	Definition
	effects, for example, standard control measures implemented during construction.
Three-ended connection	A three-ended connection is use of an additional circuit to build-in extra resilience into the electricity transmission network. Most High Voltage Direct Current (HVDC) electricity links are two-ended allowing power to be transported from where it is being generated to where it is needed. The control systems of a HVDC electricity link allow proportional and directional control of power flow which can be altered very quickly in response to network needs. The role of a third connection (circuit) is to provide additional flexibility in the network which would allow power flows to be rapidly re-routed in the event of an unplanned circuit outage thereby preventing some parts of the network becoming overloaded.
Topsoil	The uppermost layer of soil, usually with the highest concentration of nutrients, organic matter and microorganisms.
Traffic separation scheme	A maritime traffic management route system ruled by the International Maritime Organisation (IMO).
Tranquillity	A state of calm and quietude associated with peace, considered to be a significant asset of landscape.
Transboundary effects	Transboundary effects are those effects that would affect the environment in another state within the European Economic Area (EEA).
Transition Joint Bay (TJB)	Buried concrete pad with joint connecting offshore and onshore cables located above MHWS.
Tree Preservation Order (TPO)	A statutory designation protecting trees, administered by the relevant local planning authority.
Trenched	Installation of the cable using an open trench to lay the cable within before backfilling.
Trenchless	Installation of a cable below a constraint or other infrastructure without using a trench.
Underground Cable	An insulated conductor carrying electric current designed for underground installation.
Vessel Monitoring System (VMS)	VMS data tracks vessels in a similar way to an Automatic Identification System but this data has historically been restricted to government regulators or other fisheries authorities.
Vessel-side discharge methods	A method used for placing material after a subsea cable has been laid. Less precise than using a fall-pipe vessel.
Vibration	Vibration is an oscillatory motion. The magnitude of vibration can be defined in terms of displacement, i.e. how far from the

Term	Definition
	equilibrium something moves, velocity (how fast something moves), or acceleration (the rate of change of velocity).
Visual effect	The change in the appearance of the townscape as a result of the development. This can be positive or negative.
Visualisation	A computer simulation, photomontage or other technique illustrating the predicted appearance of a project to aid engagement with consultees.
Visual receptor	Individuals and/or defined groups of people who have the potential to be affected by a project impacting upon their views.
Water Environment Regulations (WER)	The Water Environment Regulations 2017 (Water Framework Directive) (England and Wales) transpose the Water Framework Directive into UK law
Water Framework Directive (WFD)	The WFD protects surface waters including rivers, lakes, transitional waters (referred to in this advice as estuarine waters), coastal waters and groundwater.
Water jetting	High Pressure Water Jetting (also known as hydroblasting and water cutting) is an industrial tool capable of removing material and cleaning a wide variety of materials using extremely high-pressure jets of water, or a mixture of water and chemicals.
Working area	The working area refers to the area of land that is likely to form part of the construction site. This is not the same as the Project Scoping Boundary, as there may be parts of the Project Scoping Boundary that lie outside the working area.
Working width	The temporary working area required to install a cable which normally includes stock proof fencing, temporary drainage, access road, topsoil and sub soil storage and the cable trench.
World Heritage Site	A natural or man-made site, area, or structure recognised as being of outstanding international importance and therefore as deserving special protection. Sites are nominated to and designated by the World Heritage Convention.
Zone of Influence (ZoI)	An identified geographical area around the Project where there is a potential for impacts to occur.
Zone of Theoretical Visibility (ZTV)	The likely (or theoretical) extent of visibility of a development, usually shown on a map.

PART ONE
INTRODUCTION

1. Introduction

1.1 Overview

1.1.1. National Grid Electricity Transmission plc (NGET) owns and manages the national high-voltage electricity transmission system throughout England and Wales.

1.1.2. The key role of this transmission system is to connect the electricity generators' power stations with regional Distribution Network Operators (DNO) who then supply businesses and homes. In return for the connection, users of the transmission network pay a tariff to NGET. This revenue is then used to maintain, improve and invest in the transmission network.

1.1.3. NGET holds the Transmission Licence for England and Wales and is thus obligated to develop and maintain an efficient, co-ordinated and economical system of electricity transmission and to facilitate competition in the generation and supply of electricity, as set out in the Electricity Act 1989.

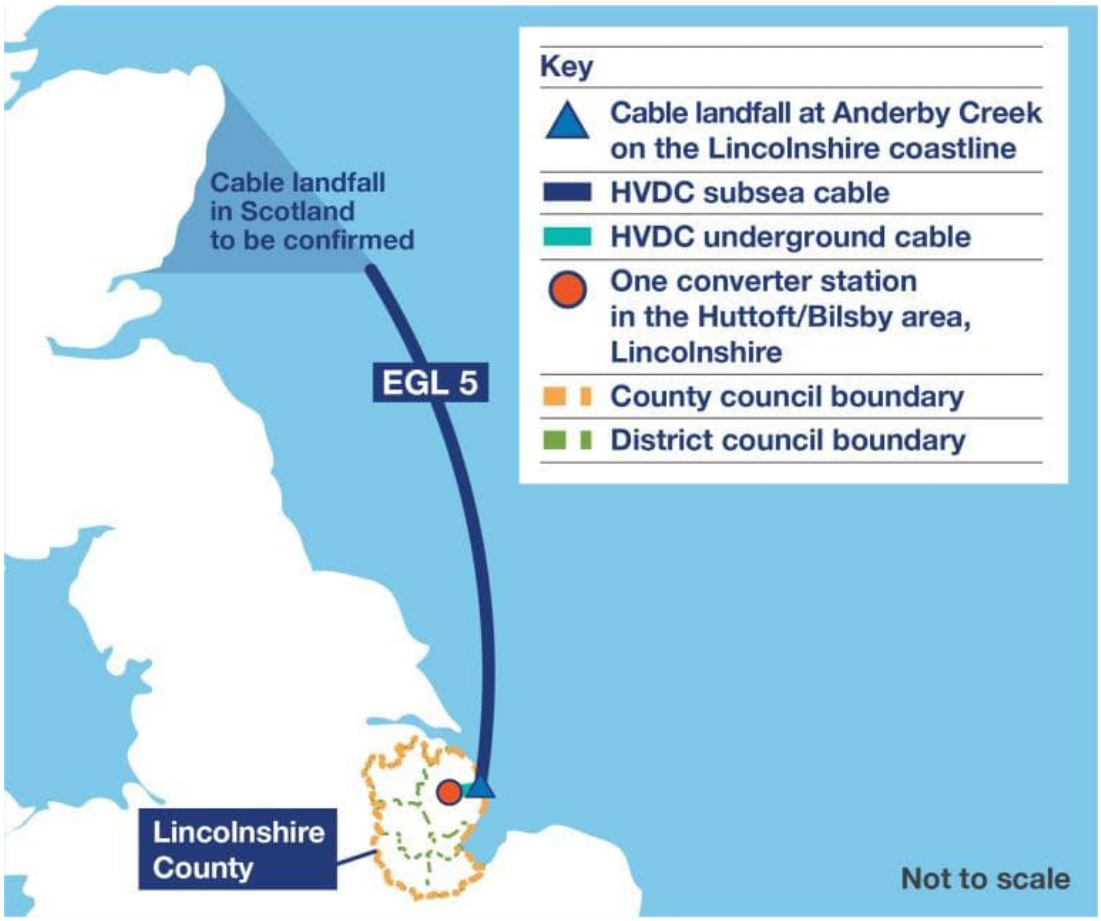
1.1.4. As a licence holder NGET has specific duties to uphold in relation to the desirability of preserving amenity of certain aspects of the environment and to mitigate the effects of its activities on the environment under Section 38 and Schedule 9 of the Electricity Act 1989.

1.1.5. Eastern Green Link (EGL) 5 is a new primarily offshore high voltage electricity link, with associated onshore infrastructure, between Scotland and England. EGL 5 would transport enough clean energy from Scotland to power up to two million homes in parts of the Midlands and South of England. By doing so, it would play an important role in building a more secure and resilient future energy system and decarbonising the UK.

1.1.6. EGL 5 forms part of 'The Great Grid Upgrade', which is building the significant new electricity network infrastructure required to reduce the UK's reliance on fossil fuels by connecting 50GW of offshore wind by 2030. The Great Grid Upgrade is the largest overhaul of the electricity grid in generations and will play a big part in the UK government's plan to boost homegrown power (Ref 1.11).

1.1.7. NGET intends to submit an application for the granting of an order for development consent to the Planning Inspectorate for the English components of EGL 5. EGL 5 is also proposed by NGET to be considered as EIA development under the criteria in Schedule 3 as defined in the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the EIA Regulations). Consequently, an assessment of the impacts of the Project on the environment is required.

Plate 1-1: Overview of EGL 5



1.2 The role of National Grid Electricity Transmission plc

1.2.1. NGET owns, builds and maintains the national high voltage electricity transmission system throughout England and Wales. The licence areas for NGET are shown on **Plate 1-2**. NGET is responsible for making sure electricity is transported safely and efficiently from where it is produced (such as wind farms, solar farms and power stations) to the local DNOs and for developing upgrades to the network as agreed with the industry regulator, the Office of Gas and Electricity Markets (Ofgem). The DNO boundary relevant to the Project is Western Power Distribution (WPD) (East Midlands).

1.2.2. The National Energy System Operator (NESO) controls and operates the high voltage electricity transmission system in England, Scotland and Wales. The NESO facilitates several roles on behalf of the electricity industry, including making formal offers to connection applicants to the National Electricity Transmission System (NETS). NESO also manages shortfalls in capacity by reducing power flows and constraining generation, as well as making investment recommendations to Transmission Owners (TOs), including NGET, through an annual network planning cycle and other periodic reviews. This indicates which areas of the transmission system require reinforcement.

1.2.3. Under the Electricity Act 1989, NGET holds a transmission licence, under which it has a legal duty to develop and maintain an efficient, coordinated and economical electricity system. NGET's transmission system in England and Wales consists of approximately 7,250 kilometres (km) of overhead lines and a further 1,450 km of underground cables, operating at 400 kilovolts (kV) and 275 kV. The 275 kV grid was developed in the 1950s to provide a national electricity transmission system, and then developed further from

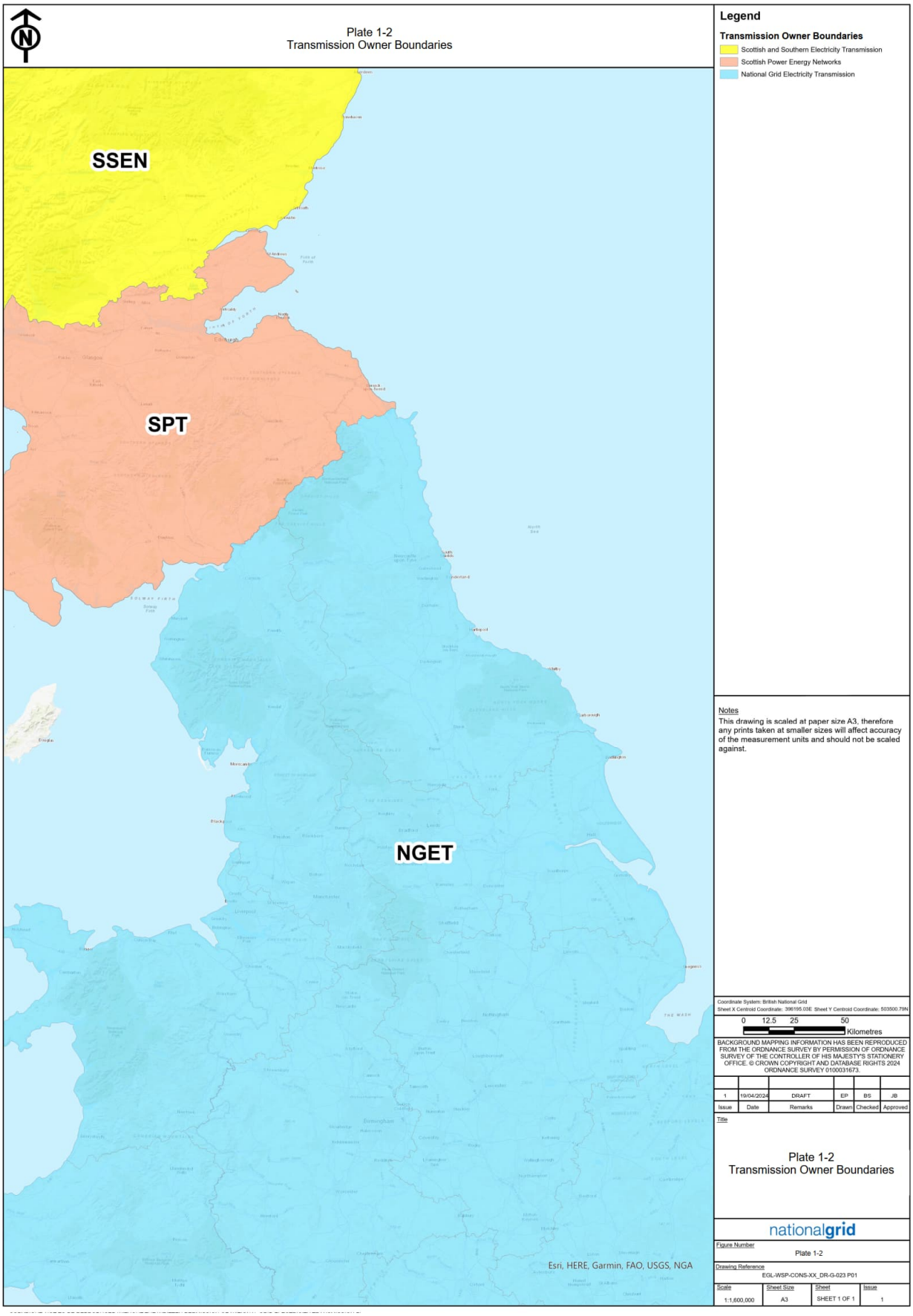
the mid-1960s, at 400 kV to increase its power carrying capacity. The overhead lines and underground cables connect over 300 substations to form a highly interconnected network. The substations provide points of connection to the local distribution networks, which operate at voltages from 132 kV down to 240 volts (V) (the voltage at which electrical power is distributed to domestic consumers). The distribution networks are owned by DNOs, including Northern Power Grid (NPG) and National Grid Electricity Distribution (NGED) in the East Midlands region of England.

1.2.4. NGET is also required, under Section 38 of the Electricity Act 1989, to comply with the provisions of Schedule 9 of the Act. Schedule 9 requires licence holders such as NGET, in developing proposals to transmit electricity to:

- Schedule 9(1)(a) *"…have regard to the desirability of preserving natural beauty, of conserving flora, fauna and geological or physiographical features of special interest and of protecting sites, buildings and objects of architectural, historic or archaeological interest;"* and
- Schedule 9(1)(b) *"…do what [it] reasonably can mitigate any effect which the proposals would have on the natural beauty of the countryside or on any such flora, fauna, features, sites, buildings or objects"*.

1.2.5. Scottish and Southern Electricity Network Transmission (SSEN-T) is the TO for northern Scotland and responsible for the Scottish components of EGL 5 (shown in **Plate 1-2**). Similar to NGET, SSEN Transmission is responsible for ensuring electricity is transmitted safely and efficiently from generation to user. As transmission license holders under the Electricity Act 1989, SSEN Transmission also has a number of statutory duties to comply with the provisions of Schedule 9 of the Electricity Act 1989 including those outlined above.

Plate 1-2: Transmission Owner Boundaries



1.3 Background to and need for the Project

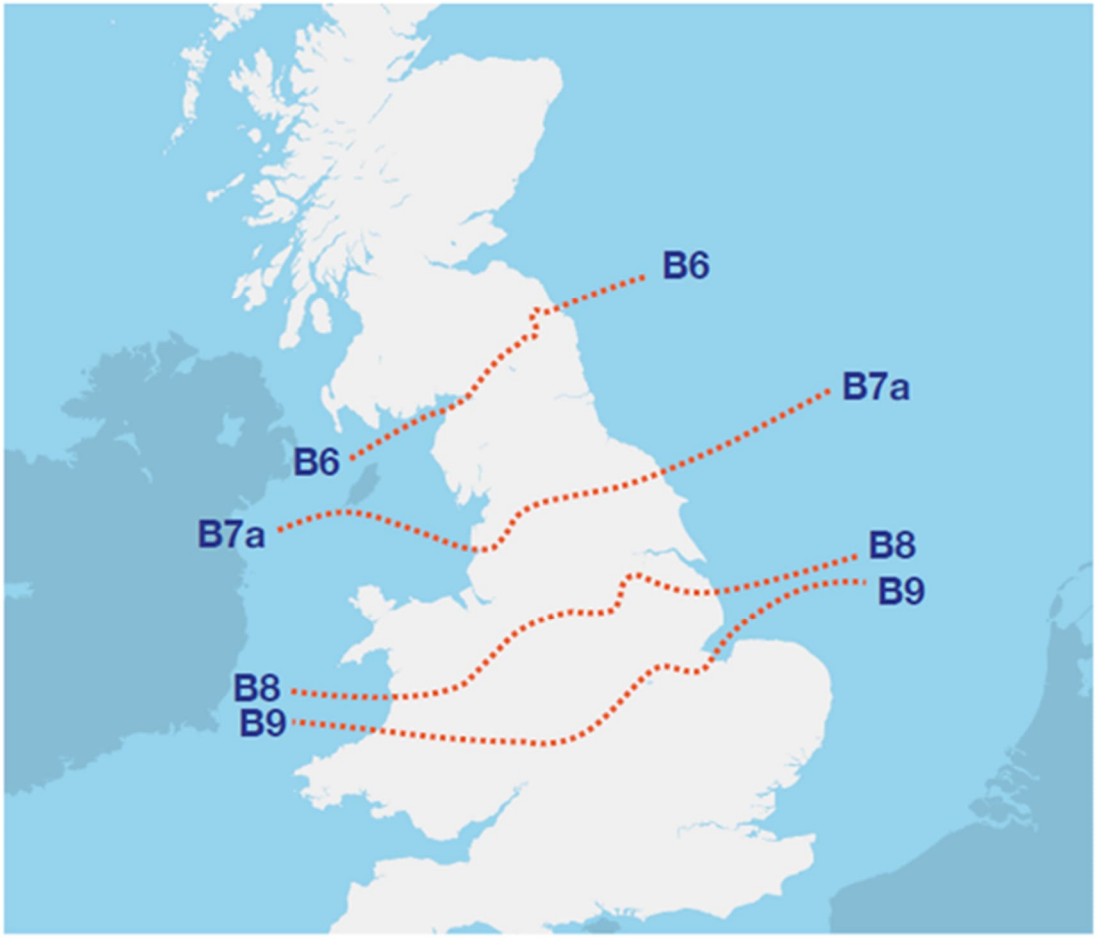
1.3.1. The electricity industry in Great Britain is undergoing unprecedented change. The Climate Change Act 2008 (as amended) now commits the UK Government by law to reducing greenhouse gas emissions by at least 100% from the 1990 baseline by 2050. This 2050 target is commonly known as 'Net Zero'. The Scottish Government's target is to become Net Zero by 2045, five years ahead of the rest of the UK.

1.3.2. To achieve Net Zero, there will need to be a substantial shift away from the use of fossil fuel burning generation and towards new generating and interconnection capacity. The UK Government has set clear targets of 50 Gigawatt (GW) of offshore wind generation by 2030 (Ref 1.12) and up to 140 (Ref 1.13) GW by 2050. There is particular growth forecast in offshore wind capacity in Scotland (Ref 1.14) and the northeast of England, as well as subsea 'offshore' transmission or 'bootstraps' to and from Scotland. This will put pressure on the existing network such that reinforcement of the network in the East Midlands area has been identified as necessary to ensure optimal operation of the transmission system and reliable economic long-term supply.

1.3.3. The existing electricity transmission and distribution networks in Great Britain both operate using predominantly High Voltage Alternating Current (HVAC) systems. However, High Voltage Direct Current (HVDC) technology allows electricity to be transmitted from point to point in much larger volumes, over greater distances, with fewer transmission losses compared to an equivalent HVAC system. This flexibility brings operational benefits; however, to transmit electricity in Direct Current (DC) form, specialist electrical equipment contained within converter stations is required at either end of the transmission line to convert the power from Alternating Current (AC) to DC, or vice versa.

1.3.4. The electricity network system in Great Britain is split into boundaries. Each boundary has a limit to the amount of electricity that can flow through it. As more electricity is needed and is being generated in Great Britain, we can assess where the power flows between these boundaries will need to increase. The boundaries as shown in **Plate 1-3** through the north and the midlands (B6, B7a, B8 and B9). EGL 5 is required to reinforce and increase the capacity of the B6 & B7a boundaries, and it also provides additional capacity to the B8 boundary.

Plate 1-3: Network Transmission Boundaries



1.3.5. In response to concerns over the security, affordability, and sustainability of the UK's energy supply, the UK Government published its British Energy Security Strategy (Ref 1.12) in July 2022. The British Energy Security Strategy outlines the ambition to increase generation of energy from offshore wind to 50 GW by 2030 – more than enough to power every home in the UK. This has led to a shift towards offshore renewable generation of power, away from coal power generation in the north and Midlands. The UK is also transporting more power between countries across the North Sea, using interconnectors. These factors have driven a change in the energy landscape across the UK, in particular the East of England including the Yorkshire and Humber, East Midlands, Lincolnshire and Norfolk regions of England where reinforcement of the network (overhead lines, pylons, cables and other infrastructure that transports electricity around the country) is required to deliver this change.

1.3.6. As the volume of renewable energy generation connecting to the transmission system in Scotland continues to grow there is a need to increase cross-border transmission capability to ensure this energy is economically and efficiently transmitted from where it is generated to where it is needed. EGL 5 is part of the continued co-ordinated development of significant cross-border transmission routes that are needed due to the significant and increasing levels of North-South power flows. As noted above EGL 5 is part of The Great Grid Upgrade and along with a number of other projects will support the UK's Net Zero target by reinforcing the electricity transmission network and facilitating the connection of sources of electricity, allowing clean energy generated in the UK to be carried on the network.

1.3.7. In 2022, the ESO published the Pathway to 2030 Holistic Network Design (HND) report (Ref 1.15) setting out an integrated approach to transmission network design that supports the large-scale delivery of electricity generated from offshore wind by 2030. As it stands, the HND recommendations are not sufficient by themselves to reinforce the transmission system, as more electricity will be generated than the network can efficiently support and transport. Therefore, the UK Government requested ESO to further develop the HND and enable a set of recommendations to allow a greater amount of offshore wind generation to connect to the network. The further development of the HND, known as HND FUE (HND Follow Up Exercise), was published by ESO in 2024, in a report titled 'Beyond 2030' (Ref 1.16).

1.3.8. Within the Beyond 2030 report (Ref 1.16), the NESO recommended multiple East Coast onshore and offshore reinforcements, including SW_E1A_3 also known as AC4, which has now been refined to a link between Scotland and England known as EGL 5 (this Project).

Other NGET Projects

1.3.9. Also referenced in this Scoping Report are the NGET EGL 3 and EGL 4 Projects, which are two additional major reinforcements of the electricity transmission system to meet the requirements of generation connections in Scotland. The EGL 3 Project is located between Aberdeenshire in Scotland and Norfolk in England. The EGL 4 Project is located between Fife in Scotland and Norfolk in England. The EGL 3 and EGL 4 Projects, each comprise offshore HVDC cabling, onshore HVDC cabling, new converter stations and onshore HVAC cabling, with both EGL 3 and EGL 4 connecting at a new Walpole substation. The joint submission of the EGL 3 and EGL 4 DCO application is expected in Summer 2026.

1.3.10. Additionally, there is mention of the Grimsby to Walpole Project, a 6 GW transmission between Grimsby West and Walpole. As part of this project, a new substation, Lincolnshire Connection Substation B (LCS-B) is proposed, which is where EGL 5 will connect to the wider network.

1.4 The Project

1.4.1. This Scoping Report is written with specific regard to the English Onshore Scheme and the English Offshore Scheme (i.e., the 'Project'). The following definitions are relevant to this Scoping Report:

1.4.2. "English Onshore Scheme" – All components of EGL 5 between the electricity transmission connection point in England and the Mean Low Water Springs (MLWS) in England.

1.4.3. "English Offshore Scheme" – All components of EGL 5 within the English marine environment up to the Mean High-Water Springs (MHWS) in England.

1.4.4. "the Project" – is the term used to refer all elements of EGL 5 which are the subject of this Scoping Report i.e., the English Onshore Scheme and the English Offshore Scheme. More specifically, the Project comprises the 'Authorised' development and 'Associated' development for EGL 5 that will be subject to an application for Development Consent.

1.4.5. “EGL 5” – EGL 5 comprises a 2 GW HVDC system linking the Scottish coastline and Lincolnshire in England. EGL 5 comprises the following Schemes: Scottish Onshore; Scottish Offshore; English Offshore; and English Onshore.

1.4.6. “Scottish Onshore Scheme” - All components of EGL 5 between the electricity transmission connection point in Scotland and the MLWS in Scotland, which fall under the responsibility of SSEN.

1.4.7. These include a proposed converter station located in Scotland, from which an underground HVDC cable would route to a proposed landfall on the Scottish coastline. The proposed converter station would be connected to a substation by underground HVAC cables. The substation connects EGL 5 to the existing Scottish transmission system.

1.4.8. “Scottish Offshore Scheme” - All components of EGL 5 within the Scottish marine environment up to the MHWS in Scotland, which fall under the responsibility of SSEN.

1.4.9. These include up to 185 km of subsea HVDC cable from the intersection with the EGL 5 Offshore Elements, at the marine boundary between English and Scottish adjacent waters, to the MHWS mark at a landfall location yet to be decided in Scotland. The subsea cable system would consist of two HVDC cables.

1.4.10. The English Onshore Scheme (**Figure 1-2**) and English Offshore Scheme (**Figure 1-4**) components of EGL 5 to be consented by DCO and Deemed Marine Licence are illustrated in **Figure 1-3 and Figure 1-5**. The Scoping Boundary for the Project is shown in shown in **Volume 3, Figure 1-1**.

Summary of the English Onshore Scheme

1.4.11. The English Onshore Scheme is sited within Lincolnshire, with all elements located in East Lindsey. The location of the English Onshore Scheme is illustrated by the English Onshore Scheme Scoping Boundary in **Volume 3, Figure 1-2**.

1.4.12. The key elements of the English Onshore Scheme are shown in **Volume 3, Figure 1-3** and are summarised below. A detailed breakdown of the English Onshore Scheme is provided within **Part 1, Chapter 4: The Scheme**.

Elements of the Project

1.4.13. The principal elements of the Project i.e., those which would constitute the ‘authorised development’ in a DCO and for which development consent is now sought, comprise a new converter station in the East Lindsey area of Lincolnshire, which will connect to the proposed 400 kV Lincolnshire Connection Substation B (LCS-B), considered as part of the NGET Grimsby to Walpole Project.

1.4.14. The remaining elements of the Project would be considered to constitute ‘associated development’ under Section 115 of the Planning Act 2008 (PA 2008) (Ref 1.17) and under the current ‘Guidance on associated development applications for major infrastructure projects’ (DCLG 2013) (Ref 1.18). These elements of the Project comprise:

- Anderby Creek Landfall:
  - A new HVDC underground cables landfall at Anderby Creek, located approximately 1.8 km north of Anderby Creek in East Lindsey, ending at MLWS, located on the Lincolnshire coast.
- HVDC underground cables:
  - Up to 9 km of new underground HVDC cable, from the landfall point (at Anderby Creek) to the new EGL 5 converter station in the vicinity of the proposed 400 kV LCS-B considered as part of the NGET Grimsby to Walpole Project.
- HVAC underground cables:
  - Up to 3 km of new underground HVAC cable, between the new EGL 5 converter station and the proposed 400 kV LCS-B considered as part of the NGET Grimsby to Walpole Project.
- Alford Bypass Construction Route:
  - A temporary construction traffic route departing from the road network around the north of Alford hereafter referred to as the 'Alford Bypass Construction Route'.

Terms of the English Onshore Scheme

1.4.15. A full description of the English Onshore Scheme is provided in **Part 1, Chapter 4: The Project**. For the purposes of describing the English Onshore Scheme in this Scoping Report, the following terms are used:

Anderby Creek Landfall

1.4.16. This term is used to refer to the area along the Lincolnshire coast which contains the interface between the EGL 5 offshore elements and onshore elements. It is an area where the subsea cables cross the intertidal and connect to the onshore underground cables at a buried Transition Joint Bay (TJB). The landfall area for Anderby Creek has been captured within the eastern extent of the English Onshore Scheme Scoping Boundary.

HVDC Underground Cable

1.4.17. This is the term used to refer to the elements of the Project (underground HVDC cables) located within the English Onshore Scheme Scoping Boundary between the landfall area and the new EGL 5 converter station.

EGL 5 Converter Station

1.4.18. This is the term used to refer to the elements of the Project (EGL 5 converter station) into which the HVDC underground cables will connect from landfall. It will then subsequently be connected to the proposed 400 kV LCS-B proposed as part of the Grimsby to Walpole Project in East Lindsey, via HVAC underground cables.

HVAC Underground Cable

1.4.19. This is the term used to refer to the elements of the Project (underground HVAC cables) located within the English Onshore Scheme Scoping Boundary between the new EGL 5

converter station and the proposed 400 kV LCS-B proposed as part of the Grimsby to Walpole Project in East Lindsey.

Alford Bypass Construction Route

1.4.20. The Alford Bypass Construction Route will consist of enabling works required to facilitate the construction and installation of the permanent assets of EGL 5. Its requirement was identified due to a potential constraint for abnormal indivisible loads (AIL) to reach the Anderby Creek Landfall and both potential converter station sites.

1.4.21. These areas above are also shown in **Volume 3, Figure 1-2** and **Figure 1-3** with further information provided in **Figure 3-1 and Figure 3-3** to **3-5**.

Summary of the English Offshore Scheme

1.4.22. The English Offshore Scheme is sited within the English marine environment, through inshore (<12 nautical miles (NM) from the coast) and offshore waters (>12 NM from the coast), and up to MHWS in England. The most northerly elements of the English Offshore Scheme would be located at the boundary of English Waters where it meets Scottish Waters, and the most southerly elements would be located at MHWS at the proposed Anderby Creek Landfall area. The location of the English Offshore Scheme is illustrated by the English Offshore Scheme Scoping Boundary in **Volume 3, Figure 1-4**.

1.4.23. The English Offshore Scheme Scoping Boundary encompasses two route options, Option 1 - ENG Route A and Option 2 – ENG Route B. Kilometre points (KPs) have been used in certain places to provide reference points along the English Offshore Scheme Scoping Boundary in relation to Option 1 – ENG Route A. KP 0 is defined as the Landfall at Anderby Creek, with KP 412 the border between English and Scottish adjacent waters – the northern most extent of the English Offshore Scheme Scoping Boundary. Kilometre Points Alternative (KPA) has been used to describe Option 2 – ENG Route B with KPA 0 being the point at which Option 2 – ENG Route B diverges from Option 1 – ENG Route A and KPA 39 where it rejoins Option 1 - ENG Route A at KP 58. KP's and KPA's for the English Offshore Scheme are shown in **Volume 3, Figure 1-5** and routes described further in **Chapter 3: Consideration of Alternatives**.

1.4.24. The key elements of the English Offshore Scheme are up to 415 km of subsea HVDC cable. The subsea cable system would consist of two HVDC cables. A detailed breakdown of the English Offshore Scheme is provided within **Part 1, Chapter 4: The Project**.

1.5 Intention to apply for Development Consent

1.5.1. As an electricity transmission licence holder in relation to transmission of electricity in England and Wales, NGET has specific duties to uphold in relation to the desirability of preserving amenity of certain aspects of the environment and to mitigate the effects of its activities on the environment under Section 38 and Schedule 9 of the Electricity Act 1989.

1.5.2. NGET is responsible for gaining consent for both the English Onshore and English Offshore Schemes.

1.5.3. Whilst none of the components of the Project fall within the definition or thresholds of a 'Nationally Significant Infrastructure Project' (NSIP) defined under Part 3 of the Planning Act 2008 (PA 2008), NGET considers elements of the Project to be of national

significance. As such, following engagement with the relevant Local Planning Authorities (LPA) in Lincolnshire, NGET sought and have been granted a direction under Section 35 (s35) of the PA 2008 from the Secretary of State (SoS) for elements of the Project to be treated as a development for which development consent under the PA 2008 is required. The aspects of the Project which would constitute the 'authorised development' in the DCO, and for which development consent is sought, comprise:

- A new converter station in the East Lindsey area of Lincolnshire, in the vicinity of the proposed 400 kV LCS-B, proposed by the Grimsby to Walpole Project (Ref 3.4).

1.5.4. Of the remaining elements of the Project:

- The Scottish onshore and offshore works will be consented through Scotland's town and country planning and marine licensing legislation;
- The English offshore works will be dealt with via a Deemed Marine Licence (DML) under the Planning Act 2008; and
- The other English onshore works are necessary to support both the operation of the Proposed Development and the Project and will include significant underground onshore HVDC and HVAC cables, transition joint bays where the HVDC cables make landfall, together with works necessary to provide environmental mitigation.

1.5.5. NGET intends to submit an application for a DCO under Section 37 of the PA 2008 to the SoS. The application will comprise details of all development proposals and will be accompanied by an Environmental Statement (ES) conforming to Regulation 14 of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (hereafter referred to as 'the EIA Regulations') and other relevant policies and legislation (see **Part 1, Chapter 2: Legislation and Planning Policy Context**).

1.5.6. A DML will be sought under the DCO. In accordance with the United Nations Convention on the Laws of the Sea (UNCLOS) and Section 81 of the Marine and Coastal Access Act (MCAA) 2009 cable installation beyond 12 nautical miles (NM) is exempt from requiring a Marine Licence. Therefore, the Applicant intends to structure the Deemed Marine Licence to reflect the licensable activities within and outside 12 NM.

The need for Environmental Impact Assessment

1.5.7. EIA is a process required by UK law which brings together information about the likely significant effects of a development. The legal basis for EIA originated with European Council Directive 85/337/EEC (the 'EIA Directive'). The EIA Directive was transposed into UK law through several pieces of legislation.

1.5.8. In relation to NSIPs, EIA is required for certain developments under the EIA Regulations (Ref 1.19).

1.5.9. The four stages of the DCO EIA process include:

1. Screening (discretionary);
2. Scoping (discretionary) (this stage);
3. Preparation of Preliminary Environmental Information; and
4. Preparation of an ES.

1.5.10. Under the EIA Regulations, EIA is mandatory for development projects defined under Schedule 1. Those development projects defined in Schedule 2 only require EIA if they

are likely to have significant effects on the environment by virtue of their nature, size or location.

1.5.11. It is not considered that any individual component of the Project explicitly falls under Schedule 1 or 2 of the EIA Regulations. Schedule 3 of the EIA Regulations sets out the selection criteria for screening Schedule 2 development and thereby determining whether a project is likely to have significant effects, for which an EIA would subsequently be required. Having considered the criteria in Schedule 3, NGET proposes to undertake an EIA having given regard to the whole of Schedule 3 but specifically:

"Characteristics of development

1. The characteristics of development must be considered with particular regard to—

(a) the size and design of the whole development;

(b) cumulation with other existing development and/or approved development;

and

Location of development

2. The environmental sensitivity of geographical areas likely to affected by development, must be considered with particular regard to—

(a) the existing and approved land use;

(b) the relative abundance, availability, quality and regenerative capacity of natural resources (including soil, land, water and biodiversity) in the area and its underground;

(c) the absorption capacity of the natural environment, in particular:

(i) Wetlands, riparian areas, river mouths;

(ii) Coastal zone and the marine environment;

(iv) Nature reserves and parks;

(v) European sites and other areas classified or protected under national legislation; and

(viii) Landscapes and sites of historical, cultural or archaeological significance."

1.5.12. Considering the nature and size of the Project, an EIA will be undertaken and therefore in line with Regulation 8(1)(b) of the EIA Regulations, NGET hereby provides notice that the application for a DCO will be accompanied by an ES.

1.6 Purpose and structure of this Scoping Report

1.6.1. This Scoping Report has been prepared to accompany a request for a Scoping Opinion from the Planning Inspectorate (prepared on behalf of the SoS). The Scoping Opinion will then inform the scope of the EIA for EGL 5. The results of the EIA will be presented in an Environmental Statement (ES) to be submitted to the Planning Inspectorate as part of the application for Development Consent.

1.6.2. The opinion of the SoS is being sought specifically on:

- The environmental aspects that should be included in the EIA;

- The relevant elements of the Project and the resultant likely significant effects;
- Those effects not likely to be significant that do not need to be considered further;
- The approach to setting the study areas for each aspect;
- The data that has been gathered (and will be gathered);
- The assessment methods that will be used to determine likely significant effects; and
- The approach to determining the design and control measures that could be incorporated into the Project to avoid, prevent, reduce or, if necessary, offset significant effects.

1.6.3. This Scoping Report has been prepared in accordance with the EIA Regulations Regulation 10 and taking account of the guidance in the Planning Inspectorate's Advice Note Seven (Ref 1.20). A list of other Advice Notes considered is provided in **Part 1, Chapter 2: Legislation and Planning Policy Context**. **Table 1-1** identifies where the information set out in Regulation 10(3) of the EIA Regulations and Planning Inspectorate Advice Note Seven can be found within this Scoping Report.

Table 1-1: Compliance with Regulation 10(3) and Planning Inspectorate Advice Note Seven

Source of requirement	Suggested information to be included within the Scoping Report	Location within this Scoping Report
Regulation 10(3) of the EIA Regulations	(a) a plan to sufficiently identify the land;	The Project Scoping Boundary is shown in **Volume 3, Figure 1-5: The Project Scoping Boundary** The English Onshore Scheme Scoping Boundary is shown in **Volume 3, Figure 1-6: English Onshore Scheme Scoping Boundary** The English Offshore Scheme Scoping Boundary is shown in **Volume 3, Figure 1-7: English Offshore Scheme Scoping Boundary**
	(b) a description of the proposed development including its location and technical capacity	**Part 1, Chapter 1: Introduction** **Part 1, Chapter 4: The Project**
	(c) an explanation of the likely significant effects of the development on the environment	This is presented within each of the technical aspect chapters: **Part 2, Chapter 6 – Chapter 17** **Part 3, Chapter 18 – Chapter 27** **Part 4, Chapter 28 – Chapter 30**
	(d) such other information or representations as the person making the request may wish to provide or make	Where relevant, this is presented within each of the technical aspect chapters: **Part 2, Chapter 6 – Chapter 17** **Part 3, Chapter 18 – Chapter 27** **Part 4, Chapter 28 – Chapter 30**
Planning Inspectorate Advice Note Seven	**The Proposed Development**	
	An explanation of the approach to addressing uncertainty where it remains in relation to	**Part 2, Chapter 5: EIA Approach and Methodology** **Part 2, Chapter 4: The Project**

Source of requirement	Suggested information to be included within the Scoping Report	Location within this Scoping Report
	elements of the Proposed Development e.g. design parameters;	
	Referenced plans presented at an appropriate scale to convey clearly the information and all known features associated with the Proposed Development;	The Project Scoping Boundary is shown in **Volume 3, Figure 1-5: The Project Scoping Boundary** The English Onshore Scheme Scoping Boundary is shown in **Volume 3, Figure 1-6: English Onshore Scheme Scoping Boundary** The key elements of the English Onshore Scheme are shown in **Volume 3, Figure 1-7: Key Elements of the English Onshore Scheme** The English Offshore Scheme Scoping Boundary is shown in **Volume 3, Figure 1-8: English Offshore Scheme Scoping Boundary**
	EIA Approach and Topic Areas	
	An outline of the reasonable alternatives considered and the reasons for selecting the preferred option;	**Part 1, Chapter 3: Consideration of Alternatives**
	A summary table depicting each of the aspects and matters that are requested to be scoped out allowing for quick identification of issues;	Each of the technical aspect chapters considered in **Part 2, English Onshore Scheme** (**Chapter 6** to **Chapter 17**) include a summary table identifying those sources, impacts and receptors proposed to be scoped in and out of the ES. **Part 3 English Offshore Scheme, Chapters 18** to **26** also include a summary table setting out the effects to be scoped in or out of the ES.
	A detailed description of the aspects and matters proposed to be scoped out of further assessment with justification provided;	The technical aspects proposed to be scoped out of the ES are detailed within: **Part 4, Chapter 29: Scoped Out Aspects.**

Source of requirement	Suggested information to be included within the Scoping Report	Location within this Scoping Report
	Results of desktop and baseline studies where available and where relevant to the decision to scope in or out aspects or matters;	These are set out within the 'Baseline Conditions' section of each of the technical aspect chapters considered in **Part 2, English Onshore Scheme (Chapter 6** to **Chapter 16)** and in the 'Baseline Characterisation' section in **Part 3 English Offshore Scheme (Chapter 18** to **26)**.
	Aspects and matters to be scoped in, the report should include details of the methods to be used to assess impacts and to determine significance of effect e.g. criteria for determining sensitivity and magnitude;	Impacts and receptors proposed to be 'scoped in' for the English Onshore Scheme for the purpose of the ES are identified within the 'Likely Significant Effects' section of each of the technical aspect chapters considered in **Part 2, English Onshore Scheme (Chapter 6** to **Chapter 16**). Impacts and receptors proposed to be 'scoped in' for the English Offshore Scheme for the purpose of the ES are identified within each of the technical aspect chapters considered in **Part 3, English Offshore Scheme** (**Chapter 18** to **Chapter 26**). The proposed EIA approach and methods are described in **Part 2, Chapter 5: EIA Approach and Methodology**. The 'Assessment Methodology' section of each of the technical aspect chapters considered in **Part 2, English Onshore Scheme (Chapter 6** to **Chapter 16)** and 'Proposed Assessment Methodology' section in **Part 3, English Offshore Scheme (Chapter 18** to **26)** also describe how they will apply that methodology to their assessments or where it differs due to specific topic guidance, set out their proposed methodologies.
	Any avoidance or mitigation measures proposed, how they may be secured and the anticipated residual effects;	These are set out within the 'Design and Control Measures' section of each of the technical aspect chapters considered in **Part 2, English Onshore Scheme (Chapter 6** to **Chapter 16)** and in **Part 3. English Offshore Scheme (Chapter 18** to **Chapter 26)** where identified at this stage

Source of requirement	Suggested information to be included within the Scoping Report	Location within this Scoping Report
	Information Sources	
	References to any guidance and best practice to be relied upon;	This is presented within section 2 of each of the technical aspect chapters considered in **Part 2, English Onshore Scheme (Chapter 6** to **Chapter 16)** and in the 'Data Sources' section in **Part 3, English Offshore Scheme (Chapter 18** to **26)**
	Evidence of agreements reached with consultation bodies (for example the statutory nature conservation bodies or local authorities);	Where it has been received, feedback from stakeholders is described as appropriate throughout the technical aspect chapters considered in **Part 2, English Onshore Scheme (Chapter 6** to **Chapter 16)** and **Part 3, English Offshore Scheme (Chapters 18** to **Chapter 26).**
	An outline of the structure of the proposed ES.	The outline structure of the ES is provided in **Part 1, Chapter 1: Introduction.**
	Transboundary Effects	
	The Applicant may also wish to provide a completed transboundary screening matrix dealing with the potential effects of the Proposed Development on other European Economic Area (EEA) States.	As outlined in the Planning Inspectorate's Advice Note Twelve (Ref 1.10) the screening process for transboundary effects will be carried out by the Planning Inspectorate. The transboundary screening matrix will be provided at a future stage of the process and is not included at this time. However, an initial view on the likelihood of transboundary effects is provided in **Section 5.10, Part 2, Chapter 5: English Onshore Scheme**.

1.6.4. A scoping process has been undertaken to identify those issues which are likely to give rise to significant effects and should be included within the scope of the EIA. **Table 1-2** outlines the chapters and supporting appendices along with a summary of the content of this Scoping Report.

Table 1-2: Scoping Report Structure

Chapter	Content
Volume 1 Part 1 Introduction	
Chapter 1: Introduction	Sets out an overview of the Project, the background to the need for an EIA in relation to the Project, the structure of this Scoping Report, and other assessments to be undertaken.
Chapter 2: Legislation and Planning Policy Context	A review of the legislative and policy relevant to the Project.
Chapter 3: Consideration of Alternatives	Provides a background to and the need for the Project, and the main alternatives considered.
Chapter 4: The Project	Provides a description of the surrounding land and its land uses alongside a description of the elements of the English Onshore Scheme and English Offshore Scheme.
Chapter 5: EIA Approach and Methodology	A description of the overall EIA methodology that is proposed for the onshore components of the Scheme of the Project, including temporal durations and approach to mitigation.
Volume 1 Part 2 English Onshore Scheme	
Chapter 6: Biodiversity	Provides a description of the potential impacts arising from the construction, operation and maintenance of the English Onshore Scheme on ecological receptors.
Chapter 7: Cultural Heritage	Provides a description of the potential impacts arising from the construction, operation and maintenance of the English Onshore Scheme on cultural heritage and archaeological receptors.
Chapter 8: Landscape and Visual Amenity	Provides a description of the potential impacts arising from the construction, operation and maintenance of the English Onshore Scheme on landscape and visual receptors.
Chapter 9: Water Environment	Provides a description of the potential impacts arising from the construction, operation and maintenance of the English Onshore Scheme on water environment receptors.
Chapter 10: Geology and Hydrogeology	Provides a description of the potential impacts arising from the construction, operation and maintenance of the English Onshore Scheme on geological and hydrogeological receptors.
Chapter 11: Agriculture and Soils	Provides a description of the potential impacts arising from the construction, operation and maintenance of the

Chapter	Content
	English Onshore Scheme on agricultural land, holdings and soils.
Chapter 12: Traffic and Transport	Provides a description of the potential impacts arising from the construction, operation and maintenance of the English Onshore Scheme on traffic and transport receptors.
Chapter 13: Noise and Vibration	Provides a description of the potential impacts arising from the construction, operation and maintenance of the English Onshore Scheme on noise and vibration receptors.
Chapter 14: Air Quality	Provides a description of the potential impacts arising from the construction, operation and maintenance of the English Onshore Scheme on air quality receptors.
Chapter 15: Socio-economics, Recreation and Tourism	Provides a description of the potential impacts arising from the construction, operation and maintenance of the English Onshore Scheme on socio-economic, recreation and tourism receptors.
Chapter 16: Health & Wellbeing	Provides a description of the potential impacts arising from the construction, operation and maintenance of the English Onshore Scheme on the health and wellbeing of the local population.
Chapter 17: English Onshore Scheme Scoping Summary	Provides a summary of the scope of the assessment of the assessment of the English Onshore Scheme.
Volume 1 Part 3 English Offshore Scheme	
Chapter 18: Marine Physical Processes	Provides a description of the potential impacts arising from the construction, operation and maintenance and decommissioning of the English Offshore Scheme on marine physical processes.
Chapter 19: Intertidal and Subtidal Benthic Ecology	Provides a description of the potential impacts arising from the construction, operation and maintenance and decommissioning of the English Offshore Scheme on intertidal and subtidal benthic ecology receptors.
Chapter 20: Fish and Shellfish	Provides a description of the potential impacts arising from the construction, operation and maintenance, and decommissioning of the English Offshore Scheme on fish and shellfish.
Chapter 21: Intertidal and Offshore Ornithology	Provides a description of the potential impacts arising from the construction, operation and maintenance, and decommissioning of the English Offshore Scheme on Intertidal and Offshore Ornithology.
Chapter 22: Marine Mammals and Marine Reptiles	Provides a description of the potential impacts arising from the construction, operation and maintenance, and decommissioning of the English Offshore Scheme on marine megafauna receptors including marine mammals.

Chapter	Content
Chapter 23: Shipping and Navigation	Provides a description of the potential impacts arising from the construction, operation (including maintenance and repair) and decommissioning of the English Offshore Scheme on shipping activity and key navigation features.
Chapter 24: Commercial Fisheries	Provides a description of the potential impacts arising from the construction, operation and maintenance, and decommissioning of the English Offshore Scheme on commercial fisheries.
Chapter 25: Other Marine Users	Provides a description of the potential impacts arising from the construction, operation and maintenance, and decommissioning of the English Offshore Scheme on other marine users.
Chapter 26: Marine Archaeology	Provides a description of the potential impacts arising from the construction, operation (including maintenance and repair) and decommissioning of the English Offshore Scheme on offshore archaeology and cultural heritage receptors.
Chapter 27: English Offshore Scheme Scoping Summary	Provides a summary of the impacts of the English Offshore Scheme that have been scoped 'in' to the EIA and those impacts it is proposed to scope out of the assessment, for physical and biological receptors and socio-economic receptors respectively.
Volume 1 Part 4 Project Wide	
Chapter 28: Greenhouse Gases	Identifies the proposed methodology for assessment of the greenhouse gases.
Chapter 29: Scoped Out Aspects	Identifies those aspects that are proposed to be scoped out of the EIA.
Chapter 30: Cumulative Effects	Identifies the proposed methodology for assessment for the cumulative effects assessment.
Volume 2 Appendices	Technical content relating to topic assessments.
Volume 3 Figures	

1.7 Competence

1.7.1. Regulation 14(4) of the EIA Regulations (Ref 1.19) requires that an ES is prepared by 'competent experts' and that the ES is accompanied by a statement outlining the relevant expertise or qualifications of such experts.

1.7.2. Competent experts have prepared this Scoping Report and will undertake the EIA and prepare the ES. All experts are accredited at a Company level by the Institute of Environmental Management and Assessment (IEMA) EIA Quality Mark Scheme. The scheme allows organisations that lead the co-ordination of EIAs in the UK to make a commitment to excellence in their EIA activities and have this commitment independently reviewed.

1.7.3. Details of the expertise and qualifications of the competent experts who have been responsible for preparing the topic specific chapters will be provided in the ES.

1.8 Other Assessments

1.8.1. In addition to the EIA, the preparation of the application for the Project requires other standalone assessments to be carried out to meet the requirements of other policy and legislation. Whilst the outcomes of these assessments may be drawn upon when carrying out the EIA (and vice versa), the scope of these other assessments will be discussed and agreed with appropriate regulatory authorities in line with the requirements of the relevant policy and legislation, rather than within this Scoping Report.

1.8.2. Where appropriate, however, the individual technical aspect chapters in this Scoping Report outline where the findings of one of the additional assessments are to be drawn upon when carrying out the EIA, and any proposed scope of the relevant additional assessment is set out to facilitate consultation with relevant consultees in relation to this Scoping Report. The other assessments that are required to meet the requirements of other legislation and policy are outlined below.

Habitats Regulations Assessment

1.8.3. In accordance with Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (the 'Habitats Directive') (Ref 1.21) and Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (the 'Birds Directive') (Ref 1.22), a network of protected areas has been designated by European Union (EU) member states for the protection of Europe's most valuable and threatened habitats and species. These areas are known as European sites. The Conservation of Habitats and Species Regulations 2017 (SI 2017 No. 1012) (Ref 1.5) and the Conservation of Offshore Marine Habitats and Species Regulations 2017 (SI 2017 No.1013) (the 'Habitats Regulations') (Ref 1.6) transpose the EU Directives into UK law. Following Brexit, a number of changes were made to the Habitats Regulations through the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019.

1.8.4. When considering the merits of the application, the SoS must consider potential effects on European sites. In instances where a proposal has the potential to affect a European site, a Habitats Regulations Assessment (HRA) will need to be conducted. HRA is a process that determines if a plan or project proposal could significantly harm the designated features of a European site.

1.8.5. It should be noted that, post Brexit, European sites in the UK (as defined by Ref 1.21 and Ref 1.22) are no longer part of the European Union's Natura 2000 network. The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 (Ref 1.23) have created a National Site Network (NSN) on land and at sea, including both the inshore and offshore marine areas in the UK. The UK NSN includes existing Special Areas of Conservation (SACs), existing Special Protection Areas (SPAs), and new SACs and SPAs designated under these Regulations.

1.8.6. UK policy extends the requirements pertaining to NSN sites to include Ramsar sites, proposed / candidate SACs, potential SPAs and areas secured as sites compensating for damage to a NSN site. Any proposals which have the potential to affect these sites would also require a HRA because they are protected by government policy.

Marine Conservation Zone Assessment

1.8.7. A Marine Conservation Zone (MCZ) Assessment, under the Marine and Coastal Access Act (MCAA) 2009 (Ref 1.24), will be undertaken for the English Offshore Scheme and will be submitted as part of the application.

1.8.8. When considering the merits of the application, the SoS must satisfy themselves under Section 126 (6) of the MCAA, that there is no significant risk of the proposed activity hindering the achievement of the conservation objectives stated for a MCZ.

1.8.9. There are three stages to the assessment process including Screening (the process of identifying whether S.126 should apply to the English Offshore Scheme and whether the activity is capable of affecting (other than insignificantly) either the protected features of the MCZ or the ecological or geomorphological processes on which the protected features are dependent); Stage 1 assessment (which considers whether there is a significant risk of the activity hindering the achievement of the conservation objectives stated for the MCZ); and Stage 2 assessment (which considers whether there are benefits to the public of proceeding with the project that clearly outweigh the damage to the environment and what measures NGET will look to provide in principle Measures of Equivalent Environmental Benefit (MEEB) to compensate for the damage which the project will have on the MCZ).

Flood Risk Assessment

1.8.10. A Flood Risk Assessment (FRA) will be submitted and form part of the application. The FRA will assess the flood risk both to and from the Project and demonstrate how that flood risk will be managed over the Project lifetime. The FRA will give due regard to climate change.

Water Framework Directive Assessment

1.8.11. A Water Framework Directive (WFD) Assessment under the Water Environment Regulations 2017 (Water Framework Directive) (England and Wales) (Ref 1.25) will be undertaken for the English Onshore Scheme and English Offshore Scheme.

1.8.12. When deciding NSIP applications, the 2017 WFD Regulations requires the SoS to consider the potential effects of any proposed development on:

1.8.13. The environmental objectives and measures within River Basin Management Plan and any supplementary plans.

1.8.14. The ability of the UK to comply with the WFD (if applicable) the derogation provisions of Article 4.7.

1.8.15. The Examining Authority for an NSIP application must also report on these effects and ensure the SoS has enough information to decide whether the development has implications for the UK's obligations under the WFD. This includes information in support of any derogation that may be sought.

1.8.16. There is no prescribed format or process to WFD assessments, however, the Environment Agency have produced guidance which generally follows three stages:

- Stage 1 WFD Screening: to determine if parts of the proposed development do not require further consideration, for example activities which have been ongoing since before the current River Basin Management Plan cycle so form part of the baseline;

- Stage 2 WFD Scoping: to identify risks of the proposed development's activities to receptors based on the relevant water bodies and their water quality elements, including information on status, objectives, and the parameters for each water body; and
- Stage 3 WFD Impact Assessment: a detailed assessment of water bodies and their quality elements that are likely to be affected by the proposed development.

1.8.17. The EIA will be supported by a standalone WFD Assessment that will cover the hydrological receptors within the English Onshore Scheme and English Offshore Scheme. It is noted that there is an overlap between the onshore and offshore elements of the Project in the inter-tidal area. The WFD Assessment will cover waterbodies within the intertidal area as well as the land based WFD waterbodies. WFD compliance for surface waterbodies will be assessed, based on the results of assessments for hydromorphology and water quality, plus the results of the assessment of effects on aquatic biology from the biodiversity chapter. Assessment of WFD compliance for groundwater bodies will be reported within the Geology and Hydrogeology chapter of the ES.

1.9 Net Gain Commitments

1.9.1. NGET has committed to 10% Net Gain in Environmental value including as a minimum 10% Biodiversity Net Gain (BNG) across all its construction projects' terrestrial elements.

1.9.2. This commitment is underpinned by the delivery of quantifiable enhancements for biodiversity measures from a baseline using the Department for Environment, Food and Rural Affairs Biodiversity Calculator with actions formalised and secured by long term management arrangements with external organisations and partners.

1.9.3. Wider environmental benefits such as carbon capture and storage, air quality and recreation and associated financial values are also considered and quantified using variation tools and emerging methodologies.

1.9.4. These commitments ensure that NGET can deliver long term environmental improvements as part of our works. The commitments will align and make a positive contribution to regional and national strategies and facilitate collaboration and partnerships with our communities and stakeholders.

1.10 Stakeholder Engagement

1.10.1. This section sets out the NGETs approach to stakeholder engagement and consultation. It provides an overview of the general approach, the engagement and consultation that has taken place to date, and that is proposed in the future. Engagement and consultation with technical stakeholders and the local community is a key element of the EIA process and will inform the design and assessment of the Project.

1.11 General Approach

1.11.1. NGET will continue to ensure stakeholders are engaged and consulted in a useful and inclusive manner. The general approach to engagement and consultation includes:

- Engagement and consultation activities scheduled at key points of the design and assessment process;
- Proactive and effective engagement with statutory and non-statutory stakeholders, including local residents who are most likely to be impacted by the Project;
- A focus on the matters of greatest importance and relevance to stakeholders to ensure efficient use of their time;
- Use of varied and accessible engagement techniques – including a mix of online and in person channels. One-way and two-way communications will be utilised;
- Opportunities for stakeholders to share their experience and knowledge to help identify potential effects, mitigations and enhancements at an early stage of the design process;
- Addressing stakeholder queries and concerns in an efficient and effective manner; and
- Feedback which will be recorded, analysed and used to inform the EIA, optioneering and design of the Project.

1.12 Future Engagement and Consultation

1.12.1. In line with the requirements of the PA 2008, NGET will undertake further consultation and engagement with communities and stakeholders as the Project continues to develop.

1.12.2. The programme of ongoing stakeholder engagement and consultation will be structured around key milestones in the design development and assessment process. This will provide the opportunity to update and consult stakeholders on the evolving design and decision-making process.

1.12.3. Engagement and consultation will continue throughout the stages of the Project, with the following stakeholders:

- Statutory bodies;
- Non-statutory bodies;
- Local authorities;
- Directly affected individuals and asset owners; and
- Local communities.

1.12.4. In addition to statutory consultation with prescribed consultees, as best practice, applicants are also encouraged to engage in non-statutory consultation with all potentially affected parties from the earliest stages of design. This allows stakeholders and local communities to gain a better understanding of the Project and any potential effects identified whilst also giving the opportunity to influence the design and help identify appropriate mitigation. Local knowledge and understanding is important, and the

applicant will seek to engage with consultees through both formal and informal consultation prior to submission of the DCO application.

1.12.5. NGET has undertaken an initial, non-statutory consultation on the English Onshore Scheme between 13 May and 23 June 2025. Responses received from the non-statutory consultation will inform how potential effects may be mitigated and if required, the design may be updated as a result.

1.12.6. Statutory Consultation will be held in 2026, and the Preliminary Environmental Information Report (PEIR) will be issued as part of this. The PEIR will enable consultees to understand the likely environmental effects of the Project and help to inform their responses to the Statutory Consultation.

1.12.7. NGET will set up Technical Working Groups which will be themed to allow collaborative engagement across core environmental issues. The aim is to encourage attendees representing different environmental organisations to assist in reaching resolution with all parties, to inform the EIA.

1.12.8. Through the process of engagement and consultation the aim is to reach agreement, as far as possible, with stakeholders prior to the submission of the DCO. Statements of Common Ground will be developed between NGET and relevant stakeholders to document any remaining areas of disagreement which will be shared with the Planning Inspectorate at the point of submitting the DCO application.

1.12.9. A summary of the engagement and consultation activities undertaken, and how feedback has been taken into account will be documented in the Consultation Report which will accompany the DCO application.

1.13 Structure of the ES

1.13.1. The Planning Inspectorate's Advice Note Seven (Ref 1.20) requires that applicants provide an outline structure of what the ES will contain. The structure of the ES will broadly follow the same order of chapters that are presented in this Scoping Report, acknowledging that changes may need to be made to address the requirements of the Scoping Opinion, both in terms of presentation of the Project to aid understanding, or as the design requirements evolve.

1.13.2. An indicative outline structure for the ES is set out in **Table 1-3**.

Table 1-3: Outline structure of the ES

ES content	Likely content
Non-Technical Summary (NTS)	A concise and standalone document that provides a description of the EIA process and its findings in a manner that is both appealing to read and easily understood by the general public.
Part 1: ES Introductory chapters	
Introduction	Overview of the Project. The applicant and EIA project team and competency details. Purpose of the ES. Structure of the ES.

ES content	Likely content
	A brief summary of other relevant assessments and documents (for example, Habitats Regulations Assessment).
The Project	Description of the Project and their surroundings. Development proposals (location and development description, development timescales and programme etc.). Design and Control measures.
Need and alternatives	The need for the Project. Alternatives considered and environmental reasons for the choice of preferred options.
Legislation and policy	Legislative context. National and local policy context. Other relevant guidance and policies. Applicable consents and permits.
Approach to preparing the ES	The EIA process. EIA terminology. EIA scoping. Stakeholder engagement. Identification of baseline conditions. Overview of assessment methodology. Approach to significance evaluation. Development of design and control measures Approach to Cumulative Effects Assessment (CEA).
Part 2: English Onshore Scheme	
Environmental aspect chapters	Introduction. Relevant aspect specific guidance. Consultation and engagement. Data gathering methodology. Baseline description. Scope of the assessment. Design and control measures. Assessment methodology. Assessment of effects. Cumulative effects (inter-project effects) assessment. Limitations and assumptions.
Part 3: English Offshore Scheme	
Environmental aspect chapters	Introduction. Relevant aspect specific guidance. Consultation and engagement. Data gathering methodology.

ES content	Likely content
	Baseline description. Scope of the assessment. Design and control measures. Assessment methodology. Assessment of effects. Cumulative effects (inter-project effects) assessment. Limitations and assumptions.
Part 4: Project wide chapters	
Greenhouse Gases	Environmental aspect chapter as structure outlined above
Cumulative effects (intra-project effects) assessment	Intra-project effects that occur as a result of two or more environmental aspect effects acting together (i.e. combined), to result in a new or changed effects on a single receptor.
Assessment summary	Summary of the outcome of the environmental aspect assessments and how mitigation will be implemented through for example, an Outline Construction Environmental Management Plan (CEMP) and DCO Requirements.

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2. Legislation and Planning Policy Context

2.1 Introduction

2.1.1. This chapter provides an overview of the key legislation and policy against which the Development Consent Order (DCO) application will be prepared and assessed. A full explanation of the relevant legislation and policy will be provided in the Planning Statement included within the suite of documents which will accompany the DCO application. The technical aspect chapters (**Part 2, Chapter 6 to Chapter 16** and **Part 3, Chapter 19 to Chapter 26**) of this Scoping Report provide a summary of the key legislation and policies relevant to the specific receptor assessment.

2.2 Key Legislation

Planning Act 2008

2.2.1. The Planning Act 2008 (SI 2008 c. 29) (as amended) (PA 2008) introduced a new consenting procedure for NSIPs relating to energy (Ref 2.1). The PA 2008 is the primary legislation that establishes the legal framework for submitting, examining and determining applications for development consent. It sets out that developments meeting certain defined criteria, are classified as Nationally Significant Infrastructure Projects (NSIPs). It requires that developers wishing to construct, operate and maintain NSIPs must obtain a DCO from the relevant Secretary of State (SoS) to authorise their project.

2.2.2. Section 14 of the PA 2008 defines types of developments which are classified as NSIPs, subject to the criteria and thresholds set out in Sections 15 to 30A for different types of infrastructure. Section 16 of the PA 2008 sets this out for developments comprising ‘Electricity lines’.

2.2.3. The Project does not fall under the definition of a NSIP under Part 3 of the PA 2008. Only electricity lines that are above ground, 132 kilovolt (kV) or greater and 2 kilometres (km) or more in length are defined as NSIPs in their own right under Section 16 of the PA 2008. The Project is therefore not an NSIP under the definitions set out in the PA 2008. However, under Section 35(1) of the PA 2008, *“the Secretary of State may give a direction for development to be treated as development for which development consent is required”* if certain criteria (including the type and location of the development) are met.

2.2.4. On 17 April 2025 National Grid Electricity Transmission plc (NGET) issued a letter to the SoS for Energy Security and Net Zero, requesting a direction under section 35 (s35) of the PA 2008 related to development forming part of the Project. In the letter, NGET requested that the proposed converter station in the East Lindsey area of Lincolnshire required for the Eastern Green Link (EGL) 5 Project should be treated as development for which development consent is required. In the letter, the converter station in the East Lindsey area was described as comprising the *“Proposed Development”* which would constitute the *“authorised development”* in a DCO.

2.2.5. On 14 May 2025, the SoS gave the requested direction under sections 35(1) and 35ZA of the PA 2008, noting in both that the Project could be consented by way of a DCO application. Therefore, the PA 2008 provides the primary legislative framework for the consenting of the Project.

2.2.6. The Planning Act 2008 has been amended through the adoption of the Localism Act 2011 *(SI 2011 c. 20)*. Under the Localism Act 2011, the Planning Inspectorate is responsible for the NSIP planning process and will examine the DCO application for the Scheme and make a recommendation to the SoS to grant or refuse consent.

The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017

2.2.7. The Infrastructure Planning (Environmental Impact Assessment (EIA)) Regulations 2017 (the EIA Regulations) govern the EIA process relevant to NSIPs. An EIA is required because NGET consider the Project to meet the criteria for EIA development in Schedule 3 of the EIA Regulations.

2.2.8. The EIA Regulations set out a procedure for assessing, consulting and informing decision-making for projects which are likely to have significant environmental effects. The EIA Regulations require the provision of an Environmental Statement (ES), which will be submitted alongside the DCO application for the Project.

2.2.9. Paragraph 5 of Schedule 4 of the EIA Regulations specifically outlines that the EIA must identify, describe and assess, the direct and any indirect, secondary, cumulative, transboundary, short–term, medium-term and long-term, positive and negative significant effects of the Project upon specific environmental factors. The requirement of Schedule 4 of the EIA Regulations will be met through the assessment of effects for each environmental aspect assessed as part of the EIA. Further details on the approach to the EIA are outlined in **Part 1, Chapter 5: EIA Approach and Methodology** and in the scope of environmental aspects outlined in the environmental aspect chapters (**Part 2, Chapter 6 to Chapter 16** and **Part 3, Chapter 19 to Chapter 27**).

2.2.10. The EIA will be undertaken in line with legislation and policy and specifically in accordance with the requirements of the EIA Regulations. In addition, the EIA will take into consideration key guidance documents from the Planning Inspectorate which include:

- Nationally Significant Infrastructure Projects: Advice on EIA Notification and Consultation (2024) (Ref 2.2).
- Nationally Significant Infrastructure Projects: Advice on the Preparation and Submission of Application Documents (2024) (Ref 2.3).
- Nationally Significant Infrastructure Projects - Advice Note Seven: Environmental Impact Assessment: process, preliminary environmental information and environmental statements (2020) (Ref 2.4).
- Nationally Significant Infrastructure Projects - Advice Note Nine: Rochdale Envelope (2018) (Ref 2.5).
- Nationally Significant Infrastructure Projects: Advice on Habitats Regulations Assessments (2024) (Ref 2.6).
- Nationally Significant Infrastructure Projects: Advice on working with public bodies in the infrastructure planning process (2024) (Ref 2.7).

- Nationally Significant Infrastructure Projects: Advice on Transboundary Impacts and Process (2024) (Ref 2.8).
- Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment (2024) (Ref 2.9).
- Nationally Significant Infrastructure Projects: The Water Framework Directive (2024) (Ref 2.10).
- The IEMA also provides guidance on EIA, and the EIA for the Project will take into consideration the following guidance documents from IEMA:
- Environmental Impact Assessment Guide to: Delivering Quality Development (Ref 2.11).
- Delivering Proportionate EIA. A Collaborative Strategy for Enhancing UK Environmental Impact Assessment Practice (Ref 2.12).

2.2.11. These lists of guidance documents are not exhaustive and provide a general overview of the important guidance that will help to inform the EIA process for the Project. The lists will be continually reviewed and updated throughout the EIA process up to submission of the DCO application. Each individual environmental aspect will also refer to relevant aspect-specific guidance in the environmental aspect chapters (**Part 2, Chapter 6 to Chapter 16** and **Part 3, Chapter 19 to Chapter 27**) of the Scoping Report, where appropriate. A full list of the relevant legislation and guidance considered as part of the EIA process will be provided within the PEIR and ES.

Marine and Coastal Access Act 2009

2.2.12. A spatial planning system for the management of the marine environment was introduced by the Marine and Coastal Access Act 2009 (MCCA 2009) (Ref.13). This introduced a requirement to obtain Marine Licences for works at sea.

2.2.13. The Marine Management Organisation (MMO) is responsible, under Part 4 of the MCAA 2009, for administering marine licensing of activities related to construction or removal of any substance or object in UK territorial waters and also for regulating activities where they are undertaken outside of the UK territorial waters e.g., within the UK Exclusive Economic Zone (EEZ). They do so by issuing a Marine Licence.

2.2.14. The PA 2008 enables an applicant for a DCO to apply for DML as part of the DCO process by virtue of Section 149A of the PA 2008 which was inserted by the MCAA 2009. It is intended that the DCO will contain a DML for the offshore works for the Project.

2.2.15. In addition, Section 126 of the MCAA 2009 sets out that where a public authority has the function of determining an application that is capable of effecting (other than insignificantly) the protected features of a Marine Conservation Zone (MCZ), or the processes on which those features depend, then they have a duty to consider MCZs during their decision making.

Electricity Act 1989

2.2.16. Section 9(2) of the Electricity Act 1989 (Ref 2.14) places general duties on NGET as a licence holder:

2.2.17. *"to develop and maintain an efficient, co-ordinated and economical system of electricity transmission…"*.

2.2.18. In addition, Section 38 and Schedule 9 of the Electricity Act 1989 requires an electricity license holder such as NGET, when formulating proposals for new lines and other *works, to:*

2.2.19. *"…have regard to the desirability of preserving natural beauty, of conserving flora, fauna and geological or physiographical features of special interest and of protecting sites, buildings and objects of architectural, historic or archaeological interest; and shall do what [it] reasonably can to mitigate any effect which the proposals would have on the natural beauty of the countryside or on any such flora, fauna, features, sites, buildings or objects"*.

2.2.20. NGET's Stakeholder, Community and Amenity Policy (Ref 2.15) published December 2016, sets out how the company will meet the Schedule 9 duty placed upon it by the aforementioned legislation.

Countryside and Rights of Way Act 2000

2.2.21. A National Landscape is, since November 2023, the rebranded name of Areas of Outstanding Natural Beauty (AONB). They are designated under the provisions of Part IV of the Countryside and Rights of Way (CRoW) Act 2000 (Ref 2.16) for the purpose of conserving and enhancing the natural beauty of an area and securing its permanent protection against development that would damage its special qualities. NGET as a statutory undertaker, has a duty under Section 85 of the Act (as amended in s245 of the Levelling up and Regeneration Act 2023) which states:

2.2.22. *"In exercising or performing any functions in relation to, or so as to affect, land in an AONB in England, a relevant authority must seek to further the purpose of conserving and enhancing the natural beauty of the AONB"*.

2.3 National Planning and Marine Policy

National Policy Statements (NPSs)

2.3.1. As detailed in **Section 1.5** of this Scoping Report, a direction (under s35 of the PA 2008) was sought from the SoS. The direction for EGL 5 was made on 17 April 2025. Therefore, in accordance with Paragraph 1.3.10 of NPS EN1 *"EN-1, in conjunction with any relevant technology specific NPS, will be the primary policy for Secretary of State decision making on projects in the field of energy for which a direction has been given under section 35."* (Ref 2.17).

2.3.2. Where relevant to the EIA, further details pertaining to NPSs are provided in the appendices to the environmental aspect chapters (**Part 2, Chapter 6 to Chapter 16** and **Part 3, Chapter 19 to Chapter 26**) of this Scoping Report and will be included in the Planning Statement, included within the suite of documents which will accompany the DCO application.

2.3.3. NPS EN-1 sets out the Government's overarching policy with regard to the development of NSIPs in the energy sector. It emphasises the need for new energy projects to contribute to a secure, diverse and affordable energy supply. This is to support the Government's policies on sustainable development, in particular by mitigating and adapting to climate change. EN-1 sets out generic impacts in respect of matters such as air quality and emissions, biodiversity, dust and odour, flood risk, historic environment, landscape, land use, noise and vibration, socio-economic, traffic and transport and waste management. These generic impacts have been taken into account in the preparation of the Scoping Report.

2.3.4. NPS EN-5 specifically relates to electricity networks and Part 2 includes specific policies including consideration of good design, biodiversity and geological conservation, landscape and visual and noise and vibration. These policies have also been taken into account in the relevant topic chapter.

2.3.5. NPS EN-3 together with NPS EN-1 provide the primary basis for decisions on applications for development consent orders for nationally significant renewable energy infrastructure projects comprising energy from biomass and / or waste (>50 megawatts (MW)), offshore wind (>100 MW) and onshore wind (>50 MW). This NPS may be relevant for electricity transmission projects which connect with renewable energy sources.

2.3.6. A summary of the relevant National Policy Statements is included in **Table 2-1**Table 2-1: Relevant National Policy Statements below.

Table 2-1: Relevant National Policy Statements

Plan	Summary
Overarching National Policy Statement for Energy (EN-1) (Ref 2.17)	
Paragraph 1.3.10	This paragraph states, that EN-1 in conjunction with any relevant technology specific NPS - will be the primary policy for Secretary of State decision making on projects in the field of energy for which a direction has been given under section 35 of the PA 2008.
Draft Overarching National Policy Statement for Energy (EN-1) (Ref 2.18)	
Paragraph 1.3.10	The Government has published a draft update to the Overarching National Policy Statement for Energy. The 2025 Draft NPS EN-1 is largely the same as in the 2024 document, with relevant section numbers remaining the same.
National Policy Statement for Electricity Networks Infrastructure (EN-5) (Ref 2.19)	
Paragraph 1.6.4	This section confirms in that it also applies to developments that require development consent pursuant to section 35 of the PA 2008.
Paragraph 2.2.6	Reiterates the duties under Section 9 of the Electricity Act 1989, both in relation to developing and maintaining an economical and efficient network and in formulating proposals for new electricity networks infrastructure, to 'have regard to the desirability of preserving natural beauty, of conserving flora, fauna and geological or physiographical features of special interest...'.

Plan	Summary
Paragraph 2.9.19	A summary of the Horlock Rules to provide guidelines for the design and siting of substations (in addition to cable sealing end compounds and line entries). These rules, the basis of which was established in 2003, when considering new electricity infrastructure, National Grid has regard to the degree to which options comply or deviate from these rules.
Draft National Policy Statement for Electricity Networks Infrastructure (EN-5) (Ref 2.20)	
	The Government has published a draft update to the Overarching National Policy Statement for Energy. The 2025 Draft NPS EN-5 is largely the same as in the 2024 document, with relevant section numbers remaining the same.
National Policy Statement for Renewable Energy Infrastructure (EN-3) (Ref 2.21)	
	This NPS may also have relevance to the Project, in the view of the need for the Project to reinforce boundary flows and facilitate future connections from offshore wind.
Draft National Policy Statement for Renewable Energy Infrastructure (EN-3) (Ref 2.22)	
	The Government has published a draft update to the Overarching National Policy Statement for Energy. The 2025 Draft NPS EN-5 is largely the same as in the 2024 document.

Marine Policy Statement (MPS)

2.3.7. The framework for preparing Marine Plans and decisions affecting the marine environment is contained within the MPS, which was adopted in 2011. The MPS has been considered in the development of this Scoping Report, particularly, within the chapters relating to the English Offshore Scheme.

2.3.8. Guidance to the UK Marine Policy Statement from 1 January 2021 provides statutory guidance which explains how references to EU law in the UK MPS should be interpreted following the UK's withdrawal from the EU.

Marine Plans

2.3.9. The East Inshore and East Offshore Marine Plan (Ref 2.23) and the Northeast Offshore Marine Plan (Ref 2.24) has been considered in the development of this Scoping Report.

2.3.10. The Guidance to the UK Marine Policy Statement from 1 January 2021 (Ref 2.25) provides statutory guidance which explains how references to EU law in the UK MPS should be interpreted following the UK's withdrawal for the EU. This Marine Plan has been considered in the development of this Scoping Report.

British Energy Security Strategy

2.3.11. The British Energy Security Strategy (Ref 2.26) was published by the UK Government in April 2022. It sets out the Government's ambition to improve energy efficiency, transition away from oil and gas, and build a self-sufficient and secure energy system.

2.3.12. The Strategy sets out the UK's ambition to deliver up to 50 Gigawatt (GW) of offshore wind by 2030 and outlines a number of ways in which the time taken for development and deployment of offshore wind farms will be reduced. This includes through streamlining the consenting process and strengthening the Renewable NPSs.

2.3.13. The Strategy also prioritises the need for flexibility in matching supply and demand, so that minimal energy is wasted, thus creating a more efficient and locally-responsive energy system.

2.3.14. The Powering Up Britain paper (Ref 2.27) published in March 2023 by the UK Government. This document provides an update of the strategy for secure, clean and affordable British energy for the long-term future.

2.3.15. When considering new electricity infrastructure, NGET have had regard to the British Energy Security Strategy and Powering Up Britain paper.

2.3.16. The British Energy Security Strategy was published under the 2019 to 2022 Johnson Conservative government; therefore, it is recognised that this does not fully reflect the current Starmer Labour government policy. References to this have been included for information purposes only, ensuring the Project is aligned with the current Starmer Labour government policy where it has departed from the policy published under the previous Conservative government.

Transmission Acceleration Action Plan

2.3.17. In response to the Electricity Networks Commissioner's report in August 2023 on accelerating electricity transmission network build the UK Government published its Transmission Acceleration Action Plan in November 2023 (Ref 2.28).

2.3.18. The Transmission Acceleration Action Plan outlines a series of recommendation and actions aimed at modernising and expanding the electricity grid to meet the increasing demand for electricity and to support the transition to Net Zero by 2050.

2.3.19. The Transmission Acceleration Action Plan recommends that:

> *"the development of a Strategic Spatial Energy Plan (SSEP), including a Marine Environmental Assessment and an offshore delivery route map, to enable planning of the network in a strategic way" and the "development of Centralised Strategic Network Plans (CSNPs) based on the SSEP, and that these should be used to enable resource planning."*

2.3.20. Regarding design standards, the Transmission Acceleration Action Plan suggests the following recommendations:

- *"Electricity Transmission Design Principles (ETDP) should be created to provide greater clarity on the type of asset to be used in different environments."*
- *"Engagement with communities hosting transmission infrastructure should be focused on the choices that they can influence within the ETDP design principles and guidelines."*
- *"A forum should be created between the Future System Operator (FSO), Transmission Owners (TOs), equipment manufacturers and Ofgem to review and update equipment standards used within Great Britain."*

- *"An automated Corridor routing process should be adopted as standard practice"*
- *"A route design process that uses the Electricity Transmission Design Principles (ETDP) should be adopted."*

2.3.21. The Transmission Acceleration Action Plan states that:

- *"Moving to a strategically planned approach for the transmission network allows a different approach, where strategic plans determine the need for projects, and a separate need case assessment is not required for regulatory approval."; and*
- *"the government agrees with the Commissioner's recommendation that regulatory approvals should be removed from the critical path of key transmission projects."*

2.3.22. The overall goal of the Transmission Acceleration Plan is to halve the timeline for building new transmission infrastructure from the current 14 years to 7 years in order to support the UK's energy security and its target for Net Zero.

2.3.23. The Transmission Acceleration Action Plan was published under the 2022 to 2024 Sunak Conservative government; therefore, it is recognised that this does not fully reflect the current Starmer Labour government policy. References to this have been included for information purposes only, ensuring the Project is aligned with the current Starmer Labour government policy where it has departed from the policy published under the previous Conservative government.

Clean Power 2030 Action Plan

2.3.24. The Clean Power 2030 Action Plan outlines the need for a secure and affordable energy supply, the creation of essential new energy industries, and to limit our contribution to the damaging effects of climate change. With help from the NESO the following next steps have been identified (Ref 2.29):

- Fundamentally reforming the connections process, by *"working with NESO, Ofgem (Office of Gas and Electricity Markets), TOs (Transmission Owners) and DNOs (Distribution Network Operators) to prioritise viable projects that align with the Clean Power 2030 Action Plan. Without these critical reforms, the queue will not align with our strategic needs and the projects we need will be delayed"*;
- Regulatory reform *"to ensure that the Clean Power 2030 target is better integrated into planning and investment decision making, enabling investment in networks ahead of need. This includes working with Ofgem to explore the appropriateness of tightening the incentives and penalties to drive the acceleration of network buildout delivery"*;
- Improving networks planning and consenting *"to provide the levers to accelerate the expansion and upgrades required across our transmission and distribution network to ensure energy infrastructure can support the delivery of the 2030 target"*; and
- *"Engaging with communities to enable them to benefit from living near new transmission network infrastructure."*

2.3.25. The Clean Power 2030 Action Plan was published under the current Starmer Labour government.

National Planning Policy Framework

2.3.26. The revised National Planning Policy Framework (NPPF) was most recently updated in February 2025 (Ref 2.30). Paragraph 5 of the NPPF sets out that it does not contain specific policies for NSIPs and states that:

> *"These are determined in accordance with the decision-making framework in the Planning Act 2008 (as amended) and relevant national policy statements for major infrastructure, as well as any other matters that are relevant (which may include the National Planning Policy Framework)".*

2.3.27. Notwithstanding the above, paragraph 161 of the NPPF confirms the Framework's support for the transition to a low carbon future in a changing climate. It states that:

> *"the planning system should help to: shape places in ways that contribute to radical reductions in greenhouse gas emissions, minimise vulnerability and improve resilience...and support renewable and low carbon energy and associated infrastructure."*

2.3.28. While EN-1 and EN-5 remain the prime decision-making policy, where they do not provide guidance, each topic chapter will consider whether there is important and relevant policy in the NPPF that may require consideration by the decision-making authority.

2.3.29. At this stage, it is not possible to confirm if such secondary guidance will be considered important or relevant by the SoS, and it is therefore included for completeness to allow the SoS to make such a determination.

2.3.30. Paragraph 164 of the NPPF states that:

- *"New Development should be planned for in ways that:*
- *avoid increased vulnerability to the range of impacts arising from climate change. When new development is brought forward in areas which are vulnerable, care should be taken to ensure that risks can be managed through suitable adaptation measures, including through the planning of green infrastructure; and*
- *can help to reduce greenhouse gas emissions, such as through its location, orientation, and design. Any local requirements for the sustainability of buildings should reflect the Government's policy for national technical standards."*

2.3.31. The NPPF is also supported by the National Planning Practice Guidance (NPPG).

2.4 Local Planning Policy

2.4.1. The NPPF states that the planning system should be genuinely plan-led. As such, local plans are prepared by the Local Planning Authority (LPA), usually the Council or the national park authority for the area. Succinct and up-to-date local plans should provide a positive vision for the future of each area and a framework for addressing housing needs and other economic, social and environmental priorities.

2.4.2. Local plans must be positively prepared, justified, effective and consistent with national policy in accordance with section 20 of the Planning and Compulsory Purchase Act 2004 (as amended) and the NPPF. Once adopted, local plans provide the framework for development across England, including in the borough that EGL 5 would be developed in.

2.4.3. A summary of the relevant, adopted local planning policies relevant to the Project are included in **Table 2-2**Table 2-2: Relevant local planning policy.

Table 2-2: Relevant local planning policy

Plan	Summary
South East Lincolnshire Joint Strategic Planning Committee (Boston Borough, South Holland District and Lincolnshire County Council)	
South East Lincolnshire Local Plan 2011-2036 (Adopted March 2019) (Ref 2.31)	The South East Lincolnshire Local Plan 2011-2036 was produced by the South East Lincolnshire Joint Strategic Planning Committee (the Joint Committee) and adopted in March 2019. The Joint Committee is a partnership of Boston Borough, South Holland District and Lincolnshire County Councils. The Local Plan will guide development and the use of land in South East Lincolnshire from 1 April 2011 to 31 March 2036 and will help to shape how the area will change over this period.
East Lindsey District Council	
East Lindsey Local Plan Core Strategy (Adopted July 2018) (Ref 2.32)	The East Lindsey Local Plan Core Strategy was adopted in July 2018 and sets out the vision and strategic policies for the growth and development of the District up to 2031.
East Lindsey Local Plan Review: Issues & Options (Ref 2.33)	East Lindsey District Council is undertaking a partial review of the East Lindsey Local Plan 2018. The Issues and Options Paper sets out certain issues within the adopted local plan which are being considered in the partial review and suggests potential options in relation to these – in particular relating to whether or not the Plan continues with its current strategy of separate policies for the coastal are or brings the policies together with one strategy for the District. The Council also undertook a call for land. Those with an interest in developing land within East Lindsey were asked to submit sites to the Council for consideration. Sites were being sought for both housing and employment land. Both the Issues and Options Paper consultation and the Call for Land consultations ran for an 8 week period between 15 February 2021 and 12 April 2021.
Lincolnshire County Council	
Lincolnshire Minerals and Waste Local Plan Core Strategy and Development Management Policies (Adopted June 2016) (Ref 2.34)	The Lincolnshire Minerals and Waste Local Plan Core Strategy and Development Management Policies was adopted in June 2016. The Core Strategy and Development Management Policies document sets out the key principles to guide the future winning and working of minerals and the form of waste management development in the County up to 2031.
Lincolnshire Minerals and Waste Local Plan Site	The Site Locations document was adopted in December 2017 and includes specific proposals and policies for the provision of land for mineral and waste development.

Plan	Summary
Locations (Adopted December 2017) (Ref 2.35)	
Lincolnshire Minerals and Waste Local Plan (Ref 2.36)	Lincolnshire County Council is reviewing the Lincolnshire Minerals and Waste Local Plan. The Development Scheme timetable indicated that the draft Local Plan would be submitted to the Secretary of State in Summer 2024, but is not yet live.

2.4.4. Further aspect specific details on local planning policy, including specific policies of relevance to the Project, are provided in the appendices to the environmental aspect chapters (**Part 2, Chapter 6 to Chapter 16** and **Part 3, Chapter 19 to Chapter 26**) of this Scoping Report and will be included in the Planning Statement.

2.5 National Grid Policy and Guidance

2.5.1. National Grid has its own policies and processes that are followed when developing projects. The key policies that are applicable to the Project include:

- Holford Rules (Ref 2.37): A series of guidelines / rules for the routeing and design of new overhead lines or overhead line extensions. The guidelines were initially developed in 1959 and have been reviewed on a number of occasions by National Grid and by the other UK transmission licence holders. The guidelines provide a set of design criteria that have stood the test of time and became accepted industry best practice in overhead line routeing. The guidelines now form an important part of national planning policy relating to the development of electricity networks, as set out in National Policy Statement EN-5. The general principles underlying the Holford Rules – the avoidance of adverse impacts by careful routeing – are to a degree also relevant to the routeing of underground cables, although the balance of impacts and constraints will often be different;
- Horlock Rules (Ref 2.38): A series of guidelines / rules for the siting and design of new converter stations, substations, or substation extensions, including consideration of line entries and sealing end compounds. The guidelines were initially developed in 2003 and have been reviewed on a number of occasions by National Grid, with a revised version issued in 2009. The Horlock Rules provide a set of principles which avoid, or reduce the environmental impacts associated with the development of new substation infrastructure.
- National Grid's Stakeholder, Community, and Amenity Policy (Ref 2.15): This document describes the ten commitments that National Grid has made to the way that electricity and gas works are carried out in the UK. This includes setting out how National Grid will meet its amenity responsibilities and how stakeholders and communities are involved on projects; and
- National Grid's Approach to Consenting (Ref 2.39): This document outlines the project development process for major infrastructure projects, from initial inception to consent and construction. National Grid's Approach to Consenting is divided into six stages, as detailed within **Part 1, Chapter 3: Consideration of Alternatives**.

- National Grid also has an extensive range of process and guidance documents that govern how projects are designed and implemented. Specific documents are referenced later in the Scoping Report chapters where relevant.

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3. Consideration of Alternatives

3.1 Introduction

3.1.1. This chapter describes how the Project has been developed in response to the identified need case and secondly, how the Project has evolved and the alternatives that have been considered taking account of National Grid Electricity Transmission plc (NGET) statutory duties under the Electricity Act 1989.

3.1.2. This chapter will also provide a description of the reasonable alternatives identified and assessed by NGET which are relevant to the English Onshore Scheme and English Offshore Scheme and its specific characteristics, and the main reasons for the option chosen, taking into account a number of different factors including potential impacts on the environment.

3.2 Consideration of Alternatives

3.2.1. Schedule 4 of the Environmental Impacts Assessment (EIA) Regulations (Ref 3.1) states that an Environmental Statement (ES) should include:

> *"A description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects."*

3.2.2. Whilst there is no statutory requirement to include an assessment of alternatives in support of a request for a Scoping Opinion, the Planning Inspectorate's Advice Note Seven recommends that a Scoping Report includes "*an outline of the reasonable alternatives considered and the reasons for selecting the preferred option"*.

3.3 Alternative Technology

3.3.1. There are two viable options for transporting electricity: High Voltage Direct Current (HVDC) technology and High Voltage Alternating Current (HVAC) technology.

3.3.2. The UK onshore electricity transmission networks operate as HVAC systems in which the direction of the current changes on average fifty times a second. The capacity of HVAC subsea cables reduces significantly with distance, with long lengths of HVAC cable requiring electrical compensation to be installed, typically every 50 kilometres (km). Electrical compensation requires a large shunt reactor which needs to be installed on a small, fixed platform (such as that used by the oil and gas industry). HVDC does not require electrical compensation (reducing the footprint of the Project along the cable route) and operates over much longer distances more efficiently. As a result of this higher efficiency of power transmission in HVDC cables, fewer materials (e.g., copper or aluminium) are required for cable manufacture, ultimately leading to fewer cables being required. This translates into cost savings for the Project and subsequently consumers, having a lower environmental impact as fewer resources are required in comparison to a HVAC system, along the cable route.

3.3.3. The Project proposes the use of HVDC technology because it is more effective at transmitting high electricity capacity over longer distances with lower energy losses than an equivalent HVAC system. Additionally, a HVDC technology system provides a greater degree of control over the magnitude and the direction of power flow, eliminating the requirement for synchronisation between the electricity systems at either end of the link.

3.4 NGET's Approach to Consenting

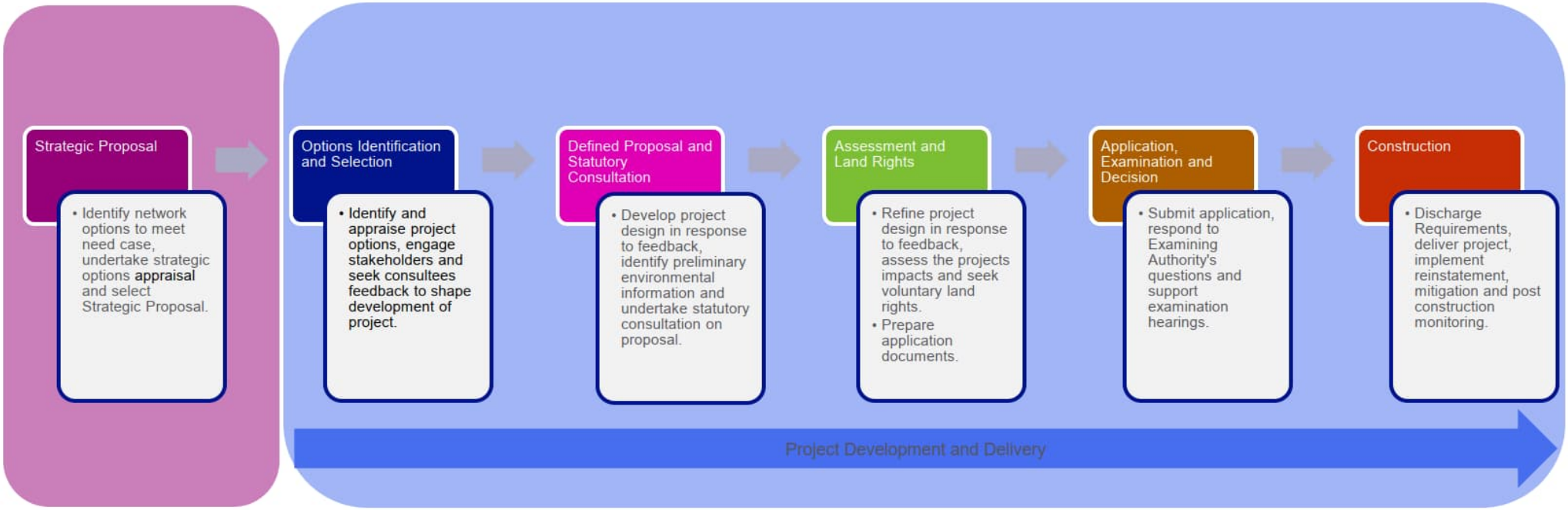
3.4.1. NGET's Approach to Consenting (Ref 3.6) outlines the development process for major infrastructure projects, from initial inception to consent and construction. NGET's Approach to Consenting comprises the following six stages:

- Stage 1: Strategic Proposal;
- Stage 2: Options Identification and Selection;
- Stage 3: Defined Proposal and Statutory Consultation;
- Stage 4: Assessment and Land Rights;
- Stage 5: Application, Examination and Decision; and
- Stage 6: Construction.

3.4.2. **Plate 3-1** presents an overview of NGET's approach to project development and delivery.

3.4.3. The first two stages (Strategic Proposal and Options Identification and Selection) have informed the identification of the Project. At each of these stages, NGET has considered a range of engineering, economic, environmental and social factors consistent with its statutory duties. In addition, a non-statutory consultation has been undertaken with stakeholders, landowners and members of the public between 13 May 2025 and 23 June 2025 providing the opportunity to provide feedback on the Project. Responses received from the non-statutory consultation will inform how potential effects may be mitigated and if required, the design may be updated as a result. Statutory consultation on the evolved proposals will take place in 2026.

Plate 3-1: NGET's Approach to Project Development and Delivery



3.5 Strategic Proposal

3.5.1. Following the NESO's recommendation for multiple East Coast onshore and offshore reinforcement developments as part of the Beyond 2030 report (Ref 3.2), NGET undertook additional network studies, documented in a Strategic Options Report (SOR), to evaluate the impact on the existing transmission system in England and Wales, and to confirm which connection point provided the best value to customers whilst minimising potential environmental and socio-economic impacts (Ref 3.3). As stated in the needs case for Eastern Green Link (EGL) 5 (as described in the SOR), three distinct issues were identified which need to be considered by system reinforcements (see **Plate 1-3**) that EGL 5 seeks to enhance:

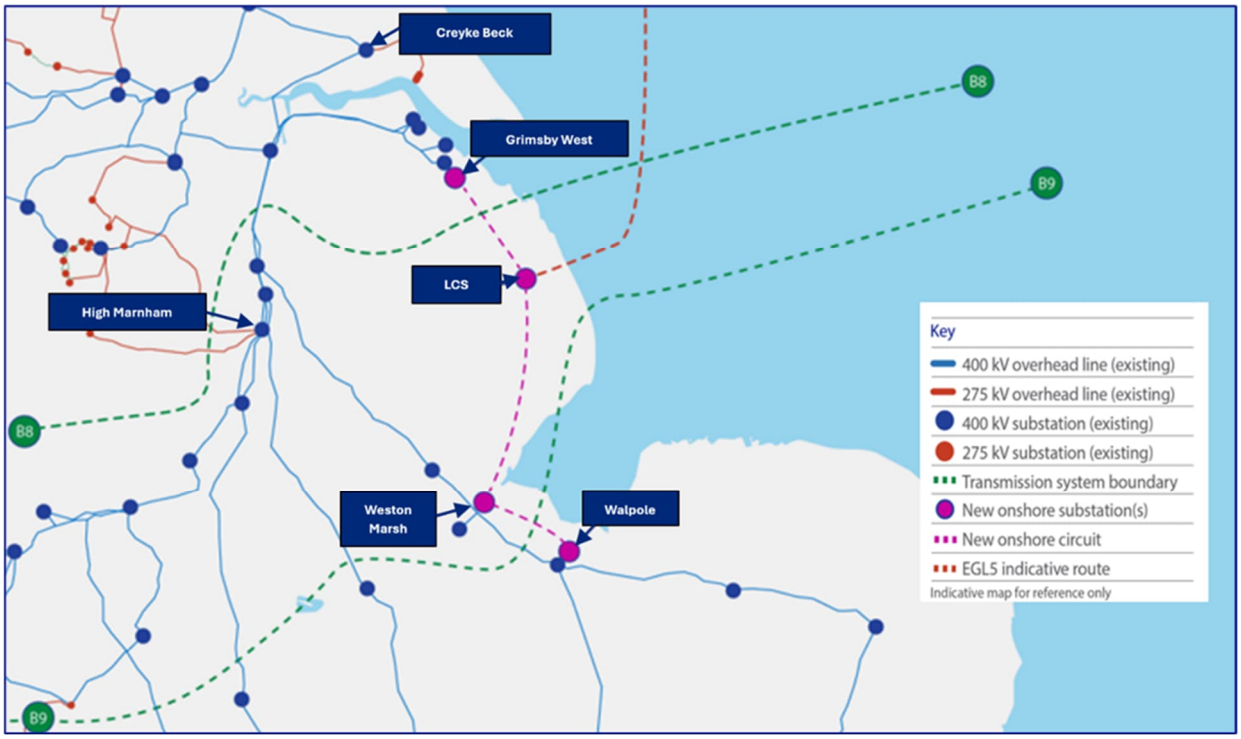
- Provision of capacity and capability from Scotland across the B6 and B7a system boundaries;
- Consider provision of beneficial capability across B8 and / or B9 system boundaries; and
- Neutral connection impact upon the East Coast Connections Generation Group (proposed generation contracted to connect in an area south of the Humber Estuary and north of The Wash).

3.5.2. A number of potential strategic options were identified which could meet NGET's need case for EGL 5 as well as to enable NGET to meet its statutory duties. Initially a 'long list' of options were identified connecting a number of potential 'start' and 'end' points. These included connection points at, or close to, existing or already planned substations, to minimise the infrastructure required. These options were then appraised and filtered to obtain a short list of options, which were subject to a detailed appraisal against a range of technical, socio-economic, environmental, cost and programme issues.

3.5.3. The strategic options assessment identified a Strategic Proposal comprising EGL 5 HVDC link south of the B8 transmission boundary to or near to a Main Interconnected Transmission System substation (identified as one of the new Lincolnshire Connection Substation(s) (LCS)). This is referred to as Option 1 (LCS), in the SOR, and is shown below in Plate 3-2: Option 1 (LCS) potential strategic option.

3.5.4. LCS (A and B), two new substations which are proposed in the Alford area (LCS-A northwest of Alford and LCS-B northeast of Bilsby), are proposed as part of the Grimsby to Walpole Project (Ref 3.4). The Grimsby to Walpole Project is being developed by NGET to reinforce the electricity transmission system to help deliver the UK Government's Net Zero targets. It forms part of a major programme of reinforcement of the electricity transmission system to accommodate substantial increases in north-south power flows. It would establish a new (wholly or largely overhead line) 400 kV transmission connection, new 400 kV substations at Grimsby West and Walpole, together with new connection substations in Lincolnshire. The SOR confirms that the new LCS are included as part of the Grimsby to Walpole Project and therefore will form part of its DCO.

Plate 3-2: Option 1 (LCS) potential strategic option



3.6 Options Identification and Selection

3.6.1. Following confirmation of the Strategic Proposal, the Options Identification and Selection process started for both the English Onshore Scheme and the English Offshore Scheme.

3.6.2. National Grid have developed over-arching guiding principles for options appraisal. These assist in the decision-making process by helping achieve an appropriate balance between the different competing interests that need to be looked at during an options appraisal. There is no hierarchy in the principles, which echo National Grid's statutory obligations, and are as follows:

- Using or adapting existing infrastructure will generally be given priority over creating new infrastructure.
- Shorter routes will generally be given priority over longer ones, as smaller-scale infrastructure projects are likely to have lower environmental, safety, sustainability and cost implications (for comparable technology options).
- Financially less-expensive options, both in terms of capital and lifetime cost, will generally be given priority, as these support NGETs statutory duty to develop and maintain an 'efficient, coordinated and economical' network.
- Options which avoid or minimise and mitigate impacts on environmental or socio-economic constraints will generally be given priority over those which have likely significant residual effects, as less environmentally and / or socially damaging routes support National Grid's statutory duty to 'have regard to the desirability of preserving amenity' and will more readily achieve consent.

3.6.3. Throughout the Options Identification and Selection process discussions were held by the project team to review findings, challenge judgements, check understandings and assumptions and a develop a relative overview of the overall performance of the end-to-end solution for the Project.

3.7 Approach

Onshore

3.7.1. A Corridor and Preliminary Routeing and Siting Study ('the CPRSS') was undertaken as part of Options Identification and Selection to further define the location of the proposed English Onshore Scheme infrastructure (see Chapters 5 – 8 of the CPRSS) within a defined study area (Ref 3.5).

3.7.2. The focus of the CPRSS was on the routeing of new underground cables, and the siting of the new landfall and converter station within the study area.

3.7.3. A staged approach, undertaken in line with NGET's Approach to Consenting (Ref 3.6), comprised:

- Step 1: Defining the Study Areas – this step sought to identify the broad areas within which transmission infrastructure required for the Project will be located.
- Step 2: Scope of Environmental Topics and Data Gathering – data was obtained to understand the presence, and distribution of, environmental, socio-economic, and technical constraints and opportunities within the study areas. Buffers were also included for some features representing constraints, where it was considered that potentially significant indirect impacts could occur from beyond the asset itself.
- Step 3: Ascribe a weight to confirm and 'Heat Map' Features - features identified in Step 2 were assigned a classification or "sensitivity weighting" based on their sensitivity to the technology likely to be required for the Project. Sensitivity weightings associated with these features were reviewed and were then combined to produce separate composite 'heat maps'.
- Steps 4 – 6: Identifying and Defining Corridors, Siting Zones or Siting Areas and Landfall Appraisal – starting with the heat maps produced in Step 3; corridors, siting zones or siting areas were then identified, defined, refined, and confirmed, informed by a combination of GIS analysis, professional judgement, knowledge of routeing and siting considerations, and site visits undertaken by both environmental and engineering specialists.
- Steps 7 – 8: Options Appraisal and Selection of Preferred Options - All options were appraised taking into account potential effects on the environment, the local community, relevant planning policy, including the National Policy Statements (NPS) for Energy (EN-1) and Electricity Network Infrastructure (EN-5), other existing and proposed development as well as technical and engineering design information to agree a preferred Landfall study area, corridor and siting zones.

Offshore

3.7.4. When considering the development of options for marine route alignments (proposed offshore HVDC cable corridors), NGET took the decision to parallel the EGL 3 Project within English waters as far as possible. This decision is in line with National Policy Statement EN-5 (Ref 3.7), including paragraph 2.12.4 and 2.16.6.

3.7.5. Within this objective in mind, a staged approach was taken that sought to make use of assessments and learnings from the EGL 3 Project. In line with NGETs Approach to Consenting (Ref 3.6), the steps consisted of:

- Step 1: Confirm the Study Area – this step identified the area between the English coastline and the border between English and Scottish adjacent waters within which transmission infrastructure required for the English Offshore Scheme will be located.
- Step 2: Scope of Environmental Topics and Data Gathering – data on physical, biological, and socio-economic constraints obtained for EGL 3 within the study area was audited to ensure no new information was available prior to the identification of marine route alignments. Buffers were included around some ‘physical’ constraints such as wrecks, oil and gas platforms and wells, existing cables and pipelines in accordance with industry guidance.
- Step 3: Ascribe a weight to constraints - features identified in Step 2 were assigned a classification or “weighting” based on its nature, value or sensitivity and how it could be affected by the English Offshore Scheme or conversely whether it could affect the English Offshore Scheme i.e. presents a technical challenge meaning that the cable could not be installed.
- Step 4: Define Marine Route Alignments – starting with the marine route alignments developed for EGL 3 and EGL 4, and using the updated constraints map marine route alignments were developed through a combination of GIS analysis, professional judgement, knowledge of technical and environmental routeing considerations. The following design principles were considered when developing options:
  - Avoid environmentally sensitive areas, where possible.
  - Avoid areas which would represent restrictions to vessel movement e.g., anchorages, restricted navigation channels.
  - Avoid areas of archaeological importance and wrecks.
  - Avoid existing offshore infrastructure e.g., offshore wind farms, oil and gas infrastructure, marine aggregate extraction areas, aquaculture sites.
  - Minimise the crossings of in-service cables and pipelines. Where it is not possible to avoid a crossing altogether, then to seek to optimise the crossing angle and to ensure that navigational safety or water depth is not adversely affected.
  - Avoid hazardous seabed features e.g., mobile sediments or bedrock outcrops and sub crops.
  - Minimise any impact on third party considerations such as seasonal fishing activities or local tourism.

- Step 5: Options Appraisal and Selection of Preferred Marine Route - All options were appraised taking into account four topic areas; environment, socio-economic, technical and cost. Within these topic areas there are a list of sub-topics which align with best practice informed by the requirements of the EIA Regulations, developed to apply more specifically to the marine environment. This was reported in the Marine Options Appraisal (MOA).

3.8 Study Areas

Onshore

3.8.1. The connection points of the selected strategic option (the Anderby Creek Landfall, the EGL 5 converter station and the proposed 400 kV LCS-B in East Lindsey) were taken as a start point for the definition of the study areas for the onshore components for EGL 5, i.e., the English Onshore Scheme. Given the geographical extent of the English Onshore Scheme, three distinct but interrelated study areas were defined within the CPRSS. These study areas covered the landfall, the new underground cable onshore connections and the new EGL 5 converter station (in the vicinity of LCS-B). The approach to developing the separate study areas is detailed within the CPRSS; however, at a high-level, the approach was based on balancing:

- NGET's statutory duty to develop an efficient, co-ordinated and economical system of transmission (Section 9 of the Electricity Act (1989) (Ref 3.8);
- NGET's statutory duty to preserve amenity under Section 38 and Schedule 9 of the Electricity Act 1989;
- Holford Rule 1 (Ref 3.9) (which is to "avoid altogether, if possible, the major areas of highest amenity value, by so planning the general route of the first line in the first place, even if the total mileage is somewhat increased in consequence"); and
- Horlock Rule 2 (Ref 3.10) (which is to "as far as reasonably practicable seek to avoid altogether internationally and nationally designated areas of the highest amenity, cultural or scientific value by the overall planning of the system connections").

3.8.2. The separate study areas overlapped, and as such, the combined areas were referred to as 'the Study Area', located within the district of East Lindsey. The Study Area is shown in **Volume 3, Figure 3-1**.

Offshore

3.8.3. The English connection point in Lincolnshire and the transition points on the Scotland / England adjacent waters border were taken as the start points to define the offshore routeing and siting study area. In Scotland, NGETs project partner, Scottish and Southern Electricity Networks – Transmission (SSEN – T) have identified a connection point on the Aberdeenshire coastline. Immediately adjacent to the Scotland / England adjacent waters border, in Scottish waters, Morven (fixed foundation) offshore wind farm (OWF) is in the pre-application stages of consent and Ossian floating OWF has submitted its application for a marine licence to the Scottish Government. The locations of these wind farm sites constrain the approach into Scottish waters from England and therefore define the transition points on the Scotland / England adjacent waters border.

3.8.4. The offshore routeing and siting study area is shown in **Volume 3, Part 1, Figure 3-2**.

3.9 Options Appraisal

Landfall

3.9.1. The landfall study areas defined the area within which the offshore (subsea) cables come ashore. This is the interface between the onshore (terrestrial) and offshore (marine) components of the Project. The landfall study area is considered to extend from Mean Low Water Springs (MLWS) (where it overlaps with the offshore components of EGL 5) across the intertidal zone to terminate at a Transition Joint Bay (TJB). Two landfall study areas were defined and can be viewed within the CPRSS and Marine Options Appraisal (MOA):

- **Theddlethorpe**: This landfall study area is located approximately 4.5 km north of the town of Mablethorpe on the Lincolnshire coastline. The potential landfall location could be accessed via Crook Bank Road, directly off the A1031. The landfall study area has a rural setting, with the former Theddlethorpe Gas Terminal immediately to the south and west and agricultural land to the west. The most prominent coastline features are the tidal flood defence sand dunes running north to south along the coastline and the Saltfleetby to Theddlethorpe Dunes & Gibraltar Point SAC and Saltfleetby – Theddlethorpe Dunes SSSI.
- **Anderby Creek**: Anderby Creek is a small holiday village in Lincolnshire, to the north of Skegness. The potential landfall location could be situated to the north or south of Anderby Creek and accessed via Roman Bank Road. This landfall study area has a mainly rural setting with the most prominent coastline feature being a beach with tidal flood defence / sand dunes running north to south and with agricultural land to the west.

3.9.2. The two landfall study areas were then subjected to an options appraisal considering the landfall parameters and the environmental, socio-economic and technical topics for each landfall study area. The options appraisal was informed by relevant data and feedback received on the EGL 3 and EGL 4 Projects' CPRSS, Marine Non-Statutory Environmental Appraisal Scoping Reports (for the EGL 3 and EGL 4 Projects' English Offshore Scheme and Scottish Offshore Schemes) and Scoping Report (for the EGL 3 and EGL 4 Projects' DCO).

3.9.3. Feedback provided on these documents received from the Marine Management Organisation (MMO) and Natural England both shared views around the need to avoid as far as practical the Saltfleetby to Theddlethorpe Dunes & Gibraltar Point SAC and Saltfleetby – Theddlethorpe Dunes SSSI. These designated sites could not have been avoided should a landfall at Theddlethorpe have been chosen, and adverse effects on integrity could not be ruled out in relation to the Saltfleetby to Theddlethorpe Dunes & Gibraltar Point SAC.

3.9.4. A review of trenchless crossings at the landfalls identified an absence of existing information regarding feasibility of trenchless crossings at the Theddlethorpe landfall and the need for a longer Horizontal Directional Drilling (HDD) crossing when compared to the Anderby Creek landfall. An exit point on the beach would also be required at the Theddlethorpe landfall outside of the Saltfleetby-Theddlethorpe Dunes & Gibraltar Point Special Areas of Conservation (SAC) but within the Humber Estuary SPA and Ramsar site, within the Greater Wash SPA, and within the Saltfleetby - Theddlethorpe Dunes SSSI and the Lincolnshire Coronation Coast National Nature Reserve (NNR), adding to the consenting risk.

3.9.5. As part of the trenchless crossing at the landfall, it would be necessary to carry out ground investigation works before confirming whether an HDD trenchless solution is feasible at either landfall. For the Theddlethorpe landfall it was identified that adverse effects on integrity arising from ground investigation surveys could not be ruled out. Alongside other factors, these would require demonstration that there were no alternative solutions to the delivery of the surveys, that would have a lesser or no effect on Habitats Sites. If information is not sufficient to confirm that an adverse effect on the integrity of the designated site cannot be ruled out, an investigation of alternative solutions is undertaken. To proceed with Theddlethorpe it would have been required, pursuant to The Habitats Regulations, to demonstrate that there were no feasible alternatives, which would not have been satisfied when Anderby Creek offered a feasible alternative solution.

3.9.6. Therefore, Theddlethorpe was identified as least preferred and as such, onward onshore underground cable routeing from Theddlethorpe was not considered within the CPRSS. Anderby Creek was taken forward as the emerging preference.

Onshore Route Corridor

3.9.7. Within the new underground cables onshore connections study area, a corridor identification exercise was undertaken to identify a network of potential corridors within which the underground onshore HVDC cables would route. To allow for clear, comparative analysis, these were structured and named. Following identification of the Anderby Creek landfall study area as the emerging preferred landfall and a connection to the proposed 400 kV LCS-B as preferred, the Corridors to be progressed to options appraisal were reviewed. Two Corridors between the Anderby Creek landfall study area and the proposed 400 kV LCS-B were identified (see **Volume 3, Figure 3-3**) and are described below:

- **Corridor 5**: This Corridor begins at the connection with the Anderby Creek Landfall, and routes west, north of Huttoft, extending over the A52 and then A1111, before finishing at the A1104 between Beesby and Alford.
- **Corridor 6**: This Corridor begins at the connection with the Anderby Creek Landfall, and routes west, south of Huttoft, extending over the A52 and the A1111, before finishing at the A1104 between Beesby and Alford.

3.9.8. Following a comparative review of the Corridors, from an environmental and socio-economic perspective, although there were minor differentiating features, such as the presence of a Grade II Listed Building in Corridor 5, these are avoidable through careful routeing and as such did not give rise to a preference following a comparative review within the CPRSS.

3.9.9. From an engineering perspective, Corridor 5 was identified as being marginally preferred, with Corridor 6 a close second. This is due to several factors including additional flexibility due to the larger number of alternative options being available, fewer medium / high risk constraints to cross and shorter cable route lengths for equivalent EGL 5 converter station Siting Zones. However, this was subject to further coordination and design development with other projects in the area; including the Grimsby to Walpole Project, EGL 3 and EGL 4 Projects' and Ossian OWF.

3.9.10. As such, it was considered that, subject to the selection of the preferred EGL 5 converter station Siting Zone, both Corridors 5 and 6 were to be retained as the emerging preferences for the underground cable routes between the Anderby Creek landfall study area and the proposed 400 kV LCS-B, with a marginal preference for Corridor 5.

Siting Zones

3.9.11. The EGL 5 converter station siting zones were developed through the definition of a study area (Step 1), mapping and weighting of features (Step 2 and Step 3), and an iterative identification, review and refinement process (Steps 4, 5 and 6). The EGL 5 converter station siting zones were developed to accommodate a converter station up to 350 m by 250 m (up to 9 ha). The siting zones (see **Volume 3, Figure 3-4**) progressed for options appraisal, comprised:

- Siting Zone CS05: an area which is up to 3.1 km by 800 m (approximately 235 ha) and is located up to 300 m north of Bilsby and 190 m east of Thoresthorpe. The siting zone overlaps with the Wold Grift Drain and the A1111.
- Siting Zone CS06: an area which is up to 1.4 km by 500 m (approximately 85 ha) and located west (up to 100 m) of Huttoft. The siting zone is up to 240 m west of the A52.
- Siting Zone CS07: an area which is up to 675 m by 550 m (approximately 26 ha) and is located up to 550 m northeast of Huttoft. It is up to 260 m east of the A52.
- Siting Zone CS08: an area which is up to 475 m by 350 m (approximately 15 ha) and is located between Alford (1.45 km east of Alford) and Thurlby (up to 1.42 km west of Thurlby) and approximately 280 m southeast of Bilsby. The B1449 is immediately north of the siting zone.
- Siting Zone CS16: an area which is approximately 580 m by 450 m (approximately 24 ha) and is located approximately 150 m north of Anderby and 570 m southeast of Huttoft. It is approximately 490 m east of the A52.

3.9.12. Following comparative appraisal of the EGL 5 converter station siting zones, siting zones CS07, CS08 and CS16 were identified as least preferred in the CPRSS due to the limited flexibility for siting, and therefore potential increased technical complexity for siting within these zones. The limited flexibility for siting within these zones may mean that potential environmental and socio-economic impacts cannot be avoided or adequately mitigated.

3.9.13. Siting zones CS07 and CS16 were less preferred as these siting zones resulted in the longest lengths of HVAC due to their distance from the preferred siting area for the proposed 400 kV LCS-B. This additional length of underground cabling would have increased the geographical spread of development on the basis that HVAC cabling requires a much wider construction corridor and therefore, the risk of encountering technical constraints and increase the likelihood, and scale, of potential adverse environmental and socio-economic impacts.

3.9.14. Locating the proposed EGL 5 converter station within CS05 offers the opportunity to be located near to the proposed 400 kV LCS-B. From an environmental perspective, the co-location of infrastructure is considered preferable to reduce the spread of potential impacts across the wider region. From an engineering perspective, this would offer opportunities in terms of shared infrastructure (such as haul roads). CS05 also allows

for the shortest deviations of underground HVDC cables between the new landfall at Anderby Creek and the proposed 400 kV LCS-B.

3.9.15. On balance, siting zones CS05 and CS06 would be the preferred options to take forward. Environmentally, there are few factors to differentiate between the two siting zones. While CS05 and CS06 do have constraints, it is considered that the size of the siting zones is such that these constraints could be avoided and / or adequate mitigation could be implemented to reduce the magnitude of potential impact. Therefore, siting zones CS05 and CS06 are the emerging preferences for the EGL 5 converter station location.

Offshore Route Corridor

3.9.16. Marine route options that were technically and environmentally suitable and took into consideration stakeholder feedback received for EGL 3 and EGL 4 were developed to the landfall options and England / Scotland adjacent waters border. The decision was taken to parallel the EGL 3 project as far as possible. Constraints in the offshore area were extensively investigated for the EGL 3 and EGL 4 Project's and the offshore area was identified as having little environmental or technical constraints. One offshore route was therefore developed that routes to the east of EGL 3, to avoid an infrastructure crossing of the proposed cables, avoid potential areas of *Sabellaria spinulosa* reef identified on UKHO high resolution bathymetric data and optimise the route length. Additional options would add route length to EGL 5 without bringing any technical or environmental benefit.

3.9.17. Due to the offshore constraints, many route options shared areas of commonality. For the purposes of options appraisal, the English marine cable route options were segmented into marine route alignments, with the assessment carried out on each marine route alignment. This then allowed marine route alignments to be easily grouped together to assess multiple marine cable route options. For example, one marine cable route option will comprise of three or more marine route alignments i.e., an offshore approach towards Scottish waters, an offshore route, a nearshore approach and an English landfall.

3.9.18. The marine route alignments start at the English landfalls and merge to a common point approximately 125 km offshore. From the first common point in English waters, the offshore route extends to another common point in English waters, before splitting into further marine route alignment segments leading to the three potential transition points across the border between English and Scottish waters. The three transition points provide optionality on the offshore connection point around the proposed Morven and Ossian Offshore Wind Farms which lie in Scottish waters immediately adjacent to the England / Scotland border.

3.9.19. This process led to six landfall marine route alignments (ENG Route A to F), one offshore marine route alignment and three marine route alignments to Scottish waters (SCOT Route A to C).

3.9.20. Each marine route alignment was assessed based on its own merits, technically and environmentally, taking into consideration any information available from other major developments in the region. They were also assessed in combination with the merits of the associated landfalls and co-joining marine cable route alignments, to ensure that the end-to-end solution meets the objectives of EGL 5 (also refer to **Part 1, Chapter 1: Introduction**).

3.9.21. EGL 3 and EGL 4 undertook extensive stakeholder consultation to inform the development of marine route alignments and to categorise consenting risk. Stakeholder engagement commenced in March 2023 and continued through 2024. For EGL 3 and EGL 4 this led to a second phase of marine route alignment development and appraisal. EGL 5 directly applied the recommendations and advice gathered for EGL 3 and EGL 4 in the development and appraisal of marine route alignments, starting from the position reached at the end of the second phase of EGL 3 and EGL 4's marine route alignment development.

3.9.22. When appraising the landfalls a short section of the marine route alignments was considered, as the approach to the landfall is an integral part of the assessment. Whilst Theddlethorpe and Anderby Creek share many of the same marine ecological constraints, the marine route alignment to Anderby Creek was marginally more ecologically constrained under the categories 'water' and 'coastal processes'. The higher 'water' risk was associated with the higher density of bathing waters compared to Theddlethorpe, whilst the coastal processes risk was due to the beach at Anderby Creek being subject to annual beach nourishment / replenishment as part of the Saltfleet to Gibraltar Point Beach Management Strategy.

3.9.23. The preference from a marine perspective is driven by the technical complexity of a trenchless landfall technique such as HDD. At Theddlethorpe a longer drill would be required (1700 m) to navigate beneath terrestrial protected features. However, initial designs indicated that the HDD would still only exit in shallow water, or within the intertidal zone. This would make the marine construction challenging with the need for different installation tools and vessels. At Anderby Creek, a shorter, less complex trenchless landfall technique could be undertaken, with the exit point being in relatively deeper water, simplifying the construction methodology. Several other projects have successfully completed HDD in the Anderby Creek area, demonstrating the feasibility of the technique.

3.9.24. Many of the marine route alignments had the same constraints and challenges as they cross the Southern North Sea SAC and Greater Wash SPA. Two features offshore of Lincolnshire, the Holderness Offshore MCZ and Silver Pit significantly constrain cable route development to the landfalls. Statutory Nature Conservation Body (SNCB) guidance is that development should be avoided within MCZs where possible, and if a site cannot be avoided (i.e., there are no feasible alternatives) then impacts should be minimised e.g., by taking the shortest route through the site and avoiding certain activities which could hinder the achievement of the conservation objectives. The MCZ is at the northern end of Silver Pit, with part of the Silver Pit designated as the protected feature 'North Sea glacial tunnel valley feature' of the Holderness Offshore MCZ. Silver Pit has very steep slopes at the sides which are technically challenging for cable burial. There is therefore a pinch point at the southeastern corner of the MCZ between the site boundary and the Hornsea 1 and 2 OWF export cables which cross Silver Pit slightly to the southeast. EGL 3 have taken the optimal route to avoid the MCZ and cross Silver Pit in this gap. EGL 4 have chosen the second technically preferential route across Silver Pit (where slope angles are reduced), however, this still crosses Silver Pit within the MCZ.

3.9.25. EGL 5 has sought to parallel the EGL 3 cable route within English waters, however space between the two cable systems is required in this specific area to ensure security of supply. Therefore, two marine route alignments were selected for further investigation on EGL 5 within the English Offshore Scheme:

- **Option 1 – ENG Route A** - The first option routes the subsea HVDC cable around the eastern boundary of the Holderness Offshore MCZ minimising the interaction with the designated site in accordance with Natural England and Joint Nature Conservation Committee (JNCC) statutory advice and mitigation hierarchy of avoid – reduce - mitigate. The route crosses through the eastern corner of the MCZ interacting with the northern tip of the Silver Pit 'North Sea glacial tunnel valley feature'.
- **Option 2 – ENG Route B** - The second option takes the route directly through the MCZ, shortening the cable length by approximately 39 km as compared to Option 1.

3.9.26. These two marine route alignments are shown in **Volume 3, Figure 3-2**. The Scoping Boundary encompasses both options. A marine characterisation survey has been conducted on both route options to collect as much data on the site as possible to make an informed decision. The JNCC and Natural England will be consulted, to inform the decision-making process and selection of the preferred option.

3.9.27. The appraisal of the Scottish water approaches marine route alignments concluded that there is little to differentiate the three marine route alignments in English waters. The selection of the marine route alignment has been driven by the conclusions from SSEN-T's option appraisal process. In Scottish waters marine route alignment SCOT Route A would pass through the Firth of Forth Banks Complex NCMPA and was therefore identified as the least preferred of the three options. SSEN-T also identified SCOT Route C as less preferential from a Scottish perspective due to the length of the marine route alignment. As there was no differentiator between SCOT Route B and SCOT Route C the shortest most economical route was chosen; SCOT Route B.

3.9.28. Further information on the offshore route corridor is available in the MOA.

Options Selection

3.9.29. Following options appraisal of the landfalls, corridors, siting zones and siting areas (Chapter 6, Chapter 7 and Appendix A in the CPRSS), an end-to-end review was then undertaken between the English landfall and LCS-B and the landfalls and the Scotland / England adjacent waters border. This review considered each preferred corridor and siting zone in the context of the wider end-to-end solution. The reasoning and justification for progressing each individual element was tested to ensure that it remained robust when considered in the context of the whole route. The wider end-to-end solution review also incorporated cost and programme performance, reported in Chapter 12 of the CPRSS. A challenge and review workshop was also held and attended by NGET, the onshore and offshore technical and environmental specialists. The purpose of the workshop was to review environmental preferences and, in accordance with EN-1 and EN-5, balance these against technical and cost inputs to reach a conclusion on the emerging preferred corridors and siting zones. The aim being to conclude upon options which provide the optimum balance of efficiency and economy, whilst having appropriate regard to environmental and socio-economic impacts.

3.9.30. In summary, the emerging preferred siting zones for the EGL 5 converter station, corridors for new underground cables within the CPRSS are as follows: and subsea cables as identified within the CPRSS are as follows:

- **Landfall** – Anderby Creek was identified as the preferred Landfall location over Theddlethorpe. Anderby Creek offers the best opportunity for Landfall installation

particularly from an ecological perspective and it poses fewer onshore engineering constraints.

- **Connection between the Landfall and LCS-B** – the connection routes between Anderby Creek and the proposed 400 kV LCS-B, via a new EGL 5 Converter Station.
  - As described in Chapter 6 of the CPRSS, two underground cable Corridors 5 (north of Huttoft) and 6 (south of Huttoft) were defined and reviewed between the Anderby Creek Landfall Study Area and the proposed 400 kV LCS-B. The emerging preferred Corridors (see Chapter 7 of the CPRSS) represent the best opportunity to limit environmental and socio-economic impacts and technical complexity, whilst also representing the most direct, and more economic and efficient routes; and
- **New EGL 5 Converter Station** – of the five Siting Zones considered (CS05, CS06, CS07, CS08 and CS16, as set out in Chapter 7 of the CPRSS) the areas identified as most suitable for the EGL 5 converter station were Siting Zones CS05 (EGL 5 West Converter Station) and CS06 (EGL 5 East Converter Station). Siting Zone CS05 offers the best opportunity to limit potential landscape and visual effects in-combination by aiming to co-locate infrastructure near the proposed 400 kV LCS-B (proposed as part of the GtW Project). Siting at zones CS05 or CS06 would also help to reduce the potential for other environmental and socio-economic effects whilst minimising the length of underground cable required (from Anderby Creek) as well as technical complexity during construction and operation. The Siting Zones also best align with the Horlock Rules.
- **Subsea Cable route from Anderby Creek to England / Scotland adjacent waters border –** of the six English marine route alignments and three Scottish marine route alignments, two English marine route alignments (ENG Route A and B) have been chosen for further investigation regarding interaction with the Holderness Offshore MCZ, and SCOT Route B was selected for the approach to the border.

3.9.31. Following the identification of the preferred onshore route corridors and preferred siting zones, a ‘graduated swathe’ has been identified within these which took into consideration environmental and socio-economic constraints, the Holford and Horlock Rules and technical considerations. The graduated swathes indicate the broad areas where the proposed new infrastructure is likely to be located. The darker areas of the graduated swathe indicated a greater preference for the location of the required infrastructure.

3.9.32. The preferred landfall study area, corridors, siting zones and the graduated swathes within these areas are shown in **Volume 3, Figure 3-5**. Further information on the justification behind the selection of these locations is provided in the CPRSS.

3.9.33. **Part 1, Chapter 4: The Project** of this Scoping Report describes the Project at its current stage of development, i.e., the ‘end-to-end solution’, which was identified as preferred within the CPRSS and MOA. Owing to the iterative nature of the EIA process, it is acknowledged that the Project may evolve from that which is presented in this Scoping Report. In accordance with Schedule 4 of the EIA Regulations, the ES will build upon the consideration of alternatives presented in this Scoping Report, detailing how the design of the Project has evolved (for example in terms of development design, technology, location, size and scale) in response to environmental features and technical challenges during the EIA process.

3.10 Alternative Construction Techniques

3.10.1. There are a variety of alternative construction techniques available for installing power cables. The most appropriate for a given project, or location within a project, is determined based on environmental, land use, cost and technical factor. The decision as to which combination of techniques to choose influences how the Project will affect the environment. Typically, the selection of alternatives will depend on the individual constraints and environmental conditions at any point along the cable route (both onshore and offshore), meaning that different techniques may be appropriate at different locations. For example, surface cable lay with external cable protection may be necessary where ground conditions (e.g., outcropping bedrock) will not allow burial in the seabed, however burial in the seabed may be the most feasible solution for the remainder of the offshore cable route.

3.10.2. There are several different installation methods available for the installation of HVDC and HVAC cables onshore. Open cut and trenchless methods of cable installation are summarised below:

- Open cut methods: These would typically be utilised in open agricultural land. This involves the excavation of a trench into which the HVDC or HVAC cables could either be directly laid, or a duct could be laid through which HVDC or HVAC cables could then be pulled. This is usually followed by land reinstatement.
- Trenchless methods: These would typically be utilised where specific features (such as main rivers, major roads, railway lines, flood defences or other significant infrastructure) need to be crossed. This would involve the installation of ducts or potentially a tunnel below the feature. The HVDC or HVAC cables would then be pulled through the ducts or installed within the tunnel.

3.10.3. Where conditions allow, HVDC or HVAC cables are typically installed using open cut methods. Open cut methods are generally preferred as they enable HVDC and HVAC cables to be installed at more technically efficient depths. Open cut methods are also generally more economical and often require a smaller construction footprint than trenchless methods. Where technically feasible, and unless other technical or environmental constraints and considerations determine otherwise, all underground cable installation will be by open-cut method.

3.10.4. Where specific environmental or infrastructure features, including main rivers such as the Wold Grift Drain, preclude the use of HVDC or HVAC cables in trenches, as described above, installation in ducts using a trenchless installation technique such as HDD is likely to be required. In this instance HVDC or HVAC cables are pulled into pre-installed ducts.

3.10.5. Where HDD is not technically viable then a tunnelled solution can be considered. Tunnels can be constructed using a variety of techniques, but all involve civil engineering activities, which result in additional costs, increased construction risks and extended programme durations.

3.10.6. In determining the most appropriate trenchless technique for installing HVDC or HVAC cables, NGET need to ensure the electrical performance of the HVDC or HVAC cables are not compromised. Additionally, site-specific surveys will be carried out to inform engineering decisions and the selection of installation solutions. In the absence of detailed engineering information, for the purposes of scoping it has been assumed that any installation technique could be used. The design parameters considered by this

Scoping Report, and further information on construction techniques, are presented in **Part 1, Chapter 4: The Project.**

3.11 Bibliography

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4. The Project

4.1 Introduction

4.1.1. This chapter provides an overview of Eastern Green Link (EGL) 5 and presents a description of the main elements of the English Onshore Scheme and English Offshore Scheme (together referred to as 'the Project'), including details of design, construction and operation.

4.2 EGL 5

4.2.1. EGL 5 is a primarily offshore 2 Gigawatt (GW) High Voltage Direct Current (HVDC) electricity link, with associated onshore infrastructure, between Scotland and East Lindsey in England. EGL 5 comprises almost 600 kilometres (km) of subsea and underground HVDC cables between new converter stations at each end of the electricity transmission link, of which approximately 415 km is within the English EGL 5 Project. These in turn are connected to the existing National Electricity Transmission System (NETS) via high voltage alternating current (HVAC) cables between the new converter stations and new substations.

4.2.2. The existing electricity transmission and distribution networks in England and Scotland both operate using predominantly HVAC. However, transmission projects such as EGL 5 use Direct Current (DC) technology because it is more efficient at transmitting large volumes of electricity over longer distances with lower losses than an equivalent Alternating Current (AC) system. A DC system also provides a greater degree of control over the magnitude and direction of flow. This flexibility brings operational benefits, however, to transmit electricity in DC form, specialist electrical equipment contained within converter stations at either end of EGL 5 is required to convert from AC to DC (or vice versa).

4.2.3. For the purposes of seeking the necessary consents EGL 5 has been split into different 'Schemes' i.e., Scottish Onshore Scheme, Scottish Offshore Scheme, English Offshore Scheme and English Onshore Scheme. These Schemes for EGL 5 are outlined in **Volume 1, Part 1, Chapter 1: Introduction**.

4.3 English Onshore Scheme

Overview of the English Onshore Scheme

4.3.1. As outlined in **Part 1, Chapter 1: Introduction**, the English Onshore Scheme of EGL 5 extends from Mean Low Water Springs (MLWS) where the English Offshore Scheme makes landfall at Anderby Creek on the Lincolnshire coastline to the new EGL 5 converter station and proposed LCS (A and B), two new substations which are proposed in the Alford area (LCS-A northwest of Alford and LCS-B northeast of Bilsby), are proposed as part of the Grimsby to Walpole Project (Ref 1.46). It is noted that the boundaries for the English Onshore Scheme and the English Offshore Scheme both overlap in the intertidal zone between MLWS and MHWS. The English Onshore Scheme would comprise the construction of:

- A new converter station, in the vicinity of the proposed 400 kV LCS-B in East Lindsey;
- Up to approximately 9 km of new underground HVDC cable, from the landfall point at Anderby Creek to the EGL 5 converter station in the vicinity of the proposed 400 kV LCS-B in East Lindsey; and
- Up to approximately 3 km of new underground HVAC cable, between the EGL 5 converter station and the proposed 400 kV LCS-B considered as part of the NGET Grimsby to Walpole Project.

4.3.2. To connect the Project into the NETS, a new 400 kV substation will be required i.e., the proposed 400 kV LCS-B. LCS-B is included as part of the Grimsby to Walpole Project and therefore will form part of its DCO and is not included as part of the EGL 5 Project.

Design envelope approach for EIA scoping

4.3.3. Whilst the infrastructure which will be needed to construct the English Onshore Scheme has been identified, the exact siting has not yet been confirmed. Therefore a 'design envelope' approach has been adopted for EIA Scoping having regard to the Planning Inspectorate's Advice Note Nine (Ref 4.1). This approach, known as the 'Rochdale Envelope' Approach, is employed "where the nature of the proposed development means that some details of the whole project have not been confirmed" and "flexibility is sought to address uncertainty." Further details with regards to the Rochdale Envelope Approach are provided in **Part 1, Chapter 5: EIA Approach and Methodology**.

4.3.4. As described in **Section 3.5** the Corridor and Preliminary Routeing and Siting Study (CPRSS) study identified preferred corridors, siting zones, and landfall. Preliminary routes for the new underground cables and emerging preferences for the converter station were also developed, which are shown as a 'graduated swathe'. For the purposes of non-statutory consultation, the graduated swathe was split into its different infrastructure elements; one for the landfall, one for the corridors and one for the siting zones. The outputs of the CPRSS form the basis of the first round of public consultation for the English Onshore Scheme. Therefore, a final preferred option for the alignment of the underground cables and site of the converter station has not yet been confirmed.

4.3.5. To retain flexibility, a Scoping Boundary for the English Onshore Scheme has been defined to represent the maximum extent of development (**Volume 3, Figure 1-2**) to incorporate all known integral and associated development that NGET will be seeking consent for as part of the DCO. Unlike the CPRSS which solely considered the potential locations for new permanent infrastructure (accounting for an immediate construction swathe), the English Onshore Scheme Scoping Boundary has been expanded to accommodate all potential temporary and permanent land likely to be required to construct and operate the English Onshore Scheme. As such, the English Onshore Scheme Scoping Boundary differs from that which is presented within the CPRSS. At this stage of the English Onshore Scheme design, the English Onshore Scheme Scoping Boundary covers a wider area than is likely to be required for the DCO. This is to allow design flexibility for the following reasons:

- To take account of ongoing engineering and detailed design development;
- To allow for design changes in light of on-going environmental surveys and assessment; and

- To take account of feedback received through engagement, including through consultation events with the public, key stakeholder meetings and discussions with landowners.

4.3.6. The English Onshore Scheme Scoping Boundary was determined by taking into account the following requirements:

- Construction works at the landfall: The English Onshore Scheme Scoping Boundary has incorporated all land from MLWS that may be required to facilitate the work, including construction compounds and accesses.
- Construction works for the HVDC underground cables between the Anderby Creek Landfall and the EGL 5 converter station: The location of the construction compounds and the access routes for the works have yet to be determined (although allowance has been made for the Alford Bypass Construction Route due to known limitations on the road network through Alford). Therefore, the Preferred Corridors, as defined within the CPRSS, have been extended to accommodate minor access roads (i.e., not an A-road, B-road or motorway) where widening and / or creation of passing places may be required to accommodate construction traffic movements. The extension of the English Onshore Scheme Scoping Boundary also accommodates a Limit of Deviation (LoD) as it is possible that further micro-siting may be required during the construction process to reflect localised land, engineering and environmental features, and therefore the LoD allows for further design amendments in this regard.
- Construction works at the EGL 5 Converter Station Areas: The English Onshore Scheme Scoping Boundary has incorporated all land that may be required to facilitate the works, including construction compounds and accesses.

4.3.7. The English Onshore Scheme design will be refined as it continues to evolve through the subsequent stages of the design and EIA process. Additionally, whilst sensitive environmental receptors are included within the English Onshore Scheme Scoping Boundary (including residential properties and listed buildings) these would be avoided as detailed design progresses.

Scoping area description

Overview of scoping area

4.3.8. **Volume 3, Figure 1-3** shows the location of the English Onshore Scheme Scoping Boundary, which is located within Lincolnshire. To provide clarity during reporting, the English Onshore Scheme Scoping Boundary includes four key areas of focus which have largely been defined by Project elements. These key areas comprise the EGL 5 converter station siting zones (CS05 and CS06), the Anderby Creek landfall, and the underground cable route corridors (Corridor 5 and Corridor 6), and a construction traffic route. The breakdown of these key areas is presented in **Part 1, Chapter 1: Introduction**, **Section 1.4** and the following text provides an overview of each of these key areas, as illustrated in **Volume 3, Figure 1-2** and **Figure 1-3**.

4.3.9. The English Onshore Scheme Scoping Boundary extends into two local authority boundaries:

- East Lindsey District Council; and
- Lincolnshire County Council.

4.3.10. A description of each of the key areas and route sections which comprise the English Onshore Scheme Scoping Boundary is outlined below. The descriptions provide in insight into some of the key environmental features and constraints within each area / section. Best and Most Versatile (BMV) agricultural land is largely present across the English Onshore Scheme Scoping Boundary apart from areas defined as urban; as such, BMV is not included in the following descriptions.

EGL 5 Converter Station Areas

EGL 5 West Converter Station (CS05)

4.3.11. CS05 is located northeast of Bilsby spanning the A1111 Sutton Road, finishing to the northwest at Saleby. There are no major settlements located within CS05, but it does overlap with the A52 and A1111. There are no listed buildings within CS05, however, there are clusters to both the south and west in Bilsby and Alford, with the closest located approximately 230 m west of CS05. Ecological designations within 10 km of CS05 include the Greater Wash Special Protection Area (SPA), Humber Estuary (SAC, SPA, SSSI and Ramsar), and Saltfleetby-Theddlethorpe Dunes and Gibraltar Point (SAC and SSSI). There is no priority habitat within the Area, however, there is deciduous woodland near the northwest and south. There are small sections of Flood Zone 2 and 3 in the Area, which feature in the centre and the southeast of CS05. One main river, Wold Grift Drain, intersects the centre of CS05. The Viking Link underground cable crosses CS05 in the north, between Saleby and Wold Grift Drain. This area lies within East Lindsey District Council and Lincolnshire County Council authority areas.

EGL 5 East Converter Station (CS06)

4.3.12. CS06 is located northwest of Huttoft, in between the A52 and Wold Grift Drain. There are no major settlements located within CS06, nor any major roads. There are no listed buildings within CS06, however, there is a small cluster to the southeast in Huttoft, with the closest 325 m southeast of the CS06. Ecological designations within 10 km of CS06 include the Greater Wash (SPA), Humber Estuary (Special Area of Conservation (SAC), SPA, Site of Special Scientific Interest (SSSI), and Ramsar Site (Ramsar)), Saltfleetby-Theddlethorpe Dunes and Gibraltar Point (SAC and SSSI), and Inner Dowsing, Race Bank and North Ridge (SAC). There are no SSSI or priority habitats within the area, however, there is deciduous woodland near the south. No main statutory rivers intersect the Converter Station, however Wold Grift Drain is located 130 m northwest and small sections of Flood Zone 2 and Flood Zone 3 feature in the east and west of CS06. This area lies within East Lindsey District Council and Lincolnshire County Council authority areas.

Landfall

Anderby Creek

4.3.13. The Anderby Creek Landfall extends from MLWS (where it overlaps with the English Offshore Scheme) across the intertidal zone to terminate at a Transition Joint Bay (TJB). The English Onshore Scheme Scoping Boundary at the Anderby Creek Landfall largely comprises agricultural land, with a narrow area of sand dunes and a beach to the east, and is located between Anderby Creek (approximately 400 (meters) m southeast of the English Onshore Scheme Scoping Boundary), and Sandilands (approximately 1.5 km north of the English Onshore Scheme Scoping Boundary).

Settlements are present within the English Onshore Scheme Scoping Boundary in this location, primarily located along Huttoft Bank. The beach is designated as part of the Greater Wash Special Protection Area (SPA) and the sand dunes are identified as coastal sand dune priority habitat. The Sea Bank Clay Pits Site of Special Scientific Interest (SSSI) is located adjacent to the north of the English Onshore Scheme Scoping Boundary west of Huttoft Bank. At the north of the English Onshore Scheme Scoping Boundary is the National Trust's new Sandilands nature reserve, formerly Sandilands golf course. The beach at the landfall location is designated as a bathing water.

4.3.14. There are no trunk roads, A-roads or B-roads in this area. However, Sea Lane, which is present in the Anderby Creek Landfall, connects to the A52 connecting with Sutton on Sea to the north and Skegness to the south. Several Public Rights of Way (PRoW) are located to the centre and south of the English Onshore Scheme Scoping Boundary connecting with Huttoft Bank and the beach. The England Coastal Path crosses the English Onshore Scheme Scoping Boundary in the Anderby Creek Landfall as it routes behind the sand dunes connecting Mablethorpe and Skegness. The South Wolds and Skegness National Cycle Network (NCN) local cycle route crosses the English Onshore Scheme Scoping Boundary in the Anderby Creek Landfall as it routes along Sea Lane, connecting the settlement of Huttoft with the beach and running along the England Coastal Path towards Sandilands. Flood Zone 2 and Flood Zone 3 are present across the entire extent of the English Onshore Scheme Scoping Boundary on the landward (west) side of the Environment Agency tidal flood defence sand dunes. Several notable drains are located within the English Onshore Scheme Scoping Boundary including Knopsey Drain, Sea Bank Drain and North Outmarsh Drain which form a network of drains behind the sand dunes. The Anderby Creek Landfall lies within East Lindsey District Council and Lincolnshire County Council.

Underground Cable Route Corridors

Corridor 5

4.3.15. Corridor 5 (the Northern Corridor Route) begins at the connection with the Anderby Creek Landfall, and routes west, north of Huttoft, extending over the A52 and then A1111, before finishing at the A1104 between Beesby and Alford. Corridor 5 is characterised by small settlements, holiday parks, scattered dwellings and open farmland of irregular sizes and shapes. The established field pattern has boundaries which vary from vegetated with mature hedgerow, mature hedgerow trees and drainage ditches to open boundaries. The Corridor largely comprises agricultural land, with the Lincolnshire Wolds National Landscape situated approximately 3.5 km west of the Corridor. Corridor 5 lies within Grade 2 and Grade 3 Provisional Agricultural Land Classification (ALC). The Wold Grift Drain Nitrate Vulnerable Zone is present in the western edge of the Corridor, as well as Sea Bank Clay Pits SSSI geological site located adjacent to the northeast of the Corridor (primarily designated for Biology but also includes marsh and swamp lowland). Priority habitats within the Corridor include river habitat headwater areas and coastal and floodplain grazing marsh (CFPGM) in the centre, coastal, sand dunes, and reedbeds in the east, and deciduous woodland adjacent to and within an excluded area in the centre of the Corridor. Sandilands Nature Reserve (and Local Wildlife Site (LWS)) is assumed to be operational during construction of the Project with proposed priority wetland and coastal dune habitat created and established by 2029. Designated heritage assets also occupy the corridor. There are three Grade I Listed Buildings, located north, south, and southwest of the Corridor. 26 Grade II Listed Buildings, one of which falls within the Corridor; the remaining are located mainly to the north and south of the Corridor in the vicinity of

Anderby and Huttoft. Stain Glebe Farm Grade II Listed Building is within the eastern limb of the Corridor; however, it could be avoided with careful routeing. Two Grade II* Listed Buildings, located north and south of the Corridor, as well as Alford Conservation Area located 600 m to the southwest of the Corridor. Water environment features exist both within and adjacent to the Corridor. Groundwater vulnerability is predominantly medium through the centre and western part of the Corridor, and low toward the east. Groundwater Source Protection Zones (SPZ) also lie within the Corridor with SPZ I (Inner Protection Zone) and SPZ II (Outer Protection Zone) leaving only a 90 m gap in the Corridor for routeing through due to their south western boundary. Another SPZ II is located south of the centre section of the Corridor, however, this could be avoided with careful routeing. Flood Zone 2 and Flood Zone 3 are present across the Corridor, primarily attributed to Wold Grift Drain, the Anderby Main Drain and the Boy Grift Drain. Both the Wold Grift Drain and the Boy Grift Drain are WFD blue line watercourses and flow north to south through the Corridor and are unavoidable. Nearby settlements include Asserby, Thurlby and Beesby. Approximately 14 residential properties are present within the Corridor, primarily located in the east of Corridor 5, with scattered properties present in the west. Outside Corridor 5 but within 250 m of the Corridor, are approximately 81 residential receptors. These are primarily located adjacent in Bilsby, to the west of the Corridor. Recreational receptors have also been identified within 250 m of the Corridor. 15 PRoW predominantly route in the centre and east of the Corridor, and will be avoided where possible.

Corridor 6

4.3.16. Corridor 6 (the Southern Corridor Route) begins at the connection with the Anderby Creek Landfall, and routes west, south of Huttoft, extending over the A52 and the A1111, before finishing at the A1104 between Beesby and Alford. Corridor 6 is characterised by small settlements, open farmland with large fields pattern with a mix of open boundaries, and those with linear belts of tree planting or drainage ditches. The Corridor largely comprises agricultural land, with the Lincolnshire Wolds National Landscape situated approximately 3.2 km west of the Corridor. Corridor 5 lies within Grade 3 Provisional Agricultural Land Classification (ALC). Priority habitats include river habitat headwater areas, coastal and floodplain grazing marsh (CFPGM) in the centre, coastal, sand dunes and reedbeds in the east, deciduous woodland adjacent to and within an excluded area in the centre, and lowland meadow in the south of the Corridor. Sandilands Nature Reserve (and LWS) is assumed to be operational during construction of the Project with proposed priority wetland and coastal dune habitat created and established by 2029. Designated heritage assets also occupy the corridor. There are two Scheduled Monuments within 1 km of the Corridor, the closest is Churchyard Cross, St Andrew's Churchyard, located 170 m south of the eastern limb of the Corridor. One Grade I Listed Building, located to the north of the centre of the Corridor. One Grade II* Listed Building, Church of the Holy Trinity, located approximately 1 km northwest of the Corridor, near Bilsby, as well as 16 Grade II Listed Buildings scattered around the Corridor. The closest is the Church of St Andrew located 155 m south of the Corridor. Water environment features exist both within and adjacent to the Corridor. Groundwater vulnerability is predominantly low with sections of medium and medium-high vulnerability at Landfall. Groundwater Source Protection Zones (SPZ) also lie within the Corridor, SPZ I can be avoided with careful routeing, whereas SPZ II is unavoidable in this Corridor. Flood Zone 2 and Flood Zone 3 are present across the Corridor, primarily attributed to Boy Grift Drain. Boy Grift Drain along with Anderby Main Drain are both WFD blue line watercourses and present within the Corridor, Boy Grift Drain will need crossing whereas Anderby Main Drain can be avoided with careful routeing and siting. Nearby settlements include Huttoft, Bilsby, Anderby, Sutton on Sea

and Alford. Approximately 15 residential properties are present within the Corridor and are scattered throughout. Outside the Southern EGL 5 Corridor Route, but within 250 m are approximately 100 residential receptors, primarily attributed to Huttoft and Bilsby. Recreational receptors have also been identified within 250 m of the Corridor, including 20 PRoW, one holiday park and one caravan park, and will be avoided where possible.

Alford Bypass Construction Traffic Route

4.3.17. As specified in **Paragraph 4.3.5**, the English Onshore Scheme Scoping Boundary has been expanded to accommodate all potential temporary and permanent land likely to be required to construct and operate the English Onshore Scheme, including a temporary construction traffic route hereafter referred to as the 'Alford Bypass Construction Route'. The Alford Bypass Construction Route will consist of enabling works required to facilitate the construction and installation of the permanent assets of EGL 5. Its requirement was identified due to a potential constraint for abnormal indivisible loads (AIL) to reach the Anderby Creek Landfall and both potential converter station sites. The Alford Bypass Construction Route constitutes the westernmost section of the English Onshore Scheme Scoping Boundary, commencing southwest of CS05 and traversing north of Alford, between the A1104 (East Street) and the A1104 (Station Road). Refer to **Construction access** for more information on the construction proposals.

Development Proposals

4.3.18. The specific elements and planned works at each location of the English Onshore Scheme are described in the following sections.

4.3.19. All dimensions in the sections below are approximate.

EGL 5 Converter Station

Physical description of the EGL 5 converter station

4.3.20. As part of the English Onshore Scheme, a new converter station (the EGL 5 converter station) would be required in proximity to the proposed 400 kV LCS-B. For the purposes of the current stage of the English Onshore Scheme, it has been assumed that the EGL 5 converter station with associated (AIS) HVAC switchgear could extend to approximately 350 m by 250 m (up to 9 ha). It should be noted that this excludes related development including permanent access would be needed to the new converter station, together with peripheral landscaping, drainage, and other related works.

4.3.21. The EGL 5 converter station would be connected to the proposed 400 kV LCS-B by HVAC cables.

Access to the EGL 5 converter station

4.3.22. Access to the EGL 5 converter station would be required, however, the location and extent of permanent access is dependent on the final siting of the infrastructure.

Construction of the EGL 5 converter station

4.3.23. Additional land would also be required to facilitate the construction of the EGL 5 converter station. Details of the key characteristics are included in **Table 4-1.** The area which would be required for the converter station construction compound is anticipated to be approximately 200 m by 200 m (approximately 4 ha).

4.3.24. The exact phasing of some activities would depend on the Construction Contractor and detailed design, but the main construction activities of the EGL 5 converter station would typically include:

- Preliminary works, including diversion of distribution network overhead lines;
- Access road construction;
- Site establishment;
- Earthworks;
- Civil engineering works;
- Building works;
- Cable installation;
- Provision / installation of permanent services;
- Mechanical and electrical works;
- Commissioning; and
- Site reinstatement and landscape works.

Table 4-1: EGL 5 Converter Station: Summary of Key Characteristics

Factor	Details
Technology	525 kV VSC (voltage source conversion)
Indicative converter station platform footprint	9 ha
Maximum height	30 m (excluding platforms, lightning protection and aerials) A height of 0.6 m has been used where relevant in this Scoping Report for the platform, to produce Zones of Theoretical Visibility (ZTV).
Construction compound	One construction compound for the converter station of approximately 200 m by 200 m

Anderby Creek Landfall

Physical description of the landfall

4.3.25. The landfall is the interface between the English Onshore Scheme and the English Offshore Scheme. This is the location where subsea cables (which are of a greater diameter than underground cables due to increased protection (armouring)), would connect to the onshore underground cables at a single buried TJB. More specifically, the landfall is considered to extend from MLWS (where it overlaps with the English Offshore Scheme) across the intertidal zone to terminate at a buried TJB located a short distance inland (above MHWS). A TJB is a permanent underground chamber constructed of reinforced concrete that houses the cable joints and a fibre chamber / link pit. A TJB typically comprises an area of 15 m by 4 m (60 sqm).

4.3.26. The landfall would be located at Anderby Creek, East Lindsey.

Construction and installation at the landfall

4.3.27. A larger area would be required temporarily during construction and installation of the TJB to accommodate temporary construction equipment and storage areas.

4.3.28. A temporary construction compound, which would extend approximately 150 m by 150 m (2.25 ha), would be required to construct the landfall and the TJB. The temporary compound would contain all necessary plant and equipment plus parking and welfare facilities required. Once installation has been completed, the land would be reinstated to pre-existing conditions, as far as practicable; the only infrastructure visible on the surface (on otherwise reinstated land, see **Plate 4-1** as an example) would be the cover of the link box pit.

Plate 4-1: Triton Knoll TJB Following Reinstatement



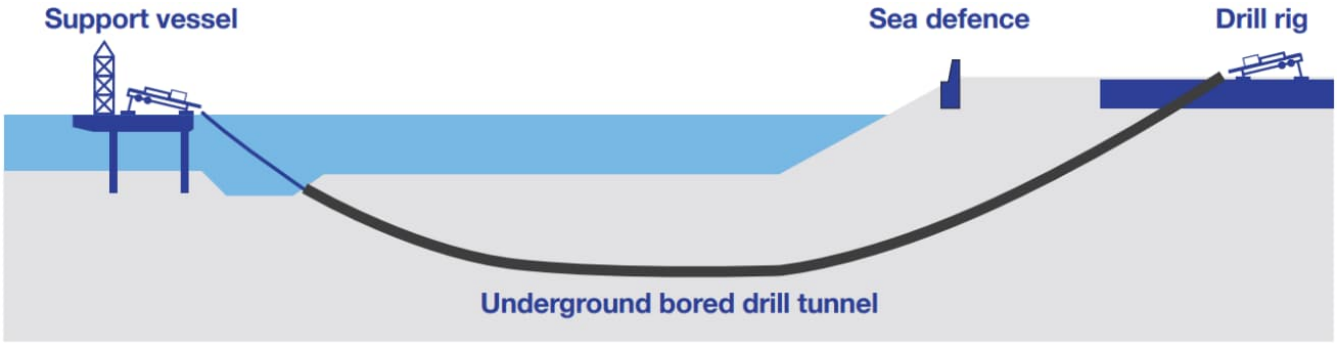
4.3.29. Installation of the HVDC cables at the landfall between Onshore and Offshore environments would be achieved utilising trenchless methods where possible to minimise disruption and avoid direct impacts to the intertidal zone. The exact trenchless method is subject to further detailed design considering the result of ground investigation; however, it is considered likely to be by a technique referred to as Horizontal Directional Drilling (HDD). HDD is a construction technique typically utilised in utilities construction whereby a tunnel is drilled under a constraint (such as a watercourse, environmentally sensitive area or other infrastructure) and a pipeline or cable is pulled through the drilled underground tunnel.

4.3.30. Subject to the size of the duct(s) required and the ground conditions expected to be encountered, the operation typically comprises the initial drilling of a small diameter pilot hole which is then increased in stages (known as the “reaming” stage), followed by the installation of a cable duct. Drilling uses inert bentonite clay and water as drilling fluid. Other chemicals may be used but these are typically categorised as chemicals that ‘pose little or no risk’ (PLONOR) to the environment.

4.3.31. At the landfall, HDD would be utilised to install a duct for each subsea cable between the TJB and the breakout point in the Offshore environment beyond the MLWS. The breakout point from the HDD is subject to the appointed Principal Contractor’s final design and dependent on the ground conditions and depth of the cable needed to be achieved to ensure suitable protection, however HDD’s can typically be up to 800 to 1,200 m in length, and the maximum known HVDC cable landfall HDD in the UK is 1.6

km. The subsea cables would be pulled through the installed ducts and joined to the underground HVDC cables at the TJB. An indicative cross section of the HDD at the landfall is provided in Plate 4-2: Indicative Landfall HDD Cross Section.

Plate 4-2: Indicative Landfall HDD Cross Section



4.3.32. Access to the landfall is likely to be via a temporary access track from the existing road network. Construction activities within the landfall would include compound construction, site mobilisation, site operations, materials deliveries, cable pull-in, site demobilisation and site reinstatement. Anticipated construction vehicles would include heavy goods vehicles (HGVs), light goods vehicles (LGVs), vans and cars. Abnormal Indivisible Load (AIL) movements would be required to allow cable delivery to the landfall.

4.3.33. A summary of the key characteristics of the landfall are outlined in **Table 4-2**.

Table 4-2: Landfall: Summary of Key Characteristics

Factor	Details
Location	Anderby Creek in East Lindsey, Lincolnshire
Working Area	Approximately 150 m by 150 m
Installation Approach	Horizontal Directional Drill (HDD)
HDD Length	Approximately 1.6 km
Operational Footprint	TJB is typically a buried concrete chamber. No above ground infrastructure. TJB dimensions are approximately 15 m by 4 m (60 sqm).

4.3.34. Note that the parameters specified were derived from project landfall feasibility assessments. They will be refined at the Preliminary Environmental Information Report (PEIR) stage once detailed design and contractor input is available.

Underground HVDC Cables

4.3.35. The term underground HVDC cable route is used throughout this Scoping Report and refers to the underground HVDC cables, the trench (or installation area) and associated temporary working areas which would be required for cable installation as covered below. The English Onshore Scheme Scoping Boundary is comprised of two potential underground cable Route Corridors, identified as emerging preferences in the CPRSS, which are:

- Corridor 5; and
- Corridor 6.

4.3.36. These corridors will be comprised of both HVDC (between the Anderby Creek Landfall and preferred converter station), and HVAC (between the preferred converter station and LCS-B).

4.3.37. The exact configuration of the underground HVDC cables route depends on a number of factors including the constraints (such as crossings of major rivers, roads, and utilities) which are present, prevailing ground conditions, the length of each cable corridor, suitability of jointing positions and the number of bends and topography of the route.

4.3.38. **Section 4.3** above provides a high-level description of the English Onshore Scheme Scoping Boundary for each of the Route Corridors. The following sections provide a high-level description of the design, construction and operation of the underground HVDC cables (described in this Scoping document as 'DC cables').

Underground HVDC Cable Route Overview

4.3.39. At the landfall, where the Onshore and Offshore components of EGL 5 overlap, the HVDC cables continue from offshore to onshore environment. The English Onshore Schemes HVDC cables would begin at MLWS and extend across the intertidal zones to connect into a buried TJB (where the subsea and Onshore HVDC cables connect). From the TJB, the HVDC cables would route towards one of the two emerging preferred siting zones for the EGL 5 converter station, via either cable Corridor 5 or 6.

Physical description of the HVDC Cables

4.3.40. The English Onshore Scheme would comprise one set of two HVDC cables (and a Distributed Temperature Sensing (DTS) carrier tube and fibre optic cables for performance monitoring). Each HVDC cable is typically 15 centimetres (cm) in diameter.

4.3.41. The English Onshore Scheme would require the construction of up to 9 km of HVDC cables, connecting from the Anderby Creek Landfall to the EGL 5. The exact configuration of the HVDC cables is subject to detailed design following appointment of a Construction Contractor; however, the general characteristics below have informed this Scoping Report.

4.3.42. The HVDC cables would have a permanent easement. The exact width of the permanent easement is still to be determined, this would be established during the detailed design stage of the Project.

4.3.43. The HVDC cables would be installed in sections, typically every 800 m to 1.5 km. These sections would be connected at buried cable joint bays. The number, location and dimensions of cable joint bays required would be determined through consultation feedback, information from surveys and ongoing design studies.

4.3.44. There would be no permanent above ground infrastructure required along the new HVDC cables route except for small marker posts. These may be installed at field boundaries, crossings, and other locations as appropriate to highlight the presence of the HVDC cables to landowners, asset owners and those undertaking works within the vicinity.

Construction and Installation

4.3.45. The typical HVDC construction swathe required for the construction and installation of the HVDC cables, including for access routes, soil storage and drainage, is approximately 49 m in total. This is described in this Scoping Report as the working width. The working width is demarcated by a post and rail fence and would typically comprise:

- Storage areas for topsoil and subsoil stripped from the working width;
- Drainage measures;
- Temporary haul road, typically 7 m in width, for the movement of installation traffic;
- Cable installation trench of a minimum depth of 0.9 m (to the cable protective tiles);
- Storage areas for excavated material; and
- Other mitigation measures as necessary.

4.3.46. In addition to the working width, cable construction and installation would require temporary construction facilities to be established at various locations along the route. These may result in a wider route corridor in some sections or require temporary land take ‘off” the HVDC cable route corridor. This includes temporary access to the working width, drainage and temporary compounds for storage, lay-down and site offices.

4.3.47. There are several different installation methods available for the installation of HVDC cables. The exact methods for cable installation would depend on the final cable route and constraints which are present. Typically, cable installation would involve the following activities:

- **Open cut / direct buried**: this is where a trench is excavated, and the underground cables laid directly into a single trench typically 1.5 m wide unless ground conditions or constraints dictate otherwise (for example due to other utilities or field drainage). The trench would then be backfilled using a combination of excavated soils and thermally suitable material (such as Cement Bound Sand (CBS)) and the land reinstated. Further information regarding the measures that would be undertaken to reinstate land and soils is provided in **Part 2, Chapter 11: Agriculture and Soils**. One trench is required for the English Onshore Scheme.
- **Open cut / ducted**: This installation method is largely the same as per the process for open cut / direct buried. The main difference is that ducts are laid in the trench and the underground cables are then pulled through the ducts. This installation method allows for the ducts to be laid and the majority of the trench reinstated without the underground cables being present. Cable joint bays would need to remain open as they would be utilised to pull the underground cable through the pre-installed ducts and join the sections of underground cables together. Following underground cable installation, the land would be reinstated.
- **Trenchless methods:** such as HDD or microtunnelling / pipejacking: these are used where specific features are encountered, such as main rivers, major roads, railway lines, flood defences or other significant infrastructure, need to be crossed. Where HDD is not technically viable then a tunnelled (microtunnelling / pipejacking) solution can be considered. In determining the most appropriate trenchless technique for installing HVDC cables, NGET need to ensure the electrical performance of the HVDC cables are not compromised.

- HDD involves the use of a drill to bore a route below the ground through which ducts would be pulled and cables installed; and

- *Microtunnelling / Pipejacking* is a technique for installing underground ducts and uses hydraulic jacks to push specially designed pipes through the ground behind a shield at the same time as excavation is taking place within the shield, cables are then installed in the pipes.

- **Cable jointing**: cable joint bays are required between each cable section to join them together, and cables are typically installed in sections approximately 800 m to 1.5 km long. The number, location and dimensions of cable joint bays required would depend on the cable route and constraints present which would be determined through consultation feedback, information from surveys and ongoing design studies. These would be formed by building a concrete floor (or similar) in the base of the trenches approximately 12 m by 5 m. Cable joint bays must be clean and dry so temporary covers would be erected at jointing locations. Due to the precise nature of engineering employed, cable joint bays could remain open for several weeks to allow for trench and joint bay excavation, cable pulling, jointing and reinstatement.

4.3.48. Where conditions allow, HVDC cables are typically installed using open cut methods. Open cut methods are generally preferred as they enable HVDC cables to be installed at more technically efficient depths. Open cut methods are also generally more economical and often require a smaller construction footprint than trenchless methods. Where technically feasible, and unless other environmental and infrastructure features and considerations determine otherwise, all underground cable installation would be by open cut method.

4.3.49. The minimum burial depth of the HVDC cables is typically 0.9 m to the cable protective tiles. Where constraints dictate or agricultural practices require, depths of installation may be deeper. This would be determined through feedback from consultation, information from surveys, stakeholders, landowners and ongoing design studies.

4.3.50. Where specific environmental or infrastructure features preclude the use of open cut methods, use of trenchless methods such as HDD would be used. The depth of installation would be deeper at locations where trenchless installation methods are used.

4.3.51. A summary of the key characteristics of the underground HVDC cable route are outlined in **Table 4-3**.

Table 4-3: Underground HVDC Cables Route: Summary of Key Characteristics

Factor	Details
Operating voltage	525 kV
Indicative Length of Route	Up to 9 km.
Cable number	Two HVDC cables would be installed. A DTS and fibre optic cable would be installed with the HVDC cables for monitoring.
Indicative cable dimensions	Each HVDC cable is approximately 15 cm in diameter.

Factor	Details
Working width	Approximately 49 m. Working width includes provision for the cable trench, cable joint bays, soil storage, materials and equipment laydown, and temporary haul road.
Number of trenches	One trench containing the two HVDC cables, a DTS and one fibre optic cable.
Indicative trench width and depth	Approximately 2.5 m wide (subject to local ground conditions and obstacles). The approximate depth coverage would be 0.9 m to the cable protective tiles. The depth of installation would be deeper at locations where trenchless methods e.g., HDD, are required.
Number of cable joint bays	Required approximately every 800 m to 1.5 km
Construction compounds for underground cable installation	Construction compounds and other working areas for installation of HVDC cables, such as HDD set up locations (in the case of trenchless methods), would be required at various locations along the length of route.
Permanent above ground infrastructure	Cable markers may be installed at field boundaries, crossings, and other locations as appropriate to highlight the presence of the HVDC cables to landowners, asset owners and those undertaking works within the vicinity.

Underground HVAC Cables

4.3.52. Where reference is made to the underground HVAC cable route in this Scoping Report, this refers to the underground HVAC cables, the trench (or installation area) and associated temporary working areas which would be required for cable installation, unless specifically stated otherwise.

4.3.53. The underground HVAC cable route would connect the new EGL 5 converter station to the proposed 400 kV LCS-B.

4.3.54. The exact configuration of the underground HVAC cable route depends on a number of factors including the constraints which are present (such as crossings of major rivers, roads, and utilities), prevailing ground conditions, the length of each cable section, suitability of jointing positions and the number of bends and topography of the route.

4.3.55. The following sections provide a high-level description of the design, construction and operation of the underground HVAC cables (described in this Scoping Report as ‘AC cables’).

Physical description of the Underground HVAC Cables

4.3.56. The connection from the new EGL 5 converter station to the proposed 400 kV LCS-B would require two sets of three HVAC cables (i.e., a total of six HVAC cables from the EGL 5 converter station). The HVAC cables would include a DTS carrier tube and fibre optic cables for performance monitoring. Each HVAC cable is typically 15 cm in diameter.

4.3.57. The English Onshore Scheme would require the construction of up to 3 km of HVAC Cables between the EGL 5 converter station and the proposed 400 kV LCS-B. The

exact configuration of the HVAC cables is subject to detailed design following appointment of a Construction Contractor; however, the general characteristics below have informed this Scoping Report.

4.3.58. The HVAC cables would have a permanent easement. The exact width of the permanent easement is still to be determined.

4.3.59. The HVAC cables would be installed in sections, typically every 800 m to 1.5 km. These sections would be connected at buried cable joint bays. The number, location and dimensions of cable joint bays required would be determined through consultation feedback, information from surveys and ongoing design studies.

4.3.60. There would be no above ground infrastructure required along the new HVAC cables route except for small marker posts or link pillars. Underground link boxes could also be used instead of link pillars at buried cable joint bays. The marker posts may be installed at field boundaries, crossings, and other locations as appropriate to highlight the presence of the HVAC cables to landowners, asset owners and those undertaking works within the vicinity. Link pillars would be required at buried cable joint bays, where the HVAC cable sections would be joined. Link pillars are typically 1 m by 1.5 m and are at a height of 1.5 m and are typically enclosed within a timber fence typically at a height of 1.5 m.

Construction and Installation

4.3.61. The typical HVAC construction swathe required for the construction and installation of the HVAC cables, including for access routes, soil storage and drainage, is approximately 85 m in total. This is described in this Scoping Report as the working width. The working width is demarcated by a post and rail fence and would typically comprise:

- Storage areas for topsoil and subsoil stripped from the working width;
- Drainage measures;
- Temporary haul road, typically 7 m in width, for the movement of installation traffic;
- Cable installation trench of a minimum depth of 0.9 m (to the cable protective tiles);
- Storage areas for excavated material; and
- Other mitigation measures as necessary.

4.3.62. In addition to the working width, cable construction and installation would require temporary construction facilities to be established at various locations along the route. These may result in a wider route corridor in some sections or require temporary land take ‘off’ the HVAC cable route corridor. This includes temporary access to the working width, drainage and temporary compounds for storage, lay-down and site offices.

4.3.63. As with HVDC cables, there are several different installation methods available for the installation of HVAC cables. These methods are the open cut and trenchless methods described in **Paragraph 4.3.474.3.47** with HVAC cables installed in sections and connected at buried cable joint bays. The number of sections and the number, location and dimensions of cable joint bays required would be determined through consultation feedback, information from surveys and ongoing design studies.

4.3.64. As described in **Paragraph 4.3.474.3.48**, where technically feasible, and unless other environmental and infrastructure features and considerations determine otherwise, all underground cable installation would be by open cut method. Where specific

environmental or infrastructure features preclude the use of open cut methods, use of trenchless methods such as HDD would be used.

4.3.65. Where open cut installation methods are used for the HVAC cables, two trenches would be required for the HVAC Cables. Each trench would contain a set of three HVAC cables and (subject to cable system design) for the HVAC cables would be approximately 3 m wide.

4.3.66. The minimum depth of cover for the HVAC cables is typically 0.9 m to the cable protective tiles. Where constraints dictate, such as BMV agricultural land, depths of installation may be deeper, typically 1.2 m to the cable warning tape. This would be determined through feedback from consultation, information from surveys and ongoing design studies.

4.3.67. Where specific environmental or infrastructure features preclude the use of open cut methods, use of trenchless methods such as HDD would be used. The depth of installation would be deeper at locations where trenchless installation methods are used.

4.3.68. A summary of the key characteristics of the underground HVAC cable route are outlined in **Table 4-4**.

Table 4-4: Underground HVAC Cables Route: Summary of Key Characteristics

Factor	Details
Operating voltage	400 kV
Indicative Length of Route	Up to 3 km.
Cable number	Six cables in total i.e., two sets of three (totalling six HVAC cables).
Indicative cable dimensions	Each HVAC cable is approximately 15 cm in diameter.
Working width	Approximately 130 m where open cut methods are used and 140 m where trenchless methods are used. Working width includes provision for the cable trench, cable joint bays, soil storage, materials and equipment laydown, and temporary haul road.
Number of trenches	Two trenches would be required for the HVAC cables.
Indicative trench width and depth	Approximately 3 m wide (subject to local ground conditions and obstacles). The approximate depth coverage would be 0.9 m to the cable protective tiles. The depth of installation would be deeper at locations where trenchless methods e.g., HDD, are required.
Number of cable joint bays	Required approximately every 800 m to 1.5 km.
Construction compounds for underground cable installation	Construction compounds and other working areas for installation of HVAC cables, such as HDD set up locations (in the case of trenchless methods), would be required at various locations along the length of route.

Factor	Details
Permanent above ground infrastructure	Cable markers may be installed at field boundaries, crossings, and other locations as appropriate to highlight the presence of the HVAC cables to landowners, asset owners and those undertaking works within the vicinity. Link pillars at buried cable joint bays which are typically 1 m by 1.5 m and are at a height of 1.5 m. Link pillars are typically enclosed within a timber fence typically at a height of 1.5 m.

Construction of the English Onshore Scheme

Construction compounds

4.3.69. Temporary construction compounds and laydown areas would be set up at strategic locations along the alignment, with associated access points from the existing road network. All compounds would be accommodated within the English Onshore Scheme Scoping Boundary and would be sited alongside or adjacent to the relevant works. Where possible, a site would be chosen which is accessible for HGVs, has existing services and preferably has some hardstanding to avoid or reduce the need to create a level base for the compound. The importation of material would be required to provide hardstanding if suitable material is not already in place.

4.3.70. As a minimum it is assumed for the purposes of this Scoping Report that construction compounds would be required at the following locations:

- Landfall;
- EGL 5 converter station; and
- Along the cable routes.

4.3.71. The construction compounds would generally comprise of temporary cabin or modular style units that would be positioned to maximise construction space and limit the area of land take required. Such units would be used for the purposes of site management activities and also provide welfare accommodation for the construction workforce. As well as this, the construction compounds would provide distinct laydown areas for the storage of construction plant and for the delivery and removal of materials. Compounds may also be used for the stockpiling of materials to facilitate their transfer to and from construction working area. Defined areas for staff parking would also be provided as part of the construction compound.

4.3.72. Security fencing or hoardings would be provided around the perimeter of each construction compound. The specification and construction of fences would depend on factors such as the level of security required and the degree of visual impact. Lighting of construction compounds would be designed to limit light pollution to the surrounding area.

4.3.73. Compounds would comprise a mix of satellite compounds (approximate footprint 150 m by 150 m) for the underground cable installation and main compounds for the converter station. Satellite compounds are smaller compounds with storage and laydown areas but unlike main compounds would not include offices.

4.3.74. All compound areas would be reinstated as soon as reasonably practicable after completion of the construction works and demobilisation.

Construction access

4.3.75. Site construction activities would begin with the preparation and installation of temporary access roads. Primary access would be from the existing road network. However, existing accesses from public highways may need to be widened, due to the size of the construction vehicles, or temporary new access tracks (including culverts and bridges) from the existing road network may be required, such as the proposed Alford Bypass Construction Route, given the nature of works required and plant to be used. These would be connected to the haul roads that are located adjacent to the construction areas. In addition, there may be the requirement for bellmouths (onshore) where these accesses meet the road network to enable the appropriate access arrangement for site traffic. The converter station would also require permanent access roads to be constructed. Further definition of the access routes and requirements would be provided as the design of the English Onshore Scheme progresses. The Alford Bypass Construction Route would be constructed at the site establishment stage to ensure prior access from the highway network for construction traffic.

4.3.76. An Outline Construction Environmental Management Plan (Outline CEMP) and an Outline Construction Traffic Management Plan (Outline CTMP) will be developed for the English Onshore Scheme which will outline the modes of transport proposed for the delivery of construction materials, plant, the construction workforce and the removal of waste materials. The aim of the Outline CEMP will be to reduce HGV and road traffic movements generated by the English Onshore Scheme where practical and possible. An Outline PRoW management plan (Outline PRoWMP) will also be developed setting out any temporary and permanent diversions of PRoW.

Operation and maintenance

4.3.77. Routine inspection and periodic maintenance and repair of the English Onshore Scheme would be required during its operational lifetime. This would identify any damage or deterioration of the components or becoming life-expired and requiring replacement. Typical maintenance procedures are summarised in **Table 4-5**.

Table 4-5: Typical Maintenance Procedures

Scheme Element	Example Maintenance Works
Underground HVDC cable	Activity along the proposed HVDC cable route would generally be limited to non-intrusive inspections and cable repairs. The latter would only be required in the unlikely event of a cable fault. Where a fault does occur the location of the fault would be identified, and the faulty section of cable replaced. The activities involved in cable repair would be like those outlined above for installation, albeit over a much smaller section.
Underground HVAC cable	Activity along the proposed HVAC cable route would generally be limited to non-intrusive inspections and cable repairs. The latter would only be required in the unlikely event of a cable fault. Where a fault does occur the location of the fault would be identified, and the faulty section of cable replaced. The activities involved in cable repair would be like those outlined above for installation, albeit over a much smaller section.

Scheme Element	Example Maintenance Works
Converter station	The converter station would be operated by a small team that visit the site weekly and otherwise as and when required. During maintenance (planned and unplanned) the number of personnel present on site would increase with the number of staff proportionate to the nature of the maintenance works being undertaken. Visual inspections of equipment within the converter station to ensure smooth and efficient working. Servicing of equipment, such as cleaning, adjustment and lubrication. Repair and replacement of equipment which is faulty.

Electric and Magnetic Fields

4.3.78. All equipment that generates, distributes or uses electricity produces Electric and Magnetic Fields (EMFs). Exposure limits for EMFs in the UK are set by the Government on advice from Public Health England, and the electricity industry strictly adheres to these limits. The exposure limits for both HVDC and HVAC cables originate from the International Commission on Non-Ionizing Radiation Protection (ICNIRP) guidelines, published in 1994 and 1998 respectively and recently updated in March 2020.

Decommissioning

4.3.79. The minimum design life of the elements of the English Onshore Scheme is 40 years. There are currently no specific plans to decommission the Project, which will be subject to maintenance, reinforcement works and for assets to be replaced when they come to the end of their lifespan.

4.3.80. It is expected that the transmission of electricity would continue for as long as there is a business case for doing so and that any decommissioning activity would occur decades into the future.

4.4 English Offshore Scheme

Overview of the English Offshore Scheme

4.4.1. As outlined in **Part 1, Chapter 1: Introduction**, the English Offshore Scheme of EGL 5 extends from MHWS where the English Offshore Scheme makes landfall at Anderby Creek on the Lincolnshire coastline to the border between English and Scottish adjacent waters. It is noted that the boundaries for the English Onshore Scheme and the English Offshore Scheme both overlap in the intertidal zone between MLWS and MHWS. The English Offshore Scheme would comprise the construction of:

- Up to 415 km of subsea HVDC cables from the Anderby Creek Landfall to the border between English and Scottish adjacent waters. The subsea cable system would consist of two bundled HVDC cables and a fibre optic cable (up to the first offshore joint) for control and monitoring purposes.
- Associated cable protection such as rock, concrete mattresses, sand / rock / grout bags.

Design envelope approach for EIA scoping

4.4.2. Whilst the infrastructure which will be needed to construct the English Offshore Scheme has been identified, the exact siting has not yet been confirmed. Therefore a 'design envelope' approach has been adopted for EIA Scoping having regard to the Planning Inspectorate's Advice Note Nine (Ref 4.1). This approach, known as the 'Rochdale Envelope' Approach, is employed "*where the nature of the proposed development means that some details of the whole project have not been confirmed*" and "*flexibility is sought to address uncertainty.*" Further details with regards to the Rochdale Envelope Approach are provided in **Part 1, Chapter 5: EIA Approach and Methodology**.

4.4.3. Work has been undertaken to map the environmental and socio-economic baseline to gain a better understanding of the constraints and features present in the English Offshore Scheme Boundary. This has informed the indicative project description presented in this Scoping Report. The design of the English Offshore Scheme will be developed in parallel to the EIA and will therefore evolve as the assessment progresses. The design will be influenced by engineering, environmental and commercial factors, as well as consultation with local and national stakeholders. The design envelope assessed and presented in the Preliminary Environmental Information Report (PEIR) and subsequent Environmental Statement (ES) would still include some flexibility regarding design parameters but would clearly identify where construction techniques/methodology has been restricted to mitigate significant environmental concerns.

4.4.4. To retain flexibility, a Scoping Boundary for the English Offshore Scheme has been defined to represent the maximum extent of development. The English Offshore Scheme Scoping Boundary covers a wider area than is likely to be required for the DCO. This is to allow design flexibility for the following reasons:

- To take account of ongoing engineering and detailed design development;
- To allow for subsea cable route development in light of the ongoing geophysical, geotechnical and environmental seabed surveys; and
- To take account of feedback received through engagement, including through consultation events with the public and key stakeholder meetings.

4.4.5. The extent of the English Offshore Scheme Scoping Boundary was determined taking into account the following requirements:

- The need for flexibility and optionality regarding how the English Offshore Scheme crosses the Holderness Offshore Marine Conservation Zone (MCZ).
- The need for flexibility in the approach to the England and Scotland adjacent waters border to allow onward routeing through Scottish water.
- Sufficient area of seabed to allow the construction of the subsea cable system (including anchor spreads associated with shallow draft vessels) and any requirements for future repairs requiring the laydown of an omega loop joint.

4.4.6. As a Principal Contractor has not been selected and detailed design work has not yet been completed, the following sections provide an indicative overview of the expected subsea installation methods and intervention works. As EGL 5 progresses, including the appointment of the Principal Contractor and as detailed engineering is carried out, some variation and more detailed design development will be conducted. To ensure that the realistic worst-case scenario is considered in this Scoping Report, estimated design parameters presented here seek to reflect those options that may be anticipated to

result in a ‘worst case’ environmental impact. A more detailed description of the English Offshore Scheme will be presented in the PEIR and subsequently the ES (which will accompany the application for development consent).

Scoping area description

4.4.7. **Volume 3, Figure 1-4** shows the location of the English Offshore Scheme Scoping Boundary**.** The extent of the English Offshore Scheme Scoping Boundary is up to 415 km long in relation to EGL 5 in English inshore (within 12 NM) and offshore waters (outside of 12 NM) from MHWS at the Anderby Creek Landfall, Lincolnshire.

4.4.8. The English Offshore Scheme Scoping Boundary is nominally 2 km wide, 1 km either side of the centre line used for the 2025 geophysical survey and narrows up to 1 km at the Landfall. It is anticipated that the draft Order Limits presented in the PEIR and Order Limits presented in the ES would be refined to up to 500 m wide following refinement and rationalisation as the seabed survey data is reviewed, the design process evolves and the EIA is undertaken.

4.4.9. As established in Paragraph 3.9.25 two offshore route options were selected for further investigation for EGL 5 and the English Offshore Scheme Scoping Boundary encompasses both options:

- One that largely avoids the Holderness Offshore MCZ by routeing around the eastern boundary but crosses the northern tip of the Silver Pit glacial tunnel valley feature; and
- One that crosses directly through the Holderness Offshore MCZ.

4.4.10. The selection of the preferred option would be made on review of the geophysical, geotechnical and environmental survey data, and after consultation with the Joint Nature Conservation Committee (JNCC) and Natural England and would be presented in the PEIR and ES.

4.4.11. Of note is that the English Offshore Scheme Scoping Boundary runs parallel to the EGL 3 and EGL 4 projects from landfall, where the three routes are co-ordinated, approximately between KP 0 – KP 210 and between KP 360 – KP 410.

Development proposals

4.4.12. The English Offshore Scheme will comprise two subsea power cables and a fibre optic cable.

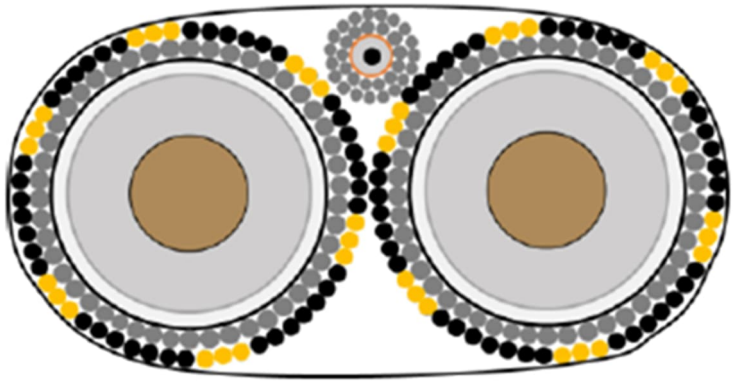
4.4.13. The detailed configuration of the marine cable system is still under development at this stage and would be informed by further electrical design studies and through selection of the cable supplier and Principal Contractor. However, in common with similar HVDC systems recently installed by the Applicant, it has been assumed that the HVDC link would comprise of two single core metallic conductors (one positive, one negative) and a fibre optic cable. The cables would be installed for EGL 5 as a single bundle of two conductors and the fibre optic cable i.e., within one trench. The fibre optic cable would be for control and monitoring purposes only and would be installed from the landfall to the first joint position.

4.4.14. The HVDC subsea cables are likely be cross linked polyethylene (XLPE) insulated cable. XLPE cables are preferred over mass impregnated (MI) insultation for modern HVDC since 2000. This is because XLPE has better electrical performance, operates at a higher temperature with lower dielectric losses than MI. XLPE also provides better

insultation, thermal and mechanical resilience with no oil filled insulation. As illustrated in Plate 4-3: Example illustration of bundled HVDC cable with fibre optic cable, the cables have a central core (comprising of aluminium or copper), protected by insulation and a lead sheath. Heavy steel wire is wound in a helical form around the cable as armour to protect the cable from external damage during construction and operation.

Plate 4-3: Example illustration of bundled HVDC cable with fibre optic cable

(illustration shows double wire armoured sheathing and is indicative only)



4.4.15. As the cables approach the landfall the cables would be unbundled and each core passed through its own HDD duct. Two ducts in total would be installed at the landfall.

4.4.16. The cable system in a minimum of four and a maximum of ten sections, with each section connected by a joint.

Construction of the English Offshore Scheme

Pre-construction activities

4.4.17. Prior to the commencement of offshore cable installation, it is essential to ensure that the seabed is clear of obstructions that may hinder the construction works. Seabed preparation is expected to involve clearance activities to ensure the subsea cable corridor is clear of boulders, out of service cables, smaller debris such as abandoned fishing gear, wires , and other obstacles. **Table 4-6** summarises the activities that may be expected to take place.

Table 4-6: Pre-construction activities

Activity	Description	Assessment Approach
Pre-construction survey	Seabed surveys will be carried out prior to seabed preparation and cable burial by the Principal Contractor to reconfirm existing geotechnical and geophysical information regarding seabed conditions, bathymetry, and other seabed features. These may include Multibeam Echosounder (MBES); Side-Scan Sonar (SSS), Sub-Bottom Profiler (SBP), magnetometer,	In certain circumstances the MCAA 2009 provides for certain activities to be exempt from requiring a Marine Licence (or Deemed Marine Licence). The activities associated with the pre-construction survey would qualify as exempt activities provided that the geotechnical and environmental sample sizes are <1 m^3 (individually) and the Applicant can demonstrate

Activity	Description	Assessment Approach
	cable trackers etc. In addition, visual inspections may also be undertaken using a Remotely Operated Vehicle (ROV) or other visual inspection system. Depending on the final Condition in the Deemed Marine Licence, pre-construction surveys may also include additional specialist studies, including geotechnical, environmental, archaeological and Unexploded Ordnance (UXO) investigations.	that the survey would not obstruct or present a danger to navigation and would not have a significant adverse effect on a marine protected area. The EIA will assess the impacts of the surveys on the environment focusing on the effects of changes in underwater noise, disturbance (physical and visual) to species and disruption to other marine users (including shipping and commercial fisheries). Notices to Mariners would be published ahead of the survey commencing. Fishers would be notified of impending survey activity through the Project's Fisheries Liaison Officer (FLO). Appropriate consents would also be sought from The Crown Estate (TCE) as relevant.
UXO Identification	An initial UXO desk-based assessment has been undertaken to determine the potential UXO risk, which has informed the position of the English Offshore Scheme Scoping Boundary. A UXO survey would be undertaken as part of the pre-construction survey. The results of the survey will be used to identify potential UXO (pUXO). pUXO would be avoided where possible through careful micro-routeing of the cables. If pUXO cannot be avoided, then further investigations would be undertaken to determine if the pUXO is UXO or ferrous debris. Identification of UXO may involve further magnetometer and ROV investigations including small excavations.	As detailed above, the pre-construction survey will not be included in the EIA process. I However, investigation of pUXO (excavations) is a licensable activity and will be consented under a separate Marine Licence and Environmental Impact Assessment assessed as part of the EIA process, however a high-level overview of this activity will be assessed within the EIA.
UXO Clearance	If a target is confirmed as UXO by the identification phase the Applicant would follow the clearance mitigation hierarchy. Should in-situ clearance be the only feasible option, a low noise method would be the default option, with high order clearance the last	Following advice provided by the MMO, JNCC and Natural England for the EGL 3 and EGL 4 projects the Applicant intends to provide a high-level description of the effects of UXO clearance on the environment in the EIA to provide a full assessment of the

Activity	Description	Assessment Approach
	resort and only considered after all other options have been exhausted.	construction activities, but a separate Marine Licence would be applied for if UXO clearance is required.
Seabed preparation	Boulder Clearance Should boulder clearance be required, the technique would depend on the density of the boulder field identified. The preference would be to move individual boulders to an alternative seabed position using a grab deployed from a vessel. However, if the boulders are densely distributed a plough would be towed across the seabed, pushing the boulders to both sides creating a cleared swathe up to 15 m wide with berms either side of the cleared swathe; width of the berms will be determined by environmental conditions and the plough used.	The Applicant are in the process of acquiring geophysical, geotechnical, and environmental survey data along the English Offshore Scheme. This data will be used in route engineering and design studies. Where possible, the subsea HVDC cable route will be micro-routed to minimise seabed preparation activities e.g., avoidance of sandwaves or boulder fields.
	Sand wave clearance (pre-sweeping) In areas where mega ripples (wave heights <1.5 m) and sandwaves (wave heights >1.5 m) are present along the final cable centreline within the DCO Boundary pre-sweeping may be required to remove a portion of the sand wave (maximum clearance width 20 m). This reduces the slope angle to allow the burial equipment to operate safely and allows the burial equipment to reach the required depth of burial, preventing future cable exposures. Trailing suction hopper dredgers or controlled flow excavators could be used for pre-sweeping.	UKHO high resolution bathymetry data was used to determine potential areas of pre-sweeping within the English Offshore Scoping Boundary. Additional environmental samples have been acquired in these areas and will be analysed by a MMO validated lab in line with MMO requirements to determine if sediments are suitable for seabed disposal. Studies will be undertaken to calculate the volume of sand to be removed and identify suitable disposal locations that retain the sediment within the local sediment system. Consultation with relevant authorities will be undertaken to determine the most suitable methods for pre-sweeping.
	Cutting Out of Service (OOS) Cables Removal of OOS cables would also be required. Permission would be sought from asset owners to cut OOS cables crossed by the English Offshore Scheme. The OOS cable would be snagged using a grapnel and then cut, with an up to 100 m section of cable being removed from the seabed. The	Consultation would be undertaken with fishers with respect to the location of OOS assets and how these interact with specific fishing grounds, so that mitigation can be identified if necessary.

Activity	Description	Assessment Approach
	cut ends would be tied to a clump weight and placed on to the seabed. If the OOS cable is buried deeper than could be retrieved with the grapnel, then an ROV fitted with a dredger would be used to uncover the OOS cable. The OOS cable would then be cut using a hydraulic cutter fitted to the ROV. The removed cable would be recovered to deck and disposed of in line with a Waste Management Plan.	
	Pre-Lay Grapnel Run (PLGR) A PLGR would be completed along the entire length of the English Offshore Scheme. This would involve towing a heavy grapnel with a series of specially designed hooks along the centre line of the route, snagging any debris on the seabed and within the top 1.0 m of the seabed to confirm the construction site is clear of obstructions. Debris caught with the grapnel would be recovered to the vessel for appropriate licenced disposal ashore.	The effects of seabed disturbance from PLGR would be assessed within the EIA.
Trial trenching	Trial trenching, if required to test the capabilities of the trenching tool to meet depth of burial requirements, would be undertaken within the proposed English Offshore Scheme Cable Corridor. The trial trenching would use the same methodology as that proposed for the installation of the cables. During the trial trenching, if cables were to be laid and buried, these would be subsequently removed following the trial.	The EIA would assume that trial trenching could be undertaken at any location within the English Offshore Scheme Scoping Boundary and would assess the environmental impact of the activity. If areas within the English Offshore Scheme Scoping Boundary are identified that would be adversely affected by trial trenching, these would be identified and mitigation proposed.
Infrastructure crossings - preparation	Where the English Offshore Scheme crosses live or abandoned but not decommissioned infrastructure e.g., cables and pipelines, the Applicant would enter discussions with the asset owner to agree how the crossing of the asset should be engineered. Particular attention would be paid to ensure crossing angles of ≥90° are achieved. Crossing and proximity agreements	The EIA would identify all crossings and provide indicative crossing dimensions. Consultation would be undertaken with relevant stakeholders with respect to the locations of crossings to identify what location specific mitigation may be feasible.

Activity	Description	Assessment Approach
	with asset owners would detail the physical design of the crossing and outline the rights and responsibilities of both parties to ensure ongoing integrity of the assets. Vertical separation between the EGL 5 cables and third-party assets would be achieved through either placing rock or concrete mattresses at the crossing locations prior to offshore cable installation to create the required separation distance. To protect the third-party assets during cable installation minimum standoff distances for equipment (PLGR, burial tools etc.) would be agreed with the asset owner. Post-lay surveys would verify compliance with burial and separation specifications.	

Landfall enabling works and cable pull-in

4.4.18. The method for drilling cable ducts is described is Paragraphs 4.4.19 – 4.4.28.

4.4.19. The ‘punch-out’ point for the HDD ducts would be in the subtidal environment i.e., seaward of the 0 m water depth contour. The punch-out points would be defined by the geological suitability of the seabed and metocean conditions. Depending on the final design and depth of the ducts, there would be a 25 m separation between adjacent drill HDD punch-out points, and a separation of no less than 50 m between the English Offshore Scheme and EGL 4 and EGL 3. In terms of landfall order at Anderby Creek from south to north the proposed alignment would be Triton Knoll, EGL 4, EGL 5 and then EGL 3.

4.4.20. The HDD would reach a maximum of 25 m below ground at its maximum depth. The punch-out point may need to be excavated (by barge mounted backhoe excavator or controlled flow excavator) and would be left to either naturally back fill or would be manually infilled with excavated material. Exit pits would remain open until the cable pull in. Ducts laid in the bottom of the exit pits may be weighted to the seabed using clump weights or rock bags.

4.4.21. Depending on the construction programme and any seasonal sensitivities at the landfall, there may be a break in works between the HDD finalisation and the cable pull-in. The offshore end of the cable ducts would be “wet stored” for this period by fitting a temporary flange to stop water ingress. This would be either a blanking plate (flat plate) or marine bellmouth (not to be confused with onshore bellmouth junction relating to highways infrastructure) with blanking plate to cover.

4.4.22. To prepare for cable pull-in, any deposits would be removed, the bellmouth / flange exposed and a messenger wire fed through each duct to the HDD compound. The messenger wire would be attached to a winch within the HDD compound. The cable lay vessel or shallow water barge would approach the landfall position at up to the 10 m water depth contour. The cable end would be transferred to a multi-cat or construction

support vessel and the cable end sailed to the messenger wire at the HDD duct exit. Floats would be installed along the cables to keep them from sinking to the seabed. Workboats would be positioned along the length of the floating cable, ensuring the steady positioning of the cable.

4.4.23. The onshore winch would start to pull the cable through the duct. Divers would remove the floats as the cable approaches the duct, allowing the cable to sink into and be pulled through the duct. Floats may either be allowed to wash to the beach in a controlled manner for retrieval or would be picked up by a support boat.

4.4.24. A cofferdam will not be used for the landfall enabling works.

Subsea cable lay and burial

4.4.25. Burial in the seabed is recognised as the best protection method for marine HVDC cables. However, ground conditions may not always allow full cable burial to the depth necessary to protect from external risks. The cable system would be buried below the seabed wherever possible, with a target burial depth defined post-consent in a pre-construction Cable Burial Risk Assessment (CBRA) and Burial Assessment Study undertaken by the Principal Designer. The minimum and maximum cable burial depth would vary along the English Offshore Scheme, depending on numerous factors such as soil type, presence / absence of sub-cropping or outcropping rock, shipping and fishing activity and the type of burial tool utilised. Burial depth is typically 0.6 – 2.5 m below chart datum. A preliminary CBRA would be undertaken by the Applicant based on the results of geophysical and geotechnical surveys to inform the PEIR and ES.

4.4.26. There are three possible configurations for cable installation and protection:

- Pre-cut trenching and cable lay;
- Simultaneous lay and burial (slb); and
- Cable lay and post-lay burial.

4.4.27. One or a combination of these would be used, depending on the ground conditions, environmental constraints and Principal Contractor selected. Cable lay and installation operations would be performed on a 24-hour basis, to minimise installation time and the duration of any disruption to sensitive environmental receptors as well as navigation and other sea users; this would also maximise available weather opportunities, as well as vessel and equipment availability. Guard vessels may be on site to warn mariners of any lengths of unprotected cable.

4.4.28. It is not yet confirmed what subsea trenching equipment would be used to bury the cables; however, it is anticipated that the some or all of the following may be required dependent on the seabed conditions present:

- Jet-trenching – positioned on the seabed, a jet trencher uses a powerful water jetting tool to fluidise the seabed allowing pre-laid cables to sink to the required burial depth. The cable trench is typically left to back-fill naturally or would be manually infilled with excavated material.
- Conventional narrow share cable plough – as the plough is pulled through the seabed it cuts and lifts a wedge of soil. The cable is then fed into the plough and guided down through the share to the base of the trench and the soil wedge is placed back in over the cable. For this option, the seabed level tends to recover to its natural state within several tidal cycles.

- Advanced cable ploughs (vertical injectors) – deep burial ploughs using water jets fitted within the plough share to fluidise material at the leading edge of the share. Can achieve deeper burial depths (i.e., 3 – 6 m). The cable trench would be left to back-fill naturally.
- Cutting – used in hard sediments such as clay and weak bedrock or gravelly sediments to pre-cut a trench. The cables are then laid within the trench, and burial achieved either via back-fill plough, controlled flow excavator or through external cable protection measures.
- Controlled Flow Excavation – suspended above the seabed, controlled flow excavators uses high pressure water jets to fluidise the seabed which allows the cable to sink to the required burial depth. The cable trench would be left to back-fill naturally.
- Trailing Suction Hopper Dredger (TSHD) – A dredging vessel that uses a suction pipe (trailing drag head) to suck up sediment off the seabed. The sediment is discharged into a compartment (the hopper) on the vessel. The sediment can either be retained in the hopper for deposition onshore or deposited back on the seabed.

4.4.29. The CBRA and Burial Assessment Study would be used to identify which cable burial tools may be selected. All potential construction methodologies would be assessed in the EIA to identify whether any should be excluded due to the potential for significant impacts, and whether mitigation is required.

4.4.30. The subsea HVDC cables are proposed to run in parallel with EGL 3 and EGL 4 corridors and a minimum horizontal separation would be required in accordance with engineering and thermal performance requirements, typically ≥50 m, unless constrained by pinch points.

4.4.31. The subsea HVDC cables would be installed in a minimum of four and a maximum of ten sections, with each section connected by a joint. The cable joint would be made on board the cable lay vessel and would take up to two weeks per joint location. In-line joints would be made where cable laying can continue after the cable end has been picked up. Where the cable is laid towards the cable end, or where a repair is made in an existing cable and omega joint is made (whereby a section of cable is laid in a loop to one side of the cable centreline). For both types of joint, the joint and cables would be buried (as the preference) or protected by external cable protection.

4.4.32. **Table 4-7** presents the cable design parameters considered by this Scoping Report.

Table 4-7: Subsea cable design parameters

Parameter	Design Envelope
Number of trenches	1
Anticipated maximum burial depth (below mudline)	2.5 m
Maximum installation tool seabed disturbance width	15 m
Maximum width of cable trench	1 m
Number of cable joints	4 - 10

External cable protection

4.4.33. External cable protection may be required in various areas along the English Offshore Scheme. Areas that require protection would include:

- Infrastructure crossings; and
- Areas where depth of burial cannot be achieved (remedial protection).

Infrastructure crossings

4.4.34. Cable protection at infrastructure crossings cannot be avoided. The Applicant would enter discussions with the asset owner to agree how the crossing of the asset should be engineered. These agreements detail the physical design of the crossing and outline the rights and responsibilities of both parties to ensure ongoing integrity of the assets. Typically, after installing a separation layer (see **Table 4-6**) the cable system would be surface laid over the separation layer and then protected using either concrete mattresses or rock protection. The PEIR and ES would present the maximum lengths, widths, heights and positions of protection to be used.

Remedial

4.4.35. As detailed above, cable burial is the preferred method of protection and any requirement for additional external protection would be considered a last resort and minimised by micro-routeing, refinement of target burial depths, selection of appropriate burial tools and remedial trenching. However, there may be areas where adequate protection of the cable system cannot be achieved through burial and additional external protection is required, for example where there is insufficient sediment cover, boulders, or crossings of existing seabed assets.

4.4.36. Options for providing external protection include:

- Rock Placement – this involves the construction of a continuous, profiled berm of graded rock over the cables. It may be used along sections of the cables where seabed conditions do not allow sufficient protection by burial (either planned or remedial), at crossings and joint locations, and where the cables transition from surface lay to burial such as HDD punch-out points. Rock berms would be installed using targeted placement methods, e.g., fall pipe vessels would be used rather than using side or bottom discharge vessels.
- Concrete Mattresses / Concrete Half Shells – Concrete mattresses are frequently used to protect subsea cables and can also be used to construct crossings over existing subsea cables and pipelines. They are flexible and thus follow the contours of the seabed or crossed assets. Concrete half shells are newer innovations in the industry which form a barrier over surface laid cables to protect them from dropped objects.
- Sand / Grout / Rock Bags – smaller bags filled with either sand, grout (which sets in water to the profiled shape), or rock bags can also be used to provide very localised protection, where most mechanical means such as trenchers cannot reach, such as HDD punch-out locations.
- Tubular Protection Systems – additional protection can be provided around the cable in the form of articulated half shells. They are generally made of either high density polyurethane (HDPE) or cast-iron.

- Imported sand placement – following cable installation in the trench, should insufficient sediment be present to re-bury the cables the trench may be backfilled with sand from a licensed marine extraction site in the vicinity of the installation area.

4.4.37. The potential requirement for additional external cable protection would be confirmed through further design development both pre- and post- consent and would be informed by offshore survey information as it becomes available. Where external protection is or may be required, details of the type, quantity and nature of each protection measure would be provided in the EIA, including estimated locations, volumes / numbers, tonnages, and likely material to be used. This would include both planned and potential remedial requirements and would be provided to characterise the nature and extent of cable protection which may be installed within inshore and offshore waters. Nature-inclusive solutions such as fronded mats, 3D printed bio/e-concrete are also being investigated and would be described in the EIA.

Construction vessels

4.4.38. A range of different vessels would be required during construction of the English Offshore Scheme. These are likely to include:

- Cable Lay Vessel (CLV): The CLV is a specialist ship designed to carry and handle long lengths of heavy power cables. The CLV would be equipped with a Dynamic Positioning (DP) system. The shallowest depth in which the cable ship can operate will depend on the vessel used but is typically around 10 m Lowest Astronomical Tide (LAT), although some vessels can operate in much shallower depths.
- Cable Lay Barge (CLB): Alternatively, a CLB may be required at the landfall. These types of vessels typically operate in water depths less than 10 m LAT. A CLB requires a four- to six-point anchor mooring system covering an area of between 500 m and 1,000 m radius from the vessel to allow the barge to hold station whilst the installation work is undertaken.
- Jack-up/anchored barge or vessel / multi-cat: These types of vessels may be used at the HDD punch-out point to support the drilling and pull-in of the cables.
- Small work boats: smaller work boats may be required to support the main construction vessels. Examples include anchor handling vessels, tugs, Rigid Inflatable Boats (RIBs).
- Construction Support Vessels (CSVs): CSV include a variety of vessels that may be required to support construction activities. This may include survey vessels, diver support vessels, and general construction support vessels. CSVs are available in a variety of sizes and are adapted to undertake different roles, for example archaeological or UXO inspection, PLGR, OOS cable removal, placement of concrete mattresses etc.
- Rock placement vessels: A rock placement vessel features a large hopper (tank) to transport rock and a mechanism for deploying rock on the seabed. There are many different types of rock placement vessel, however, for the purposes of this EIA Scoping Report, it has been assumed that a flexible fall pipe mechanism for rock placement would be used whereby a retractable chute is used to control the flow of rock to the seabed.
- Guard vessel: Guard vessels are used to ensure the safety of mariners operating in the vicinity of construction and maintenance activities associated with the cable. They may be required to accompany the CLV, particularly in areas of high-frequency

shipping. Guard vessels are also used to protect areas of exposed cables prior to burial or deposit of external cable protection.

4.4.39. For the purposes of the Scoping Report, it has been assumed that during cable installation, a ‘rolling’ safety zone would be applied around construction vessels and activities. An estimate of the number of vessels, vessel movements and likely duration of activities would be included in the PEIR and the subsequent ES.

Operation and maintenance

Operational emissions

Electric and magnetic fields

4.4.40. The English Offshore Scheme would use HVDC technology which has a frequency of zero hertz (0Hz) and would produce static EMFs.

4.4.41. Electric fields depend on the operating voltage of the equipment producing them and are measured in V/m (Volts per metre). As the proposed English Offshore Scheme cables would be enclosed in a solid metal sheath, which screens the electric fields, they would not produce an external electric field. However, they would produce a magnetic field, which is not screened by the metal sheath, and seawater moves through the magnetic field, a small localised electric field is produced. This is known as an induced electric field.

4.4.42. Magnetic fields depend on the electrical currents flowing, which vary according to the electrical power requirement at any given time and are measured in µT (microtesla). Magnetic fields generated by the operational cables diminish rapidly with distance from the source.

4.4.43. The earth also produces its own HVDC magnetic field, which in the UK is around 49.9 µT, but this can vary due to geomagnetic material such as ferromagnetic rocks. Given the natural magnetic field, the background induced electric field could range between 5.0 and 65 µV/m in tidal velocities ranging between 0.1 m/s and 1.35 m/s.

4.4.44. The magnetic field strengths for the EGL 3 cable systems have been calculated (Ref 4.2) and it is proposed would be used to inform the English Offshore Scheme EIA. The EGL 3 is an analogous cable system (same voltage and capacity, similar length and parallel route through the North Sea with similar burial conditions). The calculations show that for bundled HVDC poles the magnetic field dissipates to below background geomagnetic levels within 20 m when cables are buried at 1 m below the seabed. The magnetic field directly above the cables at the seabed is 123.8 µT (or 76.4 µT without the earth’s magnetic field).

4.4.45. A study will be undertaken to calculate the predicted electromagnetic fields to be generated by the subsea power cables due to the electric current flowing along the cables. The electric and magnetic field strengths will be highest where the cables are separated and/or partially or unburied. The study will therefore focus on determining the maximum field strengths and the distance at which the fields dissipate to background values. This study will be used to determine the spatial extent over which electromagnetic changes could affect sensitive receptors.

Magnetic compass deviation

4.4.46. Magnetic compasses, whether traditional magnetic needle designs or alternatives such as fluxgate magnetometers, operate from the Earth's magnetic field, and are susceptible to any perturbation to the Earth's magnetic field by other sources.

4.4.47. The Maritime and Coastguard Agency (MCA) response to the Project's non-statutory consultation and meeting held on the 29th July 2025 confirmed that "*The MCA would be willing to accept a three-degree deviation for 95% of the cable route and for the remaining 5% of the cable route there must be no more than a 5 degree electromagnetic compass deviation. On receipt of the study, the MCA reserves the right to request a deviation survey of the cable route post-installation"*

4.4.48. The magnetic fields and compass deviation at the sea's surface was for calculated for the EGL 3 project (Ref 4.3) (analogous cable project) and concluded:

- When HVDC cables are bundled, the MCA thresholds are not exceeded.
- Within 300 m of the shoreline where the HVDC cables are separated into individual ducts, compass deviation would be > 5-degrees.

4.4.49. It is proposed that the EGL 3 calculations would be used to inform the EIA for the Project.

Heat

4.4.50. During the operation of an HVDC cable heat losses occur because of the resistance in the cable / conductor. This can cause localised heating of the surrounding environment (i.e., sediment for buried cables, or water in the interstitial spaces of external cable protection). There are no specific regulatory limits applied to temperature changes in the seabed, although a 2 °C change between seabed surface and 0.2 m depth is used as a guideline in Germany.

4.4.51. The heat loss from the cable is related to the physical and thermal properties of the cables. Calculations undertaken for the EGL 3 project (analogous cable system) (Ref 4.4) show that for cables operating at full power, the temperature is raised in the immediate vicinity of the cable but reduces with distance. Assuming an ambient seabed temperature of 12 °C, seabed temperatures at 0.2 m immediately above the cables are estimated to be 13 – 14 °C, with the cables operating at maximum operating temperatures. The actual system is unlikely to reach these temperatures as the system would have to operate at full load continuously for an extended period of time (months / years) to meet these temperatures. In reality the system would not be at full load for this long and therefore the temperature would fluctuate and be unlikely to reach these maximums.

4.4.52. Heat calculations will be undertaken to determine the temperature distribution profile within the seabed. Calculations will consider factors such as cable length, voltage, maximum power, the HVDC configuration, depth of burial and the thermal resistivity of the sediments. The heat calculations will be used to inform the EIA for the Project.

Maintenance

4.4.53. The English Offshore Scheme would be designed to minimise any maintenance requirements. Regular inspection surveys would be undertaken using standard geophysical survey equipment and / or ROV to monitor the cables' burial depth and the condition of any external protection. Maintenance activities may be required, subject to

the results of the inspection surveys, to ensure the integrity of the cables are maintained. These may take the form of remedial trenching or deposit of additional external protection. For example, maintenance works may be required to re-bury any sections of cable that have become exposed and / or to reinstate rock berms that may have become displaced.

Repair

4.4.54. The most common reason for repair of a subsea cable is damage caused by third parties, typically caused by trawlers or commercial ships' anchors on a shallow or exposed cable segment. A repair requires removal of the damaged section of cable, insertion of an additional cable section and two additional cable joints. The additional cable length may be equal to or greater than up to three times the depth of the water at the site, depending on how much damage the cable has sustained. The extra length of a repaired cable section means that the repaired cable cannot be returned to its exact previous position and alignment on the seabed. The excess cable would be laid on the seabed in a loop to one side of the original route to form an omega loop. This would then be buried into the seabed, or external cable protection would be deposited if burial is not feasible due to ground conditions or position. Depending on the size of the repair and location, a construction vessel may be stationary at a location for 1 – 2 weeks at a time.

4.4.55. The requirement for repair operations during the lifetime of the English Offshore Scheme would depend on the number of faults, location of the faults, and the burial / protection method used for the original installation. When assessing the impacts of a repair operation within the EIA, feasible worst-case scenarios would be assessed. Information on seabed characteristics would be used to identify any locations along the English Offshore where burial might not be feasible following a repair, and external cable protection could therefore be required.

Decommissioning

4.4.56. The minimum design life of the subsea HVDC cables is 40 years, although with repairs, some cable systems last upwards of 60 years. The English Offshore Scheme would be licensed for a 40 year period, after which it would either require an extension to the Deemed Marine Licence or would need to be decommissioned.

4.5 Construction programme timescales

4.5.1. Subject to gaining development consent in 2028, it is anticipated that access and construction of the English Onshore Scheme and English Offshore Scheme would commence in 2030, starting with enabling works including site clearance activities, the installation of construction compounds and access roads. It is expected the main construction works (construction of the landfall, underground cables, and converter station) would continue through to 2035 (5 years). The offshore construction duration window would be over the same period (5 years).

4.5.2. Reinstatement would be required following the onshore construction period. Based on the currently available design information, the earliest in service date (EISD) when the Project would be operational is Q1 2035.

4.5.3. The construction programme will be developed as the Project progresses and will take account of seasonal constraints such as protected species breeding, wintering or hibernation seasons.

4.5.4. Further details on the phasing of the project will be set out within the PEIR and ES.

4.6 Bibliography

Ref 4.1 Planning Inspectorate, 2018. Nationally Significant Infrastructure Projects - Advice Note Nine: Rochdale Envelope. Available at: https://www.gov.uk/government/publications/nationally-significant-infrastructure-projects-advice-note-nine-rochdale-envelope [Accessed: 02/06/2025].

Ref 4.2 NGET (2025). Eastern Green Link 3 (EGL 3) and Eastern Green Link 4 (EGL 4) Preliminary environmental information report. Volume 2, Part 1, Appendix 1.4.A Electromagnetic Fields (EMF) Assessment. Available at: Volume 2 Part 1 Appendix 1.4.A EMF Assessment.

Ref 4.3 NGET (2025). Eastern Green Link 3 (EGL 3) and Eastern Green Link 4 (EGL 4) Preliminary environmental information report. Volume 2, Part 1, Appendix 1.4.A Electromagnetic Fields (EMF) Assessment. Available at: Volume 2 Part 1 Appendix 1.4.A EMF Assessment.

Ref 4.4 NGET (2025). Eastern Green Link 3 (EGL 3) and Eastern Green Link 4 (EGL 4) Preliminary environmental information report. Volume 2, Part 1, Appendix 1.4.B EGL 3 Heat Calculations. Available at: Volume 2 Part 1 Appendix 1.4.B EGL3 Heat Calculations.

5. EIA Approach and Methodology

5.1 The EIA Process

5.1.1. Environmental Impact Assessment (EIA) is a process for identifying the likely significant environmental effects (positive and adverse) of a project to inform the decision-making process for development consent to be granted. The EIA process will culminate in the provision of an Environmental Statement (ES) written in accordance with the EIA Regulations and will provide an overview of the likely significant effects associated with the Project during the construction, operation and maintenance and decommissioning phases which will help to inform decision-making.

5.1.2. Schedule 4(4) of the EIA Regulations (Ref 5.1) specifies that the ES should describe those:

"…factors…likely to be significantly affected by the development: population, human health, biodiversity (for example fauna and flora), land (for example land take), soil (for example organic matter, erosion, compaction, sealing), water (for example hydromorphological changes, quantity and quality), air, climate (for example greenhouse gas emissions, impacts relevant to adaptation), material assets, cultural heritage, including architectural and archaeological aspects, and landscape."

5.1.3. Regulation 5(2) of the EIA Regulations requires the interaction between these factors to be considered. In addition, Regulation 5(4) requires ESs to consider:

5.1.4. "…the expected significant effects arising from the vulnerability of the proposed development to major accidents or disasters that are relevant to that development."

5.1.5. The EIA process aims to be systematic, analytical, impartial, consultative and iterative allowing opportunities for environmental concerns to be addressed in the design and evolution of the Project. Typically, throughout the evolution of the design, a number of design iterations take place in response to environmental features identified during the EIA process, stakeholder engagement and consultation prior to the final design being submitted for approval. This iterative design process is a fundamental element of the EIA for the Project, and this will be described further at later stages in the Preliminary Environmental Information Report (PEIR) and ES as the design continues to develop.

5.1.6. As noted in **Part 1, Chapter 10: Introduction1.5.7**, the key EIA documents produced as part of the Development Consent Order (DCO) EIA process include[1]:

- **The Scoping Report:** The Scoping Report (this document) sets out the likely significant effects from a project, and therefore which environmental aspects should be scoped into the EIA and presented within the ES. The EIA scoping process will identify the different methodologies used for the assessment and these will be based on recognised good practice and guidelines specific to each environmental aspect as set out in **Part 2, Chapter 6 Biodiversity** to **Chapter 16 Health & Wellbeing** and **Part 3, Chapter 18: Marine Physical Processes** to **Chapter 26: Marine Archaeology**. The Scoping Report is issued by the Planning Inspectorate to

[1] NGET has notified the SoS in writing that they propose to provide an ES in respect of the English Onshore Scheme, and as such, a screening opinion is not considered necessary, in line with Regulation 8(1)(b) of the EIA Regulations.

consultees for comment on the scope and methodology proposed, informing the Scoping Opinion.

- **Preliminary Environmental Information Report (PEIR):** The PEIR is defined in the EIA Regulations (Regulation 12(2)(b)) as:

  'information referred to in regulation 14(2) which –

  has been compiled by the applicant; and

  is reasonably required for the consultation bodies to develop an informed view of the likely significant environmental effects of the development (and of any associated development)'.

  – The PEIR helps inform consultees consultation responses during the Statutory Consultation and as such, it provides an opportunity for both the design of the Project and the EIA to take into consideration any comments received through this consultation; and

- **Environmental Statement (ES):** The ES will be based on the most recently adopted Scoping Opinion and it will present the results of the EIA undertaken for the Project. It identifies the likely significant effects that would result if the Project were implemented, and details the measures envisaged to prevent, reduce and where possible, offset any significant adverse effects. The ES will accompany the DCO application and will be considered carefully by the Planning Inspectorate to ensure that it is adequate and complies with the EIA Regulations.

5.1.7. This Scoping Report has been prepared in four separate 'parts' (**Part 1, Introduction; Part 2, English Onshore Scheme; Part 3, English Offshore Scheme; and Part 4, Project Wide).**

5.2 Receptor-Based Approach

5.2.1. Within this Scoping Report, and ultimately the ES, the methodology for assessing the significance of an effect will vary between environmental aspects but in principle, a receptor-based approach has been and will continue to be adopted i.e., based upon the environmental sensitivity (or value / importance) of a receptor and the magnitude of change from baseline conditions. Receptors are those aspects of the environment which may be sensitive to change as a result of the Project. When deciding on which receptors to include within the Scoping Report, and subsequently the ES, consideration was given to Regulation 5(2) and Schedule 4 paragraph 4 of the EIA Regulations (Ref 5.1) and the Planning Inspectorate's Advice Note Seven: Environmental Impact Assessment: Process, Preliminary Environmental Information and Environmental Statements (June, 2020) (Ref 5.2).

5.2.2. Where aspect-specific guidance requires that specific criteria or scales for determining significance are to be used, this will be outlined in the relevant chapter. The Scoping Report, and ultimately the ES, would also be supported by professional judgement and discussion from the technical specialist author to justify the final judgements on significance.

5.2.3. In instances where limited information is available, assessments have and will continue to apply a precautionary principle, in that reasonable worse-case scenario is assessed. Further details can be found below.

5.3 The ‘Rochdale Envelope’ Approach

5.3.1. As noted in **Part 1, Chapter 4: The Project** of this Scoping Report, at this stage of the Project lifecycle, an element of flexibility needs to be retained within the design, and subsequently the Scoping Boundary, in order to address uncertainties i.e., where some details of the Project are yet to be confirmed. The Scoping Boundary and the description of the Project presented in this Scoping Report are therefore based on a suitable ‘Rochdale Envelope’ having regard to the Planning Inspectorate’s Advice Note Nine (Ref 5.3), allowing for a realistic worst-case assessment to be undertaken and providing sufficient flexibility for the design to evolve.

5.3.2. The Scoping Report has therefore established the relevant design parameters for the purposes of assessment. Where uncertainty surrounds a particular parameter, the assessment has implemented a maximum design scenario i.e., it has established those parameters likely to result in the maximum adverse effect (the worst-case scenario). The reasonable worst-case scenario for any given design parameter may vary by technical aspect, depending on how that particular parameter may interact with the receptor being considered.

5.4 Determining the Scope of the Assessment

5.4.1. The EIA scoping process establishes which aspects of the environment are likely to be significantly affected by a project and involves identifying:

- The people and environmental resources (collectively known as 'receptors') that could be significantly affected by the Project; and
- The work required to take forward the assessment of the likely significant effects intended to inform a proportional and robust approach to assessment through initial evaluation and reporting of identified likely significant effects in a Scoping Report.

5.4.2. Effective scoping enables agreement to be reached on the aspects and methodologies to be taken forward, assessed and reported in much greater detail in the ES. It also provides an opportunity for early interaction with stakeholders, strengthening the assessment evidence base and allowing active participation of interested parties in project development and decision making. This can in turn improve project design, environmental soundness and social acceptability.

5.4.3. The approach taken in preparation of this Scoping Report has also been informed by the Planning Inspectorate’s Advice Note Seven (Ref 5.2) and reflects that the EIA Regulations require an ES to focus on aspects of the environment likely to be subject to significant effects. In line with guidance and legislation, this Scoping Report seeks to, where appropriate, scope out aspects / matters from further assessment with suitable justification provided. This will streamline the assessment to focus on likely significant effects and ensure the EIA for the Project is proportionate in accordance with the IEMA (2017) Delivering Proportionate EIA guidance document (Ref 5.4).

5.4.4. When considering which aspects of the environment have the potential to be significantly affected by the Project and therefore which aspects should be scoped into the assessment, a conceptual source-pathway-receptor approach has been adopted which considers the following criteria (from the Environment Agency’s A Handbook for Scoping Projects 2002 (Ref 5.5)):

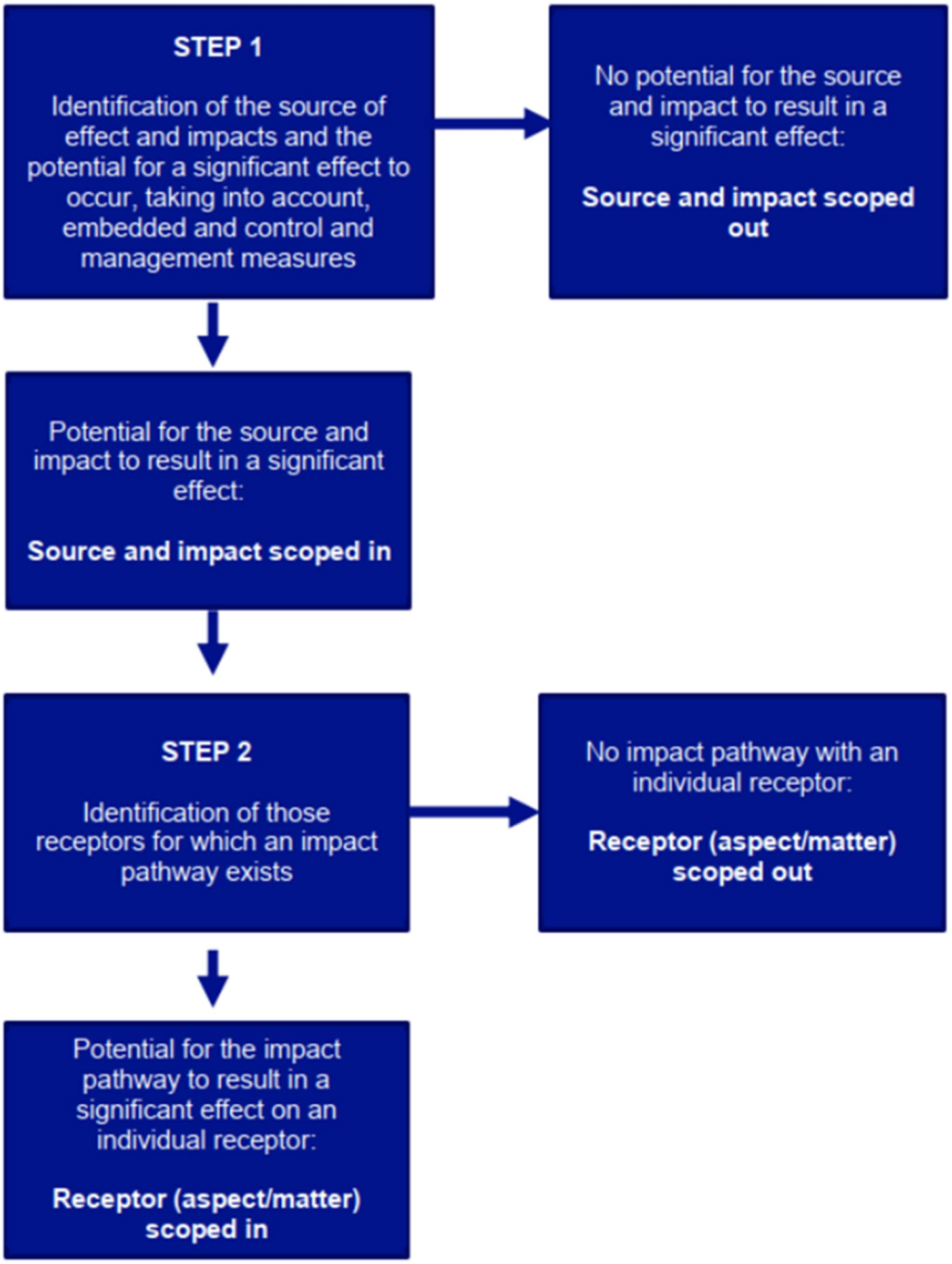
- **Source** - location of a material or activity that may be harmful i.e., The origin of the potential impacts (such as cable installation and a resultant impact e.g., mobilisation of contaminants);
- **Pathway** - i.e., the route by which a harmful action or material is able to reach the receptor (for example, the mobilisation of contaminants could enter a local surface waterbody); and
- **Receptor** - i.e., the feature or aspect of the receiving environment that is impacts; such as, humans, property, ecology, habitat, landscape, atmosphere, water, etc (for the example above, species living within the local waterbody).

5.4.5. Once the above criteria have been identified, they should be examined to assess the potential impact(s)[2] upon a receptor, and ultimately the significance of the effect[3] upon the receptor. In general, the impact assessment for each aspect will adopt this approach when considering the potential impacts arising during the construction, operation and decommissioning phases of the Project. This approach allows for a transparent impact assessment and clear justification as to why particular aspects are either scoped in, or scoped out of, the EIA process. This approach is presented in **Plate 5-1** below.

[2] 'impacts' are generally defined as the changes resulting from an action i.e. the changes that arise as a result of the project/proposed development, such as changes in drainage pattern.

[3] 'effects' are generally defined as the consequences of impacts / changes e.g. a habitat becomes degraded by changes in drainage pattern.

Plate 5-1: The source-pathway-receptor model of scope identification



Technical scope

5.4.6. The technical scope of assessment for each environmental aspect is detailed in **Part 2, Chapter 6: Biodiversity** to **Chapter 16: Health and Wellbeing** and **Part 3, Chapter 18: Marine Physical Processes** to **Chapter 26: Marine Archaeology** and this covers the scoping in and out of impacts and effects to be assessed as part of the EIA. Justification is provided for the individual approach and scoping of matters to be considered in the assessment for each environmental aspect. The technical scope also details the approach to baseline data collection and assessment methodologies.

Spatial scope

5.4.7. The spatial scope for each environmental aspect i.e., the area over which changes to the environment are predicted to occur as a consequence of the Project, will depend on the nature of the potential effects and the location of receptors that could be affected. It takes account of:

- The physical area of the Project;
- The nature of the baseline environment;
- The manner and extent to which environmental effects may occur; and
- Relevant guidance, best practice and / or legislation.

5.4.8. Each of the environmental aspect chapters (**Part 2, Chapter 6: Biodiversity** to **Chapter 16: Health and Wellbeing** and **Part 3, Chapter 18: Marine Physical Processes** to **Chapter 26: Marine Archaeology)** describes the study area to be considered, providing a clear explanation as to why the study area has been adopted. The spatial scope of each assessment may be refined for both the PEIR and the ES in response to comments from consultees or further assessment work.

Temporal scope

5.4.9. The temporal scope covers the time period over which changes to the environment and the resultant effects are predicted to occur, and are typically defined as either being temporary or permanent:

- Permanent – these are effects that will remain even when the Project is complete, although these effects may be caused by environmental changes that are permanent or temporary.
- Temporary – these are effects that are related to environmental changes associated with a particular activity and that will cease when that activity finishes.

5.4.10. The assessment will have regard to the Project lifecycle and will evaluate the environmental effects of the Project during construction, operation and maintenance and decommissioning (as outlined later in this chapter). These effects will be compared to the situation prevailing before the Project commenced (the current baseline), and to the situation that would prevail in the future without the Project (the projected future baseline). Construction is expected to start in 2030 and is anticipated to take approximately five years, with the Project expected to be operational by 2035. The Project would be licensed to operate for 40 years; however, it is anticipated that rather than be decommissioned, parts would be replaced to extend the operational life.

5.4.11. The assumption is that the Project would need to be removed if it cannot be re-purposed. Removal of the Project is a similar process to construction but in reverse. The environmental impact of decommissioning can therefore not be fully assessed until the environmental conditions at the time of decommissioning are established. In any event, it is not anticipated that impacts from decommissioning would present any greater environmental risk than any assessed impacts from the construction phase. For the purposes of this EIA, it is proposed that effects of decommissioning are assessed only assessed as a high level at this stage. They would be fully assessed at the time of decommissioning in line with the applicable guidance and regulations at the time.

5.4.12. The future baseline is the theoretical situation that would exist in the absence of the Project. This is based upon extrapolating the current baseline using technical knowledge of likely changes to predict this (e.g., predictable changes such as climate change, changes that can be predicted based on reasonable assumptions and modelling calculations, information about other relevant developments etc.).

5.4.13. Each environmental aspect chapter of the ES will define the baseline (current and future) against which the environmental effects of the Project will be assessed. The baseline conditions to be assessed for each environmental aspect are outlined in **Part 2, Chapter 6: Biodiversity** to **Chapter 16: Health and Wellbeing** and **Part 3, Chapter 18: Marine Physical Processes** to **Chapter 26: Marine Archaeology** of this Scoping Report. Where relevant, aspect chapters provide further information on the time periods within the Project programme that will be considered for their assessment.

Decommissioning

5.4.14. NPS EN-1 (Ref 5.6) Paragraph 4.3.5 states that the ES should cover the decommissioning of a project, however, decommissioning of electricity networks is not specifically covered in NPS EN-5 (Ref 5.7) which recognises that generally, nationally significant electricity networks are likely to have an ongoing function, but will be subject to maintenance, reinforcement works and for assets to be replaced when they come to the end of their lifespan. There are currently no specific plans to decommission the Project.

5.4.15. It is expected that the transmission of electricity would continue for as long as there is a business case for doing so and that any decommissioning activity would occur decades into the future. To date, relatively few transmission projects have been decommissioned since the main expansion of such infrastructure in the 1950s and 1960s. The approaches for the assessment for decommissioning of the English Onshore Scheme and the English Offshore Scheme are outlined below.

Converter Station

5.4.16. The anticipated operational life of the proposed converter station is expected to operate under a 40 years licence, at which point either a licence extension would be applied for or a decommissioning plan would be implemented. It is likely that during this period refurbishment and plant replacement would extend the life of the proposed converter station. If decommissioning is required, the scale and nature of activities would use similar methods as those required to install the assets and decommissioning would be separately assessed at the time. The main components would be dismantled and removed for recycling wherever possible. As a result, it is not proposed to assess the impacts of decommissioning of the English Onshore Scheme as part of the EIA. In any event, it is not anticipated that impacts from decommissioning would present any greater environmental risk than any assessed impacts from the construction phase.

HVAC and HVDC Underground Cables

5.4.17. If the English Onshore Scheme ceases to operate, dependent on the requirements at the time, the redundant cables could either be left in-situ, or all or parts of the cable could be removed for recycling. Where this is not possible, removed cables would be disposed of in accordance with the relevant waste disposal regulations at the time of decommissioning. If decommissioning is required, it is expected that it would use similar methods as those required to install the assets and decommissioning would be separately assessed at the time. As a result, it is not proposed to assess the impacts of

decommissioning the English Onshore Scheme as part of the EIA. In any event, it is not anticipated that impacts from decommissioning would present any greater environmental risk than any assessed impacts from the construction phase.

Landfall

5.4.18. The expected minimum operational life of the proposed landfall infrastructure is 40 years, with replacement only expected to occur upon the failing of specific assets.

5.4.19. If the English Onshore Scheme ceases to operate, dependent on the requirements at the time, all above ground assets at the proposed landfall would be removed to foundation level and foundations capped. The below ground Transition Joint Bay (TJB) providing onshore to offshore cable interface may be left in place. As a result, it is expected that there would be similar methods used as those required to install the asset and decommissioning would be separately assessed at the time. As a result, it is not proposed to assess the impacts of decommissioning of the English Onshore Scheme as part of the EIA. In any event, it is not anticipated that impacts from decommissioning would present any greater environmental risk than any assessed impacts from the construction phase.

English Offshore Scheme

5.4.20. The English Offshore Scheme would require a Licence or Lease from The Crown Estate (TCE) for the cable system within inshore waters (within the 12 NM limit). An Initial Decommissioning Plan (IDP) would be written once the final route and construction methodology is chosen. This is a legal requirement necessary to secure TCE Licence. The IDP would form the basis of the Final Decommissioning Plan which would be developed in consultation with TCE. The measures and methods for any decommissioning would comply with any legal obligations which would apply to the decommissioning of the cable when it takes place.

5.4.21. The IDP is periodically reviewed and updated in line with the applicable guidance and regulations at the time of writing.

5.4.22. The environmental impact of decommissioning the English Offshore Scheme would be assessed at the time of decommissioning. The presumption is that all infrastructure would be removed, unless it is demonstrated that it would have significant adverse effects to do so. Removal of the cable is a similar process to the installation of the cable, but in reverse. The environmental impact can therefore not be fully assessed until the environmental conditions at the time of decommissioning are established. However, the EIA would consider the potential impacts of decommissioning of the English Offshore Scheme at a high level in line with TCE decommissioning principles.

Environmental Effects of Decommissioning

5.4.23. It is anticipated that rather than the Project be decommissioned, parts would be replaced to extend the operational life. As such, the operational assessments in the Scoping Report have been undertaken under the assumption that the Project will continue to operate in perpetuity. For the English Onshore Scheme in particular, the environmental impact of decommissioning cannot be fully assessed until the environmental conditions at the time of decommissioning are established. It is not anticipated that impacts from decommissioning would be any greater than impacts from the construction phase.

5.4.24. Acknowledging the complexities of completing a detailed assessment for decommissioning works up to 40 years in the future for the English Onshore Scheme and given that there are no current plans to decommission the Project, an assessment of effects associated with decommissioning of the English Onshore Scheme is not presented in the Scoping Report. Instead **Table 5-1** below summarises the assessment of the likely significant effects associated with decommissioning of the English Onshore Scheme for each environmental aspect based on existing information. **Table 5-1** assumes that standard good practice measures would be implemented during decommissioning activities, as these would be typical measures employed on large NGET contracts. **Table 5-1** does not consider changes to the baseline environment, outside of those noted within the future baseline section of **Part 2, Chapters 6 – 16** and **Part 4, Chapter 28 and 30**, as there could be a number of scenarios that could occur. However, it is noted that the baseline environment could change and would be assessed at the time of decommissioning.

5.4.25. Given the level of information available regarding the approach to decommissioning for the English Offshore Scheme, reasonable assumptions with regards to likely environmental impacts at the time of decommissioning can be made. As such, **Part 3, English Offshore Scheme** has considered impacts associated with decommissioning within the technical aspect chapters.

Table 5-1: Preliminary summary of English Onshore Scheme decommissioning effects

Technical Aspect	Summary Assessment
Part 2, English Onshore Scheme	
Chapter 6 Biodiversity	The footprint of any decommissioning works is likely to be the same, or smaller, than the ground disturbed during construction of the English Onshore Scheme and the effects are anticipated to be no worse than those identified during construction. There could be effects to protected species and habitats at the time of decommissioning. However, these are likely to be managed through standard good practice measures and / or the measures set out in relevant consents or European Protected Species (EPS) licences required at the time, as informed by update baseline ecological surveys and assessment. Therefore, significant effects to biodiversity during decommissioning are predicted to the same (or less) than those identified by the construction stage assessment.
Chapter 7 Cultural Heritage	The footprint of any decommissioning works is likely to be smaller than the ground disturbed during construction of the English Onshore Scheme. As the ground within this area would already have been disturbed during construction, it is unlikely that archaeological remains would be present. Therefore, there are unlikely to be any significant effects to buried archaeology during decommissioning. There could be impacts on the setting of heritage assets during decommissioning (namely the Grade I listed Church of St Mary (NHLE 1077676) and its separate bell tower (NHLE 1171875), the Grade II listed buildings of Ingleborough Mill (NHLE 1077675), Shepherds Cottage (NHLE 1264180), Faulkner House (NHLE 1237331), but these would be the same as the construction effects, only for a shorter duration.

Technical Aspect	Summary Assessment
	Removal of the Walpole B Substation would remove all impacts to the Medieval Moated site (MNF2207).
Chapter 8 Landscape and Visual Amenity	The footprint of any decommissioning works is likely to be the same, or smaller, than the ground disturbed during construction of the English Onshore Scheme and the effects are anticipated to be no worse than those identified during construction. The removal of above ground infrastructure to foundation level including the converter station could have beneficial effects on views and the landscape character of the area during decommissioning works, however these are unlikely to be significant. Significant effects to landscape and visual amenity during decommissioning are therefore predicted to be the same (or less) than those identified by the construction stage assessment.
Chapter 9 Water Environment	The footprint of any decommissioning works is likely to be the same, or smaller, than the ground disturbed during construction of the English Onshore Scheme and the effects are anticipated to be no worse than those identified during construction. There could be short-term temporary effects to watercourses (e.g. pollution risks) and on the land drainage regime during decommissioning. However, these effects would be expected to be managed by standard good practice measures applied at the time. Therefore, no likely significant effects to the water environment during decommissioning are anticipated.
Chapter 10 Geology and Hydrogeology	The removal of the above ground infrastructure to foundation level is not likely to have significant effects on the geology. The removal of underground cables and associated underground infrastructure if conducted in a similar manner to the installation is unlikely to have significant effects on the geology. Leaving underground cables in situ in part or entirely is unlikely to have significant effects on the geology. There is the potential for short-term temporary effects to hydrogeology (e.g., pollution risks from contaminated land) during decommissioning. However, these effects would be managed by standard good practice measures applied at the time. Therefore, there are unlikely to be any significant effects to the geology and hydrogeology during decommissioning.
Chapter 11 Agriculture and Soils	The footprint of any decommissioning works is likely to be the same, or smaller, than that required for the construction of the English Onshore Scheme and the effects are anticipated to be no worse than those identified during construction. There could be temporary loss of agricultural land, including Best and Most Versatile (BMV) land, temporary disruption to agricultural operations and temporary impacts on soil function. However, all land would be reinstated to its pre-decommissioning condition and as such there are unlikely to be any significant effects to agriculture and soils during decommissioning.

Technical Aspect	Summary Assessment
Chapter 12 Traffic and Transport	The decommissioning works would generate traffic associated with the construction vehicles required to transport materials off site and associated staff vehicles. The decommissioning works are likely to involve a similar, or smaller, workforce than during construction as the works could be phased and managed. Therefore, significant effects to traffic and transport during decommissioning are predicted to be the same (or less) than those identified by the construction stage assessment.
Chapter 13 Noise and Vibration	The decommissioning of the English Onshore Scheme, including demolition of the converter station, and excavation and removal of underground cabling has the potential to generate short-term, localised noise and vibration impacts. However, it is unlikely that these noise and vibration impacts would be materially different to those identified during the construction phase. Furthermore, given that decommissioning is expected to occur at least 40 years in the future, advancements in vehicle and machinery technology are likely to reduce noise and vibration generation. Where noise and vibration levels hold the potential to exceed acceptable thresholds, best practicable means (BPM) would be implemented to control these, including measures such as noise barriers and plant specification, to reduce the generated impacts. As such significant effects from noise and vibration during decommissioning are considered unlikely subject to the implementation of these controls.
Chapter 14 Air Quality	There is potential for emissions to air to be generated from vehicle exhaust emissions, Non-Road Mobile Machinery and diesel generators associated with the decommissioning phase of the English Onshore Scheme. However, in the future when decommissioning is likely to take place, emissions from vehicles and generators are predicted to decrease over time due to new technology, increasingly stringent emission regulations and cleaner fuel formulations. Therefore, there are unlikely to be significant effects on air quality associated with vehicle emissions and generators during the decommissioning phase of the English Onshore Scheme. There is also potential for fugitive dust emissions to arise from construction activities. However, these effects would be managed by standard good practice measures applied at the time. Assuming standard good practice measures are implemented, residual effect from all dust generating activities are unlikely to be significant during the decommissioning phase of the English Onshore Scheme.
Chapter 15 Socio-economics, Recreation and Tourism	The footprint of any decommissioning works is likely to be the same, or smaller than during construction of the English Onshore Scheme and the effects are anticipated to be no worse than those identified during construction. There is the potential for short-term, temporary effects on amenity for residents, recreational users of PRoW, tourist and community facilities, associated with air quality and dust, noise and vibration, and visual impacts. In line with the above assessments however, these are anticipated to be not significant during decommissioning, and therefore

Technical Aspect	Summary Assessment
	any perceptible adverse impact on residential, recreational, tourist and community receptors are considered to be not significant. These effects are expected to be managed by standard good practice measures applied at the time. Given the works associated with decommissioning are anticipated to be smaller than during construction, any beneficial effects relating to construction employment generation are also anticipated to be short term, temporary, and minor. It is not considered that temporary accommodation for construction employees will be required, due to the scale, duration, and short term nature of the decommissioning works. Therefore, no likely significant effects related to socio-economics, recreation and tourism during decommissioning are anticipated.
Chapter 16 Health and Wellbeing	The footprint and nature, and thereby impacts, of any decommissioning works is likely to be the same, or smaller, than that during construction of the English Onshore Scheme and the effects are anticipated to be no worse than those identified during construction for health and wellbeing.
Part 4, Project Wide	
Chapter 28 Greenhouse Gases	The scale of GHG emissions associated with any future decommissioning works are forecast to be lower than currently assessed for the construction phase. There are no additional activities specific to decommissioning not identified in the construction phase assessment. In practice, items such as marine cables may be left in-situ rather than being recovered. Plant equipment and marine vessels associated with any works are likely to be less carbon intensive due to future fuel switching or use of alternative fuels.
Chapter 30 Cumulative Effects	The combined effects would depend on the potential effects identified from the different aspects at the time. However, it is unlikely that the effects would be different to those identified within individual aspect chapters and therefore there would be no new or different significant effects for the decommissioning phase when compared to construction of the Project. The Cumulative Effects Assessment (CEA) would depend on the proposed developments within the vicinity at the time of decommissioning. Therefore, an assessment of cumulative effects is not possible at the current time.

5.5 Assessment of effects and determining significance

Overview

5.5.1. For consistency, and to allow comparison between aspects, the methodology described in this section will be applied when preparing the ES. This methodology is designed to consider whether impacts of the Project would have an effect on any environmental receptors. Assessments will consider the magnitude of impacts and the sensitivity of resources or receptors that could be affected in order to classify the significance of effects.

5.5.2. The conclusion that is made on whether an effect should be considered significant is based upon professional judgement, with reference to the description of the Project in **Part 1, Chapter 4: The Project** and available information about:

- The magnitude and other characteristics of the potential changes (impacts) that are expected to be caused by the Project;
- The sensitivity of receptors to these changes;
- The effects of these changes on relevant receptors; and
- The value of receptors (where relevant).

5.5.3. For each environmental aspect, the categories of resource or receptor sensitivity and magnitude of impact will be described or defined.

5.5.4. The sensitivity or value of a receptor is largely the product of the importance of an asset, as informed by legislation and policy, and as qualified by professional judgement. For example, higher value receptors for landscape, biodiversity or the historic environment may be defined as being of international or national importance; lower value resources may be designated as being sensitive or important at a county or district level. The use of a receptor also plays a part in the classification of its value or sensitivity. For example, when considering visual amenity, a receptor which is residential in nature may be valued more than a place of work as the environmental quality of the residential receptor is more likely to be an important part of that receptor's use. General criteria for defining the importance or sensitivity of receptors are set out in **Table 5-2**.

Table 5-2: Definitions of Value and Sensitivity for an Example Receptor

Receptor Value and Sensitivity	Description
Very High	Value: Very high importance and rarity, international scale. Sensitivity: The receptor has little or no capacity to absorb change without fundamentally altering its present character.
High	Value: High importance and rarity, national scale. Sensitivity: The receptor has a low capacity to absorb change without fundamentally altering its present character.
Medium	Value: Medium importance and rarity, regional scale. Sensitivity: The receptor has some tolerance to change without detriment to its character.
Low	Value: Low importance and rarity, local scale. Sensitivity: The receptor has a moderate capacity to absorb change without fundamentally altering its present character.
Negligible	Value: Not considered to be important (e.g. Common or widespread). Sensitivity: The receptor is resistant to change and has capacity to accommodate the proposed changes.

5.5.5. The magnitude of change affecting a receptor that would result from the Project will be identified on a scale from minor alterations or change, up to major changes or the total or substantial loss of the receptor. For certain aspects, the magnitude of change would be related to guidance on levels of acceptability (for example, for air quality or noise), and is therefore based on numerical parameters. For others it will be a matter of professional judgement to determine the magnitude of change, using descriptive terminology. **Table 5-3** sets out the guidelines of the assessment of the magnitude of impact. Where relevant, individual technical aspect chapters set out variations in magnitude description requirements.

Table 5-3: Definitions of Impact Magnitude Criteria

Impact Magnitude	Definition
High	Total loss or major alteration to key elements / features of the baseline conditions such that post development character / composition of baseline conditions would be fundamentally changed.
Medium	Loss or alteration to one or more key elements/features of the baseline conditions such that post development character / composition would be materially changed.
Low	Some measurable change in attributes, quality or vulnerability; Minor shift away from baseline conditions. Changes arising from the alterations would be detectable but not material; the underlying character/composition of the baseline conditions would be similar to the pre-development situation.
Very Low / Negligible	Very minor alteration to one or more characteristics, features or elements of baseline features.

5.5.6. The environmental aspect chapters (**Part 2, Chapter 6: Biodiversity** to **Chapter 16: Health and Wellbeing** and **Part 3, Chapter 18: Marine Physical Processes** to **Chapter 26: Marine Archaeology**) provide greater detail on the approach to the assessment and specific guidelines for the definition of impact magnitude and resource or receptor sensitivity. Where applicable, standards mandated by professional bodies (for example the Chartered Institute of Ecology and Environmental Management (CIEEM) or the Landscape Institute) will also be considered.

Determination of significance

5.5.7. The significance of effects is derived with reference to information about the nature of the Project, the sensitivity or value of receptors that could be affected, together with the magnitudes of change that are likely to occur.

5.5.8. For many environmental aspects, significance can be determined by using a matrix. Variations to this matrix approach, which may be applicable to specific environmental aspects are detailed within the respective chapters (**Part 2, Chapter 6: Biodiversity** to **Chapter 16: Health and Wellbeing** and **Part 3, Chapter 18: Marine Physical Processes** to **Chapter 26: Marine Archaeology**), along with descriptions of receptor sensitivity, magnitude of change and levels of effect that are considered significant. Definitions of how the categories that are used in the matrix are derived for each environmental aspect are also set out.

5.5.9. In addition, professional judgement is applied in the assessment, as the boundaries between the sensitivities or magnitudes of change may not be clearly defined and the resulting assessment conclusions may need clarifying.

5.5.10. The overarching significance matrix that will be used for the EIA is shown in **Table 5-4**. Reference is made to:

- 'Major' effects, which will always be determined as being significant;
- 'Moderate' effects can be significant, or not significant, based on specific scenarios and professional judgement; and
- 'Minor' or 'negligible' effects, which will always be deemed as 'not significant'.

5.5.11. Effects can be either beneficial or adverse.

Table 5-4: Significance Evaluation Matrix

Sensitivity or value	Magnitude of change			
	High	**Medium**	**Low**	**Very low / Negligible**
Very High	Major (significant)	Major (significant)	Moderate (potentially significant)	Minor (not significant)
High	Major (significant)	Moderate (potentially significant)	Minor (not significant)	Minor (not significant)
Medium	Moderate (potentially significant)	Minor (not significant)	Minor (not significant)	Negligible (not significant)
Low	Minor (not significant)	Minor (not significant)	Negligible (not significant)	Negligible (not significant)
Very low / Negligible	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)	Negligible (not significant)

5.6 Good Design Principles

5.6.1. The Project will be designed, constructed, maintained, and operated in accordance with applicable health and safety legislation and regulations. The Project will comply with relevant design safety standards including the National Electricity Transmission System Security and Quality of Supply Standards (NETS SQSS) which sets out the criteria and methodology for planning and operating the National Electricity Transmission System and the International Cable Protection Committee (ICPC) standards. NGET policies and processes, which contain details on design standards required to be met when designing, constructing, maintaining, and operating assets such as those proposed on the Project, will be adhered to.

5.6.2. The design principles will be informed by the National Infrastructure Commission (NIC) guidance (Ref 5.8) and will be established to inform the development of the Project

design, both for construction and operation. Design principles set desirable design outcomes which the Project should endeavour to achieve, as far as is reasonably practicable, and facilitate an integrated design approach which draws together engineering, environment, sustainability and social value design considerations. Design principles ensure that these aspects are robustly addressed during the design, assurance and environmental assessment of the Project. Applying the design principles additionally helps to ensure that the Project meets the criteria in the relevant National Policy Statements.

5.6.3. The Project will also be designed to comply with existing NGET standards and relevant external guidance and processes, such as the International Commission on Non-Ionizing Radiation Protection (ICNIRP) guidelines for reducing effects in relation to electric and magnetic fields (EMFs).

5.7 Design and Control Measures

5.7.1. EIA is an iterative process and opportunities for measures to mitigate effects will be considered throughout the design evolution of the Project and embedded into the design of the Project. All of the types of measures listed below are referred to as ‘design and control measures’ and would be implemented as part of the Project. The assessment of likely significant effects takes these measures into account when drawing conclusions regarding significance of effects.

5.7.2. The iterative design evolution process involves collaborative working between the design, environment and land teams. This may be through the consideration and adoption of alternatives or through measures incorporated within the final design itself. Where possible, these measures will be developed with input from key stakeholders together with appropriate technical standards, policies and guidance.

5.7.3. In accordance with Regulation 14(2)(c) of the EIA Regulations, the ES will include a description of the “measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects of the Project on the environment”. For each environmental aspect, the EIA process will systematically identify impacts and effects and take into consideration mitigation measures that the Project will adopt, and will outline these within a Schedule of Mitigation and a Commitments Register which will accompany the ES. These mitigation measures include avoidance, best practice and design commitments, which are classified into primary or tertiary measures in accordance with the IEMA ‘Guide to Delivering Quality Development’ (2016) (Ref 5.X) definitions as follows.

- Primary (also known as embedded) (inherent): Measures which form part of the design of the Project. They can include modifications to the location, design or operation of the Project made during the pre-application phase. Examples would include amending the location of the Project to avoid a sensitive feature such as a designated nature conservation site or reducing the height of a structure to minimise visual effects. They form an inherent part of the Project, and do not require additional action to be taken.
- Secondary (foreseeable): Measures that require further activity in order to achieve the anticipated outcome, for example action post-consent. Examples would include the Archaeological Written Scheme of Investigation which outline proposals for further investigation post-consent.

- Tertiary (inexorable): Measures that would occur with or without input from the EIA feeding into the design development process. These include actions that will be undertaken to meet other existing legislative requirements or actions that are standard good practice used to manage commonly occurring environmental effects. Examples include construction management measures implemented to minimise the risk of nuisance or pollution effects.

5.7.4. Through the EIA process potentially significant adverse environmental effects will be fed back into the design process to verify whether they can be avoided or otherwise mitigated in accordance with the hierarchy. Alongside this, good practice control measures will be identified with reference to legislative requirements and measures of standard practice to manage commonly occurring effects. These design measures and good practice control measures will be included within the Project design drawings and management plans.

5.7.5. Following the application of design and control measures, where the potential for a significant environmental effect remains, 'additional measures' will be considered to avoid, reduce or compensate this effect. The ES will report on the anticipated effects of the Project following the implementation of all mitigation to determine the 'residual effects'. A clear statement will be made as to whether the residual effects are significant or not significant in EIA terms. Residual effects may be beneficial as well as adverse.

5.8 Monitoring

5.8.1. The ES will outline proportionate monitoring methods to be employed to ensure the effectiveness of mitigation. This will set out who will be responsible for monitoring, and the setting of clear objectives and parameters for monitoring. The ES will also identify the actions that will be undertaken should monitoring results fall below these set parameters.

5.9 Cumulative Effects Assessment

5.9.1. A CEA will be carried out for the Project which will examine the result from the combined impacts of the Project with other developments on the same single receptor or resource as required under Paragraph 5 of Schedule 4 of the EIA Regulations and the interaction of environmental aspect effects occurring as a result of the Project in accordance with Regulation 5(2). The methodology which will be adopted for the assessment of cumulative effects is provided in **Part 4, Chapter 30: Cumulative Effects** of this Scoping Report.

5.10 Transboundary Effects

5.10.1. The EIA Regulations require an ES to consider the transboundary effects of a development (paragraph 5 of Schedule 4). Given the nature of the English Onshore Scheme and its proposed location, significant transboundary effects are unlikely as there are no pathways for effects to occur outside of the UK. Similarly, the English Offshore Scheme lies wholly in the UK waters. As outlined in the Planning Inspectorate's Advice Note Twelve (Ref 5.9) the screening process for transboundary effects will be carried out by the Planning Inspectorate. Where a potential transboundary source-receptor pathway has been identified this is identified in the relevant Offshore topic chapter.

5.11 Assumptions and Limitations

5.11.1. Assumptions and limitations are addressed under each environmental aspect for the Project, as identified in the appropriate Scoping Report chapters (**Part 2, Chapter 6: Biodiversity** to **Chapter 16: Health and Wellbeing** and **Part 3, Chapter 18: Marine Physical Processes** to **Chapter 26: Marine Archaeology**).

5.12 Consultation and Engagement

5.12.1. **Part 1, Chapter 1: Introduction** explains what consultation is required to support the DCO process and provides a summary of the consultation and technical engagement that has been undertaken for the Project to date.

5.12.2. All pre-application consultation has been and will continue to be undertaken in accordance with the Planning Act 2008 (SI 2008 c. 29) (as amended) and relevant guidance, including the Planning Inspectorate's Advice Note Seven (The Planning Inspectorate, 2020a).

5.13 Bibliography

Ref 5.1 UK Government. (2017). The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017. Available at: https://www.legislation.gov.uk/uksi/2017/572/contents [Accessed: 02/06/2025].

Ref 5.2 Planning Inspectorate, 2020. Advice Note Seven. EIA: Process, Preliminary Environmental Information, and Environmental Statements. Available at https://www.gov.uk/government/publications/nationally-significant-infrastructure-projects-advice-note-seven-environmental-impact-assessment-process-preliminary-environmental-information-an [Accessed: 02/06/2025].

Ref 5.3 Planning Inspectorate, 2018. Nationally Significant Infrastructure Projects - Advice Note Nine: Rochdale Envelope. Available at: https://www.gov.uk/government/publications/nationally-significant-infrastructure-projects-advice-note-nine-rochdale-envelope [Accessed: 02/06/2025]

Ref 5.4 IEMA, 2017. Delivering Proportionate EIA. A Collaborative Strategy for Enhancing UK Environmental Impact Assessment Practice. Available at https://www.iema.net/media/lb0d3ten/delivering-proportionate-eia-july-2017.pdf [Accessed: 02/06/2025]

Ref 5.5 Environment Agency (2002) Environmental Impact Assessment (EIA) A handbook for scoping projects.

Ref 5.6 Department for Energy Security and Net Zero, 2023 Overarching National Policy Statement for Energy (EN-1). Available at https://www.gov.uk/government/publications/overarching-national-policy-statement-for-energy-en-1 [Accessed: 02/06/2025].

Ref 5.7 Department for Energy Security and Net Zero, 2023. National Policy Statement for Electricity Networks Infrastructure (EN-5). Available at https://www.gov.uk/government/publications/national-policy-statement-for-electricity-networks-infrastructure-en-5 [Accessed: 02/06/2025].

Ref 5.8 National Infrastructure Commission (February 2020). Design Principles for National Infrastructure. Available at https://nic.org.uk/app/uploads//NIC-Design-Challenges-Pamphlet-Print-Spread-Version.pdf [Accessed 8 May 2025].

Ref 5.9 The Planning Inspectorate (2020) Advice Note Twelve: Transboundary Impacts and Process. Available at: https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-twelve-transboundary-impacts-and-process/#4.1 (Accessed 08 May 2025).

PART TWO ENGLISH ONSHORE SCHEME

6. Biodiversity

6.1 Introduction

6.1.1. The biodiversity assessment will consider the potentially significant effects on biodiversity receptors that may arise from the construction and operation of the English Onshore Scheme.

6.1.2. This chapter of the Scoping Report sets out the relevant legislation, planning policy context and technical guidance used to inform the scope of the assessment and summarises any consultation and engagement in relation to biodiversity undertaken to date. It provides an overview of the baseline conditions relevant to biodiversity within / around the Scoping Boundary and relevant zones of influence. This chapter also sets out the measures which will be incorporated into the English Onshore Scheme to avoid and mitigate biodiversity effects, the likely significant effects to be considered within the assessment, and how these likely significant effects will be assessed for the purpose of an Environmental Impacts Assessment (EIA).

6.1.3. This chapter should be read in conjunction and considered alongside the following technical aspect chapters found in **Volume 1**:

- **Part 2, Chapter 8: Landscape and Visual Amenity:** outputs (design and mitigation) from the biodiversity and arboricultural assessments will inform and be developed in conjunction with outputs from the landscape and visual amenity assessment.
- **Part 2, Chapter 9: Water Environment:** There are potential pathways of effect from changes to the water environment on terrestrial habitats and protected species. Therefore, information from the water environment assessment will inform the biodiversity assessment.
- **Part 2, Chapter 10: Geology and Hydrogeology:** There are potential pathways of effect from changes to geology and hydrology on terrestrial habitats and protected species. Therefore, information from the geology and hydrology assessment will inform the biodiversity assessment.
- **Part 2, Chapter 11: Agriculture and Soils:** There are potential pathways of effect from changes to agriculture and soils on terrestrial habitats and protected species. Therefore, information from the agriculture and soils assessment will inform the biodiversity assessment.
- **Part 2, Chapter 12: Traffic and Transport:** There are potential pathways of effect from changes to traffic and transport on terrestrial habitats and protected species. Therefore, information from the traffic and transport assessment will inform the biodiversity assessment.
- **Part 2, Chapter 13: Noise and Vibration:** There are potential pathways of effect from changes to noise and vibration on protected species. Therefore, information from the noise and vibration assessment will inform the biodiversity assessment.

- **Part 2, Chapter 14: Air Quality:** There are potential pathways of effect from changes to air quality on terrestrial habitats and protected species. Therefore, information from the air quality assessment will inform the biodiversity assessment.
- **Part 3, Chapter 18: Coastal and Marine Physical Processes:** There are potential pathways of effect from changes to hydrodynamic processes on terrestrial habitat, which may also be utilised by protected species. Therefore, information from the coastal and marine physical processes assessment will inform the biodiversity assessment.
- **Part 3, Chapter 19: Intertidal and Subtidal Benthic Ecology:** The intertidal and subtidal benthic ecology assessment will interlink with onshore biodiversity due to the presence of habitats and protected species that are present in the intertidal area.
- **Part 3, Chapter 21: Intertidal and Offshore Ornithology:** The intertidal and offshore ornithology assessment will interlink with onshore biodiversity due to the presence of bird species that use both intertidal and offshore habitats.
- **Part 4, Chapter 28: Greenhouse Gases:** There are potential pathways of effect from changes to greenhouse gases on terrestrial habitats and protected species. Therefore, information from the greenhouse gas assessment will inform the biodiversity assessment.

6.1.4. This chapter is supported by the following figures and appendices:

- **Volume 2, Appendix 6.A: Arboriculture Impact Assessment Strategy**
- **Volume 3, Figure 6-1 International designated sites for nature conservation within 10 km of the Scoping Boundary**
- **Volume 3, Figure 6-2 Local and national statutory designated sites for nature conservation within 2 km of the Scoping Boundary**

6.1.5. At this early stage in the development of the English Onshore Scheme, only limited desk-based information including satellite imagery and Multi Criteria Analysis habitat data from Eastern Green Link (EGL) 3 and EGL 4 has been used for this chapter. No data is yet available from Project specific field surveys to inform the Scoping Report; however, terrestrial ecology (including ornithology) and aquatic freshwater ecology surveys are to be undertaken in 2025 and 2026, and further details are provided in **Section 6.4** and **Section 6.7**.

6.1.6. The development of the English Offshore Scheme and the associated impact assessment will be informed by marine ecological surveys. Further details of the marine ecological surveys and impact assessment are provided in **Part 3, Chapter 19 – Chapter 22**.

6.2 Relevant Legislation, Planning Policy and Technical Guidance

6.2.1. This section identifies the relevant legislation, national and local policy and guidance which has informed the scope of the biodiversity assessment.

Legislation

6.2.2. A summary of the key legislation considered in, but not limited to, the scope of biodiversity effects is outlined in **Table 6-1**. The legislation presented in **Table 6-1** underpins and / or is considered in the following sections of this scoping chapter:

- **Section 6.4 Baseline Conditions**;
- **Section 6.5 Design and Control Measures**;
- **Section 6.6 Scope of the Assessment**; and
- **Section 6.7 Assessment Methodology**.

Table 6-1: Legislation relevant to Biodiversity

Legislation	Legislative context
The Conservation of Habitats and Species Regulations 2017 (as amended) (the 'Habitats Regulations')[4] (Ref 6.1)	The objective is to protect biodiversity through the conservation of natural habitats and species of wild fauna and flora. Regulations provide for the designation and protection of European sites (those part of the national site network), the protection of European protected species, and the adaptation of planning and other controls for the protection of European Sites. Following the UK's exit from the European Union (EU), The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 (Ref 6.2) were enacted and resulted in amendments to the Habitats Regulations. Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) in the UK no longer form part of the European Union's Natura (2000) ecological network. The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 created a national site network (NSN) on land and at sea, including both the inshore and offshore marine areas in the UK. The national site network includes: • Existing SACs and SPAs; and • New SACs and SPAs designated under these Regulations. Any references to Natura 2000 in the 2017 Regulations and in guidance now refers to the new national site network. It is also a matter of government policy (part 187 of the National Planning Policy Framework; see **Table 6-2** below) that Ramsar sites, proposed Ramsar sites, potential SPA (pSPA) and possible

[4] As amended by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 (Ref 6.2).

Legislation	Legislative context
	SAC (pSAC) are also considered in the same way as SACs, SPAs and candidate SACs (cSACs). The above designations are collectively referred to as 'European Sites' within this Scoping Report.
Wildlife and Countryside Act (WCA) 1981 (as amended) (Ref 6.3)	Protected birds, animals and plants are listed under Schedules 1, 5 and 8 respectively of the WCA 1981 (as amended). Invasive, non-native species are also listed under Schedule 9.
Natural Environment and Rural Communities (NERC) Act 2006 (as amended) (Ref 6.4)	Species and Habitats of Principal Importance in England and Wales are listed under Section 41 and Section 42 respectively of the NERC Act 2006. Section 41 and 42 lists species that are of principal importance for the conservation of biodiversity in England and should be used to guide decision-makers such as local and regional authorities when implementing their duty to have regard for the conservation of biodiversity in the exercise of their normal functions – as required under Section 40 of the NERC Act 2006.
Environment Act 2021 (Ref 6.5)	The Environment Act 2021 has two main functions: to give a legal framework for environmental governance in the UK, and to bring in measures for improvement of the environment in relation to waste, resource efficiency, air quality, water, nature and biodiversity, and conservation. This Act makes a 10% Biodiversity Net Gain (BNG) a statutory requirement for most developments. The act also strengthens the biodiversity duty under the NERC Act 2021 for public authorities to enhance biodiversity, rather than just conserve it.
The Invasive Alien Species (Enforcement and Permitting) Order 2019 (Ref 6.6)	For animal species under this order, it is an offence to release or allow them to escape into the wild, and for plant species it is an offence to plant or otherwise cause them to grow in the wild.
Protection of Badgers Act 1992 (Ref 6.7)	It is an offence to wilfully take, kill, injure, possess or ill-treat a badger. Under the Protection of Badgers Act 1992 their setts are protected against intentional or reckless interference. Sett interference includes damaging or destroying a sett, obstructing access to any part of the sett, or disturbance of a badger whilst it is occupying a sett. The Act defines a badger sett as 'any structure or place, which displays signs indicating the current use by a badger' and statutory bodies take this definition to include seasonally used setts that are not occupied but that show sign of recent use by badgers.
The Hedgerow Regulations 1997 (Ref 6.8)	Under The Hedgerows Regulations, it is an offence to remove a hedgerow (as defined within the Regulations) without obtaining Local Planning Authority (LPA) permission. Should the hedgerow be deemed unimportant according to the criteria within the

Legislation	Legislative context
	Regulations, the LPA is obliged to allow removal. However, if the hedgerow qualifies as 'Important' under the Regulations, the LPA must decide whether the reasons for removal justify the loss of an 'Important Hedgerow', with a presumption for retention.
Countryside and Rights of Way Act 2000 ('the CRoW Act') (Ref 6.9)	The CRoW Act has amended the Wildlife and Countryside Act (WCA) in England and Wales strengthening the protection afforded to Sites of Special Scientific Interest (SSSI) and the legal protection for threatened species. It adds the word 'reckless' to the wording of the offences listed under Section 9(4) of the WCA. This alteration makes it an offence to recklessly commit an offence, where previously an offence had to be intentional to result in a breach of legislation.
Salmon and Freshwater Fisheries Act 1975 (Ref 6.10)	This Act covers regulation of fisheries in England and Wales and includes legislation that covers the introduction of polluting effluents, the obstruction of fish passage (screens, dams, weirs, culverts etc), illegal means of fishing, permitted times of legal fishing and fishing licencing (which covers electric fishing).
The Eels (England and Wales) Regulations 2009 (Ref 6.11)	The Eels (England and Wales) Regulations 2009 implement Council Regulation (EC) No 1100/2007 of the Council of the European Union (Ref 6.12), which required Member States to establish measures for the recovery of the stock of European eel. The Regulations give powers to the regulators (the Environment Agency in England) to implement recovery measures in all freshwater and estuarine waters. The aim of the regulations is to achieve 40 per cent escapement of adult eels relative to escapement levels under pristine conditions. The measures, as set out in the legislation, by which this is to be achieved is to reduce fishing pressures, improve access and habitat quality and reduce the impact of impingement and entrainment.

Planning Policy

6.2.3. A summary of the planning policies at both a national and local level relevant to the scope of biodiversity effects are outlined in **Table 6-2** and **Table 6-3**. These planning policies underpin and / or are considered in the following sections of this scoping chapter:

- **Section 6.4 Baseline Conditions**;
- **Section 6.5 Design and Control Measures**;
- **Section 6.6 Scope of the Assessment**; and
- **Section 6.7 Assessment Methodology**.

Table 6-2: National Planning Policy relevant to Biodiversity

Policy reference	Policy context
Overarching National Policy Statement for Energy (EN-1) (17 January 2024) (Ref 6.13)	
Section 4.6 Environmental and Biodiversity Net Gain	"*Energy Nationally Significant Infrastructure Project (NSIP) proposals, whether onshore or offshore, should seek opportunities to contribute to and enhance the natural environment by providing net gains for biodiversity, and the wider environment where possible.* *In England applicants for onshore elements of any development are encouraged to use the latest version of the biodiversity metric to calculate their biodiversity baseline and present planned biodiversity net gain outcomes. This calculation data should be presented in full as part of their application.*"
Section 5.4 Biodiversity and Geological Conservation	"*Where the development is subject to EIA, the applicant should ensure that the Environmental Statement (ES) clearly sets out any effects on internationally, nationally, and locally designated sites of ecological conservation importance, on protected species and on habitats and other species identified as being of principal importance for the conservation of biodiversity, including irreplaceable habitats."* *"The applicant should show how the project has taken advantage of opportunities to conserve and enhance biodiversity conservation interests.* *Applicants should also consider wider ecosystem services and natural capital benefits when designing enhancement measures."*
Overarching Draft National Policy Statement (NPS) for Energy (EN-1) (April 2025) (Ref 6.14)	
Section 4.6 Environmental and Biodiversity Net Gain and Section 5.4 Biodiversity and Geological Conservation	The Government has published a draft update to the Overarching National Policy Statement for Energy. For ecology, the 2025 Draft NPS EN-1 is largely the same as in the 2024 document, with relevant section numbers remaining the same.
National Policy Statement for Electricity Networks Infrastructure (EN-5) (17 January 2024) (Ref 6.15)	
Section 2.5 Environmental and Biodiversity Net Gain	"*Recognition that the linear nature of electricity networks infrastructure can allow for excellent opportunities to:* *i. reconnect important habitats via green corridors, biodiversity stepping zones, and reestablishment of appropriate hedgerows; and / or*

Policy reference	Policy context
	ii. connect people to the environment, for instance via footpaths and cycleways constructed in tandem with environmental enhancements."
Draft National Policy Statement for Electricity Networks Infrastructure (EN-5) (April 2025) (Ref 6.16)	
Section 2.5 Environmental and Biodiversity Net Gain	The Government has published a draft update to the Overarching National Policy Statement for Energy. For ecology, the 2025 Draft NPS EN-5 is largely the same as in the 2024 document, with relevant section numbers remaining the same.
National Planning Policy Framework (NPPF) (2024) (Ref 6.17)	
Paragraphs 187, 192, 193, and 194	The NPPF supports the delivery of sustainable developments which protect and enhance biodiversity (including *"minimising impacts"*) by safeguarding ecological networks, and promote conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority and/or threatened species. LPAs should assess if significant harm would occur to biodiversity and refuse planning permission if such harm cannot be avoided, mitigated or, as a last resort, compensated for. Further, the NPPF advises that "*development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists*." Finally, LPAs should assess if improvements to biodiversity which can secure measurable gains for biodiversity have been integrated into development plans. The NPPF also identifies that Ramsar sites, proposed Ramsar sites, potential Special Protection Areas (pSPAs) and possible Special Areas of Conservation (pSAC) are also considered in the same way as SACs, SPAs and candidate SACs (cSACs).

Table 6-3: Local Planning Policy relevant to Biodiversity

Policy reference	Policy context
East Lindsey District Council (East Lindsey Local Plan Core Strategy, (adopted July 2018) (Ref 6.18))	
Strategic Policy 24 (SP24) - Biodiversity and Geodiversity	Development proposals should seek to protect and enhance the biodiversity value of land and buildings and minimise fragmentation and maximise opportunities for connection between natural habitats. The Council will protect sites designated internationally, national or locally for their biodiversity importance, species populations and

Policy reference	Policy context
	habitats identified in the Lincolnshire Biodiversity Action Plan and the Natural Environment and Rural Communities (NERC) Act 2006. Development which could adversely affect such a site will only be permitted in exceptional circumstances. If adverse impacts are demonstrated to be unavoidable, the Council will ensure that such damage is kept to a minimum and will ensure appropriate mitigation, compensation or enhancement of the site through the use of planning conditions or planning obligations.
Strategic Policy 25 (SP25) – Green Infrastructure	The Council will safeguard and deliver a network of accessible green infrastructure by protecting and safeguarding green space, maximising opportunities for new and enhanced green infrastructure and publicly accessible open spaces in and around all communities and seek opportunities to connect existing green infrastructure to improve the network of spaces and accessibility for both the local population and wildlife.
Lincolnshire County Council (Lincolnshire Minerals and Waste Local Plan Core Strategy and Development Management Policies, (adopted June 2016) (Ref 6.19))	
Strategic Objective H	A Strategic Objective of the Lincolnshire Minerals and Waste Local Plan is to "*protect Lincolnshire's high quality agricultural land… and soil where practicable from development; and in cases where it is affected, safeguard its long-term potential by encouraging restoration back to agriculture, or protection of soils through restoration schemes to biodiversity where soils are cared for in a sustainable manner, enabling habitat creation in addition to soil preservation for future agricultural needs.*"
Policy DMI: Presumption in favour of sustainable development	The County Council will take a positive approach that reflects the presumption in favour of sustainable development contained in the NPPF. It will always work proactively with applicants jointly to find solutions which mean that proposals can be approved wherever possible, and to secure development that improves the economic, social and environmental conditions in the area.

Technical Guidance

6.2.4. A summary of the relevant technical guidance, specific to the biodiversity assessment, that has informed this Scoping Report and will inform the assessment within the Preliminary Environmental Information Report (PEIR) and ES, is given in **Table 6-4**.

Table 6-4: Technical Guidance relevant to Biodiversity

Technical guidance document	Context	Section considered
Guidelines for Ecological Impact Assessment in the UK and Ireland:	Provides guidance relevant to the assessment of	Section 6.7 Assessment Methodology

Technical guidance document	Context	Section considered
Terrestrial, Freshwater and Coastal. Second Edition v1.2 (2018, updated 2022) (Ref 6.20)	potentially significant effects on biodiversity.	
Guidelines for Preliminary Ecological Appraisal: Second Edition (2017) (Ref 6.21)	Provides guidance relevant to the assessment of potentially significant effects on biodiversity.	Section 6.7 Assessment Methodology

6.3 Consultation and Engagement

6.3.1. With respect to biodiversity, key consultees have been identified and focussed engagement (through both informal and formal consultation) will be undertaken and recorded throughout the pre-application stages of the project. Key consultees identified to date are:

- Natural England;
- Environment Agency;
- Relevant LPA ecological advisors;
- Lincolnshire Wildlife Trust;
- Marine Management Organisation; and
- Royal Society for the Protection of Birds.

6.3.2. Key areas of consultation are intended to include the proposed study area(s) and survey extents, ecological features to be included in the assessment, proposed survey methodologies, approach to protected species licensing and Habitats Regulations Assessment (HRA).

6.3.3. Discussions with Natural England were held on 3rd March and 8th July regarding general overview to the Project including the English Onshore Scheme, project timelines and engagement approach, landfall locations and cable connections at Anderby Creek were discussed.

6.3.4. Discussions with the Environment Agency were held on 10th January, 29th January and 1st April 2025 concerning impacts to main rivers, ordinary watercourses, coastal processes, fisheries, water quality, bathing waters, and intertidal habitats.

6.3.5. Local or specialist groups will be contacted should the assessment process identify a need to engage further detailed local knowledge, or if requested during the statutory consultation process.

6.4 Baseline Conditions

Study Area

6.4.1. The study areas encompass the area over which desk-based data was gathered to inform the biodiversity scoping assessment presented in this section. The study areas for the assessment of effects on onshore ecological receptors presented within this chapter of the Scoping Report have been identified through consideration of the nature of the development and also acknowledging the early stage of the English Onshore Scheme.

6.4.2. **Part 3, Chapter 19 – Chapter 22** of this Scoping Report include consideration of marine ecological receptors which could be impacted in marine and intertidal habitats seaward of the Mean High Water Springs (MHWS), and impacts to terrestrial, aquatic or intertidal habitats inland of the MHWS which are functionally linked with a marine designated site (e.g., foraging, roosting or nesting habitats for migratory waders and seabirds). The English Onshore Scheme study area will therefore include impacts to terrestrial habitats, intertidal habitats and statutory sites inland of the Mean Low Water Springs (MLWS).

6.4.3. For the purpose of scoping, the biodiversity study areas are defined as land within the English Onshore Scheme Scoping Boundary (**Volume 3, Figure 1-6**) plus appropriate buffers, as detailed below:

- All habitats and protected and / or notable terrestrial, freshwater and intertidal species considerations based on a broad overview assessment of aerial and OS imagery only due to the early stage of the English Onshore Scheme: English Onshore Scheme Scoping Boundary only.
- International designated sites with terrestrial, freshwater and intertidal designating habitats or species: English Onshore Scheme Scoping Boundary plus 10 kilometres (km) (extending to 30 km for bats).
- National and local statutory designated sites with terrestrial, freshwater and intertidal designating habitats or species: English Onshore Scheme Scoping Boundary plus 2 km.

6.4.4. The study areas are appropriate to the ecological resources considered and the likely Zone(s) of Influence (ZoI). The ZoI is variable dependant on the sensitivity of the ecological feature and the effect being considered. Best practice guidelines (Ref 6.20 and Ref 6.21) and ecological experience have contributed to determining the study areas.

6.4.5. The study areas will be reviewed and amended in response to such matters as refinement of the design of the English Onshore Scheme, the identification of additional impact pathways and, where appropriate, in response to feedback from consultation. This is to ensure that there is sufficient data on which to conduct the assessment. These refinements are expected to reduce the extent of the study area as the design for the English Onshore Scheme progresses, whilst still reflecting recognised good practice.

Data Gathering Methodology

6.4.6. At this stage of the English Onshore Scheme, only freely available online information has been collated, including aerial imagery (Ref 6.22), OS mapping and the Multi-Agency Geographic Information for the Countryside (MAGIC) online mapping resources (Ref 6.23) to provide details on statutory designated sites. Habitats mapped under the Ancient Woodland Inventory (Ref 6.24) and the Priority Habitat Inventory (PHI) (Ref 6.25), the majority of which relate to Habitats of Principal Importance (HPI), has also been collated. These inventories are determined using a combination of aerial and other mapping sources and occasionally ground truthing surveys. Therefore, the information to support this chapter is a broad overview and further desk and field-based surveys will be required to provide a more robust baseline for assessment (see **Section 6.7 Assessment Methodology**).

6.4.7. No data is yet available from field surveys to inform the Scoping Report due to the early stage of the English Onshore Scheme. However, terrestrial ecology (including ornithology) and aquatic freshwater ecology surveys are to be undertaken in 2025 and 2026 and a review of the pre-survey habitat data produced through the multi-criteria analysis for EGL 3 and 4 has been completed.

6.4.8. Information regarding local / non-statutory designated sites have not yet been obtained and so is not detailed in this baseline section. However, this information shall be obtained from the Greater Lincolnshire Nature Partnership local records centre as the English Onshore Scheme progresses.

6.4.9. In addition to those sources detailed above, data is proposed to be requested from the following sources:

- Environmental Agency;
- The British Trust for Ornithology Wetland Birds Survey;
- LPAs (notably associated with identifying strategic significance as part of the BNG assessment);
- Local interest groups (such as the bat, badger and amphibian & reptile groups as applicable); and
- Lincolnshire Wildlife Trust.

Current Baseline

6.4.10. The tables below provide the following details regarding designated sites:

- International designated sites for nature conservation within the 10 km study area (**Table 6-5**), including Special Areas of Conservation (SAC), Special Protection Areas (SPAs) and Ramsar sites (shown on **Volume 3, Figure 6-1**); and
- Local and National statutory designated sites for nature conservation within the 2 km study area (**Table 6-6**), including Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR) and Local Nature Reserves (LNR) (shown on **Volume 3, Figure 6-2**).

6.4.11. A search up to 30 km was undertaken for SACs that include bats as a qualifying feature, although none were identified.

6.4.12. Chapel Point to Wolla Bank SSSI is located up to 1.8 km south of the Anderby Creek landfall. The SSSI is designated for its geological features of interest and not ecological value. As such, the SSSI has not been included in **Table 6-6** below.

International Designated Sites

Table 6-5: International Designated Sites within 10 km

International designated site	Designated feature summary	Approximate distance and direction from the Scoping Boundary (closest point)	Relevance to Project EIA
Greater Wash SPA	Range of wintering, migratory and breeding wetland birds. **Qualifying Features** • *Gavia stellata*; red-throated diver (non-breeding) • *Melanitta nigra*; common scoter (non-breeding) • *Hydrocoloeus minutus*; little gull (non-breeding) • *Sterna sandvicensis*; sandwich tern (breeding) • *Sterna hirundo*; common tern (breeding) • *Sterna albifrons;* little tern (breeding)	Within Scoping Boundary at Anderby Creek landfall	Relevant to Deemed Marine Licence application –seaward of MHWS with functionally linked land for seabirds inland of MLWS.
Inner Dowsing, Race Bank and North Ridge SAC	Contains various Annex I marine habitats and Annex II marine mammals. **Qualifying Features** • Sandbanks which are slightly covered by sea water all the time • Reefs • *Halichoerus grypus;* Grey seal • *Phocoena phocoena;* Harbour porpoise	6.8 km south	Relevant to Deemed Marine Licence application – entirely seaward of MHWS with negligible functionally linked land inland of MLWS.

International designated site	Designated feature summary	Approximate distance and direction from the Scoping Boundary (closest point)	Relevance to Project EIA
Saltfleetby-Theddlethorpe Dunes & Gibraltar Point SAC	Contains various Annex I dune habitats. **Qualifying Features:** • Embryonic shifting dunes • Shifting dunes along the shoreline with *Ammophila arenaria* ('white dunes'); Shifting dunes with marram • Fixed dunes with herbaceous vegetation ('grey dunes'); Dune grassland • Dunes with *Hippophae rhamnoides*; Dunes with sea-buckthorn • Humid dune slacks	8.3 km north	Relevant to Development Consent Order (DCO) application – entirely inland of MLWS.
Humber Estuary SPA	Range of wintering, migratory and breeding wetland birds **Qualifying Features:** • *Botaurus stellaris*; bittern (breeding and non-breeding) • *Tadorna tadorna*; common shelduck (non-breeding) • *Circus aeruginosus*; Eurasian marsh harrier (breeding) • *Circus cyaneus*; hen harrier (non-breeding) • *Recurvirostra avosetta*; avocet (breeding and non-breeding) • *Pluvialis apricaria*; European golden plover (non-breeding) • *Calidris canutus*; red knot (non-breeding) • *Calidris alpina alpina*; dunlin (non-breeding)	8.3 km north	Relevant to both DCO and Deemed Marine Licence (DML) applications – bird species which use terrestrial and intertidal habitats inland of MLWS and seaward of MHWS.

International designated site	Designated feature summary	Approximate distance and direction from the Scoping Boundary (closest point)	Relevance to Project EIA
	• *Philomachus pugnax*; ruff (non-breeding) • *Limosa limosa islandica*; black-tailed godwit (non-breeding) • *Limosa lapponica*; bar-tailed godwit (non-breeding) • *Tringa totanus*; common redshank (non-breeding) • Little tern (breeding) • Waterbird assemblage		
Humber Estuary Ramsar site	Range of habitats, migrant birds, lamprey and a grey seal population (Ramsar criteria 1, 3, 5, 6 and 8). **Ramsar criterion 1:** The site is a representative example of a near-natural estuary with the following component habitats: dune systems and humid dune slacks, estuarine waters, intertidal mud and sand flats, saltmarshes, and coastal brackish / saline lagoons. **Ramsar criterion 3:** The Humber Estuary Ramsar site supports a breeding colony of grey seals at Donna Nook. It is the second largest grey seal colony in England and the furthest south regular breeding site on the east coast. The dune slacks at Saltfleetby-Theddlethorpe on the southern extremity of the Ramsar site are the most north-easterly breeding site in Great Britain of the natterjack toad *Bufo calamita*. **Ramsar criterion 5:**	8.3 km north	Relevant to both DCO and DML application – criterion species use terrestrial, intertidal and aquatic habitats inland of MLWS as well as terrestrial habitat types present inland of MLWS.

International designated site	Designated feature summary	Approximate distance and direction from the Scoping Boundary (closest point)	Relevance to Project EIA
	Assemblages of international importance: waterfowl, non-breeding season **Ramsar criterion 6:** Species / populations occurring at levels of international importance: • Eurasian golden plover *Pluvialis apricaria altifrons* subspecies (passage and wintering) • Red knot *Calidris canutus islandica* subspecies (passage and wintering) • Dunlin *Calidris alpina alpina* subspecies (passage and wintering) • Black-tailed godwit *Limosa limosa islandica* subspecies (passage and wintering) • Common redshank *Tringa totanus brittanica* subspecies (passage and wintering) • Common shelduck (breeding and wintering) • Bar-tailed godwit *Limosa lapponica lapponica* subspecies (wintering) **Ramsar criterion 8:** The Humber Estuary acts as an important migration route for both river lamprey *Lampetra fluviatilis* and sea lamprey *Petromyzon marinus* between coastal waters and their spawning areas.		

National Designated Sites

Table 6-6: Local and National Statutory Designated Sites within 2 km

National designated site	Designated feature summary	Approximate distance and direction from the Scoping Boundary (closest point)	Relevance to Project EIA
Sea Bank Clay Pits SSSI	Notable reedbed and wetland habitats supporting notable invertebrates and plant species, and breeding, wintering and passage birds. The Sea Bank Clay Pits comprise a series of isolated flooded clay workings of varying size, depth and topography which now support uncommon aquatic plant communities characteristic of the slightly brackish, eutrophic (nutrient-rich) water in addition to extensive reedbeds and a rich marginal wetland flora. The pits were excavated in 1953 to provide material for the repair of the sea wall between Mablethorpe and Chapel St. Leonards on the Lincolnshire Coast. The pits are also important for breeding, wintering and passage birds. They are known to support a rich aquatic invertebrate fauna, notably beetles, including several nationally scarce species and others new to the County. The water plant communities of the pits are characterised by fennel pondweed *Potamogeton pectinatus*, lesser pondweed *P. pusillus*, horned pondweed *Zannichellia palustris*, spiked watermilfoil *Myriophyllum spicatum*, algae of the genus *Enteromorpha* and two nationally scarce species: brackish water crowfoot *Ranunculus baudotii* and soft hornwort *Ceratophyllum submersum*. Superimposed upon this basic suite of species are variations such as the local dominance of Canadian waterweed *Elodea canadensis* and the moss *Fontinalis antipyretica*. In addition, there is abundant amphibious bistort *Polygonum amphibium* and rigid hornwort *C. demersum*. Large stands of	105 metres (m) northeast	Relevant to DCO application – entirely inland of MLWS.

National designated site	Designated feature summary	Approximate distance and direction from the Scoping Boundary (closest point)	Relevance to Project EIA
	common reed *Phragmites australis* occur as a broad margin, especially at Huttoft. Associated with the reedbeds are sea clubrush *Scirpus maritimus*, branched bur-reed *Sparganium erectum*, reedmace *Typha latifolia* and false fox and greater pond sedges *Carex otrubae* and *C. riparia*. Large colonies of common spotted orchid *Dactylorhiza fuchsii* occur at Wolla Bank in marshy ground. Here, the flora clearly reflects a brackish influence since wild celery *Apium graveolens*, sea couch *Elymus pycnanthus*, saltmarsh rush *Juncus gerardii* and sea arrowgrass *Triglochin maritimus* are present.		

Habitats

Habitats of Principal Importance (HPI)

6.4.13. HPIs within the Scoping Boundary as identified thorough the PHI layer on MAGIC (Ref 6.23) are as follows:

- Coastal and floodplain grazing marsh;
- Coastal sand dunes;
- Reedbeds;
- Rivers;
- Lowland calcareous grassland; and
- Lowland meadows.

6.4.14. Deciduous woodland is also present, which may qualify as lowland mixed deciduous woodland HPI.

6.4.15. Habitats detailed on the PHI layer may be based largely on desk-based habitat classification exercises and would therefore need to be ground truthed through ecological surveys to confirm their status as HPI. Moreover, there may be other HPI present within the English Onshore Scheme Scoping Boundary, which are not listed above and would also need to be confirmed by ecological field survey.

Ancient Woodland / Veteran & Ancient Trees

6.4.16. Areas of ancient woodland which are logged on the Ancient Woodland Inventory (Ref 6.24) and / or have been identified within the **Volume 2, Appendix 6.A Arboriculture Impact Assessment Strategy** have been avoided at Options Identification and Selection (refer to **Part 1, Chapter 3 Consideration of Alternatives**). Areas of particularly high ecological value such as ancient woodland are therefore not within the English Onshore Scheme Scoping Boundary.

6.4.17. Areas of unmapped ancient woodland may be present which would need to be identified through a combination of field survey and review of other desk-based sources such as historical mapping.

6.4.18. The presence of any veteran trees are currently unknown. However, from aerial imagery, several scattered trees are present throughout the English Onshore Scheme which could be veteran or ancient. The presence of veteran and ancient trees shall be confirmed by an arboricultural survey and associated impact assessment.

Other Habitats

6.4.19. Aerial imagery and the pre-survey MCA habitat data show the dominant habitat throughout the English Onshore Scheme to be Grade 2 and 3 agricultural land (as defined by Natural England provisional Agricultural Land Classification (ALC), Ref 6.26) consisting of predominately arable fields bounded largely by artificial field drains. These are interspersed by pockets of scrub, woodland and scattered trees as well as ponds and watercourses including the Wold Grift Drain and the Boy Grift Drain. The selected landfall at Anderby Creek also supports coastal sand dunes and other coastal habitats including intertidal beach / foreshore areas leading into the North Sea.

Waterbodies

6.4.20. Most of the waterbodies within the English Onshore Scheme Scoping Boundary appear to comprise artificial field drains that surround arable fields, with occasional major watercourses such as the Wold Grift Drain and the Boy Grift Drain. Field ponds and other areas of standing water are occasionally scattered across the English Onshore Scheme study area. Ditches that contain standing water may also be present.

Protected / Notable Species

6.4.21. The landscape and habitats described above have the potential to support a range of protected and / or notable species for foraging, commuting, resting, sheltering and breeding, including:

- Birds, including:
  - Wintering;
  - Breeding;
  - Passage;
  - Intertidal; and)
  - Owl's roosting in trees and barns.
- Bats;
  - Badgers Meles meles;
- Otter *Lutra lutra;*
- Water vole *Arvicola amphibius;*
- Amphibians, including:
  - Great crested newt *Triturus cristatus;*
  - Toad *Bufo bufo;*
- Reptiles;
- Brown hare *Lepus europaeus;*
- Hedgehog *Erinaceus europaeus;*
- Invertebrates (terrestrial and aquatic);
- Fish; and
- Notable terrestrial or aquatic plant species (including invasive, non-native species).

Future Baseline

6.4.22. It is not known at this stage whether a different future baseline (in the absence of the English Onshore Scheme) is more likely to occur than that currently present. However, as the majority of the English Onshore Scheme comprises agricultural land, it is reasonable to assume management of such habitat would continue (in the absence of the Project or other development) and this baseline habitat would remain comparable.

6.4.23. Due to climate change, it is possible that in the medium to long term the range of some species may be altered. Any potentially relevant changes to the baseline would be reviewed during the EIA process and, should any likely instances be identified, the implications will be considered on a case-by-case basis within the EIA. A description of the potential future baseline will also be provided in the PEIR and ES.

6.4.24. It is recognised that there are a number of other proposed and committed developments within the surrounding area that could alter the future baseline in the absence of the project. The potential for cumulative effects will be considered as part of the future EIA documents in accordance with the approach and guidance outlined within **Part 4, Chapter 30: Cumulative Effects**.

6.5 Design and Control Measures

6.5.1. A high-level optioneering study (the Corridor and Preliminary Routeing and Siting Study (CPRSS)), as detailed in **Part 1, Chapter 3 Consideration of Alternatives**) has been undertaken to identify the preferred routeing and siting of the proposed infrastructure to ensure that environmental effects would be avoided. As part of the design process for the English Onshore Scheme, a number of design and control measures will be proposed to reduce the potential for impacts on ecological receptors. These measures will evolve as part of design development and in response to consultation and will be fed iteratively into the assessment process. These measures typically include those that have been identified as good or standard practice and include actions that would be undertaken to meet existing legislation requirements.

6.5.2. As there is a commitment to implementing these design and control measures, these have been considered in the scoping assessment.

Construction Phase

6.5.3. A range of standard measures for construction of the English Onshore Scheme are likely to be adopted throughout the duration of the construction phase. Design and control measures relevant to ecology and proportionate to risk would be fully outlined in the Outline Construction Environmental Management Plan (Outline CEMP) and additional Environment Management Plans as necessary, prepared to accompany the ES. A summary of these measures is detailed below in **Table 6-7** (which is not an exhaustive list).

Table 6-7: Relevant Biodiversity Design and Control Measures: Construction

Design and control measure proposed
Where practical, sensitive habitats including non-statutory and statutory designated sites, ancient woodland and HPI would be avoided by design (siting and alignment) of the English Onshore Scheme. At discrete locations, should these emerge during the design process, avoidance would also be sought when micro-siting the likely working areas.
As part of design development, where reasonably practicable, siting of the English Onshore Scheme will avoid veteran trees and construction practices will apply industry standard practice protection buffers which will vary in size for high, moderate and low-quality trees. In the eventuality that impacts to high quality trees (including veteran trees and those with a tree preservation order) cannot be avoided, any works will be undertaken or supervised by a suitably qualified arboriculturist.

Design and control measure proposed
Where appropriate, trenchless crossing methods (such as HDD) would be used at sensitive locations (for example the landfall and main rivers) to avoid or reduce impacts during construction.
At sensitive crossing locations (e.g., rivers), existing access routes would be used as far as possible and the width of any required working area reduced as far as practicable. If access upgrades are required, temporary bridges will be used in preference to culverts. Where culverts are unavoidable, these will either be arch culverts, leaving the natural bed alone, or they would be installed with the invert set below the natural bed level for a semi-natural bed to establish within the culvert.
Prior to construction, a suitably qualified and experienced (or team of suitably qualified and experienced) Ecological Clerk of Works (ECoW) will be appointed to support the Construction Contractor(s) with implementation of ecological mitigation.
Vegetation clearance would be kept to a minimum and vegetation retained where possible. To avoid destruction of active nests, where practicable, vegetation clearance of suitable habitat would be undertaken outside of the breeding bird season (outside the period March to August, inclusive). Where this is not possible, clearance would be undertaken following a pre-commencement inspection by a suitably experienced ecologist to confirm the presence / absence of active nests. If an active nest is identified, a suitable exclusion zone (minimum of 5 m but may be increased at the advice of the ecologist depending on species) would be implemented and remain in place until the ecologist confirms the nest is no longer active. Suitable methods would also be used to ensure vegetation with potential to support other legally protected species (e.g., reptiles) is removed sensitively, under the supervision of an ECoW (if needed) and in compliance with legal requirements.
In line with good practice, pollution prevention plans will be drawn up to detail how ground and surface waters would be protected during construction and operation. These will include information on the storage of any fuels, oils and other chemicals and pollution incidence response planning.
In line with good practice, an Outline CEMP will ensure that the risk of effects on ecological features from dust emissions is negligible through the use of standard dust suppression methods. It is anticipated that the Outline CEMP would be prepared by the Construction Contractor(s).
Areas of temporary habitat loss would be reinstated, wherever practicable, following the completion of construction in each area. Wherever possible, reinstatement would be back to the type and condition of habitat affected.
A lighting design of all temporary and permanent lighting during construction would be developed once Construction Contractor(s) are appointed. However, the principles of lighting design will be detailed at the time of application and informed by the joint guidance provided by the Institution of Lighting Professionals and the Bat Conservation Trust (Ref 6.27). The lighting design will account for the potential effects on biodiversity by taking measures to minimise lighting usage, minimise light spill, use most appropriate wave lengths of light and locate lighting in the most appropriate locations. This is to decrease the potential displacement effects on light sensitive fauna such as bats.
Speed limits would be imposed on all construction haul roads and access tracks to minimise the risk of road traffic collisions with fauna such as badgers, otters, bats and barn owls.

Design and control measure proposed
If invasive non-native plant species are identified through field survey and / or desk study, where practicable, works areas would be microsited to avoid contaminated locations. Where this is not possible, biosecurity measures would be implemented to prevent the spread of invasive species from construction activities.
A BNG equivalent to 10% above the existing baseline will be built into the English Onshore Scheme through the design process. This may entail both on-site and off-site habitat compensation. This is anticipated to be mandatory under the Environment Act 2021 (Ref 6.5) at the time of DCO application.

Operational Phase

6.5.4. At this early stage of the Project, design and control measures during the operational phase are anticipated to be required primarily at the locations of permanent above ground infrastructure (converter station) and at inland transition joint bay.

6.5.5. The measures detailed in **Table 6-7** above in relation to lighting (temporary and permanent) design would also be applied to operational lighting.

6.5.6. The requirements for further design and control during the operational phase will be explored during the design process of the English Onshore Scheme.

6.6 Scope of the assessment

Potential sensitive receptors

6.6.1. The following have been identified as potential ecological receptors which may be impacted during the construction and / or operation of the English Onshore Scheme based on a desk-based review of the habitats across the English Onshore Scheme Scoping Boundary and within ZoIs:

- International designated sites for nature conservation within 10 km;
- Local and national designated sites for nature conservation within 2 km;
- Birds (wintering, breeding, passage, intertidal and roosting owls);
- Bats;
- Badgers;
- Otter;
- Water vole;
- Amphibians (including great crested newt and toad);
- Reptiles;
- Brown hare;
- Hedgehog;
- Invertebrates (terrestrial and aquatic);
- Fish; and

- Notable terrestrial or aquatic plant species (including invasive, non-native species).

6.6.2. It should be noted that the majority of sensitive ecological receptors are likely to be primarily affected during the construction phase. Potential operational impacts are anticipated to be localised around permanent above ground infrastructure (the converter station) and sites of maintenance activities (if needed) along the cable route.

Ecological Receptors Scoped out from Further Assessment

6.6.3. At this early stage of the Project, most ecological receptors are proposed to be scoped into the assessment. This shall be reviewed throughout the design progression of the English Onshore Scheme.

6.6.4. As detailed fully in **Part 2, Chapter 14: Air Quality** it has been considered that the Greater Wash SPA would not require further assessment in terms of air quality effects and that no further consideration of air quality is required for this site in terms of the Habitats Regulations.

6.6.5. Natterjack toad has been scoped out of the assessment. The nearest records for natterjack toad are associated with dune slacks within the coastal dune systems of the Humber Estuary Ramsar site approximately 8.3 km north of the Scoping Boundary. Shallow pools of water on dune slack are the typical breeding habitat of natterjack toads. The adults of this species will forage on sand dunes and grasslands within coastal grazing marshes which adjoin dune systems. The coastal dune systems within the Scoping Boundary do not provide breeding habitats for natterjack toads and the closest waterbodies which could support breeding amphibians are approximately 600 m from the dunes and are separated by a local road. The distance to the closest records and the lack of suitable breeding habitat near to the dunes means that impacts to this species is highly unlikely and as such natterjack toad have been scoped out of this assessment (Ref 6.28).

Likely Significant Effects

6.6.6. **Table 6-8** and **Table 6-9** detail a broad overview of potential impacts and effects to biodiversity during construction and operation of the Project, respectively, in the absence of additional mitigation (beyond design and control measures). These tables are not exhaustive. Further impacts and effects may be identified as the scheme design and construction methods are developed. Additionally, as baseline information and project detail evolves impacts and effects currently detailed within **Table 6-8** may subsequently be scoped out from the assessment where there is no clear potential for significant effects and no further design and control or additional mitigation and compensation measures are required beyond embedded best practice measures.

6.6.7. The tables also identify which impact and effect pathways are proposed to be scoped in and out of the assessment. Where effects are proposed to be scoped out, a justification for this outcome is provided.

Table 6-8: Potential Impacts on Biodiversity During Construction (including de-commissioning)

Activity / potential impact	Biodiversity feature(s) potentially impacted	Potential for significant effects	Proposed to be scoped in / out
Permanent, long-term impacts			
Permanent habitat loss and / or degradation (any areas which will not be reinstated e.g., the converter station)	Designated sites, HPI, ancient and veteran trees, and other habitats including waterbodies and species they support.	**Yes** – there is the potential for significant effects in the absence of further design and control or additional mitigation and compensation measures. • Permanent reduction in habitat. • Degradation (e.g., hydrological changes or indirect impacts) and fragmentation of adjacent remaining habitats. • Subsequent negative effects on species and populations which use them (due to e.g., impacts to feeding, commuting, resting, hibernating and breeding habitats)	**Scoped in**
Temporary habitat loss and / or degradation (if land not reinstated to same or better condition habitats)	Designated sites, HPI and other habitats including waterbodies and species they support.	**Yes** – there is the potential for significant effects in the absence of further design and control or additional mitigation measures. • Long-term degradation of habitats. • Long term negative effects on local species and populations.	**Scoped in**

Activity / potential impact	Biodiversity feature(s) potentially impacted	Potential for significant effects	Proposed to be scoped in / out
Temporary, short to medium term impacts			
Temporary habitat loss (land which will be reinstated to the same or better condition, post-construction)	Designated sites, HPI and other habitats including waterbodies.	**Yes** – there is the potential for significant effects in the absence of further design and control or additional mitigation measures. • Temporary (short or medium-term) loss and/or degradation of habitats and subsequent negative effects on species which use them.	**Scoped in**
Vegetation clearance during construction	Protected and / or notable species.	**Yes** – there is the potential for significant effects in the absence of further design and control or additional mitigation and compensation measures. • Killing and injuring individuals or populations. • Damage / destruction to commuting, foraging, sheltering, resting or breeding habitats. Potential fragmentation and severance effects.	**Scoped in**
Terrestrial and aquatic habitat (e.g., watercourse or ditch network) severance	Protected and / or notable species.	**Yes** – there is the potential for significant effects associated with fragmentation of populations in the absence of further design and control or additional mitigation and compensation measures.	**Scoped in**
Noise, vibration, dust, pollutants, vehicle collisions and artificial lighting during site clearance and construction	Protected and / or notable species and the habitats which support them.	**Yes** – there is the potential for significant effects in the absence of further design and control or additional mitigation measures. • Degradation of habitats (short or longer term) supporting species. • Injury / displacement / fragmentation / disturbance / reduced survival and breeding success of species and resulting negative effects on local populations.	**Scoped in**

Activity / potential impact	Biodiversity feature(s) potentially impacted	Potential for significant effects	Proposed to be scoped in / out
Increased nitrogen deposition and / or ammonia concentrations from vehicular traffic	Designated sites and ancient woodland habitats.	**Yes** – there is the potential for significant effects in the absence of further design and control or additional mitigation measures. • Habitat degradation or damage (including toxicity from ammonia), species composition changes, physiological response from floral species.	**Scoped in**

Table 6-9: Potential Impacts on Biodiversity During Operation

Activity / potential impact	Biodiversity feature(s) potentially impacted	Potential for significant effects	Proposed to be scoped in / out
Maintenance activities. Lighting, noise, dust, pollutants, vehicle collisions	Protected and / or notable species and the habitats which support them.	**No** – given the temporary, short-term and localised nature of any maintenance activities, these are not predicted to give rise to significant effects.	**Scoped out**
Increased nitrogen deposition and / or ammonia concentrations from operational / maintenance vehicular traffic	Designated sites and ancient woodland habitats.	**No** – as detailed within **Part 2, Chapter 14: Air Quality**, vehicle trips associated with the operation and maintenance phase are anticipated to be below screening criteria and therefore impacts are considered to be non-significant.	**Scoped out**
Artificial lighting and noise associated with permanent infrastructure e.g., the converter station	Protected and / or notable species.	**Yes** – there is the potential for significant effects associated with disturbance and dispersal of protected/notable species in the absence of further design and control or additional mitigation measures.	**Scoped in**

6.7 Assessment Methodology

Further Data to be Gathered / Processed

Desk-Based Assessments

6.7.1. Local ecological records (terrestrial and aquatic), maps and citations regarding local designated sites will be obtained within a buffer of 2 km from the preferred cable routes (including landfall) and siting zones from relevant data holders such as ecological records centres, local species interest groups and the Environment Agency. The baseline ecological survey data gathered from any adjacent and overlapping areas of the EGL 3 and EGL 4 project will be reviewed and where applicable included within the baseline.

Ecological Surveys

6.7.2. The ecology surveys outlined in **Table 6-10** below are stage one assessments being considered to inform the design and mitigation for the English Onshore Scheme as well as the impact assessment.

6.7.3. The study area for ecology surveys will generally be 125 m either side of the preferred cable routes creating a 250 m wide survey corridor. This corridor comprises a temporary working width for the underground cables of up to 150 m (i.e. 75 m either side of the preferred cable routes), plus a survey extension of 50 m either side. The general study area for the converter station will be the siting zones plus a 50 m buffer. The study area would be extended (as required) depending on the receptor, best practice survey guidelines and the potential ZoI of the English Onshore Scheme. The study areas shall also be reviewed as the English Onshore Scheme progresses and further information becomes available, including the development of access routes e.g., the Alford Bypass Construction Route.

6.7.4. As further details regarding construction methods are obtained, these surveys and methodologies can be refined and agreed with relevant stakeholders where required. The type and scale of habitats which will be impacted, and the programme of works, will influence survey requirements and effort, which is not yet known at this stage of the Project. Survey and assessment methodologies will typically follow industry best practice guidance, unless bespoke methods or approaches are developed. Where deviation from best practice is proposed, this would be supported by a robust justification and, where possible, agreed with relevant stakeholders.

Table 6-10: Ecology Surveys

Survey / ecological receptor	Provisional scope and considerations
Habitats (including HPI and waterbodies)	• Preliminary Ecological Appraisal (PEA) / UK Habitat Classification (UKHab) survey – mapping habitats, including HPI and veteran / ancient trees (incidental observations of veteran / ancient trees only, supplemented by an arboriculture survey and impact assessment, as detailed in **Volume 2, Appendix 6-A**).

Survey / ecological receptor	Provisional scope and considerations
	• Hedgerow assessments to determine 'Important' hedgerows under The Hedgerow Regulations (1997) (Ref 6.8) (wildlife and biodiversity criteria only). • Aquatic habitat assessment (onshore aquatic habitat only).
Birds (wintering, breeding, passage, intertidal and roosting owls)	• Wintering, breeding, passage and intertidal bird surveys (single year of data collection). This would include walked transect surveys any may need to be timed to cover high and low tide survey periods, particularly for any intertidal areas. • Trees and barns with suitability for roosting owls will be identified during the PEA walkovers and breeding bird survey transects. Requirements for further investigative surveys will be determined based on the outcomes of these surveys.
Bats	• Bat ground level tree assessments and building external assessment for roosting suitability. Subsequent tree climbing and / or nocturnal emergence surveys as required where roosts may be impacted. • Commuting and foraging bat habitat suitability assessment. Requirements for bat activity surveys will be determined based on the commuting and foraging bat habitat suitability assessment.
Badgers	• Daytime walkover for signs of badger activity and any active setts. Where setts are identified, further camera trap and other surveys may be required.
Otter and water vole	• Single survey (combined otter and water vole survey) to determine potentially suitable habitat and any signs of presence. Further surveys may be required following this initial survey.
Great crested newt	• Initial walkover to scope suitable waterbodies using Habitat Suitability Index (HSI) scoring. Further eDNA and / or presence / likely absence surveys may be required following this initial survey.
Other amphibians including toads	• Targeted surveys unlikely to be required and precautionary measures during construction will be implemented to safeguard these species.
Reptiles	• Targeted surveys unlikely to be required and precautionary measures during construction will be implemented to safeguard these species. However, depending on the scale and longevity of potential reptile habitat loss, targeted reptile surveys may be required.

Survey / ecological receptor	Provisional scope and considerations
Brown hare	• Targeted surveys not proposed and precautionary measures during construction will be implemented to safeguard these species.
Hedgehog	• Targeted surveys not proposed and precautionary measures during construction will be implemented to safeguard these species.
Invertebrates (terrestrial and aquatic)	• Requirement for any terrestrial invertebrate survey will be determined following the PEA depending on habitat suitability, extent and potential impacts. Aquatic macroinvertebrate surveys of suitable waterbodies will be determined during the aquatic habitat assessment.
Fish	• Fish surveys of main rivers / watercourses and at targeted suitable habitats within the ZoI; determined during the aquatic habitat assessment.
Notable terrestrial or aquatic plant species (including invasive, non-native species)	• Requirement for any notable terrestrial or aquatic plant species (including invasive, non-native species) targeted survey will be determined during the PEA. If targeted surveys are required, these will likely be covered by mitigation measures during construction, likely to include a pre-commencement survey to map out affected areas with a targeted mitigation approach adopted, designed by a specialist Construction Contractor(s).

Ecological Impact Assessment

6.7.5. Following a series of detailed desk and field based ecological assessments, an Ecological Impact Assessment (EcIA) will be undertaken to assess the potential impacts of the English Onshore Scheme on biodiversity, once all impact avoidance and mitigation measures have been agreed.

Important Ecological Features (IEF)

6.7.6. In accordance with the Chartered Institute of Ecology and Environmental Management (CIEEM) EcIA Guidelines (Ref 6.20), a number of characteristics contribute to the Importance of Ecological Features (IEFs). These include for example (but not exclusively): the rarity of a species or habitat, legal protection / conservation status, ability to resist or recover from environmental change and uniqueness of an ecological feature, whether the species population size is notable in a wider context, the richness of assemblages of plants and animals and the presence of species on the edge of their range, particularly where their distribution is changing as a result of global trends and climate change.

6.7.7. The nature conservation importance of an ecological feature is represented on a geographic scale, in **Table 6-11** below:

Table 6-11: Defining Importance of Ecological Features

Geographic context of importance	Criteria
International or European	• European Sites including SPA and SAC. • Ramsar sites (designated under international convention) and proposed Ramsar sites are also considered in the same manner in accordance with national planning policy. • Areas of habitat or populations of species which meet the published selection criteria for designation as a European Site based on discussions with Natural England and field data collected to inform the impact assessment, but which are not themselves currently designated at this level.
National (relating to the UK, specifically England)	• A nationally designated site including SSSI and NNR. • Areas (and the populations of species which inhabit them) which meet the published selection criteria guidelines for selection of biological SSSIs but which are not themselves designated based on field data collected to inform the impact assessment, and in agreement with Natural England. • Species of Principal Importance (SPI) and HPI, Red listed and legally protected or notable species that are not addressed directly in Part 2 of the Guidelines for Selection of Biological SSSIs (Ref 6.29) but can be determined to be of national importance using the principles described in Part 1 of the guidance. • Areas of Ancient Woodland, for example woodland listed within the Ancient Woodland Inventory (Ref 6.24) and ancient and veteran trees.
Regional (East Midlands)	• Regularly occurring HPI or populations of SPI, Red listed and legally protected or notable species may be of regional importance in the context of published information on population size and distribution.
County (Lincolnshire)	• LNR and non-statutory designated sites including: Local Wildlife Sites (LWS). Areas which, based on field data collected to inform the impact assessment, meet the published selection criteria for those sites listed above (for habitats or

Geographic context of importance	Criteria
	species, including those listed in relevant Local Biodiversity Action Plans) but which are not themselves designated.
Local (towns, local country area e.g., East Lindsey)	• HPI and SPI, Red listed and legally protected or notable species that based on their extent, population size, quality etc are determined to be at a lesser level of importance than the geographic contexts above. • Common and widespread semi-natural habitats occurring within the study area in proportions greater than may be expected in the local context. • Common and widespread native species occurring within the study area in numbers greater than may be expected in the local context.
Negligible	• Common and widespread semi-natural habitats and species that do not occur in levels elevated above those of the surrounding area. • Areas of heavily modified or managed land uses (for example, hard standing used for car parking, as roads etc.)

6.7.8. Assigning importance to ecological features is based on professional judgement informed by available guidance and information along with expert advice. CIEEM's EcIA guidelines state that only ecological features which are important and potentially affected by a scheme should be subject to detailed evaluation. For the purposes of this assessment, ecological features of 'Local' importance or higher are assessed as being IEFs and therefore considered with regards to the significance of effects. Ecological features below 'Local' importance are not considered sufficiently important to experience significant effects and are not assessed as being IEFs.

Scope of Ecological Impact Assessment (EcIA)

6.7.9. The EcIA will consider the potential effects of the English Onshore Scheme upon IEFs identified during the baseline survey and data collection, in accordance with the CIEEM EcIA Guidelines (Ref 6.20). This requires the identification of pathways available for an impact, either directly or indirectly, to result in a potential significant effect to the habitat and / or species. IEFs may be located within areas directly impacted by the English Onshore Scheme or the wider areas surrounding this (the 'zone of influence').

Identification and Characterisation of Potential Impacts

6.7.10. The potential impacts of the English Onshore Scheme during construction and operation and the potential ecological effects arising from them will be identified and characterised, taking into consideration the following parameters:

- Beneficial or adverse - whether the impact will result in net loss or degradation of an important ecological feature or whether it will enhance or improve it.
- Extent - the spatial area over which an impact occurs.
- Magnitude - the size or intensity of the impact measured in relevant terms, e.g., number of individuals lost or gained, area of habitat lost or created or the degree of change to existing conditions (e.g., noise or lighting levels).
- Duration - the length of time over which the impact occurs. The duration of the impacts will be described as either ‘short-term’, ‘medium-term’ or ‘long-term’. Short-term is considered to be up to 1 year, medium-term is considered to be between 1 and 10 years and long-term is considered to be greater than 10 years.
- Reversibility - the extent to which impacts are reversible either through natural regeneration and succession or through active mitigation.
- Timing and frequency - consideration of the timing of events in relation to ecological change, for example, some impacts may be of greater magnitude if they take place at certain times of year (e.g., breeding season). The extent (see above) to which an impact is repeated may also be of importance.
- Impacts on IEFs can be permanent or temporary, direct or indirect, and can be cumulative. These factors are brought together to assess the potential impact on the integrity or conservation status of a particularly important ecological feature.

6.7.11. Potential impacts are characterised initially in the absence of any mitigation, except where this is integral to the design of the English Onshore Scheme (design measures).

6.7.12. Collaboration and data exchange with other relevant disciplines such as air quality and arboriculture will be carried out to further inform the EcIA and assessment of potential impacts.

Assessment of Cumulative Impacts and Effects

6.7.13. Other projects or proposals which are due to occur within the same ZoI and within similar timeframes as the English Onshore Scheme have the potential to results in cumulative effects on biodiversity and therefore the impacts of any relevant projects or proposals will be considered in combination with the English Onshore Scheme.

Assigning Significance

6.7.14. Having characterised importance and potential impacts, the significance of the predicted effects on IEFs arising will be assessed. The assessment of likely significant effects as a result of the English Onshore Scheme will be considered for both the construction and operational phases.

6.7.15. The CIEEM EcIA guidelines (Ref 6.20) define a significant effect in the context of an Ecological Impact Assessment as *“an effect that either supports or undermines biodiversity conservation objectives for important ecological features or for biodiversity in general”*. Significant effects, as defined by the CIEEM EcIA guidelines, are

determined by assessing any deviation in the baseline conditions of a feature of ecological importance that may occur because of individual and cumulative impacts during the construction and operational phases of a development.

6.7.16. These effects will be expressed in terms of geographical scale, using the same scale detailed above, to define the importance of an ecological feature. The geographical scale at which an effect is significant can vary from the geographical importance of the ecological feature being assessed and in accordance with the CIEEM EcIA guidelines, this will be a function of the assessment. For this assessment, effects at a Local scale or higher are defined as 'significant'.

6.7.17. Where a potential significant effect is identified, proposals for mitigation and compensation would be made with the aim of avoiding, preventing, reducing or, if possible, offsetting any identified significant adverse effects. Following the application of mitigation and compensation, the effects are reassessed to determine the residual effect.

Other Biodiversity Assessments

6.7.18. A HRA will be undertaken as a separate exercise to the EIA, to consider any likely significant effects on international designated sites, as well as a BNG assessment.

6.8 Assessment Limitations and Assumptions

6.8.1. As detailed in Paragraph 6.1.5 above, at this early stage in the Project, only limited desk-based information has been used for this scoping chapter and no data is yet available from field surveys to inform the Scoping Report. This factor has been considered and has influenced the assessment presented. As such, where necessary, a precautionary approach has been taken. Species and / or likely significant effects have been scoped in where insufficient information is available at this early stage to scope out these out.

6.8.2. In addition, the scope of ecological surveys detailed above in Section 6.7 is also precautionary. Ecological receptors, survey effort and potential for likely significant effects shall be reviewed as the English Onshore Scheme progress and further information becomes available.

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7. Cultural Heritage

7.1 Introduction

7.1.1. The cultural heritage assessment will consider the potentially significant effects on cultural heritage receptors that may arise from the construction and operation of the English Onshore Scheme.

7.1.2. This chapter of the Scoping Report sets out the relevant legislation, planning policy context and technical guidance used to inform the scope of the assessment and summarises any consultation and engagement in relation to cultural heritage undertaken to date. It provides an overview of the baseline conditions relevant to cultural heritage within and around the English Onshore Scheme Scoping Boundary, the measures which will be incorporated into the English Onshore Scheme to mitigate cultural heritage impacts, the likely significant effects to be considered within the assessment, and how these likely significant effects will be assessed for the purpose of an EIA.

7.1.3. This chapter should be read in conjunction with **Part 1, Chapter 4: The Project**, and considered alongside the following disciplines found in **Volume 1**:

- **Part 2, Chapter 8: Landscape and Visual Amenity:** the landscape and visual assessment will be used to inform the cultural heritage assessment regarding visual effects on terrestrial heritage features.
- **Part 2, Chapter 9: Water Environment: t**he onshore elements of the Project have potential to alter the pattern of drainage within and adjacent to Draft Order Limits. Any changes could impact on heritage assets from alterations to drainage patterns, changes to groundwater flows and levels, and from the movement of contaminants or pollutants
- **Part 2, Chapter 10: Geology and Hydrogeology:** the geology and hydrogeology assessment will be used to inform the terrestrial cultural heritage and archaeology assessment as the geology and ground conditions affects what type of historic environmental remains are likely to survive and how the landscape was utilised in the past.
- **Part 2, Chapter 13: Noise and Vibration:** due to the potential for changes in the noise and vibration to affect archaeological remains, this chapter will be used to inform the terrestrial cultural heritage and archaeology assessment
- **Part 2, Chapter 26: Marine Archaeology:** there will be interaction between the cultural heritage and marine archaeology assessments, in the location of the landfall and the intertidal area.

7.1.4. This chapter is supported by **Volume 3, Figure 7.1 Cultural Heritage Study Areas and Designated Heritage Assets**.

7.1.5. This chapter provides a high-level desk-based appraisal and has not included a full range of resources (e.g., documentary, cartographic, aerial photography or LiDAR datasets etc). These sources and any others that are relevant will be considered in a full

desk-based assessment for an application for consent. This chapter does not include marine archaeology; this will be covered in **Part 2, Chapter 26: Marine Archaeology**.

7.2 Relevant Legislation, Planning Policy and Technical Guidance

7.2.1. This section identifies the relevant legislation, national and local policy and guidance which has informed the scope of the cultural heritage assessment.

Legislation

7.2.2. A summary of the key legislation considered in, but not limited to, the scope of cultural heritage effects is outlined in **Table 7-1**. The legislation presented in **Table 7-1** underpins and/or is considered in the following sections of this scoping chapter:

- Baseline conditions;
- Scope of the assessment; and
- Assessment methodology.

Table 7-1: Legislation relevant to Cultural Heritage

Legislation	Legislative context
Ancient Monument and Archaeological Areas Act 1979 (Ref 7.1).	This Act sets out that sites considered to be of national importance are required to be compiled in a Schedule of Monuments. These sites are accorded statutory protection. The Act sets out conditions whereby Scheduled Monument Consent is required. This Act also provides for the designation of Areas of Archaeological Interest in which statutory provisions for access to construction sites for carrying out archaeological works apply.
Planning (Listed Buildings and Conservation Areas) Act 1990 (Ref 7.2).	This Act covers the registration of listed buildings (buildings that are seen to be of special architectural or historic interest) and the designation of conservation areas (areas of special architectural or historic interest the character or appearance of which it is desirable to preserve or enhance). It sets out the conditions under which a listed building consent would be required. The Act sets out at Sections 66 and Section 72 the duties of Local Planning Authorities (LPAs) to give great weight to the desirability of preserving listed buildings and their settings and the character of conservation areas in planning decisions. The Section 66 and Section 72 duties are superseded in applications under the Planning Act 2008 by equivalent provisions in the Infrastructure Planning (Decisions) Regulations 2010 (see below).

Legislation	Legislative context
Historic Buildings and Ancient Monuments Act 1953 (Ref 7.3).	Under section 8C of the Historic Buildings and Ancient Monuments Act 1953, Historic England compiles a register of gardens and other land situated in England and appearing to them to be of special historic interest.
Infrastructure Planning (Decisions) Regulations 2010 (Ref 7.4).	These regulations require decision-makers to have regard to the desirability of preserving: a scheduled monument or its setting; listed buildings, any features which contribute to their special interest and their settings; and to have regard for the desirability of preserving the character and appearance of conservation areas. These duties supersede sections 66 and 72 of the Planning Act (Listed Buildings and Conservation Areas) 1990 in determining DCO applications.
Treasure Act 1996 (Ref 7.5).	This Act defines what constitutes “treasure”. Any find of “treasure” must be reported to the local Coroner.
Treasure (Designation) Order 2002 (Ref 7.6).	This Order amends the statutory definition of “treasure”.
The Treasure (Designation) (Amendment) Order 2023 (Ref 7.7).	This Order amends the Treasure (Designation) Order 2002 to include an additional class of objects within the definition of treasure in section 1(1) of the Treasure Act 1996 (c. 24), and to exclude two classes of objects from that definition.
The Hedgerows Regulations 1997 (Ref 7.8).	These regulations set out criteria to be used to determine the importance of hedgerows and protect important hedgerows from removal. Selection criteria include heritage-based considerations.
Burial Act 1857 (Ref 7.9).	This Act states that it is generally an offence to remove human remains from a place of burial without a licence from the Secretary of State.
Protection of Military Remains Act 1986 (Ref 7.10).	This Act sets out specific protections for aircraft which have crashed or vessels which have sunk or been stranded whilst in military service. It sets out a general prohibition on any disturbance or removal of such remains without a licence granted by the Secretary of State.

Planning Policy

7.2.3. A summary of the planning policies at both a national and local level relevant to the scope of cultural heritage effects is outlined in **Table 7-2** and **Table 7-3**. The policies presented in **Table 7-2** and **Table 7-3** underpin and/or are considered in the following sections of this scoping chapter:

- Baseline conditions;
- Scope of the assessment; and
- Assessment methodology.

Table 7-2: National Planning Policy relevant to Cultural Heritage

Policy reference	Policy context
Overarching National Policy Statement for Energy (EN-1) (2024) (Ref 7.11). Section 5.9 paragraphs 5.9.12, 5.9.17-5.9.21.	Requires change to the significance of heritage assets to be considered in developing an understanding of the potential effects of the proposed development. It recommends conditions for refusal due to substantial harm and sets out criteria for this.
Draft Overarching National Policy Statement for Energy (EN-1) (2025) (Ref 7.12). Section 5.9 paragraphs 5.9.14, 5.9.19-5.9.22.	The Government has published a draft update to the Overarching National Policy Statement for Energy. For cultural heritage, the 2025 Draft NPS EN-1 is largely the same as in the 2024 document, relevant section numbers will remain the same, however paragraph numbers will be updated.
National Policy Statement for Electricity Networks Infrastructure (EN-5) (2024) (Ref 7.13). Section 2.9 paragraphs 2.9.19, 2.9.25.	Requires that applicants should seek to avoid altogether internationally and nationally designated areas of cultural value, which includes heritage assets with statutory protection. Development of underground cables should consider the potentially very disruptive effects on archaeological and historic assets.
Draft National Policy Statement for Electricity Networks Infrastructure (EN-5) (2025) (Ref 7.14). Section 2.9 paragraphs 2.9.19 and 2.9.26.	The Government has published a draft update to the Overarching National Policy Statement for Energy. For cultural heritage, the 2025 Draft NPS EN-5 is largely the same as in the 2024 document, relevant section numbers will remain the same, however some paragraph numbers will be updated.

Policy reference	Policy context
National Planning Policy Framework (NPPF) (2024). Section 16 (Ref 7.15).	Paragraphs 202 – 201 relate to the historic environment and its sustainable management with regards to proposed development. It defines heritage assets and why they should be conserved.

Table 7-3: Local Planning Policy relevant to Cultural Heritage

Policy reference	Policy context
East Lindsey Local Plan, Core Strategy, adopted July 2018 (Ref 7.16). Strategic Policy 11 (SP11) – Historic Environment.	The Council will support proposals that secure the continued protection and enhancement of heritage assets in East Lindsey, contribute to the wider vitality and regeneration of the areas in which they are located and reinforce a strong sense of place. Proposals will be supported where they: • Preserve or enhance heritage assets and their setting. • Preserve or enhance the special character, appearance and setting of the District's conservation areas. • Do not harm the site or setting of a scheduled monument; any unscheduled nationally important or locally significant archaeological site. • Are compatible with the significance of non-designated heritage assets in East Lindsey.

Technical Guidance

7.2.4. A summary of the relevant technical guidance, specific to the cultural heritage assessment, that has informed this Scoping Report and will inform the assessment within the Preliminary Environmental Information Report (PEIR) and Environmental Statement (ES), is given in **Table 7-4**.

Table 7-4: Technical Guidance relevant to Cultural Heritage

Technical guidance document	Context
Planning Practice Guidance: Historic Environment 2019 (Ref 7.17).	This guidance provides advice on the conservation and enhancement of cultural heritage.
Historic England Good Practice Advice in Planning Note 2 (GPA 2): Managing Significance in decision-taking in the Historic Environment 2015 (Ref 7.18).	This document provides guidance and information to assist in implementing cultural heritage policy and ensuring compliance with NPPF fundamentals.
Historic England Good Practice Advice in Planning Note 3 (GPA 3): The Setting of Heritage Assets 2017 (Ref 7.19).	Sets out guidance on managing change within the setting of heritage assets. The document sets out five steps to follow to ensure an appropriate level of assessment is achieved.
Chartered Institute for Archaeology (2021) Principles of Cultural Heritage Impact Assessment in the UK (Ref 7.20).	This document provides guidance for cultural heritage practitioners in regard to the principles of cultural heritage impact assessments. These are: A. understanding cultural heritage assets; and B. evaluating the consequences of change.
Institute of Environmental Management and Assessment (IEMA) (2020) Impact Assessment Guidance (Ref 7.21).	Sets out key principles and direction to ensure that environmental mitigation identified during the pre-application assessment process (including design and EIA) is delivered once consent has been granted.
Statements of Heritage Significance: Analysing Significance in Heritage Assets 2019 (Ref 7.22).	This Historic England advice note covers the NPPF requirement for applicants for heritage and other consents to describe heritage significance to help local planning authorities to make decisions on the impact of proposals for change to heritage assets.
Chartered Institute for Archaeologists (CIfA) Standard and guidance for archaeological desk-based assessment 2020a (Ref 7.23).	Sets out standards to produce archaeological desk-based assessments.
CIfA Standard and guidance for commissioning work or providing consultancy advice on archaeology and the historic environment 2020b (Ref 7.24).	Sets out standards for the provision of consultancy advice in the historic environment.

7.3 Consultation and Engagement

7.3.1. Introductory meetings were held with Historic England in March and August 2025 to introduce the English Onshore Scheme and the English Offshore Scheme. Within the March meeting, Historic England identified the potential for cumulative effects of the English Onshore Scheme and the Grimsby to Walpole project. They also highlighted the Grade I Listed Windmill, East Street (NHLE 1146936) as being a key consideration, and that the cap and sails are due to be replaced on it following storm damage.

7.3.2. Further focussed engagement (through both informal and formal consultation) will be undertaken and recorded throughout the pre-application stages of the project. Key consultees in addition to Historic England are the LPA archaeological advisors and conservation officers.

7.3.3. Key areas of consultation are intended to include the proposed scope of the assessment and the approach to the assessment methodology. As well as the regular consultation discussed above, consultation will also be undertaken at two key stages during the application for the development consent:

- In advance of the PEIR, to clarify and confirm requirements following the receipt of the Scoping Opinion and to agree the final scope of the assessment; and
- During preparation of the ES to discuss any comments raised during the statutory consultation to ensure any necessary amendments can be incorporated.

7.3.4. Local or specialist groups will be contacted should the assessment process identify a need to engage further detailed local knowledge, or if requested during the statutory consultation process.

7.3.5. Engagement with key stakeholders will be ongoing up to the submission of the Development Consent Order (DCO) to ensure agreement of the approach to the assessment.

7.3.6. Additional detail on engagement associated with marine archaeology can be found in **Part 2, Chapter 26: Marine Archaeology**.

7.4 Baseline Conditions

Study Areas

7.4.1. The Study Areas for the assessment of effects on cultural heritage have been defined through consideration of the nature of the English Onshore Scheme, which is principally the connection of the subsea High Voltage Direct Current (HVDC) cable to the Transition Joint Bay (TJB) at the landfall, via HVDC underground cable from the TJB to the converter station, and via High Voltage Alternating Current (HVAC) underground cable from the converter station to the proposed 400kV LCS-B.

7.4.2. Study Area A extends 500 m from the English Onshore Scheme Scoping Boundary, within which all elements are located. This is deemed to be an appropriate distance from the English Onshore Scheme Scoping Boundary to describe the historical and archaeological baseline and to undertake an assessment of archaeological potential. In addition, data will be considered in Study Area B up to 1 km from the English Onshore Scheme Scoping Boundary to provide additional archaeological context, but will not be described in detail. The heritage assets within this wider area will only be used to enhance the baseline where necessary and will be presented in a gazetteer.

7.4.3. The converter station will be the above ground element of the English Onshore Scheme. Due to its dimensions and characteristics when operational, an Extended Study Area has been defined to identify receptors which may be impacted through changes within their setting. Extended Study Area A is set at 1 km from the combined CS05 and CS06 converter station siting zones, and will consider impacts due to changes within the setting of non-designated heritage assets. Extended Study Area B is set at 3 km from the combined CS05 and CS06 converter station siting zones and will consider impacts due to changes within the setting of designated heritage assets. Any assets outside of the study areas which have a setting that extends within it will also be considered. However, only heritage assets where setting contributes to their significance shall be considered within these Extended Study Areas.

7.4.4. The Study Areas and Extended Study Areas are shown in **Volume 3, Figure 7-1**.

7.4.5. Consultation with stakeholders will be undertaken to identify heritage assets outside of Extended Study Area B, where their significance may be affected through changes within their setting. Any heritage assets identified will be included in the assessment.

7.4.6. The Study Areas will be reviewed and amended in response to any refinement of the English Onshore Scheme; desk and site-based analysis, including the development of a Zone of Theoretical Visibility (ZTV); the identification of additional impact pathways; and through ongoing consultation.

7.4.7. The assessment will be supported by appropriate visualisations, such as photomontages, to help illustrate the likely impacts of the English Offshore Scheme. These will be agreed with the relevant consultees, including Historic England and the local authorities.

Data Gathering Methodology

7.4.8. For this Scoping Report, the cultural heritage baseline has been established through a review of the following sources:

- National Heritage List for England (NHLE);
- Lincolnshire Historic Environment Record (HER) data;
- Historic England's dataset for Lincolnshire conservation areas data;
- Lincolnshire Landscape Character Areas;
- Regional Research Framework East Midlands: Updated Framework 2012 (Ref 7.25);
- Regional Research Framework East of England: Updated Framework 2021 (Ref 7.26);
- Historic Ordnance Survey (OS) mapping, available online; and
- Historic England's Aerial Archaeology Mapping Explorer (Ref 7.27).

Current Baseline

7.4.9. The following sections describe the current baseline within the Study Areas and Extended Study Areas, as described above.

Scoping Boundary

Designated Heritage Assets

7.4.10. There are no World Heritage Sites, Registered Battlefields, scheduled monuments, Registered Parks and Gardens, or conservation areas within the English Onshore Scheme Scoping Boundary. There are two Grade II listed buildings within the Scoping Boundary (see **Volume 3**, **Figure 7-1**), comprising:

- Stain Glebe Farm (NHLE 10063007); and
- The Cottage (NHLE 1063014).

Non-designated Heritage Assets

7.4.11. There are 42 non-designated heritage assets recorded on the HER within the English Onshore Scheme Scoping Boundary, which can be seen in **Volume 3, Figure 7-1**. These include those within the converter station siting zones. These comprise Roman settlement, deserted medieval settlements, areas of ridge and furrow, post-medieval domestic and agricultural buildings, undated cropmarks, World War II aircraft obstructions and a coastguard station. The HER points also show the locations of artefact find spots including Romano-British and medieval pottery and a Romano-British cremation.

Study Areas A and B

Designated Heritage Assets

7.4.12. There are no World Heritage Sites or Registered Battlefields within Study Areas A and B.

7.4.13. There are four scheduled monuments within Study Area A, one of which extends into Study Area B, as seen in **Volume 3, Figure 7-1**. The scheduled monuments are:

- Markby Priory (NHLE 1004987) (390 m north of the English Onshore Scoping Boundary), which is a medieval ecclesiastical site;
- Medieval churchyard cross at St Andrew's churchyard (NHLE 1014424) (360 m south of the English Onshore Scoping Boundary);
- Medieval churchyard cross at Holy Trinity churchyard (NHLE 1014425) (350 m south of the English Onshore Scoping Boundary); and
- Medieval churchyard cross at St Margarets churchyard (NHLE 1014426) (370 m north west of the English Onshore Scoping Boundary).

7.4.14. There are 68 listed buildings located within Study Area A and 13 within Study Area B, as seen in **Volume 3, Figure 7-1**. Of the combined total of 81 across both Study Areas, four are Grade I listed, comprising:

- The Church of St. Andrew (NHLE 1147204) (900 m north of the English Onshore Scoping Boundary);
- The Church of St. Margaret (NHLE 1360009) (340 m south of the 450 m north of the English Onshore Scoping Boundary);

- Windmill, East Street (NHLE 1146936) (140 m south of the English Onshore Scoping Boundary); and
- The Church of St. Wilfrid (NHLE 1063026) (430 m southeast of the English Onshore Scoping Boundary).

7.4.15. A further four listed buildings are Grade II* listed and comprise a manor house and hall within Alford, a church at Markby Priory and a church to the north-west of Bilsby.

7.4.16. The remaining 73 listed buildings are Grade II listed, the majority of which are within Alford, Bilsby and Thoresthorpe.

7.4.17. Alford conservation area (DLI10532) (120 m south of the English Onshore Scoping Boundary) is located within Study Area A and encroaches into Study Area B.

7.4.18. Well Hall, a Grade II Registered Park and Garden (NHLE 1000992) (910 m southwest of the English Onshore Scoping Boundary) has a small portion of its footprint within Study Area B.

Non-designated Heritage Assets

7.4.19. There are a total of 329 entries on the HER within Study Areas A and B, comprising 228 within Study Area A and 101 within Study Area B. Overall, the HER records comprise archaeological remains, historic structures such as farmsteads, and artefact find spots from prehistory to the medieval period. Typical archaeological remains recorded include:

- Potential prehistoric boundary ditches;
- Bronze Age round barrow;
- Find spots of prehistoric stone tools;
- Roman period boundaries and enclosures;
- Medieval settlement remains;
- Medieval and post-medieval ridge and furrow;
- Post-medieval agricultural buildings; and
- Undated linear features.

7.4.20. An initial review of historic mapping shows that by the late 19th and early 20th centuries the landscape of the Study Areas comprised field enclosures extending from settlements such as Alford, Bilsby, Mumby and Hannah, with linear settlement at Huttoft and Anderby.

Converter Station Siting Zones

Designated Heritage Assets

7.4.21. There are no World Heritage Sites, scheduled monuments, listed buildings, Registered Battlefields, Registered Parks and Gardens, or conservation areas within the converter station siting zones.

Non-designated Heritage Assets

7.4.22. There are ten non-designated heritage assets within the footprint of both converter station siting zones. These comprise deserted medieval villages, boundary cropmarks, medieval and post-medieval field systems, a farmstead and a tramway. Two non-designated heritage assets within CS05 denote the findspots of Romano-British pottery.

Extended Study Areas A and B

Designated Heritage Assets

7.4.23. As outlined above, designated heritage assets were considered out to 3 km (Extended Study Area B) from the combined converter station siting zones to identify receptors which may be impacted through changes within their setting.

7.4.24. There are seven scheduled monuments within Extended Study Area B (see **Volume 3, Figure 7-1**):

- Markby Priory (NHLE 1004987) (1.3 km north of the converter station siting zones);
- Site of St Mary's Priory (NHLE 1008687) (2.6 km west of the Converter Station Siting Zones);
- Hagnaby Abbey, house and formal garden (NHLE 1011454) (2.3 km north east of the converter station siting zones); and
- Four medieval churchyard crosses at Holy Trinity churchyard (NHLE 1014425) (350 m south of the converter station siting zones), St Thomas of Canterbury's churchyard (NHLE 1014423) (2.4 km south east of the converter station siting zones), St Andrew's churchyard (NHLE 1014424) (1.8 km south east of the Converter Station Siting Zones), and St Margarets churchyard (NHLE 1014426) (500 m north of the converter station siting zones).

7.4.25. There are 93 listed buildings within the Extended Study Area B; the majority of which are to the southwest of the CS05 Siting Zone. Five are Grade I listed structures comprising:

- The Church of St. Andrew (NHLE 1147204) (2.2 km m north of the Converter Station Siting Zones);
- The Church of St. Margaret (NHLE 1360009) (340 m south of the Converter Station Siting Zone);
- Windmill, East Street (NHLE 1146936) (710 m southwest of the Converter Station Siting Zone); and
- The Church of St. Wilfrid (NHLE 1063026) (1.1 km southeast of the Converter Station Siting Zone).

7.4.26. Six are Grade II* listed and comprise four churches, a manor house, and a hall. The remaining 82 are Grade II listed and comprise churches, cross bases, domestic, commercial and agricultural buildings and a war memorial.

7.4.27. The Alford conservation area (DLI10532) (670m south west of the Converter Station Siting Zones) is within the Extended Study Area B. This contains a high density of listed buildings.

Non-designated Heritage Assets

7.4.28. As outlined above non-designated heritage assets were considered out to 1 km (Extended Study Area A) from the combined Converter Station Siting Zones to identify receptors which may be impacted through changes within their setting.

7.4.29. A review of the HER data showed that there are 112 non-designated heritage assets within Extended Study Area A, comprising moated sites, deserted medieval villages, ridge and furrow, mills, a chapel, farmhouses, farm buildings and find spots such as prehistoric flints, and Romano-British and medieval ceramics.

National Character Area

7.4.30. The Study Areas are within the Lincolnshire Coast and Marshes National Character Area (NCA) 42 (Ref 7.28) and Settled Fen and Marshes, Coastal Dunes, Beach and Intertidal Sand Flats and Fen and Marsh Margin Farmlands Local Character Areas (LCAs) (Ref 7.29). These define the area as a wide coastal plain with the higher ground of the Middle Marsh in the west, which contains an undulating arable landscape with nucleated settlement, strip fields, and areas of woodlands and hedgerows. The Outmarsh in the east is a more open landscape with dispersed settlement, arable land and rich pasture divided by narrow dykes. This eastern area has changed in character from grassy to more arable since the mid-20th century when pump drainage was introduced. The NCA contains several deserted medieval villages which survive sub-surface, and reclaimed marshland and salt marshes contain traces of ridge and furrow. Evidence of medieval and later industry such as salt working has been retained in some areas. Rural settlements are characterised by the use of brick and pantile due to a period of 18th and 19th century rebuilding, but mud and stud buildings are also present, albeit rare. High status buildings within the NCA were built with stone, with this material generally reserved for this purpose.

Future Baseline

7.4.31. At this stage the future baseline for cultural heritage is based upon assumptions relating to types of development and activity that might reasonably be expected. Most of the Study Areas and Extended Study Areas are within arable agricultural land and some degradation of extant earthworks and shallowly buried archaeological deposits may be expected to occur from agricultural practices. There are also several settlements within the Study Areas and Extended Study Areas which may extend into as yet undeveloped areas, which would result in an alteration to the baseline.

7.4.32. There are a number of proposed and committed developments within the surrounding area. This includes the proposed onshore transmission infrastructure associated with Ossian Offshore Wind Farm (OWF), of which the proposed onshore export cable routes are within the English Onshore Scheme Scoping Boundary. The Grimsby to Walpole Project's proposed Order Limits, containing the 400kV LCS-B and overhead line, is also partially within the English Onshore Scheme Scoping Boundary. There are also other NGET projects in the vicinity, the most pertinent being the EGL (Eastern Green Link) 3 and EGL 4 Projects landfall which intersect the eastern portion of the English Onshore Scheme Scoping Boundary. The cables for the EGL 3 and EGL 4 Projects also pass through the English Onshore Scheme Scoping Boundary.

7.4.33. There are also several proposed developments which are within 10 km of the English Onshore Scheme Scoping Boundary but do not extend into it. However, these developments still have potential to alter the existing baseline. These developments

comprise the onshore element associated with the Outer Dowsing OWF; Manby anaerobic digester; and the Viking carbon capture and storage (CCS).

7.4.34. The potential for cumulative effects will be considered later in the EIA process according to the approach outlined in **Part 4, Chapter 30: Cumulative Effects**.

7.5 Design and Control Measures

7.5.1. As part of the design process for the English Onshore Scheme, a number of primary (embedded) environmental mitigation measures will be proposed to reduce the potential for impacts on cultural heritage receptors as the design is developed in further detail to avoid or minimise adverse effects on heritage assets.

7.5.2. Best practice measures regarding the design and finish of completed infrastructure and restoration of historic landscape features (e.g. hedgerows) will be considered within the assessment as appropriate and the influence of these measures would be considered in determining magnitude of impact. With adherence to the Outline Construction Environmental Management Plan (CEMP), considerate construction practices aimed at reducing noise, dust, and visual intrusion of works in progress or minimising duration of construction and construction hours would also be considered within the assessment.

7.5.3. Where adverse effects to heritage assets cannot be avoided through primary environmental mitigation measures, secondary mitigation will be identified as part of the assessment process. It is anticipated that an overarching Project design would be produced and agreed with relevant consultees to set out a programme of archaeological investigation to mitigate effects to buried archaeological remains and built heritage. The scope of the Project design would be agreed through the assessment process. Other additional measures will be identified as appropriate for mitigating effects due to changes within the setting of heritage assets.

7.6 Scope of the Assessment

Potential Sensitive Receptors

7.6.1. A list of cultural heritage receptors which may be subjected to significant effects, caused by changes within their setting, has not been produced at this stage. This will be done following the development of a ZTV and through formal and informal consultation and engagement with Historic England and the relevant LPA archaeological advisors and conservation officers.

7.6.2. In addition to effects on designated heritage assets, Historic England's Good Practice Advice in Planning Note 3 (the Setting of Heritage Assets) (Ref 7.19) states that non-designated heritage assets can have settings which could be affected by proposed development. Consequently, a detailed scope of non-designated heritage assets, including locally listed buildings where identified, will be set out and agreed with Historic England and the relevant LPA archaeological advisors and conservation officers.

7.6.3. Archaeological remains within the Scoping Boundary will be subject to direct physical impacts during the installation of the English Onshore Scheme.

Likely Significant Effects

7.6.4. Likely significant cultural heritage effects which will be taken forward for assessment in the ES are summarised in **Table 7-5**.

7.6.5. A number of potential effects have been scoped out from further assessment as these are considered unlikely to be significant. These conclusions are based on the knowledge of the baseline environment, the nature of planned works and the wealth of evidence on the potential for effects from similar projects more widely. The conclusions follow existing best practice.

Table 7-5: Likely significant Cultural Heritage effects

Impact	Receptor	Potential for significant effects	Proposed to be scoped in / out
Construction phase			
Land preparation (earthworks, excavation).	Non-designated heritage assets within the footprint of the English Onshore Scheme and those outside that may have sub-surface elements that extend into the footprint of the English Onshore Scheme.	**Yes** – Potential effects from permanent loss of archaeological remains.	**Scoped in**
	Designated heritage assets within the footprint of the English Onshore Scheme.	**No** – There are listed buildings within the Scoping Boundary which will be avoided during construction.	**Scoped out**
	Historic Landscape Character.	**Yes** – Potential effects from loss of historic landscape elements.	**Scoped in**
Construction effects to heritage assets beyond the footprint of the English Onshore Scheme caused by changes to drainage patterns.	Designated and non-designated heritage assets.	**Yes** – Potential effects on preservation of heritage assets.	**Scoped in**
Direct physical impacts on heritage assets and archaeological remains beyond the footprint of the English Onshore Scheme permanent infrastructure.	Designated and non-designated heritage assets; historic landscape character.	**No** – No physical disturbance, damage, or alteration would arise to heritage assets and archaeological remains located outside these areas as these would be beyond the footprint of permanent infrastructure.	**Scoped out**
Temporary effects during construction arising through change within the setting.	Designated and non-designated heritage assets; historic landscape character.	**No** – Temporary effects arising through change within the setting from temporary construction activity	**Scoped out**

Impact	Receptor	Potential for significant effects	Proposed to be scoped in / out
		during the construction phase are not deemed to be significant as they are temporary and would not result in significant residual effects greater than the operational effects.	
Operational phase			
All above-ground infrastructure.	Designated and non-designated heritage assets.	**Yes** – Potential for effects through change to setting caused during operation. This will be confined only to heritage assets where setting contributes to their cultural significance.	**Scoped in**
	Historic Landscape Character.	**Yes** – Potential for effects from perceptual change to historic landscape.	**Scoped in**
Maintenance phase			
Repairs to above ground infrastructure or buried cables.	Designated and non-designated heritage assets; historic landscape character.	**No** – There would be no impacts to heritage assets from repairs of above ground infrastructure or buried cables as heritage assets within the footprint of the English Onshore Scheme will have been removed, following appropriate mitigation, during the construction phase.	**Scoped out**

7.7 Assessment Methodology

7.7.1. The proposed generic Project-wide approach to the assessment methodology is outlined in **Volume 1, Part 1, Chapter 5: EIA Approach and Methodology**. While this has informed the defined approach for cultural heritage, it is necessary to set out how this methodology will be applied, and adapted as appropriate, to address the specific needs of the cultural heritage assessment in the ES.

Further Data to be Gathered / Processed

7.7.2. To establish a detailed baseline as part of the EIA, a desk study and targeted site walkover will be completed. This will include:

- A review of desk-based data using the sources listed in Paragraph 7.4.8 in addition to the following:
  - A detailed interrogation of up to date HER data for Lincolnshire;
  - A review of locally listed buildings and conservation areas provided by the local planning authorities;
  - A review of the Portable Antiquities Scheme database;
  - Analysis of historic mapping, including those which are accessible online and those held by the Lincolnshire HER and Lincolnshire County Council archives;
  - A review of aerial photographs through online viewers from Historic England and those held by the Lincolnshire HER;
  - Analysis of Environment Agency Light Detection and Ranging (LiDAR) data and satellite imagery;
  - Analysis of the British Geological Survey (BGS);
  - A review of the Historic England Peat Intertidal and Coastal Peat Database;
  - A review of readily available regional and local heritage data and contextual studies; and
  - Adherence to the Lincolnshire Archaeological Handbook.
- A targeted walkover survey will be conducted to ascertain the condition of known heritage assets within the construction corridor. It will also focus on areas of highest potential to contain new archaeological remains and artefacts of archaeological interest that may be of relevance to the assessment. The assessment of areas to be included for the survey will focus on the main construction corridor and converter station footprint, along with the landfall and intertidal areas, access tracks, construction compounds and other temporary work areas.; and
- Site visits to relevant heritage assets to inform the assessment of effects arising from potential changes within their setting.

7.7.3. Following completion of the desk study and site walkovers, and subject to consultation and the evolvement of the English Onshore Scheme design, consideration will be given to the undertaking of:

- A desk-based geoarchaeological assessment and deposit model; and

- Archaeological evaluation of areas of archaeological potential which are likely to be directly impacted by construction activities. Evaluation may include non-intrusive geophysical survey and intrusive survey through trial trenching, and the programme would be agreed through consultation. Intrusive survey would be targeted on areas where a review of the desk-based data and geophysical survey have not identified potential archaeological remains, i.e. 'blank' areas. This will be to test if such areas are archaeologically sterile. The results of this may inform the design of the English Onshore Scheme and potentially negate the need for further archaeological monitoring or open area excavation though avoidance of these areas. The need for intrusive investigations will be agreed with the relevant consultees. The scope and location of any intrusive investigations will also be subject to consultation.

7.7.4. Where it is identified that there may be a significant effect on a heritage asset as a result of changes within its setting, baseline data will be collected on the setting of the heritage asset and the degree to which the setting contributes to its heritage significance, in accordance with GPA 3 (Ref 7.19). In addition to visiting the heritage asset in question, where access allows, it will include a review of viewpoints which will be prepared for the Landscape and Visual Impact Assessment (LVIA). This will result in an integrated approach to data gathering.

Assessment of Heritage Value

7.7.5. The significance of a heritage asset is the product of the value it holds for this and future generations resulting from its historic, archaeological, architectural or artistic interests (Ref 7.11; Ref 7.15; Ref 7.18 and Ref 7.20):

- Historical interest – through association with past events or past people; or where a heritage asset is illustrative of a particular asset type, theme or period.
- Archaeological interest – through the potential to hold evidence about the past that can be retrieved through specialist investigation.
- Architectural/Artistic interest – through value derived from contemporary appreciation of a heritage asset's aesthetics.

7.7.6. NPS EN-1 notes that setting contributes to a heritage asset's significance as defined in NPPF and GPA 3 as:

"*The surroundings in which a heritage asset is experienced. Its extent is not fixed and may change as the asset and its surroundings evolve. Elements of a setting may make a positive or negative contribution to the significance of an asset, may affect the ability to appreciate an asset, or may be neutral.*"

7.7.7. For the purposes of the cultural heritage assessment, the heritage significance or value of a heritage asset will be assigned to one of five classes with reference to the heritage interests described above and professional judgement informed by policy and guidance (**Table 7-2, Table 7-3 and Table 7-4**). In particular, NPS EN-1 distinguishes between the heritage significance of designated and non-designated heritage assets. To align with other workstreams in this assessment, significance is referred to as a receptor's 'heritage value' in **Table 7-6**.

Table 7-6: Assessment of heritage value

Value	Heritage asset description
Very high.	World Heritage Sites. Designated heritage assets of international importance.
High	Scheduled monuments. Grade I listed buildings. Grade II* listed buildings. Grade II listed buildings with exceptional qualities in fabric, historical association, and/or association/group value with heritage assets of high significance. Protected wrecks. Registered battlefield. Conservation areas containing very important (Grade I / II*) listed buildings. Grade I and II* registered parks and gardens. Protected heritage landscapes (e.g. ancient woodland or historic hedgerows, heritage Sites of Special Scientific Interest). Burial grounds. Non-designated heritage assets (above ground structures, landscape, townscape, buried remains) of national importance.
Medium	Grade II listed buildings which can be shown to have qualities in their fabric or historical association of regional importance only. Conservation areas containing primarily Grade II listed or locally listed buildings. Grade II registered parks and gardens. Locally listed buildings. Non-designated heritage assets (above ground structures, landscape, townscape, buried remains) of regional importance.
Low	Non-designated heritage assets (above ground structures, landscape, townscape, buried remains) of local importance.
Negligible	Item with no significant heritage value or interest.

Assessment of Magnitude of Impact

7.7.8. Magnitude of impact is a measure of the extent to which the heritage significance of a heritage asset is affected, which can be influenced by several factors:

- The permanence of the impact (temporary, permanent, or reversible);
- Physical changes caused by the impact (positive or negative); and
- The extent of the heritage asset or its setting that would be affected and contribution of that part to its heritage significance.

7.7.9. The effects of change within the setting of a heritage asset depends on the contribution of setting to the heritage significance of the heritage asset, and assessments must be,

by their nature, specific to the individual heritage assets being considered. Heritage significance is a qualitative measure of value and any assessments of impact will be drawn from professional judgement exercised within a context defined by statute, policy and guidance.

7.7.10. All assessments will be presented as a narrative, setting out the nature and extent of the impact to a heritage asset's significance arising from the English Onshore Scheme, the permanence of the impact, whether positive or negative, before assigning those impacts a magnitude as set out in **Table 7-7**.

7.7.11. Impacts can be beneficial or adverse. NPS EN-1 (Ref 7.11) expects developers to make, where possible, a positive contribution or beneficial impact to cultural heritage.

Table 7-7: Assessment of magnitude of impact

Impact	Adverse criteria	Beneficial criteria
High	Change to most or all key archaeological materials or key elements of a historic building, such that the resource is totally altered. Comprehensive changes within the setting.	Preservation of a heritage asset in situ where it would otherwise be completely or almost lost. Changes that appreciably enhance the cultural significance of a heritage asset and how it is understood, appreciated, and experienced.
Medium	Changes to many key archaeological materials or key historic building elements, such that the resource is clearly modified. Considerable changes within the setting that affect the character of the heritage asset.	Changes to important elements of a heritage asset's fabric or setting, resulting in its cultural significance being preserved (where this would otherwise be lost) or restored. Changes that improve the way in which the heritage asset is understood, appreciated, and experienced.
Low	Changes to key archaeological materials or key historic building elements, such that the asset is slightly altered. Slight changes within the setting.	Changes that result in elements of a heritage asset's fabric or setting detracting from its cultural significance being removed. Changes that result in a slight improvement in the way a heritage asset is understood, appreciated, and experienced.
Negligible	Very minor changes to archaeological materials, historic building elements, or change within the setting.	Very minor changes that result in elements of a heritage asset's fabric or setting detracting from its cultural significance being removed.

Impact	Adverse criteria	Beneficial criteria
		Very minor changes that result in a slight improvement in the way a heritage asset is understood, appreciated, and experienced.
No Change.	Changes to fabric or within the setting that leave cultural significance unchanged.	

Assessment of Significance of Effect

7.7.12. The classification of the significance of effect is judged by the relationship of the magnitude of impact to the assessed heritage value of a heritage asset (**Table 7-8**).

7.7.13. As a rule, major and moderate impacts are considered to be significant, while minor and negligible impacts are considered to be not significant. However, professional judgement will be applied, and this may be amended as appropriate.

7.7.14. All assessments will be presented as narrative descriptions that set out the significance of a heritage asset, including, where appropriate, the contribution of its setting to significance, anticipated magnitude of impact upon significance, and a resulting significance of effect. Please note that the comments in parentheses refer to the higher of the magnitude of impacts where there are two options (e.g. moderate or minor).

Table 7-8: Assessment of significance of effect

	Magnitude of Impact			
Heritage Value	**High**	**Medium**	**Low**	**Negligible**
Very high	Major (significant)	Major (significant)	Major or Moderate (potentially significant)	Minor (not significant)
High	Major (significant)	Major or Moderate (significant)	Moderate or Minor (potentially significant)	Minor (not significant)
Medium	Major or Moderate (significant)	Moderate (potentially significant)	Minor (not significant)	Minor or Negligible (not significant)
Low	Moderate or Minor (potentially significant)	Minor (not significant)	Minor or Negligible (not significant)	Negligible or Neutral (not significant)
Negligible	Minor (not significant)	Minor or Neutral (not significant)	Negligible or Neutral (not significant)	Neutral (not significant)

Assessment of Harm and Substantial Harm

7.7.15. Harm and substantial harm are distinguished in NPS EN-1 (Ref 7.11). For this assessment, adverse impacts of negligible to medium magnitude to a designated heritage asset or a non-designated heritage asset of equivalent heritage significance would normally be considered as less than substantial harm, while a high magnitude of adverse impact would normally be considered substantial harm. This follows the case of Hall vs City of Bradford 2019 (Ref 7.30) that determined that even a negligible magnitude of impact to a designated heritage asset would constitute harm. The fact that the harm may be limited or negligible will contribute to the weight to be afforded to it as part of the planning balance as recognised in Paragraph 5.9.36 in NPS EN-1 (Ref 7.11).

7.7.16. Professional judgement by the heritage professional undertaking the assessment will be applied to the case of each individual heritage asset and comments on the magnitude of any harm arising will be noted in the narrative of each assessment. Where needed, consultation will also be undertaken with the appropriate consultees, in order to determine harm.

7.8 Assessment of Cumulative Effects

7.8.1. There is also potential for cumulative effects to occur on sensitive receptors arising from the English Onshore Scheme alongside other developments. In terms of cultural heritage, it is necessary to consider whether the effects of other developments in conjunction with the English onshore Scheme will result in an additional cumulative change within the setting of heritage assets, beyond the levels predicted for the English Onshore Scheme alone. Cumulative effects may arise from the English Onshore Scheme alongside activities associated with other developments in the vicinity, outlined in **Part 4, Chapter 30: Cumulative Effects**.

7.8.2. The assessment of potential inter-related effects will be considered within the Cultural Heritage Chapter of the ES. It will include consideration of the lifetime effects of the English Onshore Scheme and receptor-led effects, in line with the approach outlined in **Part 4, Chapter 30: Cumulative Effects** of this Scoping Report.

7.9 Assessment Limitations and Assumptions

7.9.1. To ensure transparency within the EIA process, the following limitations and assumptions have been identified:

- The cultural heritage assessment will assume that all data acquired is up to date and accurate. This includes but is not limited to boundaries and designs from the client and third-party data such as HER points, polygons and events;
- The scoping assessment is a high-level desk-based appraisal of risk and has not included a review of a full range of resources (e.g. documentary, cartographic, aerial photography, and geotechnical, architectural, and engineering sources) that would normally be consulted in a full desk-based assessment for planning;
- Archaeological remains are, for the most part, buried and not visible above the surface. In the absence of intrusive archaeological field investigation, it is possible that there are archaeological assets within the English Onshore Scheme that have not been identified by this Scoping Report; and
- No site visit has been undertaken for this scoping assessment.

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8. Landscape and Visual Amenity

8.1 Introduction

8.1.1. The landscape and visual amenity assessment will consider the likely significant effects on the landscape and visual amenity receptors that may arise from the construction and operation of the English Onshore Scheme. An initial study area of 3 km from the cable alignment and converter stations is considered within the English Offshore Scheme Scoping Report.

8.1.2. This chapter of the Scoping Report sets out the relevant legislation, planning policy context and technical guidance used to inform the scope of the assessment. It provides an overview of the baseline conditions relevant to landscape and visual amenity receptors within the English Onshore Scheme Scoping Boundary, the likely significant effects to be considered within the assessment, and how these significant effects will be assessed for the purpose of an Environmental Impact Assessment (EIA).

8.1.3. The likely effects on the fabric and character of the existing landscape and the influence that the English Onshore Scheme could have on views and the visual amenity of people in and around the vicinity are also considered. The approach and methodology for the Landscape and Visual Impact Assessment (LVIA) will be included within the review of the Preliminary Environmental Information Report (PEIR) and Environmental Statement (ES) and will be reviewed throughout the Project duration.

8.1.4. Landscape and visual effects are interrelated with other environmental effects but will be assessed separately. Landscape effects associated with the English Onshore Scheme relate to the changes to the fabric, character and quality of the landscape and how it is experienced. Visual effects relate closely to changes to the landscape but also concern changes in people's views as a result of the introduction of the English Onshore Scheme.

8.1.5. This chapter should be read in conjunction with **Part 1, Chapter 4: The Project**, and given the interface with other technical aspects, considered alongside the following chapters found in **Volume 1**:

- **Part 2, Chapter 6: Biodiversity** where there may be common receptors or habitats such as watercourses, fields, hedgerows, woodland, and where there may be common mitigation for these elements.
- **Part 2, Chapter 7: Cultural Heritage** where there may be common receptors or impacts on the setting of heritage assets and where there may be common mitigation for these elements.
- **Part 3, Chapter 25: Other Marine Users** which considers the impacts on amenity of recreational vessels.

8.1.6. This chapter is supported by the following figures found in Volume 3:

- **Figure 8-1 Screened ZTV Converter Station 05/West Converter Station**
- **Figure 8-2 Screened ZTV Converter Station 06/East Converter Station**

8.2 Relevant Legislation, Planning Policy and Technical Guidance

8.2.1. This section identifies the relevant legislation, national and local policy and guidance which has informed the scope of the landscape and visual amenity assessment.

Legislation

8.2.2. A summary of the key legislation considered in, but not limited to, the scope of landscape and visual amenity effects is outlined in **Table 8-1**. The legislation presented in **Table 8-1** underpins and / or is considered throughout this technical aspect chapter.

Table 8-1: Legislation relevant to Landscape and Visual Amenity

Legislation	Legislative context
The European Landscape Convention (ELC) (Ref 8.1)	A Council of Europe initiative that provides a broad framework for landscape planning and management across all member states including the UK, signed by the UK government in 2006 and introduced in March 2007. The status of this convention is not affected by Brexit. These commitments are implemented by existing domestic policy and legislation rather than through any ELC specific framework. The ELC defines landscape as, *"an area, as perceived by people, whose character is the result of the action and interaction of natural and / or human factors"* and is committed to several core principles and actions.
Hedgerow Regulations 1997 (Ref 8.2)	Hedgerows protected under these Regulations that may be relevant to the Landscape and Visual Impact Assessment (LVIA) process, specifically the assessment of impacts upon landscape elements and the development of embedded and / or optional additional mitigation.
Levelling up and Regeneration Act 2023 (Ref 8.3)	The rebranding of Areas of Outstanding Natural Beauty (AONBs) to National Landscapes requires public bodies to 'seek to further' the purpose of AONBs in 'conserving and enhancing natural beauty,' replacing the previous obligation to merely 'have regard' for these aims.

Planning Policy

8.2.3. Relevant extracts from the national planning policy are included in **Table 8-2**, whilst the summary of the planning policies at local level relevant to the scope of landscape and visual amenity effects is outlined in **Table 8-3**.

Table 8-2: National Planning Policy relevant to LVIA

Policy reference	Policy context
Overarching National Policy Statement for Energy (EN-1) 2024 (Ref 8.4)	

Policy reference	Policy context
Section 5.10. Paragraph 5.10.5	*"Virtually all nationally significant energy infrastructure projects will have adverse effects on the landscape, but there may also be beneficial landscape character impacts arising from mitigation."*
Section 5.10. Paragraph 5.10.6	*"Projects need to be designed carefully, taking account of the potential impact on the landscape. Having regard to siting, operational and other relevant constraints the aim should be to minimise harm to the landscape, providing reasonable mitigation where possible and appropriate."*
Section 5.10. Paragraph 5.10.7	*"National Parks, the Broads and* [Areas of Outstanding Natural Beauty] *AONBs have been confirmed by the government as having the highest status of protection in relation to landscape and natural beauty. Each of these designated areas has specific statutory purposes. Projects should be designed sensitively given the various siting, operational, and other relevant constraints. For development proposals located within designated landscapes the Secretary of State should be satisfied that measures which seek to further the purposes of the designation are sufficient, appropriate and proportionate to the type and scale of the development."*
Section 5.10. Paragraph 5.10.8	*"The duty to seek to further the purposes of nationally designated landscapes also applies when considering applications for projects outside the boundaries of these areas which may have impacts within them. In these locations, projects should be designed sensitively given the various siting, operational, and other relevant constraints. The Secretary of State should be satisfied that measures which seek to further the purposes of the designation are sufficient, appropriate and proportionate to the type and scale of the development."*
Section 5.10. Paragraph 5.10.19	*"The applicant should consider landscape and visual matters in the early stages of siting and design, where site choices and design principles are being established. This will allow the applicant to demonstrate in the ES how negative effects have been minimised and opportunities for creating positive benefits or enhancement have been recognised and incorporated into the design, delivery and operation of the scheme."*
Section 5.10. Paragraph 5.10.20	*"The assessment should include the effects on landscape components and character during construction and operation. For projects which may affect a National Park, The Broads or an AONBs the assessment should include effects on the natural beauty and special qualities of these areas'."*
Section 5.10. Paragraph 5.10.21	Generic considerations to be given to landscape and visual amenity impacts. It states *"The assessment should include the visibility and conspicuousness of the project during construction and of the presence and operation of the project and potential impacts on views*

Policy reference	Policy context
	and visual amenity. This should include light pollution effects, including on local amenity, and nature conservation."
Section 5.10. Paragraph 5.10.32	*"When considering applications for development within National Parks, the Broads and AONBs the conservation and enhancement of the natural beauty should be given substantial weight by the Secretary of State in deciding on applications for development consent in these areas. The Secretary of State may grant development consent in these areas in exceptional circumstances. Such development should be demonstrated to be in the public interest and consideration of such applications should include an assessment of:* *• the need for the development, including in terms of national considerations, and the impact of consenting or not consenting it upon the local economy;* *• the cost of, and scope for, developing all or part of the development elsewhere outside the designated area or meeting the need for it in some other way, taking account of the policy on alternatives set out in Section 4.3; and* *• any detrimental effect on the environment, the landscape and recreational opportunities, and the extent to which that could be moderated."*
Draft Overarching National Policy Statement for Energy (EN-1) (April 2025) (Ref 8.5)	
Section 5.10. Paragraphs 5.10.5, 5.10.6, 5.10.7, 5.10.8, 5.10.19, 5.10.20, 5.10.21, and 5.10.32.	The Government has published a draft update to the Overarching National Policy Statement for Energy. For LVIA, the 2025 Draft NPS EN-1 is largely the same as in the 2024 document, with relevant section and paragraph numbers remaining the same.
National Policy Statement for Electricity Networks Infrastructure (EN-5) 2024 (Ref 8.6)	
Section 2.9. Paragraph 2.9.9	*"New substations, sealing end compounds (including terminal towers), and other above-ground installations that serve as connection, switching, and voltage transformation points on the electricity network may also give rise to adverse landscape and visual impacts."*
Section 2.9. Paragraph 2.9.10	*"Cumulative adverse landscape, seascape and visual impacts may arise where new overhead lines are required along with other related developments such as substations, wind farms, and / or other new sources of generation."*
Section 2.9. Paragraph 2.9.11	*"Landscape and visual benefits may arise through the reconfiguration, rationalisation, or undergrounding of existing electricity network infrastructure. Though mitigation of the landscape and visual impacts arising from overhead lines and their associated infrastructure is usually possible, it may not always be so, and the impossibility of full*

Policy reference	Policy context
	mitigation in these cases does not countermand the need for overhead lines."
Section 2.9. Paragraph 2.9.14	*"Where the nature or proposed route of an overhead line will likely result in particularly significant landscape and visual impacts, as would be assessed through landscape, seascape and visual impact assessment, the applicant should demonstrate that they have given due consideration to the costs and benefits of feasible alternatives to the overhead line. This could include – where appropriate – re-routing, underground or subsea cables and the feasibility e.g. in cost, engineering or environmental terms of these."*
Draft National Policy Statement for Electricity Networks Infrastructure (EN-5) (April 2025) (Ref 8.7)	
Section 2.9. Paragraphs 2.9.9, 2.9.10, 2.9.11, 2.9.14, and 2.9.21	The Government has published a draft update to the Overarching National Policy Statement for Energy. For LVIA, the 2025 Draft NPS EN-5 is largely the same as in the 2024 document, with relevant section numbers remaining the same, but a change in some paragraph numbers.
National Planning Policy Framework (NPPF) 2024 (Ref 8.8)	
Paragraph 187	*"Planning policies and decisions should contribute to and enhance the natural and local environment by:…* *a) protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);* *b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland;* *c) maintaining the character of the undeveloped coast, while improving public access to it where appropriate;* *d) minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures and incorporating features which support priority or threatened species such as swifts, bats and hedgehogs...."*
Paragraph 189	*"Great weight should be given to conserving and enhancing landscape and scenic beauty in National Parks, the Broads and National Landscapes which have the highest status of protection in relation to these issues. The conservation and enhancement of wildlife and cultural heritage are also important considerations in these areas, and should be given great weight in National Parks and The Broads. The scale and extent of development within all these designated areas should be limited, while development within their setting should be sensitively located and designed to avoid or minimise adverse impacts on the designated areas."*

Table 8-3: Local Planning Policy relevant to Landscape and Visual Amenity

Policy reference	Policy context
East Lindsey Local Plan Core Strategy 2018-2031, Adopted July 2018 (Ref 8.9)	
Strategic Policy 2 (SP2) – Sustainable Development	The Council adopted a positive and solution-focused approach to development, aligned with the NPPF's presumption in favour of sustainable development and to secure development that improves the economic, social and environmental conditions in the area.
Strategic Policy 10 (SP10) – Design	The Council supports well-designed, sustainable development that respects and enhances the character of towns, villages, and the countryside. Key principles include: '*The Council will support well-designed sustainable development, which maintains and enhances the character of the District's towns, villages and countryside*.'
Strategic Policy 23 (SP23) – Landscape	The Council is committed to protecting and enhancing the District's landscapes to support a healthy and attractive environment. Development will be guided by the Landscape Character Assessment, with highly sensitive areas receiving the greatest protection.
Strategic Policy 24 (SP24) – Biodiversity and Geodiversity	Development should protect and enhance biodiversity and geodiversity, promoting habitat connectivity and minimising fragmentation.
Strategic Policy 25 (SP25) – Green Infrastructure	This policy highlights a commitment to safeguarding and enhancing a connected network of accessible green infrastructure.
Strategic Policy 27 (SP27) – Renewable and Low Carbon Energy	The Council supports large-scale renewable and low carbon energy developments, where the benefits outweigh any adverse impacts. This policy highlights that development affecting the Lincolnshire Wolds AONB or highly sensitive landscapes will only be permitted in exceptional public interest cases.
Strategic Policy 28 (SP28) – Infrastructure and S106 Obligations	The Council supports essential infrastructure projects that contribute to sustainable development and respect the District's character. Proposals must be accompanied by impact assessments addressing landscape and cumulative effects, with evidence of mitigation and alternative options considered.
Lincolnshire Wolds AONB Management Plan 2018 – 2023 (Ref 8.10)	
Policy BP2	This policy promotes a landscapes cale approach to habitat conservation, restoration and creation of habitats.

Policy reference	Policy context
Policy WBP1	This policy seeks to reinforce the existing pattern of woodland, seeking to increase the area of native broadleaved woodland (including wet woodland).
Policy WBP2	This policy seeks to re-establish complementary habitats adjacent to woodlands.
Policy HTP1	This policy requires the restoration of all species-rich and ancient hedgerows, encouraging planting and management of hedgerows and trees to benefit landscape and habitat connectivity.
Policy PP1	This policy requires protection and enhancement of local character and distinctiveness through the highest quality of design in new development and re-development, including making space for biodiversity, being sensitive to the considerations of heritage assets and tackling climate change.
Policy PP6	This policy requires recognition and protection of the night skies and general tranquillity through ensuring future development minimises impact upon light and noise levels.

Technical Guidance

8.2.4. A summary of the relevant technical guidance, specific to the landscape and visual amenity assessment, that has informed this technical aspect chapter of the Scoping Report and will inform the assessment within the PEIR and ES, is given in **Table 8-4**.

Table 8-4: Technical Guidance relevant to Landscape and Visual Amenity

Technical guidance document	Context
Landscape Institute and Institute of Environmental Management and Assessment's Guidelines for Landscape and Visual Impact Assessment', 3rd Edition (2013) (GLVIA3) (Ref 8.11)	Provides guidance relevant to the assessment of potentially significant effects on landscape and visual amenity receptors. This guidance is henceforth referred to as 'GLVIA3' within this document.
Notes and Clarifications on aspects of the 3rd Edition Guidelines on Landscape and Visual Impact Assessment (GLVIA3) LITGN-2024-01 (2024) (Ref 8.12)	Provides a compilation of clarifications on GLVIA3.
Landscape Institute Townscape Character Assessment Technical Information Note 05/2017(Ref 8.13)	Provides principles and a general approach of landscape character assessment that can be applied to townscape character assessment.

Technical guidance document	Context
Landscape Institute Technical Guidance Note 06/19 Visual Representation of Development Proposals, September 2019 (Ref 8.14)	Provides technical guidance for photography appropriate for LVIA, according to the Landscape Institute.
Landscape Institute (2021) Assessing landscape value outside national designations (TGN 02/21); (Ref 8.15)	Additional baseline assessment guidance in conjunction with GLVIA3.
Natural England (2014) An Approach to Landscape Character Assessment (Ref 8.15)	Supplementary landscape character guidance in conjunction with GLVIA3.
The Planning Inspectorate (2018) Advice Note Nine: Rochdale Envelope (Ref 8.17)	Information relating to limits of deviation in relation to built structures.
The Planning Inspectorate (2019) Advice Note Seventeen: Cumulative effects assessment relevant to nationally significant infrastructure projects (Ref 8.18)	Guidance on cumulative effects assessment.

8.3 Consultation and Engagement

8.3.1. In respect of landscape and visual amenity, key consultees have been identified and focussed engagement (through both informal and formal consultation) will be undertaken and recorded throughout the pre-application stage of the Project. Key consultees identified to date are:

- Natural England;
- East Lindsey District Council; and
- Lincolnshire Wolds Countryside Service and Lincolnshire Wolds Joint Advisory Committee (AONB Partnership).

8.3.2. Engagement with key stakeholders relevant to landscape and visual amenity will be ongoing up to the submission of the Development Consent Order (DCO), with the aim to seek agreement, comment and / or guidance on the following:

- The extent of the LVIA study area for the purpose of the assessment;
- Proposed viewpoint or photomontage locations; and
- The LVIA methodology and assessment parameters.

8.3.3. Local or specialist groups will be contacted should the assessment process identify a need to engage further detailed local knowledge, or if requested during the statutory consultation process.

8.4 Baseline Conditions

Study Area

8.4.1. The GLVIA3 (Ref 8.11) clarifies how study areas should be determined on a project specific basis. Paragraph 5.2 of GLVIA3 states that the study area extent should be *"… based on the extent of Landscape Character Areas likely to be significantly affected either directly or indirectly"* or "*on the extent of the area from which the development is potentially visible, defined as the Zone of Theoretical Visibility, or a combination of the two.*"

8.4.2. An initial study area of 3 km from the English Onshore Scheme Scoping Boundary have been identified to report on landscape and visual effects. Defining the extent of the study area involved a review of the initial zone of theoretical visibility (ZTV), illustrating potential areas from which the Project is likely to be visible, as well as available mapping and professional judgment from working on similar schemes.

8.4.3. The proposed study area is considered sufficient to capture any likely significant landscape or visual effects during the construction and operation phases of the Project. It is unlikely that receptors will experience significant landscape and visual effects beyond the extent of the identified study area.

8.4.4. The study area will be further refined at the detailed assessment stage to ensure a proportional approach, focusing on likely significant effects.

Data Gathering Methodology

8.4.5. To establish the baseline, there are a number of methods and sources which will be reviewed to identify further environmental features and opportunities, such as county and regional level designation or other locations important to the public and other published sources of information. These are as follows:

- Local Development Plans (LDP) for East Lindsey District Council (Ref 8.20);
- The Lincolnshire Wolds AONB Management Plan 2019-23 (Ref 8.10);
- Natural England's National Character Area (NCA) profiles:
  - NCA Profile: 42 Lincolnshire Coast and Marshes (Ref 8.21); and
  - NCA Profile: 43 Lincolnshire Wolds (Ref 8.22).
- The Landscape Character Area (LCA) assessments for:
  - Lincolnshire Wolds (Ref 8.10);
  - East Midlands Region (Ref 8.23);
  - East Lindsey (Ref 8.24); and
  - Any other emerging landscape characterisation studies or information at a local scale to inform the baseline.
- OS mapping (1:50,000 mapping and terrain data) and aerial photography (where available) to identify other potential features such as settlements, properties, walking routes, cycling routes etc;

- Review of other local information through online and published media such as tourism sites and walking routes; and
- Site walkovers.

Current Baseline

8.4.6. The current baseline section is divided into two sections, covering landscape character and visual amenity.

Landscape Character

Landscape Designations

8.4.7. The Lincolnshire Wolds National Landscape (hereafter described as the Lincolnshire Wolds) is situated adjacent to the west of the English Onshore Scheme Scoping Boundary at the proposed Alford Bypass Construction Route near Alford. The Lincolnshire Wolds is one of only two protected landscapes in the East Midlands and is comprised of rolling chalk hills, with a distinctive topography of steep sided valleys. The Lincolnshire Wolds has a high scenic quality, depending almost entirely upon the area's use for agriculture with seasonally changing field and cropping patterns, interspersed with pasture and small woodlands.

8.4.8. Other relevant designations informing the landscape value located within the study area comprise:

- Lincolnshire Coastal Country Park;
- Sandilands Pit Local Nature Reserve;
- Willoughby Branch Line Local Nature Reserve;
- Sutton Branch Line Walkway;
- Wolla Bank Pit Local Nature Reserve;
- Chapel Pit Local Nature Reserve;
- Sea Bank Clay Pits Site of Special Scientific Interest (SSSI) (over multiple sites);
- Chapel Point to Wolla Bank SSSI;
- Alford Conservation Area;
- Site of St Mary's Priory, Greenfield Scheduled Monument;
- Hagnaby Abbey Scheduled Monument;
- Markby Priory Scheduled Monument;
- Neolithic long barrow 575 m north northwest of Moon Wood Scheduled Monument;
- Grade II Listed Building Stain Glebe Farm (within the English Onshore Scheme Scoping Boundary);
- Grade II Listed Well Hall and Registered Park and Garden (RPG) (within the English Onshore Scheme Scoping Boundary);
- Grade II Listed Building The Cottage (within the English Onshore Scheme Scoping Boundary); and

- Other Listed Buildings within the study area.

8.4.9. Other potential receptors include:

- Sandilands National Trust Nature Reserve;
- The King Charles III England National Trail;
- The South Wolds and Skegness National Cycle Network (NCN) route;
- The Lindsey Loop Long Distance Path (LDP); and
- The Public Rights of Way (PRoW) network.

Landscape Characterisation: National Character Areas (NCAs)

8.4.10. There are two National Character Areas (NCAs), as defined by Natural England which fall within the study area. The purpose of the NCA definition is to provide a national categorisation of the broad variation of landscape and ecological characteristics across England. These NCAs are as follows:

- Lincolnshire Coast and Marshes NCA 42 (Ref 8.21): The Lincolnshire Coast and Marshes NCA is characterised by a wide coastal plain extending from Barton-upon-Humber in the north, across to Grimsby at the mouth of the Humber and south to Skegness.
- Lincolnshire Wolds NCA 43 (Ref 8.22): The Lincolnshire Wolds NCA is characterised by a range of varied yet unified features, including open, arable plateau hilltops, chalk escarpments, deep, dry valleys with sinuous beech woods, and isolated ash trees punctuating the skyline.

Regional Landscape Character Assessment

8.4.11. The East Midlands Regional LCA, incorporating the Peak District National Park and the Lincolnshire Wolds, was developed in 2009 by the East Midlands Landscape Partnership, following recommendations made in a scoping study, commissioned the East Midlands Regional Landscape Character Assessment (EMRLCA). The EMRLCA identifies 31 Regional Landscape Character Types (RLCTs), five of which cover the distinctive East Midlands seascape (Ref 8.23).

8.4.12. However, the East Lindsey District Landscape Character Assessment encompasses a more detailed landscape character assessment at the local level; therefore, the effects on landscape character will be undertaken with reference to East Lindsey District Landscape Character Assessment, and therefore, the effects on EMRLCA have been scoped out of this report.

The Lincolnshire Wolds Character Assessment:

8.4.13. The Lincolnshire Wolds Landscape Character Assessment (Ref 8.10) recognised four LCAs within the Lincolnshire Wolds identified by their distinct group of special features, one of which is relevant to the study area and is as follows:

South-Eastern Claylands LCA

8.4.14. The gentle ridge of the south-eastern claylands gradually slopes westward, eventually merging with the expansive marshlands beyond the National Landscape. This region is characterised by its dense woodlands, where substantial blocks of forest are interspersed with cultivated fields. The area feels isolated and remote. Prominent

features in this locale include ridge-top salters' roads, spring-line villages, and notable archaeological sites.

Landscape Characterisation: Local Landscape Character Areas

8.4.15. The study area is situated within the East Lindsey District Council LCA. The East Lindsey District Landscape Character Assessment (2011) (Ref 8.24) provides contextual background on planning and landscape influences, both physical and cultural. It identifies thirteen distinct landscape character areas within East Lindsey District. A brief description of relevant LCAs has been included below.

East Lindsey Landscape Character Assessment

Holton le Clay to Great Steeping Middle Marsh (I1) LCA

8.4.16. Holton le Clay to Great Steeping Middle Marsh lies between Tetney Lock to Skegness Coastal Outmarsh and both Binbrook to Tetford Wolds Farmland and Little Cawthorpe to Skendleby Wolds Farmland in the east. It extends from the North East Lincolnshire District boundary in the north down to the Great Steeping River in the south.

8.4.17. The LCA displays gently undulating foothills to the Wolds rising from Tetney Lock to Skegness Coastal Outmarsh with views to Binbrook to Tetford Wolds Farmland and Little Cawthorpe to Skendleby Wolds Farmland. The LCA is predominantly arable farmland with medium to large scale fields, some pasture with grazing sheep and cattle, bounded by ditches and dykes. Meandering rivers and streams are present within the LCA and the Louth Canal contained by flood embankments, which flow from the Wolds eastwards to the coast. The LCA presents scattered blocks of mixed deciduous woodland throughout but more frequent around the south western boundary. There are frequent scattered villages, hamlets, farmsteads and dwellings include a line of merging villages at the foot of the Wolds. Overall, the LCA is a distinctive and tranquil rural landscape with very few minor detractors.

Tetney Lock to Skegness Coastal Outmarsh (J1) LCA

8.4.18. Tetney Lock to Skegness Coastal Outmarsh runs down the eastern side of East Lindsey District forming the hinterland of Donna Nook to Gibraltar Point Naturalistic Coast. It extends from the North Lincolnshire District boundary in the north down to the Great Steeping River in the south and across to Holton le Clay to Great Steeping Middle Marsh in the west (Ref 8.24).

8.4.19. The LCA is a low lying, drained coastal plain contained to the east by sea embankments, sand dunes and sea defences. The LCA is mostly flat with some areas of gentle undulations including some saltern mounds. There are some wide, open views in the LCA. Some views in the LCA are enclosed by landform, embankments, sand dunes or trees. There is an extensive network of drains, ditches and dykes with a strong geometric pattern in the northern and central parts of the LCA. Rivers and the historic Louth Canal cross from the Lincolnshire Wolds in the west towards the coast within the LCA. The LCA is predominantly mixed agricultural land use with both arable and pasture, and some remnants of ridge and furrow. There are several important coastal nature reserves with a high level of nature conservation designation with associated wildlife within the LCA. There is a stretch of coastal resorts from Mablethorpe to Skegness with caravan parks in the LCA, and new residential and commercial developments on their outskirts. There is an extensive network of raised minor roads with a few larger A roads serving the coastal resorts in the LCA. Overall, the LCA is a

predominantly intact and distinctive rural landscape with some man-made influences including a gas terminal, an oil storage facility and several wind farms.

Donna Nook to Gibraltar Point Naturalistic Coast (K1) LCA

8.4.20. Donna Nook to Gibraltar Point Naturalistic Coast lies in the narrow strip of tidal coast between the North Sea and Tetney Lock to Skegness Coastal Outmarsh. The area stretches from Tetney High Sands, just south of Cleethorpes to Gibraltar Point just north of The Wash.

8.4.21. The LCA is a flat tidal strip with some stretches of long sandy beaches and mud flats with areas of saltmarsh. There are wide open views with big skies which extend out to sea in this LCA. There are views influenced by and contained to the landward side in some areas by concrete promenades defending coastal sea resorts, and in other areas by vegetated sea banks or coastal sand dunes in the LCA. Drains flowing onto the tidal marshes create intricate dendritic patterns emphasised by the saltmarsh vegetation within the LCA. The LCA presents a mosaic of coastal, dune, mudflat and saltmarsh vegetation. There are no settlements within the LCA but there are occasional small-scale, built structures in Ministry of Defence (MoD) designated Danger Areas, protected by international, national and local nature conservation designations. The LCA is remote and tranquil for the most part, but less tranquil adjacent to coastal resorts and designated MoD Danger Areas. Overall, the LCA is a very distinctive and mostly unspoilt natural landscape with very few detractors.

Little Cawthorpe to Skendleby Wolds Farmland (G2) LCA

8.4.22. Little Cawthorpe to Skendleby Wolds Farmland is located in the south of the Wolds stretching from the steep sided valley head of the Great Eau on the border with Binbrook to Tetford Wolds Farmland in the north down to Mareham to Little Steeping Fenside Woodland and Farmland in the south. It lies between Holton le Clay to Great Steeping Middle Marsh in the east and the edge of the Lymn River Valley and bordering to Hainton to Toyton All Saints Wolds Farmland in the west.

8.4.23. The LCA is an elevated rolling agricultural landscape that descends to Holton le Clay to Great Steeping Middle Marsh and the Lymn River Valley in Hainton to Toyton All Saints Wolds Farmland. The LCA displays a mix of arable farmland, pasture and woodland which frames views. The LCA has many hedgerows with hedgerow trees, and frequent woodland blocks including ancient and semi-natural and ancient replanted woodlands. Within the LCA streams and rivers drain eastwards into the marshes and south to the Lymn Valley. Within the LCA there are scattered villages nestled into valleys which are often associated with small parkland estates. The A16 and A1028 roads provide a fast north to south transport route in the LCA. There is also a network of wide verged drove roads in the LCA. The LCA has a high level of landscape and nature conservation designations, and it lies in the Lincolnshire Wolds. Many heritage features including historic parks and gardens, archaeological remains of deserted medieval villages and groups of pre-historic barrow groups are present within the LCA. Overall, the LCA is a peaceful and rural landscape.

Visual Amenity

8.4.24. The study area encompasses town of Alford, with a range of small villages and hamlets. The visual amenity is diverse, transitioning from the expansive, low-lying coastal marshes of the Lincolnshire coast to the more undulating and elevated terrain of the Lincolnshire Wolds to the west. Views across the coastal plain are typically open and

far-reaching, shaped by the flat topography and the presence of agricultural fields, drainage ditches, and occasional shelterbelts. Further to the west and away from the coastline, the landscape gradually becomes more enclosed and textured with gentle undulation. The gently rolling hills of the Lincolnshire Wolds introduce a more intimate visual character, with hedgerows, woodland blocks, and field boundaries contributing to a patchwork of visual interest. These views are often framed by the distant horizon of the North Sea or inland, by the rising landform of the Lincolnshire Wolds.

8.4.25. Visual receptors have the potential to experience views of the construction of the landfall area, transition joint bay (TJB), High Voltage Direct Current (HVDC) underground cables, new converter station, High Voltage Alternating Current (HVAC) underground cables and subsequent operation of the new converter station. The following visual receptors have been considered for inclusion in the assessment:

- A range of settlements such as Huttoft, Alford, Bilsby, Asserby, Thurlby and others;
- Isolated and small clusters of dwellings and farmsteads are dispersed across the study area;
- Recreational users, including Willoughby Branch Line Local Nature Reserve and Sandilands National Trust Nature Reserve;
- Recreational receptors along the King Charles III England Coast Path National Trail, the Lindsey Loop LDP and PRoW;
- Recreational users along The South Wolds and Skegness NCN;
- Visitors of publicly accessible sites, including Lincolnshire Coastal Country Park, Grade II Listed Well Hall Registered Park and Garden, historic sites and other visitor attractions such as Huttoft beach; and
- Users of public roads including users of A-roads (A16, A1104, A1111, A52 and A157), B-roads and unclassified roads within the study area.

Future Baseline

8.4.26. Landscape change is an ongoing and inevitable process and would continue across the LVIA study area irrespective of whether the English Onshore Scheme proceeds. Change can arise through natural processes (e.g., the maturity of woodlands) and natural systems (e.g., river erosion) or, as is often the case, occurs due to human activity, land use, management, or neglect.

8.4.27. Climate change across England in general is predicted to result in hotter drier summers, warmer wetter winters, and higher sea levels. This in turn may result in the following land use changes which may influence landscape character and visual context:

- Drier summers could lead to drought-stress for semi-natural habitats and agricultural crops. This could lead to degradation and loss of certain habitats and species;
- Hotter and drier summers, milder winters and changes in seasonal rainfall patterns could lead to changes in species composition of some habitats with changes to tree productivity;
- Potential for double cropping and / or growing different crops; and
- Increased prevalence of pests and diseases, such as oak decline, may result in changes to the composition and the visual role of ancient woodlands and mature, ancient and veteran trees.

8.4.28. It is recognised that there are a number of other proposed and committed developments such as EGL 3 and EGL 4 (Onshore), Ossian (Onshore) and Grimsby to Walpole within the surrounding area that could alter the future baseline in the absence of the English Onshore Scheme, including an increased presence of energy related development (for more information see **Part 4, Chapter 30: Cumulative Effects**).

8.5 Design and Control Measures

8.5.1. The Corridor Preliminary Routeing and Siting Study (CPRSS), as described in **Part 1, Chapter 3: Consideration of Alternatives**, has been undertaken to identify the preferred routeing and siting of the proposed infrastructure, ensuring that significant environmental effects are avoided wherever possible. As part of the English Onshore Scheme design process, embedded mitigation measures would be proposed to reduce the potential for impacts on landscape and visual amenity receptors. These measures would evolve as part of design development and in response to consultation. These measures typically include those that have been identified as good or standard practice, as well as actions that would be undertaken to meet existing legislative requirements.

8.5.2. Mitigation measures are undertaken as a response to anticipated adverse landscape and visual amenity effects and are described as primary or secondary. Primary mitigation measures are steps taken during the design phase to help lower potential effects, based on key sensitivities, constraints and opportunities identified through baseline study. Landscape and visual amenity considerations to date have contributed to the converter station and landfall site selection process and in identifying potential cable route corridor options, and will continue to inform the form, location, siting and routeing of elements throughout the design process.

8.5.3. Secondary mitigation measures are those that seek to further reduce potential effects that cannot be entirely designed out. These would be identified and informed by the detailed assessment stage and would likely include:

- Landscape reinstatement of hedgerows and other vegetation along the cable route corridor and along temporary access tracks; opportunities to improve the connectivity of green infrastructure assets; avoidance of loss and / or replacement of any vegetation loss along the development corridors, in particular hedgerow and tree planting pertinent to landscape character, recognised as special features within the Lincolnshire Wolds Landscape Character Assessment (Ref 8.10);
- Landscape integration of the proposed converter station through planting measures and / or landform design; design collaboration on the visual appearance and massing of structures in combination with landscape measures; and
- The incorporation of screening measures where appropriate, to help reduce the extent or significance of negative effects on particular visual receptors in the longer term.

8.5.4. Landscape mitigation measures would be developed to support the landscape strategies and guidelines identified in published landscape character assessments. A collaborative approach to mitigation would be pursued and opportunities sought to integrate with all discipline objectives, including ecological, flood risk, noise, biodiversity net gain (BNG), carbon reduction and other mitigation measures.

8.6 Scope of the Assessment

Potential Sensitive Receptors

8.6.1. This section details the approach to identifying landscape and visual amenity receptors that could be significantly affected by the English Onshore Scheme and that therefore need to be taken forward for further consideration.

8.6.2. The general principle is that landscape and visual amenity receptors likely to be significantly affected will be identified on the basis of their value / sensitivity and the magnitude of change to which they are exposed as a result of the construction and operation of the English Onshore Scheme.

Landscape Receptors

8.6.3. Landscape effects are direct physical changes to the landscape caused by the Project, or indirect changes to landscape character experienced as a change to perceptual qualities such as such as tranquillity or scenic qualities.

8.6.4. The LCAs described in **Section 8.4** Baseline Conditions will inform the basis of assessment for landscape effects, based on their key characteristics, associated landscape elements, designations and special landscape qualities. Where LCAs or designations overlap with the study area, the full extent of the LCA or designation will be considered in the overall assessment.

8.6.5. The following landscape receptors have been identified for the assessment:

- Effects on individual components of the landscape, such as the existing vegetation; and
- Changes to landscape character, quality and condition with the reference to published landscape character assessments.

8.6.6. The section below identifies a list of published landscape character units identified for the assessment:

- National Landscape Character Area Profiles:
  - NCA 42 Lincolnshire Coast and Marshes; and
  - NCA 43 Lincolnshire Wolds.
- Lincolnshire Wolds Character Assessment (Ref 8.10):
  - LCA South-Eastern Claylands.
- East Lindsey District Landscape Character Assessment (Ref 8.24):
  - Holton le Clay to Great Steeping Middle Marsh (I1) LCA;
  - Tetney Lock to Skegness Coastal Outmarsh (J1) LCA;
  - Donna Nook to Gibraltar Point Naturalistic Coast (K1) LCA; and
  - Little Cawthorpe to Skendleby Wolds Farmland (G2) LCA.

8.6.7. The LVIA will also assess the effects on the Lincolnshire Wolds National Landscape.

Visual Receptors

8.6.8. This section describes key visual receptors that are likely to be most sensitive to visual effects arising from the English Onshore Scheme. The key visual receptors within the study area are likely to be focused along the closest sections of the coastline, including people within settlements, people engaged in recreational activity such as walking and cycling routes, people visiting the coast, heritage assets or other visitor attractions alongside road users. The LVIA will undertake an initial baseline assessment of the key visual receptors within the ZTV to identify those that may experience significant effects as a result of the English Onshore Scheme. The key visual receptors within the study area were initially identified below.

Residential Receptors:

8.6.9. Key residential receptors include, but are not limited to:

- Alford;
- Huttoft;
- Bilsby;
- Thrurlby;
- Sutton on Sea;
- Saleby;
- Markby; and
- Anderby Creek.

Recreational Receptors:

8.6.10. The principal long-distance routes with potential for views of the English Onshore Scheme are King Charles III England Coast Path National Trail, a circular route around England's coastlines. The Lindsey Loop LDP stretches between Market Rasen and Louth, passing in the vicinity of Alford.

8.6.11. Users of PRoW are another group of recreational receptors that would experience a change in their views. The greatest concentration of PRoW network is in the vicinity of Mumby and Huttoft, and to the west of Alford. Most of them provide links between local settlements. Views may be also available to visitor attractions such as Sandilands National Trust Nature Reserve and Huttoft Beach.

8.6.12. There is a limited potential for views from the Lincolnshire Wolds as illustrated on the Screened ZTV Figures (**Volume 3, Figure 8-1** and **Figure 8-2**). It is proposed that the LVIA will identify two viewpoint locations within the National Landscape to illustrate the potential change in the views within areas that may experience a change in the views as shown on the Screened ZTV Figures(**Volume 3, Figure 8-1** and **Figure 8-2**).

Viewpoint Locations

8.6.13. The visual assessment will be informed through a series of representative viewpoints. These viewpoints have been chosen to provide a representative cross-section of receptor types and locations within the study area, focused on the likely effects. The representative viewpoint locations have been informed by desk based studies and the Screened ZTVs. The ZTVs were produced for the preferred converter station siting

zones only, reflecting the least likely areas of development within graduated swathe as they are expected to be a key source of permanent impacts. The height of the new converter station was modelled at the height of 30.6 m. The ZTV will be updated throughout the Project duration to reflect potential changes to the design. The ZTVs have been generated using the Environment Agency Light Detection and Ranging (LiDAR) Composite Digital Surface Model (DSM) at 1 m Spatial Resolution. The DSM accounts for the screening effects of vegetation and built form.

8.6.14. The selected representative viewpoint locations focused primarily on the 'West' (CS05) and 'East' (CS06) converter station siting zone options, as they are expected to be a key source of permanent impacts. The selected viewpoint locations are presented in **Table 8-5** below. The selected viewpoints also included some locations chosen for the EGL 3 and EGL 4 Projects to assist with the cumulative assessment. We would seek feedback on the selected viewpoint locations following the receipt of a Scoping Opinion.

Photomontages

8.6.15. Photomontages will be produced (for both winter and summer scenarios in years 0 and 15), using the maximum development parameters, to illustrate the converter station siting zones (West and East) from representative viewpoint locations where potential views are expected. The photomontages as included in the **Table 8-5** will be produced at the Environmental Statement phase for one preferred converter station. As only one Converter Station will be assessed at the PIER stage, the selected viewpoints will be included for either East or West Converter Station as identified in Table 8-5 below.

8.6.16. No photomontages are proposed for the landfall, underground HVDC or HVAC cable corridors, or along the Alford Bypass Construction Route due to the short-term nature of impacts predicted to arise during the construction phase of these aspects of the Project.

8.6.17. The methodology for the preparation and presentation of the visualisations will follow the requirements set out in the Landscape Institute, 2019, Technical Guidance Note 06-19: Visual Representation of Development Proposals (REF 8.28).

8.6.18. The selected viewpoint and photomontage locations are presented in **Table 8-5** below.

Table 8-5: Selected viewpoints and photomontages.

No.	Viewpoint	Inclusion for CS06 (East)	Inclusion for CS05 (West)	Rationale for inclusion as viewpoint / photomontage
1	Crawcroft Lane, Hannah	Yes	Yes	Representative of views from residential receptors within Hannah.
2	Huttoft Beach	Yes		Representative of views from recreational receptors at Huttoft Beach.
3	Sea Road, Anderby	Yes	Yes	Representative of views from road users and residential receptors situated along Sea Road.
4	PRoW Hutt/13/1	Yes	Yes	Representative of recreational views from the PRoW network near Huttoft (Hutt/13/1). This viewpoint is proposed as a photomontage to illustrate the potential

No.	Viewpoint	Inclusion for CS06 (East)	Inclusion for CS05 (West)	Rationale for inclusion as viewpoint / photomontage
				visibility of converter station siting zone CS06 (East).
5	Huttoft Road	Yes	Yes	Representative of views from residential receptors and roads users along Huttoft Road. This viewpoint is proposed as a photomontage to illustrate the potential visibility of converter station siting zone CS05 (West) and converter station siting zone CS06 (East).
6	East of Bilsby	Yes	Yes	Representative of views from residential receptors within Bilsby. This viewpoint is proposed as a photomontage to illustrate the potential visibility of converter station siting zone CS05 (West).
7	Allis House, Sutton Road	Yes	Yes	Representative of views from isolated residential dwellings and roads users of Sutton Road (A1111). This viewpoint is proposed as a photomontage to illustrate the potential visibility of converter station siting zone CS05 (West).
8	Lincolnshire Wolds National Landscape at Well Hall RPG	Yes	Yes	Representative of recreational views from Well Hall RPG and PRoW within the Lincolnshire Wolds National Landscape.
9	Anderby Creek Caravan Site	Yes		Representative of views of recreational receptors and tourists staying at the caravan site at Anderby Creek.
10	Lincolnshire Wolds National Landscape at Ulceby Lodge		Yes	Representative of recreational views from PRoW within the Lincolnshire Wolds National Landscape.
11	PRoW Sale/290/1		Yes	Representative of recreational views from the PRoW network (Sale/290/1) north of Alford.
12	Causeway Bank Lane, Maltby Marsh		Yes	Representative of views from residential receptors within Maltby le Marsh.

No.	Viewpoint	Inclusion for CS06 (East)	Inclusion for CS05 (West)	Rationale for inclusion as viewpoint / photomontage
13	PRoW Bils/13/1	Yes	Yes	Representative of recreational views from the PRoW network (Bils/13/1) east of Thurlby.
14	Near St Peters Church, Markby		Yes	Representative of views from residential receptors within Markby.
15	Rossa Lane	Yes	Yes	Representative of views from road users at the junction of Rossa Lane and an unnamed road.
16	Willoughby Branch Line Nature Reserve		Yes	Representative of recreational views from Willoughby Branch Line Nature Reserve (WiWS/874/1).
17	PRoW Cumb/365/1	Yes	Yes	Representative of recreational views from the PRoW network (Cumb/365/1) west of Cumberworth.
18	PRoW Mumb/67/4	Yes	Yes	Representative of recreational views from the PRoW network (Mumb/67/4) north of Cumberworth.
19	PRoW network Alfo/281/1		Yes	Representative of recreational views from the PRoW network (Alfo/281/1) north of Alford. This viewpoint is proposed as a photomontage to illustrate the potential visibility of converter station siting zone CS05 (West).
20	Glebe Farm, Mill Lane		Yes	Representative of views from isolated residential dwellings and roads users of Mill Lane.
21	PRoW Hutt/11/2	Yes	Yes	Representative of recreational views from the PRoW network (Hutt/11/2) east of Asserby. This viewpoint is proposed as a photomontage to illustrate the potential visibility of converter station siting zone CS06 (East).
22	PRoW Hutt/14/1	Yes	Yes	Representative of recreational views from the PRoW network (Hutt/14/1) east of Asserby.
23	A52, Huttoft	Yes	Yes	Representative of views from residential receptors within Huttoft. This viewpoint is proposed as a photomontage to illustrate the potential

No.	Viewpoint	Inclusion for CS06 (East)	Inclusion for CS05 (West)	Rationale for inclusion as viewpoint / photomontage
				visibility of converter station siting zone CS06 (East).
24	A52, Sandilands	Yes		Representative of views from residential receptors located at the edge of Sandilands.
25	Sutton Branch Line Walkway PRoW	Yes		Representative of recreational views from the Sutton Branch Line Walkway (Hutt/854/1) northeast of Huttoft.
26	PRoW Hutt/1139/1	Yes		Representative of recreational views from the PRoW network (Hutt/1139/1) northeast of Huttoft.
27	PRoW Chap/19/2	Yes		Representative of recreational views from the PRoW network (Chap/19/2) north of Chapel St Leonards.
28	PRoW Hutt/2/2	Yes		Representative of recreational views from the PRoW network (Hutt/2/2) east of Huttoft.
29	King Charles III England Coast Path	Yes	Yes	Representative for recreational users along England Coast Path and beach users near Anderby Creek.

Likely Significant Effects

8.6.19. The LVIA will consider the construction and operation of the English Onshore Scheme. Details of each of these stages are set out in **Part 1, Chapter 4: The Project**.

8.6.20. The proposed scope of the landscape and visual assessment is set out below and has been determined using the approach described in **Part 1, Chapter 5: EIA Approach and Methodology**.

Sources and Impacts

8.6.21. This section identifies the sources and impacts that would occur as a result of the construction, operation, maintenance and decommissioning of the English Onshore Scheme.

8.6.22. The potential for the English Onshore Scheme to result in likely significant effects described in this section takes into account the embedded, control, and management measures described in Section 5 Good Design Principles.

Sources of construction impacts

- Construction compounds;
- Temporary office accommodation and welfare facilities;

- Access tracks;
- Removal of vegetation;
- Construction plant and vehicle movement;
- Construction fencing;
- Topsoil stripping and earthworks; and
- Introduction of construction lighting.

Sources of operational impacts

- Permanent introduction of converter station and marker posts;
- Permanent underground infrastructure, including HVDC and HVAC underground cables; and
- Operational lighting at the converter station.

Sources of maintenance impacts

- Vehicle movement; and
- Carrying out of maintenance activities.

Receptors scoped into the assessment

8.6.23. **Table 8-6** provides a summary of the identified impact pathways and the receptors proposed to be scoped into and out of the assessment.

Table 8-6: Receptors scoped in and out for further assessment

Impact pathways	Receptor	Potential for significant effects	Proposed to be scoped in / out
Construction			
Short-term change in the appearance of construction plant and activity, including construction compounds, horizontal drilling machinery, cranes, and vehicle movement, as well as open trenches, along with the removal of mature trees and hedgerows throughout the Project	Landscape receptors: vegetation alongside effects on identified Landscape Character Units within the study area at the national and local level, alongside Lincolnshire Wolds National Landscape. Visual receptors: located within the defined study area.	**Yes** – there is the potential for significant effects due to the potential for significant landscape effects at construction stage.	**In**
Short-term change due to construction plant and activity, including construction compounds, horizontal drilling machinery, cranes, and vehicle movement, as well as open trenches, along with the removal of mature trees and hedgerows throughout the cable route corridor.	Landscape receptors located outside of the study area, with the exception of the Lincolnshire Wolds National Landscape. Visual receptors: • Employees and transport users; and • Visual receptors outside of the study area.	**No** – Landscape Character Units located outside of the study area will not be affected directly, and the effects will be limited to perceptual qualities perceived locally, resulting in likely not significant effects. The effects on transport receptors and employees are generally of low sensitivity; therefore, the effects are unlikely to be significant, also in the context of the short-term nature of this activity. Visual receptors at distances over 3 km are unlikely to be affected significantly due to the screening of intervening vegetation, landform and built form.	**Out**

Impact pathways	Receptor	Potential for significant effects	Proposed to be scoped in / out
Short term introduction of night-time lighting associated with construction activity throughout the cable route corridor.	Landscape receptors: vegetation alongside effects on identified Landscape Character Units within the study area at the national and local level, alongside Lincolnshire Wolds National Landscape. Visual receptors located within the defined study area.	**No** – Significant effects of night time are not likely due to the effects being short-term and therefore unlikely to be significant	**Out**
Change in the views and perceptual qualities of Lincolnshire Wolds National Landscape	Views and visual amenity alongside perceptual qualities of landscape character	**No** – There intervisibility between the proposed converter stations is very restricted. Also, other perceptual qualities such as tranquillity and sense of wildness will be affected in medium term during construction	**Out**
Operation			
Permanent alteration to the landscape character as a result of the Project.	Landscape receptors: vegetation alongside effects on identified Landscape Character Units within the study area at the national and local level. Visual receptors: located within the defined study area.	**Yes** – there is potential for significant effects on loss of vegetation and identified Landscape Character Units located within the study area through the permanent introduction of the Project.	**In**

Impact pathways	Receptor	Potential for significant effects	Proposed to be scoped in / out
Permanent presence of nighttime lighting associated with the converter station.	Landscape receptors: LCAs falling wholly or partly within 3 km of structures. Visual receptors are located within the defined study area.	**No** – permanent lighting will likely be limited to security lighting or sporadic maintenance and repair activities, and therefore have a likely localised and not significant impact.	**Out**
Permanent presence of the converter station.	Landscape receptors located outside of the study area. Visual receptors: • Employees and transport users; and • Visual receptors outside of the study area.	**No** – the effects on Landscape Character Units located outside of the study area will not be affected directly, and the effects will be limited to perceptual qualities perceived locally, resulting in likely not significant effects. Transport receptors and employees are generally of low sensitivity; therefore, the effects are unlikely to be significant, also in the context of the short-term nature of this activity. Visual receptors at distances over 3 km are unlikely to be affected significantly due to the screening of intervening vegetation, landform and built form.	**Out**
Change in the views and perceptual qualities of Lincolnshire Wolds National Landscape	Views and visual amenity alongside perceptual qualities of landscape character	**No** – There intervisibility between the proposed converter stations is very restricted. Also, other perceptual qualities such as tranquillity and sense of wildness are unlikely to be affected in operation.	**Out**

Impact pathways	Receptor	Potential for significant effects	Proposed to be scoped in / out
Maintenance			
Maintenance	Landscape and visual receptors	**No** – Maintenance activities will be temporary and will be undertaken from the existing access tracks and will be restricted mainly to the converter station. Buried HVDC and HVAC cables do not require maintenance and will only be accessed in the event of an unlikely fault. Overall, the landscape and visual effects of maintenance will likely not be significant.	**Out**

8.7 Assessment Methodology

Proposed Data Sources

8.7.1. The following data sources are proposed to be used to inform the assessment:

- Ordnance Survey (OS) mapping and aerial photography;
- OS Digital Terrain Model (DTM);
- Natural England;
- Historic England;
- National and local planning policy;
- Published Landscape Character Assessments; and
- Published documents by the Lincolnshire Wolds Countryside Service and Lincolnshire Wolds Joint Advisory Committee (AONB Partnership).

Guidance

8.7.2. The LVIA will be carried out in accordance with the following good practice guidance documents (also see **Table 8-4**):

- Guidelines for Landscape and Visual Impact Assessment: Third edition (GLVIA3) (Ref 8.11);
- Notes and Clarifications on aspects of the 3rd Edition Guidelines on Landscape and Visual Impact Assessment (GLVIA3) LITGN-2024-01 (Ref 8.12);
- Assessing landscape value outside national designations - Technical Guidance Note 02/21(Ref 8.15);
- Design Principles for National Infrastructure: Advice on Good Design (Ref 8.25);
- Infrastructure - Technical Guidance Note 04/20 (Ref 8.26);
- Tranquillity – An overview – Technical Information Note 01/17 (Ref 8.27); and
- Visual Representation of Development Proposals – Technical Guidance Note 06/19 (Ref 8.14).

8.7.3. GLVIA3 places a strong emphasis on the importance of professional judgement in identifying and defining the significance of landscape and visual effects. The LVIA will be undertaken by Chartered Landscape Architects with experience in the assessment of similar types of electricity infrastructure projects. Professional judgement will be used in combination with structured methods and criteria to evaluate landscape and visual value and susceptibility, the resulting sensitivity, magnitude and significance of effect.

Proposed Assessment Methodology

8.7.4. The LVIA will be undertaken in accordance with GLVIA3 and current good practice guidance. The landscape assessment will consider potential effects on NCAs and Local Landscape Character Assessment alongside relevant designations. The visual assessment will be informed by a series of representative viewpoint locations as

presented in **Table 8-5**, informed by stakeholders through the provision of comments in the Scoping Opinion. These viewpoints will provide a proportionate representation of the views experienced by visual receptors throughout the study area, with an emphasis on identified receptor locations with the potential for likely significant effects and taking account of any noted key views or protected views where applicable.

8.7.5. The LVIA will also consider the potential for cumulative effects resulting from the addition of the English Onshore Scheme in relation to other similar developments. Mitigation measures will be developed throughout the duration of the English Onshore Scheme and will be informed by the detailed baseline and assessment stages, and will seek to minimise potential adverse effects. The key focus of mitigation measures would be on the avoidance of vegetation loss and the avoidance of likely significant visual effects on visual receptors, followed by the reinstatement of the cable corridor and landscape, and the visual integration of the proposed converter station.

8.7.6. A digital ZTV of the tallest built elements of the English Onshore Scheme will be produced by computer modelling, based on the Environment Agency LiDAR DSM to inform the visual assessment process and location of viewpoints through the illustration of screened ZTV. Viewpoint photography and visualisations will be produced in line with Landscape Institute Technical Guidance Note (TGN) 06/19 (Ref 8.14).

8.7.7. The following section summarises the methodology for the LVIA which builds on the general assessment methodology presented in **Part 1, Chapter 5: EIA Approach and Methodology**. In accordance with good practice, the assessment of potential effects on landscape character and visual amenity, although closely related, are undertaken separately.

8.7.8. The assessment will be presented at the construction phase, but also at the operation (year 0 / winter) to illustrate the worst-case scenario of visibility of the Project without proposed mitigation and (year 15 / summer) to assess the effectiveness of mitigation planting in provision of visual screening. Photomontages will be provided as described as outlined in Paragraph 8.6.15.

Sensitivity

Landscape receptors

8.7.9. Landscape receptors are described as components of the landscape that have the potential to be affected by the English Onshore Scheme. These can include overall character and key characteristics, individual elements or features and specific aesthetic or perceptual aspects. It is the interaction between the different components of the English Onshore Scheme and these landscape receptors which has potential to result in landscape effects (both adverse and beneficial).

8.7.10. The sensitivity of the landscape receptor is a combination of the value of the landscape (undertaken as part of the baseline study) and the susceptibility to change of the receptor to the specific type of development being assessed. Landscape value is frequently addressed by reference to international, national, regional and local designations, determined by statutory bodies and planning agencies. Absence of such a designation does not necessarily imply a lack of quality or value. Factors such as accessibility and local scarcity can render areas of nationally unremarkable quality, highly valuable as a local resource.

8.7.11. The evaluation of landscape value will be undertaken considering the following factors and classified as high, medium or low with evidence provided as to the basis of the

evaluation. The value criteria have been informed by the value criteria identified within Technical Guidance Note 02/21 Assessing landscape value outside national designations (Ref 8.15).

8.7.12. Landscape susceptibility relates to the ability of a particular landscape to accommodate the Project. It is appraised through consideration of the baseline characteristics of the landscape, and in particular, the scale or complexity of a given landscape. The evaluation of landscape susceptibility will be defined as high, medium, low, negligible and will be supported by a clear explanation based upon the analysis of the landscape receptor and the extent to which it is able to accommodate the type of change proposed by the English Onshore Scheme.

8.7.13. The overall sensitivity assessment of the landscape receptor is made by employing professional judgement to combine and analyse the identified value and susceptibility with overall levels given from high, medium, low to negligible. The basis of the assessment will be made clear in the evaluation of each landscape receptor.

Visual receptors

8.7.14. Sensitivity of visual receptors is defined through appraisal of the value placed on the view as identified in the baseline study, and its susceptibility to change.

8.7.15. Value of the view is an appraisal of the value attached to views and is often informed by the appearance on Ordnance Survey or tourist maps and in guidebooks, literature or art or identified in policy or various guidebooks and tourist information. The nature and composition of the view and its scenic quality are also indicators of value. The value of the view is classified as high, medium, low and negligible, supported by evidence and professional judgements.

8.7.16. The susceptibility of visual receptors is a function of the occupation or activity of people experiencing the view and the extent to which their attention or interest is focused on the view and the visual amenity they experience at a particular location. For example, residents in their home, walkers whose interest may tend to be focused on the landscape or a particular view, or visitors at an attraction where views are an important part of the experience, may indicate a higher level of susceptibility. Whereas receptors occupied in outdoor sport where views are not important or at their place of work could be considered less susceptible to change.

8.7.17. As with landscape susceptibility, judgements about the susceptibility of visual receptors are described as high, medium, low and negligible using consistent and reasoned judgements.

8.7.18. The overall sensitivity assessment of the visual receptor is determined by employing professional judgement to combine and analyse the identified value and susceptibility ratings. Overall visual sensitivity will be assessed on the scale from high, medium, low and negligible. The basis of the assessment is made clear in the evaluation of each visual receptor.

Magnitude of effect

Landscape

8.7.19. Landscape magnitude of change refers to the extent to which the English Onshore Scheme will alter the existing characteristics of the landscape. It is an expression of the size or scale of change to the landscape, the geographical extent of the area influenced and its duration and reversibility. The variables involved are described below:

- The extent of existing landscape elements that will be lost, the proportion of the total extent that this represents and the contribution of that element to the character of the landscape;
- The extent to which aesthetic or perceptual aspects of the landscape are altered either by removal of existing components of the landscape or by addition of new ones;
- Whether the change alters the key characteristics of the landscape, which are integral to its distinctive character;
- The geographic area over which the change will be perceptible (within the application boundary itself, the immediate setting, at the scale of the landscape character area, on a larger scale influencing several landscape character areas); and
- The duration of the change and its reversibility.

8.7.20. An overall assessment of the magnitude of change will be made combining the above judgements using evidence and professional judgement. The levels of magnitude of change are described as being high, medium, low, negligible.

Visual

8.7.21. Visual magnitude of effect relates to the extent to which the English Onshore Scheme will alter the existing view through its size or scale of change in the view, the geographical extent of the area influenced and its duration and reversibility.

8.7.22. The variables involved are described below:

- The scale of the change in the view with respect to the loss or addition of features in the view and changes in its composition, including the proportion of the view occupied by the English Onshore Scheme;
- The degree of contrast or integration of any new features or changes in the form, scale, composition and focal points of the view;
- The nature of the view of the English Onshore Scheme in relation to the amount of time over which it will be experienced and whether views will be full, partial or glimpsed;
- The angle of view in relation to the main activity of the receptor, distance of the viewpoint from the English Onshore Scheme and the extent of the area over which the changes will be visible; and
- The duration of the change and its reversibility.

8.7.23. An overall assessment of the magnitude of visual effect resulting from the English Onshore Scheme on the visual receptor is made combining the above judgements

using evidence and professional judgement. The levels of magnitude of change are described as being very large, large, medium, small, negligible and none are defined below.

Further Data to be Gathered / Processed

Desk-Based Assessments

8.7.24. No specific desk-based assessments have been identified at this stage in addition to the baseline studies that will be required at PEIR and ES stage.

Surveys

8.7.25. The progress of both the PEIR and ES will require a combination of walkover surveys and photography surveys, both in winter and summer, to illustrate the seasonality of the views. Separate surveys are likely to be required for the photomontages.

Assessment of Significance

8.7.26. Determination of the significance of landscape and visual effects will be undertaken by employing professional judgement and experience to combine and analyse the magnitude of change against the identified sensitivity of the receptor. The assessments will take account of direct and indirect change on existing landscape elements, features, key characteristics and evaluates the extent to which these will be lost or modified, in the context of their importance in determining the existing baseline character. The visual assessment will take into account potential changes to the visual composition, including the extent to which new features will distract or screen existing elements in the view or disrupt the scale, structure or focus of the existing view.

8.7.27. The levels of landscape and visual effects will be described with reference to the identified levels differentiating between those significant and not significant as highlighted in the **Table 8-4 Significance Evaluation Matrix** in **Chapter 5: EIA Approach and Methodology**.

Assessment of Cumulative Impacts and Effects

8.7.28. Cumulative assessment will be undertaken at the ES stage, however, the PEIR will present the ‘long list’ and ‘short list’ of ‘other developments’, considered for cumulative assessment, to allow consultation bodies to form a view and provide comment on the other developments included at the PEIR stage. The long list will be reviewed and if necessary, updated, in the lead up to the production of the ES, as the Project’s design further evolves and in response to any comments raised at statutory consultation.

8.7.29. Cumulative effects are defined as follows:

- Cumulative landscape effects: Where more than one development may have an effect on a landscape designation or particular area of landscape character. This may also include effects on the physical fabric of the landscape where one or more developments may affect landscape components; and
- Cumulative visual effects: Where the cumulative or incremental visibility of similar types of development combined generate a cumulative visual effect.

8.7.30. The methodology for the assessment of sensitivity and magnitude remains the same as per the assessment of landscape and visual effects identified above.

8.7.31. Combined effects (sometimes called intra-project effects) result principally from different types of impacts from one development acting in combination on a specific receptor. The combined effects will be considered at ES stage.

8.8 Assessment Limitations and Assumptions

8.8.1. To ensure transparency within the EIA process, the following limitations and assumptions have been identified:

- As exact heights and massing of the English Onshore Scheme are not confirmed at this stage, the proposed study area and viewpoint locations may be subject to change and further refinement at later stages in the EIA process as the design evolves; and
- The assessment of views from private properties will be based on representative viewpoints from publicly accessible locations and using professional judgement and is limited to LVIA and does not include Residential Visual Amenity Assessment.

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9. Water Environment

9.1 Introduction

9.1.1. The water environment assessment will consider the potentially significant effects on the water environment that may arise from the construction and operation of the English Onshore Scheme.

9.1.2. This chapter of the Scoping Report sets out the relevant legislation, planning policy context and technical guidance used to inform the scope of the assessment and summarises any consultation and engagement in relation to the water environment undertaken to date. It provides an overview of the baseline conditions relevant to the water environment within / around the English Onshore Scheme Scoping Boundary, the measures which will be incorporated into the English Onshore Scheme to mitigate effects, the likely significant effects to be considered within the assessment, and how these likely significant effects will be assessed for the purpose of an Environmental Impact Assessment (EIA).

9.1.3. This chapter should be read in conjunction with **Part 1, Chapter 4: English Onshore Scheme**, and given the interface with other technical aspects, considered alongside the following chapters found in **Volume 1**:

- **Part 2, Chapter 6: Biodiversity** considers ecologically sensitive receptors which may be impacted by changes to the water environment.
- **Part 2, Chapter 10: Geology and Hydrogeology** considers geological and hydrogeological receptors which may be impacted by changes to the water environment.
- **Part 2, Chapter 11: Agriculture and Soils** considers soil resources and agricultural receptors which may be impacted by changes to the water environment.

9.1.4. The assessment of potentially significant effects on sensitive groundwater receptors is presented in **Part 2, Chapter 10: Geology and Hydrogeology**.

9.1.5. This chapter is supported by the following figures located in **Volume 3**:

- **Figure 9-1 Study Area and Water Environment Receptors**
- **Figure 9-2 Flood Risk Areas – Flood Zones**
- **Figure 9-3 Flood Risk Areas – Risk of Flooding from Surface Water**

9.1.6. The water environment assessment that will be presented in the Environmental Statement (ES) will be supported by a Flood Risk Assessment (FRA) and a Water Framework Directive (WFD) Assessment. The scopes of these will be agreed with the relevant stakeholders. The intertidal zone is a common receptor between the onshore and offshore elements of the Project, with regards to the WFD. The WFD Assessment will therefore be prepared using information from relevant marine surveys and assessments, the findings of which will also be reported within the offshore chapters of the Preliminary Environmental Information Report (PEIR) and ES.

9.2 Relevant Legislation, Planning Policy and Technical Guidance

9.2.1. This section identifies the relevant legislation, national and local policy and guidance which has informed the scope of the water environment assessment.

Legislation

9.2.2. A summary of the key legislation considered in, but not limited to, the water environment assessment is outlined in **Table 9-1**. The legislation presented in **Table 9-1** underpins and / or is considered in the following sections of this chapter:

- **Section 9.3 Consultation and Engagement**;
- **Section 9.6 Scope of the assessment**; and
- **Section 9.7 Assessment Methodology**.

Table 9-1: Legislation relevant to the Water Environment

Legislation	Legislative Context
The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (Ref 9.1)	The 2017 Regulations place a general duty on the Secretary of State (SoS), the Welsh Ministers, the Environment Agency, and Natural Resources Wales to exercise their 'relevant functions' so as to secure compliance with the WFD (Regulation 3).
Flood and Water Management Act 2010 (Ref 9.2)	The Act created the role of the Lead Local Flood Authority (LLFA) to take responsibility for leading the co-ordination of local flood risk management in their areas. In accordance with the Act the Environment Agency is responsible for the management of risks associated with main rivers, the sea and reservoirs; and the LLFAs are responsible for the management of risks associated with local sources of flooding such as ordinary watercourses, surface water and groundwater.
The Environmental Permitting (England and Wales) Regulations 2018 (Ref 9.3)	Under these Regulations it is an offence to cause or knowingly permit a water discharge activity, unless complying with an exemption or an Environmental Permit obtained from the Environment Agency. The Regulations also manage works in, under and near main rivers to ensure no detrimental impacts on these watercourses.
Environment Act 2021 (Ref 9.4)	Part 5 brings together measures to strengthen and update the existing regulatory and long-term planning framework for water, helping to reduce environmental risks, including to water quality and land drainage. It also strengthens the regulation of water and sewerage undertakers by the Office for Environmental Protection.

Legislation	Legislative Context
The Land Drainage Act 1991 (Ref 9.5) together with the Water Resources Act 1991 (Ref 9.6)	Provides for the Environment Agency to prevent the obstruction of any main river through the construction of flow control structures, culverts or any other structure in a main river. Where culverting or other works have a potential to affect the flow regime on ordinary watercourses, consent is required from the LLFA under the Flood and Water Management Act 2010 (Ref 9.5) which provides a more comprehensive flood risk management framework for people, homes and businesses.

Planning Policy

9.2.3. A summary of the planning policies at both a national and local level relevant to the water environment assessment is outlined in **Table 9-2** and **Table 9-3**. The legislation presented in **Table 9-2** underpins and / or is considered in the following sections of this chapter:

- **Section 9.3 Consultation and Engagement**;
- **Section 9.5 Design and Control Measures**;
- **Section 9.6 Scope of the assessment**; and
- **Section 9.7 Assessment Methodology**.

Table 9-2: National Planning Policy relevant to the Water Environment

Policy Reference	Policy Context
Overarching National Policy Statement for Energy (EN-1) 2024 (Ref 9.7)	
Paragraph 5.8.13	Sets out when a site-specific flood risk assessment should be provided including for "*all energy projects in Flood Zones 2 and 3 in England*".
Paragraph 5.8.14	This paragraph states that FRAs "*should identify and assess the risks of all forms of flooding to and from the project and demonstrate how these flood risks will be managed, taking climate change into account*."
Paragraph 5.8.18	Pre-application discussions should be arranged with relevant bodies such as the Environment Agency, LLFAs and Internal Drainage Boards (IDBs).
Paragraph 5.16.1	Outlines some of the adverse effects infrastructure developments can have on the water environment. Indicates how these effects can result in "*surface waters, groundwaters or protected areas failing to meet environmental objectives established under the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 and the Marine Strategy Regulations 2010".*
Paragraph 5.16.14	Regard should be given to current River Basin Management Plans and the requirements of the WFD Regulations.

Policy Reference	Policy Context
	Development will be refused consent where it is "*likely to cause deterioration of a water body or its failure to achieve good status or good potential, unless the requirements set out in Regulation 19 are met*."
Paragraphs 5.16.8 to 5.16.10	These paragraphs set out requirements regarding mitigation.
Paragraph 5.16.15	States "*The SoS should also consider the interactions of the proposed project with other plans such as Water Resources Management Plans and Shoreline / Estuary Management Plans*."
Paragraph 5.16.16	States "*The SoS should consider proposals to mitigate adverse effects on the water environment and any enhancement measures put forward by the applicant and whether appropriate requirements should be attached to any development consent and / or planning obligations are necessary*."
Overarching Draft National Policy Statement for Energy (EN-1) 2025 (Ref 9.8)	
Paragraphs 5.8.13, 5.8.14, 5.8.18, 6.16.2, 5.16.15, and 5.16.8 – 5.16.11.	The Government has published a draft update to the Overarching National Policy Statement for Energy. For water environment, the 2025 Draft NPS EN-1 is largely the same as in the 2024 document, with relevant changes in section and paragraph numbers.
National Policy Statement for Electricity Networks Infrastructure (EN-5) (Ref 9.9)	
Section 2.3	This section of EN-5 covers resilience to climate change and the need to look to design for flood resilience. Paragraph 2.3.2 states "*Applicants should in particular set out to what extent the proposed development is expected to be vulnerable, and, as appropriate, how it would be resilient to flooding, particularly for substations that are vital for the electricity transmission and distribution network*". Paragraph 2.3.3 advises that "*the resilience of the project to the effects of climate change must be assessed in the Environmental Statement (ES) accompanying an application', also stating that 'future increased risk of flooding would be covered in any flood risk assessment*".
Draft National Policy Statement for Electricity Networks Infrastructure (EN-5) 2025 (Ref 9.10)	
Section 2.3. Paragraph 2.3.2 and 2.3.	The Government has published a draft update to the National Policy Statement for Energy. For water environment, the 2025 Draft NPS EN-5 is largely the same as in the 2024 document, with relevant changes in section and paragraph numbers.

Table 9-3: Local Planning Policy relevant to the Water Environment

Policy Reference	Policy Context
East Lindsey District Council: East Lindsey Local Plan Core Strategy, 2018 (Adopted 2018) (Ref 9.11)	Strategic Policy (SP) 16: Inland Flood Risk Proposals in areas at risk of flooding must be accompanied by a site-specific flood risk assessment and that development will be supported that demonstrates an integrated approach to sustainable drainage. SP 17: Coastal East Lindsey This policy applies to the landfall. The council will support improvements to the existing flood defences, the creation of new flood defences and infrastructure associated with emergency planning. Development will need to satisfy the Sequential and Exception Tests and all relevant development will need to provide adequate flood mitigation.

Technical Guidance

9.2.4. A summary of the relevant technical guidance, specific to the water environment assessment, that has informed this Scoping Report and will inform the assessment within the PEIR and ES, is given in **Table 9-4**.

Table 9-4: Technical Guidance relevant to the Water Environment

Technical Guidance Document	Context	Section Considered
Nationally Significant Infrastructure Projects: Advice on the Water Framework Directive (Ref 9.12)	Explains the information that the Planning Inspectorate considers an Applicant must provide with their application in order to clearly demonstrate that the WFD and the 2017 Regulations have been appropriately considered.	As described in **Section 9.7**, a WFD Assessment will be prepared, informed by engagement with the Environment Agency.
Construction Industry Research and Information Association (CIRIA) publications, for example, C532: Control of water pollution from construction sites (Ref 9.13)	Provide details of construction good practice for preventing pollution of the water environment.	The good practice measures that would be adopted are described in outline in **Section 9.5**.

Technical Guidance Document	Context	Section Considered
Guidance for Pollution Prevention Series (Ref 9.14)	Provides environmental good practice and environmental regulatory guidance for a range of topics, for example, GPP5 Works and maintenance in and near watercourses.	The good practice measures that would be adopted are described in outline in **Section 9.5**.
Design Manual for Roads and Bridges (DMRB) LA 113: Road drainage and the water environment (Ref 9.15)	Describes a methodology for assessing the impacts that linear infrastructure projects can have on the water environment.	The assessment methodology is more fully described in **Section 9.7**.
Joint Lincolnshire Flood Risk and Water Management Strategy 2019-2050 (Ref 9.16)	Outlines the collective vision and actions for managing flood risk and future water supply in Lincolnshire. Provides baseline flood risk data and design guidance and criteria for the management of surface water runoff from new developments.	As described in **Section 9.7**, a Flood Risk Assessment will be prepared, the scope of which will be guided by the requirements of national and local planning policies and guidance and informed by baseline data from a range of sources.
National Planning Policy Framework (Ref 9.17) and its accompanying Flood Risk and Coastal Change; and Water Supply, Wastewater and Water Quality planning practice guidance (Ref 9.18, Ref 9.19)	The 'Flood Risk and Coastal Change' guidance provides recommended allowances for climate change effects on future peak river flows, sea levels and rainfall intensities. These allowances will be taken forward to the FRA. The 'Water Supply, Wastewater and Water Quality' guidance advises on how planning can ensure water quality and the delivery of adequate water and wastewater infrastructure.	As described in **Section 9.7**, a Flood Risk Assessment will be prepared that considers the impacts of climate change over the Project lifetime. As detailed in Section 9-6 water quality is included within the proposed scope of assessment.

9.3 Consultation and Engagement

9.3.1. In respect of water environment, key consultees have been identified and to date brief introductory meetings have been held in January, April and August 2025 with the Environment Agency. Key areas of interest that were highlighted by the Environment Agency include main rivers, water quality, bathing waters and the Projects interactions with the intertidal zone. Feedback was also received that ordinary watercourses should be considered when assessing flood risk.

9.3.2. More focussed engagement (through both informal and formal consultation) will be undertaken and recorded throughout the pre-application stage of the Project. Key consultees identified to date are:

- Environment Agency;
- Lincolnshire County Council (as the LLFA);
- Lindsey Marsh IDB; and
- Anglian Water.

9.3.3. Key areas of consultation are intended to include collection of baseline data and agreement of the proposed assessment scopes and methodologies (including for the WFD Assessment and FRA).

9.3.4. Local or specialist groups will be contacted to collect detailed local knowledge should the assessment process identify a need to engage further, or if requested during the statutory consultation process.

9.4 Baseline conditions

Study Area

9.4.1. The study area for the water environment assessment is proposed to include all land within the English Onshore Scheme Scoping Boundary, and in addition, a buffer of 500 m from this boundary. The study area, illustrated in **Volume 3, Figure 9-1**, is considered appropriate based on technical knowledge of similar schemes and has been set following consideration of the distance over which likely significant effects can reasonably be expected to occur.

9.4.2. The assessment will consider predominantly terrestrial waterbodies and will also include the intertidal zone down to Mean Low Water Springs (MLWS) at the proposed Anderby Creek Landfall, where there is interaction with the English Offshore Scheme.

9.4.3. The FRA that will be prepared to inform the EIA, may cover a larger study area where necessary, for example assessing the potential for changes to baseline flood risk at the local catchment scale or within a floodplain cell which may cover areas up to several square kilometres.

9.4.4. The WFD Assessment will include a study area (Zone of Influence (ZoI)) that is set at the waterbody scale and include all those WFD waterbodies with the potential to be affected, including intertidal areas where the Project makes landfall and downstream coastal waterbodies, where relevant. The ZoI will be agreed in consultation with the Environment Agency.

Data Gathering Methodology

9.4.5. The known or predicted current and future baseline environment described in this section has been informed by the following data sources:

- Statutory Main River map for England (Ref 9.20);
- Catchment data explorer database (Ref 9.21) of Cycle 2 and 3 Water Framework Directive information;
- Flood Map for Planning (Ref 9.22);
- Multi-Agency Geographic Information for the Countryside (MAGIC) Maps (Ref 9.23); and
- AIMS Spatial Flood Defences (inc. standardised attributes) (Ref 9.24).

9.4.6. Data requests will be made to the Environment Agency, LLFAs and IDBs to provide information on the following to support the future assessment:

- Baseline flood risk data, including available modelled flood data for main rivers, and local flood risk data from commissioned studies; and
- Data on consented discharges to surface waters and licenced and exempted (private) abstractions from surface waters.

9.4.7. All of the further information received from stakeholders will be incorporated into future stages of the assessment.

Current Baseline

9.4.8. The study area crosses the catchment of numerous watercourses and is located within the Anglian River Basin district. The features of the water environment are illustrated in:

- **Volume 3, Figure 9-1 Study Area and Water Environment Receptors**;
- **Volume 3, Figure 9-2 Flood Risk Areas – Flood Zones**; and
- **Volume 3, Figure 9-3 Flood Risk Areas – Risk of Flooding from Surface Water**

9.4.9. The study area does not cross any canals.

9.4.10. The English Onshore Scheme Scoping Boundary has been subdivided into the following components: the Anderby Creek Landfall, Underground Cable Route Corridors (inclusive of 5 and 6), the EGL 5 Converter Station Areas (inclusive of CS05 and CS06) and the Alford Bypass Construction Route. The current baseline is described below for each of these areas.

9.4.11. Any nature reserves and / or protected environmental areas with a hydrological dependency will be considered in future stages of assessment. Baseline data regarding designated sites is included in **Part 2, Chapter 6: Biodiversity**.

Anderby Creek Landfall

Surface Water Features

9.4.12. There are no main rivers at the landfall location at Anderby Creek landfall. However, a network of watercourses and ditches function at a local scale to drain the land. The catchments of these watercourses are generally rural in their land use, with relatively flat topography.

9.4.13. The Scoping Boundary in the Anderby Creek landfall section is wholly within the Lindsey Marsh IDB area which maintains several of the watercourses within this part of the English Onshore Scheme Scoping Boundary, including the Main Drain and a drain that flows alongside Roman Bank.

9.4.14. Other water features within the Anderby Creek landfall area include numerous natural and artificial ponds.

Water Quality

9.4.15. At the proposed Anderby Creek landfall location, the English Onshore Scheme Scoping Boundary is located within both the Lincolnshire Transitional and Coastal (TraC) and the Anderby Main Drain WFD waterbody catchments. These waterbodies both have a moderate ecological status and a chemical status of fail due to exceedance of priority hazardous substances.

Flood Risk and Land Drainage

9.4.16. Based on the online Flood Maps (Ref 9.22) and as illustrated in **Volume 3, Figure 9-2,** the majority of land at the Anderby Creek landfall location is at high risk of flooding, with the English Onshore Scheme Scoping Boundary crossing large extents of coastal floodplain (initially defined by the extents of Environment Agency Flood Zone 2 and Flood Zone 3).

9.4.17. However, flood defences are situated along the coastal frontage of the Anderby Creek Landfall area. These comprise of raised embankments and dunes, which reduce the risk of tidal flooding, such that the residual risk, linked to defence overtopping, is medium to low.

9.4.18. The previously described network of watercourses and drainage ditches are key to the land drainage regime in this area. Formal drainage systems include those serving existing roads and agricultural land is also expected to be served by piped and open drainage systems.

Hydromorphology

9.4.19. The Anderby Main Drain waterbody has a hydromorphological designation of artificial, with the Lincolnshire TraC waterbody designated as heavily modified. Many of the water features in this landfall area have been subject to modifications for the purposes of land drainage and flood defence. The ordinary watercourses in the study area, particularly those maintained by the Lindsey Marsh IDB, also serve a land drainage function and tend to have a relatively low hydromorphological diversity.

Underground Cable Route Corridors

Surface Water Features

9.4.20. The cable route corridors cover the English Onshore Scheme Scoping Boundary west of the Anderby Creek landfall to the EGL 5 Converter Station Siting Zones, before connecting with the proposed 400 kV LCS-B (see **Part 2, Chapter 4: English Onshore Scheme**). There is one main river, the Woldgrift Drain, that is crossed twice by the Scoping Boundary. The Woldgrift Drain flows in a north-easterly direction, discharging into the North Sea at Mablethorpe. There is also an extensive network of watercourses and drainage ditches, that function at a local scale, including Boy Grift Drain, which is crossed by both cable route corridors, and Anderby Main Drain, which flows to the south of the southern cable corridor. Some of these are managed to facilitate land drainage and control flood risk. The catchments of the watercourses that flow through the cable route corridors can be categorised as generally rural in their land use, with relatively flat topography.

9.4.21. The Lindsey Marsh IDB maintains several of the watercourses within this part of the English Onshore Scheme Scoping Boundary.

9.4.22. Other water features include numerous natural and artificial ponds.

Water Quality

9.4.23. The cable route corridors are located within the Steeping and Eaus Operational Catchment and are drained by three WFD waterbodies: Anderby Main Drain, Boy Grift Drain and Woldgrift Drain. These three waterbodies all achieve moderate ecological status, scoring moderate or higher in all ecological classifications, apart from Woldgrift Drain which is assigned bad for phosphate. This phosphate status is attributed to receipt of sewage discharges and poor agricultural and land management practices. All of the waterbodies share a chemical status of ‘fail’ due to exceedance of priority hazardous substances, namely mercury and its compounds and polybrominated diphenyl ethers (PBDE).

Flood Risk and Land Drainage

9.4.24. Based on the online Flood Maps (Ref 9.22) large parts of the northern and eastern parts of the Underground Cable Route Corridors are at high risk of flooding, with the English Onshore Scheme Scoping Boundary crossing large extents of fluvial and coastal floodplain (initially defined by the extents of Environment Agency Flood Zone 2 and Flood Zone 3). This is shown on **Volume 3, Figure 9-2**.

9.4.25. There are flood defences along the Woldgrift Drain. These comprise Natural High Ground and reduce the risk of fluvial flooding.

9.4.26. The previously described network of watercourses and drainage ditches are key to the land drainage regime in this area. Formal drainage systems include those serving existing roads and areas of urban development. Agricultural land is also expected to be served by piped and open drainage systems.

Hydromorphology

9.4.27. All of the WFD waterbodies that are crossed by the English Onshore Scheme Scoping Boundary along the Underground Cable Route Corridors have a hydromorphological designation of artificial. Many of the water features have been subject to modifications for the purposes of land drainage and flood defence. The ordinary watercourses in the study area, particularly those within the IDB district, also serve a land drainage function and tend to have a relatively low hydromorphological diversity.

EGL 5 Converter Station Siting Zones

Surface Water Features

9.4.28. This section comprises the two converter station Siting Zones, namely CS05 (EGL 5 West Converter Station), located northeast of Bilsby, and CS06 (EGL 5 East Converter Station), located northwest of Huttoft.

9.4.29. The Woldgrift Drain is the only main river that flows through land within the two siting zones, flowing in a northerly direction through the CS05 zone, as illustrated in **Volume 3, Figure 9-1**.

9.4.30. There is also an extensive network of watercourses and drainage ditches, that function at a local scale, located throughout the EGL 5 Converter Station Siting Zones. These mainly discharge to Woldgrift Drain (CS05 zone) and Boy Grift Drain (CS06). In some places these are managed to facilitate land drainage and control flood risk. The catchments of the watercourses in this section can be categorised as generally rural in their land use, with relatively flat topography.

9.4.31. The EGL 5 Converter Station Areas are partially within the Lindsey Marsh IDB district and the IDB manage several watercourses within this part of the English Onshore Scheme Scoping Boundary.

Water Quality

9.4.32. The two converter station Siting Zones are located within the Steeping and Eaus Operational Catchment, specifically within the catchments of the following WFD waterbodies: Anderby Main Drain, Boy Grift Drain and Woldgrift Drain. The WFD status of these waterbodies is described in Paragraph 9.4.23.

Flood Risk and Land Drainage

9.4.33. As shown in **Volume 3, Figure 9-2** the majority of land within the two converter station Siting Zones is at low risk of flooding, although some areas, notably a portion of CS05, are in Flood Zone 2 and 3, at high risk of fluvial flooding associated with Woldgrift Drain and Boy Grift Drain.

9.4.34. As described for the Underground Cable Route Corridors section, there are flood defences along the Woldgrift Drain which comprise Natural High Ground and reduce the risk of fluvial flooding.

9.4.35. The previously described network of watercourses and drainage ditches are key to the land drainage regime in this area. Formal drainage systems include those serving existing roads. Agricultural land is also expected to be served by piped and open drainage systems. Potential risk of flooding from surface water is shown in **Volume 3, Figure 9-3.**

Hydromorphology

9.4.36. As discussed in Paragraph 9.4.27, all of the WFD waterbodies that are crossed by the English Onshore Scheme Scoping Boundary in the two converter Siting Zones have a hydromorphological designation of artificial, reflecting of modifications for land drainage and flood defence.

Alford Bypass Construction Traffic Route

Surface Water Features

9.4.37. The construction traffic route corridor links the graduated swathe area for both corridors 5 and 6 to the A1104, bypassing to the north of Alford. The Woldgrift Drain main river is crossed by the route, and the land within the route corridor is also drained by a network of ordinary watercourses and drainage ditches, as illustrated in **Volume 3, Figure 9-1**. The catchments of the watercourses in this section can be categorised as generally rural in their land use, with relatively flat topography.

9.4.38. The route corridor is partially within the Lindsey Marsh IDB district and the IDB manage several watercourses within this part of the English Onshore Scheme Scoping Boundary.

Water Quality

9.4.39. The construction traffic route corridor is located within the Steeping and Eaus Operational Catchment, specifically within the catchment of the Woldgrift Drain WFD waterbody, the status of which is described in Paragraph 9.4.23.

Flood Risk and Land Drainage

9.4.40. As shown in **Volume 3, Figure 9-2**, the majority of land within the construction traffic route corridor is at low risk of flooding, with a localised area in Flood Zone 2 and 3, at high risk of fluvial flooding associated with Woldgrift Drain.

9.4.41. There are flood defences along the Woldgrift Drain which comprise Natural High Ground and reduce the risk of fluvial flooding.

9.4.42. The previously described network of watercourses and drainage ditches are key to the land drainage regime in this area. Formal drainage systems include those serving existing roads. Agricultural land is also expected to be served by piped and open drainage systems.

Hydromorphology

9.4.43. As discussed in Paragraph 9.4.27, the WFD waterbody that is crossed by the English Onshore Scheme Scoping Boundary along the construction traffic route has a hydromorphological designation of artificial, reflecting modifications for land drainage and flood defence.

Future Baseline

9.4.44. The future baseline relates to known or anticipated changes to the current baseline in the future, which should be assessed as part of the English Onshore Scheme. Construction of the Project is programmed to begin in 2030 and is planned to be fully operational by 2035, thus projections will account for these allowances.

9.4.45. With regard to flood risk and land drainage, future baseline conditions would be forecast, drawing on current best practice guidelines (Ref 9.25), taking into account the likely impacts of climate change on rainfall intensities, and where applicable, peak river flows and sea level rise. These future conditions would be considered to factor climate change resilience into the design of the English Onshore Scheme.

9.4.46. It is expected that the WFD legislation will drive future improvements in the ecological and chemical quality of waterbodies. The effects of the implementation of future cycles of river basin management plans would therefore also be considered when assigning value to water environment receptors.

9.4.47. It is recognised that there are several other proposed and committed developments within the English Offshore Scheme Scoping Boundary and surrounding area that could alter the future baseline in the absence of the Project. For water environment, this includes future developments that share the same hydrological catchments as the study area. The potential for cumulative effects will be considered later in the EIA process according to the approach outlined within **Part 4, Chapter 30: Cumulative Effects**.

9.5 Design and Control Measures

9.5.1. The Corridor Preliminary Routeing and Siting Study (CPRSS), as described in **Part 1, Chapter 3: Consideration of Alternatives**, was undertaken to identify the preferred routeing and siting of the proposed infrastructure to ensure that environmental and social effects would be avoided or reduced. As part of the English Onshore Scheme's design process, a number of primary (embedded) environmental mitigation measures will be proposed to reduce the potential for impacts on water environment receptors. These measures will evolve as part of design development and in response to consultation. These measures will be fed iteratively into the assessment process and typically include those that have been identified as good or standard practice and include actions that would be undertaken to meet existing legislation requirements.

9.5.2. As there is a commitment to implementing primary environmental mitigation measures these have been considered in the scoping assessment.

Construction Phase

9.5.3. A range of standard measures for the English Onshore Scheme are likely to be adopted throughout the duration of the construction phase. Design and control measures relevant to the water environment and proportionate to the risks will be set out in the Outline Construction Environmental Management Plan (CEMP), prepared to accompany the ES. A summary of these measures is detailed below (which is not an exhaustive list):

- The Construction Contractor(s) will undertake regular site inspections to check conformance to the CEMP (developed in accordance with the Outline CEMP) and other Management Plans.
- Fuels, oils and chemicals will be stored responsibly, away from sensitive water receptors. All refuelling, oiling and greasing of construction plant and equipment will take place above drip trays and also away from drains as far as is reasonably practicable. Appropriate spill kits will be made easily accessible for these activities.

- An Emergency Action Plan will be established for the construction phase which will outline procedures to be implemented in case of unplanned events, including but not limited to site flooding and pollution incidents.
- Runoff from working areas will be managed appropriately during construction with respect to both quantity and quality.
- Existing land drainage systems impacted by the English Onshore Scheme during its construction will be re-provided to maintain the land drainage regime.
- Where flood defences are crossed, appropriate construction methodologies will be adopted, and defences will be suitably monitored to ensure no effects on their integrity.

9.5.4. It is anticipated that the English Onshore Scheme will require crossings of multiple ditches, drains and watercourses, both for the purposes of construction access and for installation of the underground cables. The design of these crossings will be dependent on the size and sensitivity of the watercourses. For example, it is anticipated that those designated as main river, and those with WFD status, will be crossed using clear span bridges (for access) and using trenchless techniques for cable installation, where practically feasible. Construction methodologies for watercourse crossings will be discussed and design principles agreed with relevant stakeholders.

Operational Phase

9.5.5. Suitable flood resilience and surface water drainage provisions will be embedded within the design for any Above Ground infrastructure (AGI), such as the converter station, in line with national and local policy.

9.5.6. It is anticipated that a strategy for managing surface water drainage, including key principles and provisions, would be described within the FRA submitted to support the ES.

9.6 Scope of the assessment

Potential sensitive receptors

9.6.1. **Table 9-5** provides a summary of the impact pathways and sensitive receptors during each of the phases of the English Onshore Scheme.

Table 9-5: Receptors and impact pathways for each phase of the English Onshore Scheme

Project Phase	Impact	Receptor
Construction	Physical disturbance and change to flow regime and hydromorphology.	Main rivers and ordinary watercourses, intertidal zone, existing water interests (surface water abstractions and discharges), hydrologically sensitive nature conservation sites.
	Pollution risks (e.g., bentonite breakout) and water consumption	Main rivers* and ordinary watercourses, intertidal zone, existing

Project Phase	Impact	Receptor
	associated with underground cable installation via trenchless methods.	water interests and nature conservation sites.
	Increased flood risk and detriment to land drainage systems.	People, existing land drainage regime, property and infrastructure.
	Temporary works within the floodplain or in proximity to flood defences causing loss of floodplain storage / detriment to defence integrity.	Flood defences, people, property and infrastructure.
Operation / Maintenance	Increased flood risk and detriment to land drainage.	People, existing land drainage regime, property and infrastructure.

*Trenchless crossings would be utilised at main rivers.

9.6.2. Groundwater receptors are covered in Part 2, Chapter 10: Geology and Hydrogeology.

Likely Significant Effects

Construction Phase

9.6.3. The construction phase impacts described below have been scoped in for further assessment due to the potential for likely significant effects.

9.6.4. During construction, new crossings of watercourses would be required for temporary access and could result in channel bed / bank modifications causing disruption to flow regimes and increased flood risk. There is also an associated risk of pollution from construction traffic using these temporary access routes, which could result in debris and mud from tyres entering the watercourses. Other construction activities with a risk of opening pollution pathways to water environment receptors include the dewatering of excavations and drilling for trenchless crossings (with potential for outbreaks of drilling muds). There would also be changes to land surface permeabilities, for example, at the converter station and at permanent access tracks, which could disrupt the current land drainage regime.

9.6.5. There is the potential for the English Onshore Scheme to increase flood risk during construction through the creation of soil stockpiles and temporary working areas, which could result in the temporary loss of floodplain storage or could impede flood flows.

9.6.6. The English Onshore Scheme would create new areas of temporary impermeable land cover, such as construction compounds and haul routes, along with topsoil stripping and earthworks, which could locally reduce rainfall infiltration rates, increase runoff rates and induce overland flow during construction. This could contribute to localised changes to the land drainage regime, resulting in ponding of water or waterlogging of soils. Areas with a sloping topography where topsoil has been stripped would be particularly vulnerable to these changes.

9.6.7. There are existing flood defences throughout the study area and there will need to be further discussions with the Environment Agency to understand the effects of any temporary works on the design and integrity of these. It is anticipated that any requirements in relation to the flood defences would be agreed under the protective provisions secured for the Environment Agency.

Operational Phase

9.6.8. There would be limited potential for likely significant effects during operation of the English Onshore Scheme. Once the underground cables have been installed, the land (including watercourses and riparian habitat) would be reinstated.

9.6.9. Following construction all temporary watercourse crossings would be removed unless it has been identified that it would be preferential for them to remain, for example, when replacing an existing crossing in a poor state of repair.

9.6.10. There would be no impermeable footprint associated with the underground cable and there would be appropriate post construction provision for land drainage within the cable corridor.

9.6.11. There would be a permanent impermeable footprint associated with the converter station and its access route. The designs of these elements of the English Onshore Scheme would incorporate appropriate surface water drainage measures. However, as the EGL 5 Converter Station Siting Zones are partially located within the floodplain, operational flood risk and land drainage effects are scoped in for further assessment.

9.6.12. **Table 9-6** presents a summary of the likely significant effects associated with the above impact pathways and sensitive receptors which have been scoped in to the water environment assessment. The potential for the English Onshore Scheme to result in likely significant effects takes into account the embedded measures described in Section Design and Control Measures.

Table 9-6: Summary of likely significant effects on water environment receptors for each phase of the English Onshore Scheme

Project Phase	Impact	Receptor	Potential for significant effects	Proposed to be scoped in / out
Construction	Physical disturbance and change to flow regime and hydromorphology.	Main rivers, ordinary watercourses, intertidal zone, existing water interests, nature conservation sites.	**Yes** – the English Onshore Scheme will cross numerous watercourses and floodplains, with potential for temporary physical disturbance and impacts on flow regimes. There is also potential for permanent impacts where any permanent culverts are required for example for access to Converter Stations.	**Scoped in**
	Pollution due to soil stripping, earthworks and excavations and use and refuelling of plant	Main rivers and ordinary watercourses, intertidal zone, existing water interests, nature conservation sites.	**No** – Measures outlined in Section 9.5 Design and Control Measures would act to manage work site runoff to ensure watercourses are not polluted, nor their flow capacities reduced	**Scoped out**
	Pollution risks (e.g., bentonite breakout).	Main rivers, intertidal zone, existing water interests and nature conservation sites.	**Yes** – the English Onshore Scheme is likely to cross some watercourses and will make landfall using trenchless techniques.	**Scoped in**
	Water resources.	Existing water interests.	**Yes** – in addition to the above, the English Onshore Scheme has the potential to impact water resources through water use during construction (e.g., for cable testing and welfare facilities).	**Scoped in**
	Increased flood risk and detriment to land drainage.	People, existing land drainage regime, property and infrastructure.	**Yes** – due to the large swathes of floodplain within the English Onshore Scheme Scoping Boundary, temporary works in the floodplain cannot be avoided. New areas of temporary impermeable land cover would be created.	**Scoped in**

Project Phase	Impact	Receptor	Potential for significant effects	Proposed to be scoped in / out
	Temporary works in the floodplain / in proximity to flood defences.	Flood defences, people, property and infrastructure.	**Yes** – discussions with the Environment Agency are required to understand the effects of any temporary works on the design and integrity of these.	**Scoped in**
Operation / Maintenance	Increased flood risk and detriment to land drainage.	People, existing land drainage regime, property and infrastructure.	Yes – due to the large swathes of floodplain within the English Onshore Scheme Scoping Boundary, AGI has the potential to be situated in the floodplain and new permanent areas of impermeable land cover will be introduced.	**Scoped in**
	Pollution due to discharges of operational surface water drainage.	Main rivers, ordinary watercourses, existing water interests, nature conservation sites.	**No** – rainfall runoff from AGI would be sustainably attenuated and treated prior to discharge to the receiving water environment. There would be no other operational discharges to surface watercourses.	**Scoped out**
	Physical disturbance and change to flow regime and hydromorphology.	Main rivers, ordinary watercourses and their floodplains	**No** – given the nature of the English Onshore Scheme, there would be no permanent impacts on watercourse flow regimes or their hydromorphology	**Scoped out**
	Pollution and physical disturbance caused by maintenance activities.	Main rivers, ordinary watercourses, existing water interests, nature conservation sites.	**No** – maintenance activities would be low impact, generally limited to non-intrusive inspections undertaken in line with the Applicant's operational management procedures. The ES will provide specific information regarding operational management procedures that would safeguard water environment receptors during operation of the English Onshore Scheme, including for maintenance activities.	**Scoped out**
	Water resources.	Existing water interests.	**Yes** – the English Onshore Scheme would require a water supply to the converter station.	**Scoped in**

9.6.13. It is noted that ordinary watercourses will be included as receptors in the PEIR and ES where relevant for all impacts scoped in.

9.7 Assessment Methodology

Further Data to be Gathered / Processed

Desk-Based Assessments

9.7.1. In addition to the data sources used to inform this Scoping Report and described in **Section Baseline** conditions, the following data sources are proposed to be used to inform the water environment assessment:

- Long term flood risk map for England (Ref 9.26);
- Data from Environment Agency flood models;
- Drainage and flood data from Local Authority Surface Water Management Plans and Strategic Flood Risk Assessments;
- Land drainage data and information from Lindsey Marsh IDB;
- Anglian River Basin Management Plan (Ref 9.27);
- Data defining surface water catchment areas and hydrological properties (e.g., Rainfall, slopes, and soil permeability) from the Flood Estimation Handbook webservice (Ref 9.28); and
- Information from the relevant Shoreline Management (Ref 9.29) and Water Resources Management (Ref 9.30) Plans.

9.7.2. An FRA would be submitted to support the Development Consent Order (DCO) application. The size of the English Onshore Scheme and the presence of large areas of Flood Zone 3 triggers the requirement for an FRA. The FRA will be produced in accordance with the requirements of the Energy National Policy Statements EN-1 and EN-5 and local flood risk management guidelines published by the LLFA. The FRA will consider flood risk from all relevant sources during both construction and operation, incorporating allowance for climate change in accordance with published guidance where applicable (Ref 9.25). It will also include details of the measures proposed to adhere to local drainage and flood risk planning policies. The presence of works and infrastructure (where required) within the floodplain will be covered in the FRA. The FRA scope and methodology will be agreed through engagement with the Environment Agency, LLFA and IDB.

9.7.3. A WFD Assessment would also be submitted to support the DCO application, guided by Planning Inspectorate WFD guidance (Ref 9.12). It is noted that there is an overlap between the English Onshore Scheme and English Offshore Scheme in the intertidal area. The WFD will cover land based WFD waterbodies as well as transitional and marine waterbodies within the ZoI of the Project. It will be informed by inputs from relevant marine and groundwater assessments and engagement with the Environment Agency to agree each stage of assessment.

9.7.4. The effects of the English Onshore Scheme on the Anglian River Basin Management Plan (Ref 9.27) and the waterbodies therein will be described, and the assessment will set out how the design of the English Onshore Scheme has been developed to align with the requirements of the Regulations. A qualitative approach is proposed, and the assessment will identify how the design will avoid waterbody deterioration, as well as any other mitigation necessary.

9.7.5. A Water Resources Assessment will also be prepared (using a pro-forma template provided by Anglian Water) to support the DCO application.

Surveys

9.7.6. Field notes and photographs collected during walkover surveys will be used to inform the water environment assessment.

9.7.7. Surveys of all main river crossing sites are proposed, in addition to the study area around the landfall site and any area where it is confirmed as necessary to undertake bespoke flood modelling.

9.7.8. Relevant data from ecology surveys and drainage surveys will also be drawn from to inform the water environment assessment.

Assessment of Significance

9.7.9. The water environment assessment will be based on the methodology described in DMRB LA 113 (Ref 9.15). Whilst primarily intended for use in assessing the impacts of highway projects on the water environment, the methodology is widely accepted as suitable for assessing the effects of other types of linear infrastructure. It promotes assessment that is proportionate to the scale and nature of the proposals and that considers the sensitivity of the local water environment to change.

9.7.10. The method set out in the DMRB provides guidance on assigning value (sensitivity) to receptors, for example watercourses and floodplains (Table 3.70 of LA 113), and this will be used to assign value to water environment receptors. The DMRB approach also provides criteria for assigning impact magnitude (Table 3.71 of LA 113). The criteria consider the scale / extent of the predicted change and the nature and duration of the impact. The significance of effect will then be derived using the matrix set out in **Part 1, Chapter 5: EIA Approach and Methodology**.

9.7.11. LA 113 does not provide a prescriptive assessment methodology for hydromorphology. Guidance on assigning value (sensitivity) and impact magnitude with respect to hydromorphology will be drawn by published literature, namely the ‘Guidebook of Applied Fluvial Geomorphology’ (Ref 9.31) and the ‘River Hydromorphology Assessment Technique Training Manual’ (Ref 9.32). The assessment criteria will be set out in the ES and informed by consultation with relevant stakeholders.

Assessment of Cumulative Impacts and Effects

9.7.12. As mentioned previously, **Part 4, Chapter 30: Cumulative Effects** considers the aggregated impact of multiple actions on water environment receptors.

9.8 Assessment Limitations and Assumptions

9.8.1. The following limitations and assumptions have been identified:

- No water quality sampling and analysis is proposed as it is considered that sufficient baseline data is available to generally characterise the water quality of surface water receptors; and

- It is assumed there is sufficient data from the Environment Agency to identify and define the current condition and standards of protection provided by existing flood defences, and that no baseline condition surveys will be required.

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10. Geology and Hydrogeology

10.1 Introduction

10.1.1. The geology and hydrogeology assessment will consider the potentially significant effects on geological and hydrogeological (groundwater related) receptors which may arise from the construction and operation of the English Onshore Scheme.

10.1.2. This chapter of the Scoping Report sets out the relevant legislation, planning policy context and technical guidance used to inform the scope of the assessment and summarises consultation and engagement in relation to geology and hydrogeology. It provides an overview of the baseline conditions relevant to geology and hydrogeology within and adjacent to the English Onshore Scheme Scoping Boundary, the measures which will be incorporated into the English Onshore Scheme to mitigate effects, the likely significant effects to be considered within the assessment, and how these likely significant effects will be assessed for the purpose of an Environmental Impact Assessment (EIA).

10.1.3. This chapter should be read in conjunction with **Part 1, Chapter 4: The Project**, and given the interface with other technical aspects, considered alongside the following technical chapters found in **Volume 1**:

- **Part 2, Chapter 6: Biodiversity** considers ecologically sensitive receptors which may be impacted by changes to the water environment;
- **Part 2, Chapter 9: Water Environment** for which there may be crossover in receptors and common impact pathways; and
- **Part 2, Chapter 11: Agriculture and Soils** considers soil resources and agricultural receptors which may be impacted by changes to the water environment and which may be informed by the geology and hydrogeology assessment.

10.1.4. This chapter is supported by the following figures found in **Volume 3**:

- **Figure 10-1 Superficial Geology**;
- **Figure 10-2 Bedrock Geology**;
- **Figure 10-3 Baseline Geology Features**; and
- **Figure 10-4 Baseline Hydrogeology Features**.

10.2 Relevant Legislation, Planning Policy and Technical Guidance

10.2.1. This section identifies the relevant legislation, national and local policy and guidance which has informed the scope of the geology and hydrogeology assessment.

Legislation

10.2.2. A summary of the key legislation considered in, but not limited to, the scope of geology and hydrogeology effects is outlined in **Table 10-1**. The legislation presented in **Table 10-1** underpins and / or is considered in the following sections of this chapter:

Table 10-1: Legislation relevant to Geology and Hydrogeology

Legislation	Legislative context	Section considered
Environmental Protection Act (EPA) (1990) (Ref 10.1).	The EPA: • Establishes provisions for preventing and controlling pollution to protect water sources, including groundwater. • Regulates activities that may have an impact on groundwater quality, such as waste management and industrial processes. • Provides powers to regulators for monitoring and enforcing compliance with groundwater protection standards. • Requires the identification and remediation of contaminated land to prevent pollution of groundwater.	Section 10.5 Design and Control Measures
EPA Part IIA (Ref 10.1).	The overarching objectives of the regime are: (a) To identify and remove unacceptable risks to human health and the environment. (b) To seek to ensure that contaminated land is made suitable for its current use. (c) To ensure that the burdens faced by individuals, companies and society as a whole are proportionate, manageable and compatible with the principles of sustainable development.	Section 10.4 Baseline Conditions Section 10.5 Design and Control Measures Section 10.6 Scope of the Assessment Section 10.7 Assessment Methodology
Environment Act (2021) (Ref 10.2).	In summary, the Act: • Aims to protect and enhance the natural environment, including groundwater resources. • Provides a framework for the sustainable management of water	Section 10.5 Design and Control Measures Section 10.6 Scope of the Assessment

Legislation	Legislative context	Section considered
	resources, considering the needs of the environment and society. • Encourages the implementation of measures to prevent pollution and promote the restoration of damaged environments, including groundwater. • Facilitates the integration of environmental considerations into decision-making processes and policies.	
The Contaminated Land (England) Regulations (2006) (Ref 10.3).	The Regulations: • Implement Part IIA of the EPA. • Focuses on the identification and remediation of contaminated land, including the protection of groundwater from contamination. • Sets out procedures and standards for assessing and managing contaminated land to prevent or reduce risks to human health and the environment. • Requires the investigation and remediation of significant pollution incidents that pose a threat to groundwater quality. • Establishes responsibilities for identifying and remediating historical contamination that may impact groundwater.	Section 10.4 Baseline Conditions Section 10.5 Design and Control Measures Section 10.6 Scope of the Assessment Section 10.7 Assessment Methodology
Groundwater (England and Wales) Regulations (2009) (Ref 10.4).	The Groundwater (England and Wales) Regulations: • Implements the European Union (EU) Groundwater Directive to protect and manage groundwater resources in England and Wales. • Sets standards and measures for preventing and reducing pollution of groundwater, including the control of hazardous substances. • Requires the monitoring and reporting of groundwater quality to	Section 10.5 Design and Control Measures Section 10.6 Scope of the Assessment

Legislation	Legislative context	Section considered
	assess compliance with quality standards. • Facilitates the development and implementation of programs of measures to achieve good groundwater status and prevent deterioration.	
Environmental Damage Regulations (2009) (Ref 10.5).	The Environmental Damage Regulations: • Places liability on operators to prevent and remedy environmental damage, including damage to groundwater. • Requires operators engaged in activities with a significant risk of causing environmental damage to have financial mechanisms in place to cover potential liabilities. • Implements the "polluter pays" principle, holding operators responsible for the costs of preventive and remedial measures in case of environmental damage to groundwater. • Encourages the restoration of affected groundwater to its original state or as close as possible, ensuring the long-term protection and sustainable use of this resource.	Section 10.4 Baseline Conditions Section 10.5 Design and Control Measures Section 10.6 Scope of the Assessment Section 10.7 Assessment Methodology
The Water Act (2014) (Ref 10.6).	The Water Act: • Focuses on the sustainable management of water resources and the protection of water quality, including groundwater. • Provides powers to regulators to manage water resources effectively, including the ability to issue licenses and permits for water abstraction and discharge activities. • Sets out provisions for regulating and controlling activities that may impact groundwater, such as the	Section 10.4 Baseline Conditions Section 10.6 Scope of the Assessment

Legislation	Legislative context	Section considered
	construction and operation of wells and boreholes. • Addresses issues related to water supply, drought management, flood risk management, and the protection of aquatic ecosystems.	
The Water Resources Act (1991) (Ref 10.7).	The Water Resources Act: • Regulates the abstraction and impounding of water, including groundwater, to prevent overexploitation and ensure sustainable water resource management. • Establishes licensing requirements and permits for water abstraction activities to protect groundwater quantity and quality. • Sets out provisions for controlling pollution and contamination of groundwater to safeguard its ecological and human health significance. • Promotes the implementation of water resource management plans to balance water supply needs while considering the protection of groundwater resources.	Section 10.6 Scope of the Assessment
The Environmental Permitting (England and Wales) Regulations (2016) (Ref 10.8).	The Environmental Permitting (England and Wales) Regulations: • Requires operators of certain activities, including those related to waste management and industrial processes, to obtain environmental permits that address the protection of groundwater. • Specifies measures to prevent or control pollution of groundwater, including stringent storage and handling requirements for hazardous substances. • Mandates monitoring and reporting obligations to ensure compliance with groundwater protection	Section 10.4 Baseline Conditions Section 10.5 Design and Control Measures Section 10.6 Scope of the Assessment

Legislation	Legislative context	Section considered
	standards and facilitate early detection of potential contamination incidents. • Enables regulatory authorities to take enforcement action, including imposing penalties, for non-compliance with the regulations' groundwater protection requirements.	
The Water Environment (Water Framework Directive) Regulations (2017) (Ref 10.9).	The Water Environment (Water Framework Directive) Regulations: • Provides a framework for managing the water environment in the UK, aiming to achieve good ecological and chemical status of water bodies, including groundwater. • Sets out provisions for the protection and improvement of groundwater quality and quantity, including measures to prevent pollution and ensure sustainable water resource management. • Requires the development and implementation of river basin management plans, which consider the protection and restoration of groundwater. • Promotes the involvement of stakeholders and public participation in water management decision-making processes.	Section 10.6 Scope of the Assessment

Planning Policy

1.1.1 A summary of the planning policies at both a national and local level relevant to the scope of geology and hydrogeology effects is outlined in **Table 10-2.**

Table 10-2: National Planning Policy relevant to Geology and Hydrogeology

Policy reference	Policy context	Section considered
Overarching National Policy Statement for Energy (EN-1) (2024) (Ref 10.10).		
Paragraph 5.4.12-5.4.13.	EN-1 notes the contribution that regional and local geological sites have in supporting local biodiversity and geological interest.	Section 10.4 Baseline Conditions Section 10.5 Design and Control Measures
Paragraph 5.4.19.	States that *"the Applicant should show how the Project has taken advantage of opportunities to conserve and enhance biodiversity and geological conservation interests."*	Section 10.5 Design and Control Measures
Paragraph 5.11.3 – 5.11.5.	Outlines the potential risk associated with the re-use of previously developed land for new development, noting that it may not be suitable for all forms of energy infrastructure. Paragraphs 5.11.4 and 5.11.5 identify potential effects on soil resources through land contamination as well as indirect impact on the local water regime, organic matter content and soil biodiversity. Risks would require consideration in accordance with the contaminated land statutory guidance as a minimum.	Section 10.6 Scope of the Assessment
Paragraph 5.11.18.	States that for developments on previously developed land, the Applicant's assessment *"should ensure that they have considered the risk posed by land contamination, and where contamination is present, applicants should consider opportunities for remediation where possible"*. It is noted that engagement with relevant bodies should be carried out.	Section 10.4 Baseline Conditions Section 10.6 Scope of the Assessment Section 10.7 Assessment Methodology
Paragraph 5.11.19.	States that the Applicant *"should safeguard any mineral resources on the proposed site as far as possible, taking into account the long-term potential of the land use after any future decommissioning has taken place"*.	Section 10.4 Baseline Conditions
Paragraph 5.11.28.	States that *"Where a proposed development has an impact upon a Mineral Safeguarding Area (MSA), the Secretary of State should ensure that appropriate mitigation measures have been put in place to safeguard mineral resources".*	Section 10.4 Baseline Conditions Section 10.5 Design and Control Measures

Policy reference	Policy context	Section considered
Paragraph 5.16.6.	States that Applicants are encouraged to *"consider protective measures to control the risk of pollution to groundwater beyond those outlined in the River Basin Management Plans and Groundwater Protection Zones".*	Section 10.5 Design and Control Measures
Paragraph 5.16.3 and 5.16.7.	Outlines the aspects that should be considered by the Applicant's assessment and the features that should be described in the ES, including: • The existing quality of waters affected by the proposed project and the impacts of the proposed project on water quality, noting any relevant existing discharges, proposed new discharges and proposed changes to discharges. • Existing water resources affected by the proposed project and the impacts of the proposed project on water resources, noting any relevant existing abstraction rates, proposed new abstraction rates and proposed changes to abstraction rates (including any impact on or use of mains supplies and reference to Abstraction Licensing Strategies) and also demonstrate how proposals minimise the use of water resources and water consumption in the first instance. • Existing physical characteristics of the water environment (including quantity and dynamics of flow) affected by the proposed project and any impact of physical modifications to these characteristics. • Any impacts of the proposed project on water bodies or protected areas (including shellfish protected areas) under the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 and Source Protection Zones (SPZs) around potable groundwater abstractions.	Section 10.6 Scope of the Assessment Section 10.7 Assessment Methodology
Draft Overarching National Policy Statement for Energy (EN-1) (April 2025) (Ref 10.11).		
Paragraph 5.4.13 – 5.4.14, 5.4.20, 5.11.3 – 5.11.5, 5.11.18, 5.11.19, 5.11.27, 5.16.6, 5.16.3 and 5.16.7.	The Government has published a draft update to the Overarching National Policy Statement for Energy. For geology and hydrogeology topics, the 2025 Draft NPS EN-1 is largely the same as in the 2024 document, with a change to some paragraph numbers.	Section 10.4 Baseline Conditions Section 10.5 Design and Control Measures Section

Policy reference	Policy context	Section considered
		10.6 Scope of the Assessment Section 10.7 Assessment Methodology
National Policy Statement for Electricity Networks Infrastructure (EN-5) (2024) (Ref 10.12).		
Paragraph 2.9.25.	The policy acknowledges the *"potential disruptive effects of undergrounding on local communities, habitats, archaeological and heritage assets, marine environments, soil (including peat soils), hydrology, geology, and, for a substantial time after construction, landscape and visual amenity".*	Section 10.6 Scope of the Assessment
Draft National Policy Statement for Electricity Networks Infrastructure (EN-5) (April 2025) (Ref 10.13).		
Paragraph 2.9.26.	The Government has published a draft update to the Overarching National Policy Statement for Energy. For geology and hydrogeology topics, the 2025 Draft NPS EN-5 is largely the same as in the 2024 document, with a change to the paragraph number.	Section 10.6 Scope of the Assessment

Table 10-3: Local Planning Policy relevant to Geology and Hydrogeology

Local Authority Plan / Strategy	Summary of relevant policies relating to geology and hydrogeology
Lincolnshire Minerals and Waste Local Plan (LMWLP) / East Lindsey Minerals Safeguarding Areas Policies Map (Ref 10.14). The draft LMWLP has been prepared and adoption is anticipated in 2025.	Policy M11 Safeguarding of Mineral Resources Policy M11 identifies potential economic mineral resources to be safeguarded from non-minerals development and avoid preventing future extraction. Applications for non-mineral development within a mineral safeguarding area should be accompanied by a minerals assessment.
	Policy M12: Safeguarding of Existing Mineral Sites and Associated Minerals Infrastructure Policy M12 safeguards strategically allocated mineral sites and associated infrastructure against development that could sterilise or jeopardise their use.

Local Authority Plan / Strategy	Summary of relevant policies relating to geology and hydrogeology
East Lindsey Local Plan Core Strategy (Adopted July 2018) (Ref 10.15).	Strategic Policy 24 (SP24) Biodiversity and Geodiversity SP24, sets out how development should protect and enhance the biodiversity and geodiversity of land and buildings, noting a requirement to protect sites designated internationally, nationally and locally for the geodiversity importance. SP24 also notes the potential risks of pollution from nearby development.

Technical Guidance

1.1.2 The following technical guidance, specific to the scope of geology and hydrogeology assessment, has informed this Scoping Report and will inform the assessment within the Preliminary Environmental Impact Report (PEIR) and Environmental Statement (ES), is given in **Table 10-4**.

Table 10-4: Technical Guidance relevant to Geology and Hydrogeology

Technical guidance document	Context
Land Contamination: Risk Management (LC:RM), Environment Agency (2023) (Ref 10.16).	This guidance sets out the process for managing risks from land contamination.
Contaminated Land Risk Assessment (CIRIA) 552, A guide to good practice, CIRIA (2001) (Ref 10.17).	CIRIA sets out guidance for the approach to contaminated land risk assessment.
BS 10175:2011+A2:2017 Investigation of potentially contaminated sites. Code of Practice, British Standards Institution (2017) (Ref 10.18)..	This code of practice provides recommendations and guidance for investigation on site which could potentially be affected by contamination.
BS 5930:2020 Code of practice for site investigations, British Standards Institution (2020) (Ref 10.19).	This document provides guidance on the legal, environmental and technical matters relating to site investigation.
Environment Agency's Guiding Principles for Managing and Reducing Land Contamination (GPLC2), Environment Agency (2010) (Ref 10.20).	This guidance clarifies the roles and responsibilities and compliance with regulations.
Design Manual for Roads and Bridges (DMRB) LA 109: Geology and soils, Highways Agency, (2019) (Ref 10.21).	LA109 provides a framework for assessing and managing the effects associated with geology and soils.

Technical guidance document	Context
Protect groundwater and prevent groundwater pollution. Environment Agency (2017) (Ref 10.22).	This guidance sets out the control and permitting of activities that could affect the quality or quality of groundwater.
Environment Agency - The Environment Agency's approach to groundwater protection (2018) (Ref 10.23).	This guidance sets out the principles of groundwater protection.
Regulatory Position Statement 261: Temporary dewatering from excavations to surface water (Ref 10.24).	This guidance sets out the regulatory approach for consenting the discharge of clean rainwater from excavations.
Regulatory Position Statement LIT 16814, (2019) (Ref 10.25).	This guidance sets out the position status of low-risk passive dewatering.
National Planning Policy Framework Guidance: Land Affected by Contamination (Ref 10.26).	This guidance provides guiding principles on how planning can deal with land affected by contamination.

10.3 Consultation and Engagement

10.3.1. In respect of geology and hydrogeology, key consultees have been identified and focussed engagement (through both informal and formal consultation) will be undertaken and recorded throughout the pre-application stage of the Project. Key consultees identified to date are:

- Environment Agency;
- Natural England;
- Lincolnshire County Council including environmental health and building control;
- East Lindsey District Council; and
- Groundwater abstraction owners identified within the study area.

10.3.2. Key areas of consultation will include engagement with local or specialist groups identified, or if requested as part of the statutory consultation process.

10.4 Baseline conditions

Study Area

10.4.1. There are two study areas for the assessment on geology and hydrogeology. For geology, the study area comprises land directly affected by the English Onshore Scheme, plus 250 metres (m). This is presented on **Volume 3, Figure 10-3**. The study area for hydrogeology aspect comprises land directly affected by the English Onshore Scheme, plus 500 m. This is presented on **Volume 3, Figure 10-4**.

10.4.2. Given the scale and nature of the English Onshore Scheme, this is considered an appropriate approach. The study areas are also based on professional judgement, approaches on similar projects, and the DMRB LA109: Geology and Soils (Ref 10.21).

Data Gathering Methodology

10.4.3. The baseline assessment has been informed by the following information sources:

- British Geological Survey (BGS) 1:50,000 scale geological mapping, solid and drift edition (Ref 10.27);
- BGS GeoIndex Viewer (Ref 10.28);
- Mining Remediation Authority (formerly Coal Authority) Viewer (Ref 10.29);
- BGS Hydrogeological Maps (Ref 10.30);
- Environment Agency's Catchment Data Explorer (Ref 10.31);
- Natural England, Designated Sites View (Ref 10.32);
- Multi-Agency Geographic Information for the Countryside (MAGIC) interactive map (Ref 10.33);
- Environment Agency Groundwater Dependent Terrestrial Ecosystems (Ref 10.34);
- East Lindsey Local Plan Adopted July 2018. Annex 4 Minerals Safeguarding Areas Policies Map (Ref 10.15);
- The Lincolnshire Minerals Local Plan (Ref 10.14);
- UK Health Security Agency (UKHSA) Interactive Radon Map – Ukradon – UK maps of radon (Ref 10.35);
- Zetica unexploded ordnance (UXO) online Unexploded Bomb Risk Maps. Zetica UXO (Ref 10.36); and
- Publicly available satellite imagery/aerial photography (Ref 10.40).

Current Baseline

10.4.4. The baseline provides a characterisation of the study area in terms of geological and hydrogeological setting. To provide geographical context, the study area has been split into the following sections (east to west):

- Landfall: Anderby Creek;
- Section 1: Underground Cable Route Corridor (Corridor 5);
- Section 2: Underground Cable Route Corridor (Corridor 6);
- Section 3: EGL 5 Converter Station Area (CS05);
- Section 4: EGL 5 Converter Station Area (CS06); and
- Section 5: Alford Bypass Construction Route.

Context

10.4.5. **Table 10-5** provides a high-level summary of baseline features (current uses, significant features shown on maps, unexploded bomb risk, historical landfills and radon risk) within the geology study area and has been developed using publicly available desk-based information as set out above. Key features described are also noted on **Volume 3, Figure 10-3 Baseline Geological and Potential Contaminated Land Features**.

Table 10-5: Summary of Setting of the English Onshore Scheme Scoping Boundary

Section	Baseline features within study area
Anderby Creek Landfall.	**On-site description** The Anderby Creek Landfall extends through the shoreline into Anderby Creek beach where there are sea defences, sand dunes and visitor amenities such as the Sandilands National Trust nature reserve (formerly Sandilands Golf Course), which is located to the north of the Anderby Creek Landfall. Typically, land use inland from the shoreline is characterised by agricultural fields, clusters of residential properties, roads and surface watercourses/drains. **Ground conditions** The Zetica UXO online Unexploded Bomb Risk Maps shows low risk. The Anderby Creek Landfall falls within the lowest band of radon potential - <1% of homes at or above Action Level (very low risk). Historical or permitted landfills are not mapped at the Anderby Creek Landfall location. **Off-site description** The land use surrounding the Anderby Creek Landfall location is similar with agricultural fields, roads, occasional properties and a caravan park to the north and south except to the east (North Sea) and historical or permitted landfills are not mapped within 250 m of the English Onshore Scheme Scoping Boundary.
Section 1: Underground Cable Route Corridor (Corridor 5).	**On-site description** Sections 1 to 4 of the English Onshore Scheme Scoping Boundary comprise agricultural fields with occasional buildings/farms and roads and baseline features are similar.
Section 2: Underground Cable Route Corridor (Corridor 6).	**Ground conditions** The Zetica UXO online Unexploded Bomb Risk Maps shows low risk. Historical or permitted landfills are not mapped within the English Onshore Scheme Scoping Boundary.
Section 3: EGL 5 Converter Station Area (CS05).	Sections 1-4 falls within the lowest band of radon potential - <1% of homes at or above Action Level (very low risk).

Section	Baseline features within study area
Section 4: EGL 5 Converter Station Area (CS06).	One published Groundwater Dependant Terrestrial Ecosystem (GWDTE) site is located outside of the English Onshore Scheme Scoping Boundary but is within the study area towards the east (see **Volume 3, Figure 10-4**) of Section 1. **Off-site description** The land use surrounding these sections is similar with agricultural fields, roads, occasional properties, villages or towns (Anderby, Huttoft and Bilsby) and a caravan park. An historical landfill is mapped adjacent to Section 2 (north of Bilsby) within the 250 m buffer outside of the English Onshore Scheme Scoping Boundary.
Section 5: Alford Bypass Construction Route.	**On-site description** Section 5 comprises agricultural fields, occasional farm buildings and roads. **Ground conditions** The Zetica UXO online Unexploded Bomb Risk Maps shows low risk. Historical or permitted landfills are not mapped within the English Onshore Scheme Scoping Boundary. Section 5 falls within the lowest band of radon potential - <1% of homes at or above Action Level (very low risk) except the western part where the maximum radon potential is 1-3%. **Off-site description** The land use surrounding Section 5 is similar with agricultural fields, roads, occasional properties and the town of Alford.

Geology

10.4.6. The following sections provide an overview of the geological and ground condition information across the study area based on the available data. The generalised geological succession is presented for each of the Sections from east to west.

10.4.7. The distribution of the superficial geology and bedrock geology is shown in **Volume 3, Figure 10-1** and **Volume 3, Figure 10-2**.

Artificial Ground

10.4.8. Artificial ground is not mapped within the study area by the BGS (Ref. 10.25, 10.26).

10.4.9. Unmapped and localised Made Ground is anticipated locally within the study area which may be associated with historical developments, infrastructure and other commercial land uses.

Superficial and Bedrock Deposits

10.4.10. Mapped geology is summarised in **Table 10-6** and presented on **Volume 3, Figure 10-1** and **Figure 10-2**. **Table 10-6** also summarises the associated aquifer designations. **Volume 3, Figure 10-2** uses simplified geological mapping based on lithology. However,

the EIA will use the detailed strata shown in **Table 10-6** and the ES will present geological mapping to stratigraphical formation detail where relevant.

Aquifer Designations

10.4.11. Aquifer designations for the superficial and bedrock geology within the English Onshore Scheme Scoping Boundary have been obtained from the Department for Environment Food & Rural Affairs MAGIC mapping portal (Ref 10.33). The Environment Agency (Ref 10.51) classify aquifers as follows:

- Principal Aquifer: Provide significant quantities of drinking water, and water for business needs. They may also support rivers, lakes and wetlands;
- Secondary A Aquifer: Comprise permeable layers that can support local water supplies, and may form an important source of base flow to rivers;
- Secondary B Aquifer: Comprise mainly lower permeability layers that may store and yield limited amounts of groundwater through characteristics like thin cracks (fissures) and openings or eroded layers;
- Secondary Undifferentiated: Aquifers where it is not possible to apply either a Secondary A or B definition because of the variable characteristics of the rock type. These have only a minor value; and
- Unproductive Strata: Largely unable to provide usable water supplies and are unlikely to have surface water and wetland ecosystems dependent on them

10.4.12. Mapped superficial and bedrock geology and aquifer designations are summarised in the **Table 10-6** below.

Table 10-6: BGS Mapped Geology and Aquifer Designations within the Study Area

Section	Superficial / Bedrock	Geological units	Aquifer designation
Anderby Creek Landfall.	Superficial	Beach and Tidal Flat Deposits.	Secondary (undifferentiated).
		Blown Sand.	Secondary A.
		Tidal Flat Deposits – clay.	Unproductive Strata.
	Bedrock	Burnham Chalk Formation.	Principal
Section 1: Underground Cable Route Corridor (Corridor 5).	Superficial	Till – Diamicton.	Secondary (undifferentiated).
		Tidal Flat Deposits – clay.	Unproductive Strata.
	Bedrock	Burnham Chalk Formation, Welton Chalk Formation.	Principal
Section 2: Underground Cable Route Corridor (Corridor 6).	Superficial	Till – Diamicton.	Secondary (undifferentiated).
		Tidal Flat Deposits – clay.	Unproductive Strata.
		Glacial Fluvial Deposits (sand and gravel).	Secondary A.
	Bedrock	Burnham Chalk Formation, Welton Chalk Formation.	Principal

Section	Superficial / Bedrock	Geological units	Aquifer designation
Section 3: EGL 5 Converter Station Area (CS05).	Superficial	Till – Diamicton.	Secondary (undifferentiated).
		Tidal Flat Deposits – clay	Unproductive Strata
	Bedrock	Welton Chalk Formation	Principal
Section 4: EGL 5 Converter Station Area (CS06).	Superficial	Till – Diamicton	Secondary (undifferentiated)
		Tidal Flat Deposits – clay	Unproductive Strata
	Bedrock	Burnham Chalk Formation, Welton Chalk Formation	Principal
Section 5: Alford Bypass Construction Route.	Superficial	Till – Diamicton	Secondary (undifferentiated)
		Tidal Flat Deposits – clay	Unproductive Strata
		Glacial Fluvial Deposits (sand and gravel)	Secondary A
	Bedrock	Welton Chalk Formation, Ferriby Chalk Formation	Principal
		Carstone Sandstone Formation	Principal

mining Remediation Authority

10.4.13. A review of the Mining Remediation Authority Interactive Map viewer (Ref 10.29) confirmed features of interest are not mapped within the study area.

Potential for Sulphate Rich Soils

10.4.14. From a review of the Geologies identified from desk based sources, the geological units identified are not considered to be sulphate rich and therefore there is considered to be limited potential in generating acid sulphate rich soils. The potential for sulphates being present are greater in the tidal superficial deposits which interact with the marine environment however the expected concentrations are still like to be low. Prior to construction this will likely need confirming with chemical analysis of the soils, to ensure appropriate design of subsurface structures are considered.

Minerals

10.4.15. Mineral safeguarding is the process of ensuring that non-minerals development does not needlessly prevent the future extraction of mineral resources of local and national importance. Mineral Planning Authorities designate strategic sites as preferred and/or reserve mineral sites for extraction within their spatial development plans, identifying sites where the principle of extraction has been accepted and the need for the release of minerals is proven. Mineral Safeguarding Areas (MSAs) identify where resources are located to make relevant parties aware of the presence of the resources and ensure that their presence is considered when determining the acceptability of planning applications, so that these resources are not needlessly sterilised.

10.4.16. The Lincolnshire Minerals and Waste Local Plan (LMWLP) (Ref 10.14) and East Lindsey Minerals Safeguarding Areas Policies Map (Ref 10.15) were reviewed. MSAs or strategically designated sites and facilities were not identified within the study area. The LMWLP is in the process of update and was anticipated to be adopted in 2024 / 2025 and changes relevant will be considered within the ES.

Land Based Designations and Geological Sites

10.4.17. Regional or local sites of geological importance were not identified within the publicly available data. Consultation with local geological and geoconservation interest groups will be carried out during the assessment e.g., Greater Lincolnshire Nature Partnership.

10.4.18. Sea Bank Clay Pits Site of Special Scientific Interest (SSSI) is located 100 m (within the geological study area) from the English Onshore Scheme Scoping Boundary. However, it is not designated for its geological interest.

Hydrogeology

10.4.19. The hydrogeological context of the English Onshore Scheme is summarised in the following sections, drawing on the geological context presented in **Volume 3, Figure 10-1**, **Volume 3, Figure 10-2**, **Table 10-6** and a variety of published data sources. **Volume 3, Figure 10-4**, shows groundwater related features including published Source Protection Zones (SPZ), Private Water Supplies (PWS), Nitrate Vulnerable Zone mapping and published Groundwater Dependent Terrestrial Ecosystem (GWDTE) mapping. Site specific data has not been collected for the English Onshore Scheme. A selection of hydrogeology baseline data are discussed further below.

Source Protection Zones

10.4.20. SPZs are shown on **Volume 3, Figure 10-4** and are non-statutory planning tools, used by the Environment Agency for informing a risk-based approach to planning and environmental permitting. It is a material consideration that the English Onshore Scheme includes works both above and below ground and may, as a consequence, reduce the effectiveness of protection to groundwater afforded by any overlying or unsaturated zone strata.

10.4.21. The Environment Agency has published SPZ around strategic potable water abstractions, typically those used for Public Water Supply or large scale commercial use such as hospitals or food manufacturing. These are available on MAGIC mapping service (Ref 10.33) and are defined as follows:

- SPZ1 (Inner Protection Zone): This zone is defined by a travel time of 50-days or less from any point within the zone at, or below, the water table. Additionally, the zone has as a minimum a 50 m radius. It is based principally on biological decay criteria and is designed to protect against the transmission of toxic chemicals and water-borne disease.
- SPZ2 (Outer Protection Zone): This zone is defined by the 400-day travel time from a point below the water table. Additionally, this zone has a minimum radius of 250 m or 500 m, depending on the size of the abstraction. The travel time is derived from consideration of the minimum time required to provide delay, dilution and attenuation of slowly degrading pollutants.
- SPZ3 (Total catchment): This zone is defined as the total area needed to support the abstraction or discharge from the protected groundwater source.
- SPZ1c, 2c and 3c: For some areas where there is a protective layer, such of clay, zones SPZ 1c, 2c and 3c consider activities below the surface, such as deep drilling, which could create pathways for pollutants to enter the groundwater (using the same travel time criteria as SPZ1, SPZ2 and SPZ3 respectively).

10.4.22. In addition to published SPZs, any source of groundwater that is used for potable water abstraction purposes is assumed by the Environment Agency to have a default minimum SPZ1 with a radius of 50 m and a default minimum SPZ2 with a radius of 250 m (Ref 10.41).

10.4.23. The presence of published SPZs within each section is identified in **Table 10-7** and presented on **Volume 3, Figure 10-4**. Data has been derived from Environment Agency published data (Ref 10.42).

10.4.24. When discussing SPZs within the ES any reference to the specific location of public abstraction sources will incorporate imprecise national grid references for reasons of national security.

10.4.25. It should be noted that the design of the English Onshore Scheme does not incorporate liquid coolants within the buried cable elements hence this does not need to be considered as part of the risk assessment.

10.4.26. The locations of other water sources benefitting from the unpublished default SPZs will be identified during the detailed assessment process.

Table 10-7: Published Source Protection Zones

Section	No. of Published Zones	Classification
Anderby Creek Landfall.	One	SPZ3 over the entirety of this area.
Section 1: Underground Cable Route Corridor (Corridor 5).	One	SPZ3 over the entirety of this area.
Section 2: Underground Cable Route Corridor (Corridor 6).	Multiple zones present.	SPZ1 and SPZ2 present at the western end of this section, SPZ 1, SPZ2 and SPZ2c also in the centre and SPZ3 present over the entirety of the remaining section.
Section 3: EGL 5 Converter Station Area (CS05).	Multiples zones present.	SPZ1 and SPZ2 present over the central and southeastern part of this section, and SPZ3 present over the entirety of the remaining section.
Section 4: EGL 5 Converter Station Area (CS06).	Multiples zones present.	SPZ2, SPZ2c and SPZ3 are present within the south of this section.
Section 5: Alford Bypass Construction Route.	Multiples zones present.	SPZ1 and SPZ2 are present at the southwestern part of this section. SPZ3 is present over the remaining area of the section.

Water Framework Directive Groundwater Bodies

10.4.27. Within England, objectives under the European Union Water Framework Directive have been translated into the Water Environment (Water Framework Directive) (England and Wales) Regulations (2017) ('WFD Regulations') (WFD) (Ref 10.9).

10.4.28. Groundwater Bodies designated in WFD Regulations Cycle 3 are present the study area. These are detailed in **Table 10-8** and all are situated within Management Catchments of the Anglian River Basin District. Information about surface water WFD bodies is presented in **Part 2, Chapter 9: Water Environment**.

10.4.29. Status information for groundwater WFD bodies has been obtained from the Environment Agency's Catchment Data Explorer (Ref 10.44).

Table 10-8: Water Framework Directive Groundwater Bodies

Section	Groundwater Body	Status
Anderby Creek Landfall Section 1: Underground Cable Route Corridor (Corridor 5).	South Lincolnshire Chalk Unit (GB40501G104600).	Overall Status: Poor. Driven by 'poor' rating for 'General Chemical Test' attributed to diffuse source pollution

Section	Groundwater Body	Status
Section 2: Underground Cable Route Corridor (Corridor 6). Section 3: EGL 5 Converter Station Area (CS05). Section 4: EGL 5 Converter Station Area (CS06). Section 5: Alford Bypass Construction Route.		associated with agriculture and rural land management.

Groundwater Dependent Terrestrial Ecosystems

10.4.30. The WFD Regulations require Groundwater Dependent Terrestrial Ecosystems (GWDTE) to be identified and the pressures on them assessed. Where significant damage is occurring (or could occur) to a GWDTE the associated groundwater body is considered at risk of not attaining good status under the WFD Regulations.

10.4.31. Assessment of risk to identified GWDTEs will therefore be included within the ES. Risks may be water quality or water quantity driven.

10.4.32. The presence of GWDTEs, within each section of the English Onshore Scheme Scoping Boundary is described in **Table 10-9** and presented on **Volume 3, Figure 10-4** using data obtained from the Environment Agency (Ref 10.39).

Table 10-9: Groundwater Dependent Terrestrial Ecosystems

Section	GWDTE	Other Classifications
Anderby Creek Landfall.	Sea Bank Clay Pits SSSI.	N/A
Section 1: Underground Cable Route Corridor (Corridor 5). Section 2: Underground Cable Route Corridor (Corridor 6). Section 3: EGL 5 Converter Station Area (CS05). Section 4: EGL 5 Converter Station Area (CS06). Section 5: Alford Bypass Construction Route.	None identified.	N/A

Groundwater Vulnerability

10.4.33. Mapping showing the potential vulnerability of groundwater to the effects of activities taking place at the ground surface is published by the Environment Agency (Ref 10.26). Whilst detailed mapping is not currently available for the English Onshore Scheme, a high level review of publicly available mapping has been carried out. Aquifers underlying the Anderby Creek Landfall and Section 1 are variably designated as having Medium-High to Low risk by virtue of the variable thickness and lithologies of the overlying superficial deposits.

10.4.34. It should be noted that the English Onshore Scheme may necessitate local ground reprofiling in the areas of the above ground infrastructure, at the converter station. Therefore, future assessment of potential impact to groundwater receptors would take such excavations into account.

Drinking Water Safeguard Zones

10.4.35. Drinking Water Safeguard Zones (DWSZ) are designated by the Environment Agency to drive improvements to long term trends in water quality and avoid deterioration. Typically, a suite of measures are adopted to influence, encourage and incentivise beneficial land management practices and reduce pollution. Safeguard Zones are defined for both surface and groundwater. There are no Groundwater DWSZ within the study area (Ref 10.26).

Nitrate Vulnerable Zones

10.4.36. Designated Nitrate Vulnerable Zones (NVZ) (2021) are areas designated as being at risk from agricultural nitrate pollution. A NVZ is present across the central and western part of Section 5: Alford Bypass Construction Route. No NVZ is present across the Anderby Creek Landfall, Section 1, Section 2, Section 3 and Section 4.

Summary of Hydrogeological Setting

10.4.37. The English Onshore Scheme can broadly be considered as lying within a single distinct hydrogeological setting. The English Onshore Scheme is underlain by Principal Aquifers, which are overlain by variable superficial deposits. These aquifers comprise mostly Chalk which forms a regionally important groundwater resource, harnessed for public supply. Where exposed at surface, the Chalk forms the characteristic landscape of the Lincolnshire Wolds. The variable superficial deposits are designated as Secondary Aquifers (e.g., Till, and Glacial Fluvial Deposits) and Unproductive Strata (e.g., tidal flats).

10.4.38. The Chalk has a primary porosity within its matrix, and a secondary porosity characterised by solution-enhanced fissures and fractures. These features make it suspectable to contamination. In Lincolnshire the Chalk is often found in hydraulic continuity with Lower Cretaceous Formations and overlying Quaternary deposits. These superficial deposits, where granular, can provide significant additional storage for the Chalk aquifer system (Ref 10.45). Therefore, contamination of shallow groundwater within superficial deposits can be a risk to the wider Chalk aquifer system and hence will be assessed for the purposes of the EIA.

Future Baseline

10.4.39. It is recognised that there are a number of other proposed and committed developments within the surrounding area that could alter the future baseline in the absence of the Project. It is assumed that new developments would be appropriately managed, developed and operated to prevent the creation of potentially adverse ground conditions and/or including remediation, where required.

10.4.40. The potential for cumulative effects will be considered as part of the PEIR and ES documents in accordance with the approach and guidance outlined within **Part 4, Chapter 30: Cumulative Effects**.

10.4.41. Significant changes to the geological setting are not envisaged within the geological study area as it is assumed that new developments would be designed, managed, permitted and operated appropriately to safeguard geological conservation (in line with national and regional planning policy) and avoid resultant adverse ground conditions.

10.4.42. Hydrogeological conditions that may be prone to change include, but are not limited to:

- Published SPZs may change in size and spatial position depending on the decisions of individual water companies to increase or reduce abstraction dependant on usage in the region and other impacts such as water quality of supplies. Information is not available at the time of writing this Scoping Report of any potential changes;
- Future provision of housing development – an increase in housing in the region has the potential to affect recharge to the aquifers and the demand for drinking water, which could affect future water resources and groundwater levels in aquifers; and
- Climate change – changes in rainfall may affect the amount and distribution of aquifer recharge, groundwater levels and flow gradients.

10.4.43. Given the nature of the English Onshore Scheme, any change in baseline resulting from these factors would be unlikely to have a meaningful influence on the assessment of effects. However, this will be reviewed as part of the ES.

10.5 Design and Control Measures

Design Phase

10.5.1. A range of standard measures design for the English Onshore Scheme are likely to be adopted in order to mitigate impacts to geology and hydrogeology throughout the duration of the operational phase, these measures will be inherent in the evolving design of the English Onshore Scheme:

- Multiple watercourse crossings would be necessary for the construction of temporary and permanent accesses and the cable installation. The design of these crossings would vary based on the size and sensitivity of the watercourses. Trenchless techniques may be selected for the crossing of watercourses such as main rivers;
- The risks arising from the proposed use of drilling fluids will be assessed with particular reference to proximity to existing groundwater abstractions;
- It is anticipated that the proposed Anderby Creek Landfall location would be constructed using trenchless methods. This is considered the most appropriate approach in minimising potential adverse effects on the groundwater environment;

- In areas of the landfills, Made Ground and Artificial Ground assessments would be carried out to determine the requirements for remediation and or mitigation measures. This would be carried out in accordance with an agreed risk assessment and or remediation strategy;
- Consultation with the local authority Building Control department would be conducted, where required, to inform design requirements for ground gas and or radon protection measures within buildings or structures;
- Implementation of appropriate gas protection measures or upgrading to radon (basic or full) protection measures and/or vapour resistance membrane would be informed by the risk assessment; and
- Intrusive ground investigations and assessment would be undertaken prior to construction and these would inform appropriate geotechnical design in relation to the site / structure specific ground conditions including ground instability or adverse ground conditions.

Construction Phase

10.5.2. A range of standard measures for the English Onshore Scheme are likely to be adopted throughout the duration of the construction phase. Design and control measures relevant to geology and hydrogeology would be set out in the Outline Construction Environmental Management Plan (CEMP), prepared to accompany the ES; these will include but are not limited to:

- Multiple watercourse crossings would be necessary for the construction of temporary and permanent accesses and the cable installation. Should the use of drilling fluids be required, appropriate mitigation for example the implementation of good practice control and handling of fluids would be included within the Outline CEMP;
- Construction methods such as appropriate piling techniques (if required) to minimise the risk of mobilising contaminants into the underlying aquifer bodies through the creation of new pathways would be utilised. This includes the provision of a Foundation Works Risk Assessment (FWRA), once the proposed foundation solutions are known, in accordance with Environment Agency guidance Piling and Penetrative Ground Improvement Methods on Land Affected by Contamination (Ref 10.46);
- Use of appropriate occupational health and safety measures e.g., Personal Protective Equipment (PPE), and statutory health and safety compliance (e.g., compliance with the Confined Spaces Regulations, 1997 (Ref 10.47) in relation to working in confined spaces / trenches) to minimise the risks associated with contamination;
- All use and storage of chemicals to be undertaken in accordance with Environment Agency and Government Pollution prevention for business (Ref 10.48) and controlled and monitored and general construction site good environmental and waste management procedures;
- An Outline Site Waste Management Plan (SWMP) and an Outline Materials Management Plan (MMP) would be prepared following the protocols within the CL:AIRE Definition of Waste: Development Industry Code of Practice (Ref 10.49) to ensure that excavated materials are re-used appropriately, sustainably and remain legitimately outside the waste hierarchy; Any temporary dewatering activities during construction would be undertaken in accordance with Environment Agency

guidance, and if required, an Abstraction Licence and Environmental Permit (for the discharge) and would be limited to the depth and time required to facilitate construction activities;

- Establishment of a protocol in the event of any unexpected contamination being discovered during the construction phase;
- Measures to manage dust, waste, water, noise, vibration and soil during construction. The Construction Contractor(s) shall undertake regular site inspections as appropriate to check conformance to the Management Plans;
- Fuels, oils and chemicals will be stored responsibly, away from sensitive water receptors. All refuelling, oiling and greasing of construction plant and equipment will take place above drip trays and also away from drains as far as is reasonably practicable. Appropriate spill kits will be made easily accessible for these activities;
- Establish an Emergency Action Plan (EAP) for the construction phase which will outline procedures to be implemented in case of unplanned events, including but not limited to site flooding and pollution incidents;
- Runoff from construction working areas will be managed appropriately during construction with respect to both quantity and quality;
- All water discharges to be undertaken under the correct Environment Agency permits, with appropriate pre-treatment (e.g., de-silting) where required;
- Groundwater dewatering to be limited to the depth and time required to facilitate construction activities; and
- Construction work might affect the quality and availability of groundwater, especially for people using private water sources. Whenever possible, the project would be planned to avoid disturbing existing water supplies during both construction and operation. The need for measures to reduce these impacts will be determined as part of the ongoing EIA process.

Operational Phase

10.5.3. For geology, during the design stage, mitigation measures will be incorporated into the build and design of structures (above and below ground) which will be based on the findings of the surveys, investigation and assessments carried out. If required, localised remediation may be carried out and a watching brief implemented for unforeseen contamination. In the event of future maintenance and repair, the works are likely to be limited and the risks to geology receptors (maintenance workers) are likely to be low as mitigation has been carried out prior to operation. Operational phase contamination will be mitigated by appropriate control measures, risk assessments and PPE (as required).

10.5.4. For hydrogeology, the potential for long term adverse impact on groundwater levels and flows and quality from the Project will be assessed as part of the EIA and mitigation designed as necessary. This would include consideration of the need for mitigation to prevent significant adverse effects due to trenches or below ground structures. This might include measures to mitigate against local draining effects and/or, barrier effects to groundwater flow or a clash with existing water supply pipework.

10.6 Scope of the assessment

10.6.1. The geology and hydrogeology assessment will consider the construction, operation, and maintenance of the English Onshore Scheme.

Potential sensitive receptors

10.6.2. A summary of the potential sensitive receptors considered for each phase of the development is set out for geology and hydrogeology below.

Geology

10.6.3. Potential sensitive receptors are considered to include:

- Human health, for example site end users, off-site residents, visitors to both site end-users and nearby off-site residents;
- Buildings and infrastructure, for example buried concrete, services and water supplies;
- Controlled waters such as aquifers and watercourses; and
- Geological sites of regional and local importance.

10.6.4. Safeguarded minerals are not mapped within the English Onshore Scheme Scoping Boundary and therefore have not been considered further as a potential sensitive receptor.

Hydrogeology

10.6.5. Potential sensitive receptors are considered to include:

- Aquifers in relation to groundwater quality and groundwater quantity (flows and levels)
- WFD groundwater bodies (see **Part 2, Chapter 9: Water Environment**);
- Groundwater abstractions (licensed and PWS);
- GWDTEs; and
- Surface waterbodies dependent on groundwater.

Likely Significant Effects

10.6.6. **Table 10-10** outlines the likely significant effects which have been scoped into the geology and hydrogeology assessment. The proposed scope of the assessment has been determined using the approach described in **Part 2, Chapter 5: EIA Approach and Methodology**.

10.6.7. The potential for the English Onshore Scheme to result in likely significant effects takes into account the mitigation measures described in Section 10.xx.

Table 10-10: Receptors and Impact Pathways relevant to Geology and Hydrogeology

Development Phase	Impact	Receptor	Potential for significant effects	Proposed to be scoped in / out
Construction	Degradation of geological sites of regional and local importance.	Geological sites of regional and local importance	**Yes** – No SSSIs designated for their geology have been identified within the geology study area, however, further review and engagement with the local authorities and geodiversity groups would be carried to identify key geological receptors.	**Scoped in**
	Disturbance and handling of potentially contaminated soils during earthwork operations including soil stripping, excavation of the cable route placement and backfilling of the cable route.	Human health Controlled waters (aquifers and watercourses) GWDTEs	**Yes** – There is the potential for localised contamination within the study area to be disturbed and mobilised. A ground investigation and potentially further detailed design specific investigation would be carried out to inform the assessment and design, however, potential significant effects cannot be ruled out.	**Scoped in**
	A reduction in groundwater quality from turbidity and sediment runoff due to earthwork activities.	Controlled waters (aquifers and watercourses) GWDTEs	**Yes** – Unlikely to be a long term significant adverse effect, however, risk and significance on groundwater receptors will be assessed as part of the ES.	**Scoped in**
	Creation of preferential contaminant pathways to groundwater resources through the installation of foundations to support above ground infrastructure and trenchless crossings.	Controlled waters (aquifers and watercourses) GWDTEs	**Yes** – Where necessary, construction methods such as piling would be subject to foundation works risk assessment in line with Environment Agency guidance. Risks to groundwater from the use of trenchless technologies will be mitigated	**Scoped in**

Development Phase	Impact	Receptor	Potential for significant effects	Proposed to be scoped in / out
			through assessment, consenting and robust method statements.	
	Disruption of groundwater flows due to earthwork operations including soil stripping, excavation and back filling of the cable route and installation of foundations.	Controlled waters (aquifers and watercourses) GWDTEs	**Yes** – Shallow groundwater control (including dewatering) may be required. Groundwater flows supporting GWDTEs may be disrupted by the works. Where the cables routes cross Source Protection Zones or GWDTEs mitigation and/or monitoring may be required. Therefore, further assessment is required.	**Scoped in**
Operation	Build-up of ground gas or vapour within buildings/structures.	Buildings and infrastructure Human heath	**Yes** – there is a potential for localised Made Ground / Contamination to be encountered during the works which are potential sources of ground gas or vapour.	**Scoped in**
	Alteration of shallow groundwater flow pathways (and quality) within aquifer units due to permanent below ground infrastructure, such as the cable route and foundations.	Controlled waters (aquifers and watercourses) GWDTEs	**Yes** – the English Onshore Scheme have the potential to change groundwater levels and flows due to permanent below ground features such as foundations.	**Scoped in**
Construction	Potential for the English Onshore Scheme, third party assets and land to be impacted by land instability and geohazards as a result of the earthwork and groundwork operations.	Buildings and infrastructure	**No** – Geohazards and land instability would be considered and managed through the developing engineering design, in line with relevant design standards and informed by ground investigations. The English Onshore Scheme would be designed to avoid adverse effects from land instability.	**Scoped out**

Development Phase	Impact	Receptor	Potential for significant effects	Proposed to be scoped in / out
	Potential introduction of contaminants through the use and refuelling of construction plant, and the handling of construction material and wastes.	Buildings and infrastructure Human heath Controlled waters (aquifers and watercourses) GWDTEs	**No** – Appropriate controls would be set out within the Outline CEMP to manage the storage and handling of construction materials, excavated soils and wastes as detailed in Section 10.5. An emergency response/spill plan would be established with suitable response training established for site workers. Site drainage would be established to manage runoff from working areas.	**Scoped out**
	Discovery and disturbance of unforeseen contamination during earthwork operations, excavations and soil stripping.	Human health Controlled waters (aquifers and watercourses) GWDTEs	**No** – As detailed in Section 10.5 a watching brief protocol would be specified for earthwork activities to observe for any unforeseen contamination, reducing the risk of disturbance and mobilisation. Suspected contaminated material would be handled and stored separately from other materials.	**Scoped out**
	Storage of construction materials and wastes leading to the generation of potentially contaminated runoff.	Human health Controlled waters (aquifers and watercourses) GWDTEs	**No** – Appropriate controls would be set out within the Outline CEMP to manage the storage and handling of construction materials, excavated soils and wastes as detailed in Section 10.5. Runoff from working areas would be managed appropriately during construction with respect to both quantity and quality.	**Scoped out**
Operation	Build-up of radon gas within buildings/structures.	Human health	**No** – no structures are proposed within the western part of Section 5.	**Scoped out**

Development Phase	Impact	Receptor	Potential for significant effects	Proposed to be scoped in / out
	Accidental spills/pollution into the environment e.g. uncontrolled leaks, spill from machinery at the converter station.	Human health Controlled waters (aquifers and watercourses) GWDTEs	**No** – The study area will return to its current use except where the above ground infrastructure such as converter stations is proposed. There would be no significant fuel or oil storage, and other sources identified at the construction phase such as dust would no longer be a potential source to the receptors during operation.	**Scoped out**
	Operational runoff from impermeable surfaces	Human health Controlled waters (aquifers and watercourses) GWDTEs	**No** – Rainfall runoff from above ground infrastructure would be sustainably attenuated (and if required treated) prior to discharge to the receiving water environment. There would be no other operational discharges to surface watercourses. The impacts during maintenance are anticipated to be mitigated through the design measures and good controls adopted during the construction phase.	**Scoped out**
Operation	Aggressive ground conditions being present causing the degradation of subsurface structures	Infrastructure/ The Project	**No-** Subsurface structures are to be designed with the correct concrete classification, following appropriate chemical testing of soils. This will mitigate against the potential risks caused by aggressive ground	**Scoped Out**

10.7 Assessment Methodology

Further Data to be Gathered / Processed

10.7.1. In addition to the data sources listed in **Section 10.2**, the following data sources are proposed to be used to inform the geology and hydrogeology sections within the PEIR and ES:

- Resources held by local geological and geoconservation interest groups such as the Greater Lincolnshire Nature Partnership;
- Site walkover surveys;
- Historical mapping and environmental database information;
- Aerial imagery;
- Ground investigation factual reports/assessment reports if available;
- Licenced abstractions of groundwater;
- Historical borehole records held by the BGS;
- Records of active and defunct private water supplies from the local authorities; and
- Site surveys of private water supplies and other relevant groundwater features.

Proposed Methodology

10.7.2. The proposed assessment methodology for geology and hydrogeology would be based on professional judgement and previous experience together with guidance as set out in the DMRB LA 109 (Ref 10.21) and DMRB, LA 113 (Ref 10.50) which are considered most appropriate for the Project.

10.7.3. The baseline information would be used to identify potential source-pathway-receptor linkages and inform a risk-based assessment of the effects of the English Onshore Scheme in relation to geology and hydrogeology. The risk-based assessment would be undertaken following a tiered approach as supported by guidance provided in LCRM (Ref 10.16), with progression through the different Tiers (Tier 1 Preliminary Risk Assessment, Tier 2 Generic Quantitative Risk Assessment and Tier 3 Detailed Quantitative Risk Assessment) dependent on the outcome of each previous Tier (therefore proportionate).

10.7.4. A source-pathway-receptor methodology is adopted as follows:

- A source/hazard (a substance or situation that has the potential to cause harm or pollution);
- A pathway (a means by which the hazard moves along/generates exposure); and
- A receptor/target.

10.7.5. The information from the data gathering will form a comprehensive but proportionate baseline for the ES. The baseline information will then be used to identify potential source-pathway-receptor linkages and inform a risk-based assessment of the effects on the English Onshore Scheme. This approach accords with published guidance (e.g., LCRM) and will be transposed into an EIA classification.

10.7.6. For each potential effect, the receptor sensitivity and impact magnitude will be assigned using the criteria described in **Table 10-11** and **Table 10-12**.

Table 10-11: Receptor Sensitivity

Sensitivity	Geology	Hydrogeology
High	Very rare / rare or nationally important sites. Existing / Mineral Preferred Areas, high sensitivity land use such as residential/public open spaces use.	Groundwater that is used for human consumption, and/or is within geological units that display a high level of water storage and may support water supply and/or river base flow on a strategic scale. Includes all Principal Aquifers and SPZ1.
Medium	Regionally important sites, Mineral Safeguarded Areas and Mineral Consultation Areas, medium sensitive uses such as commercial or industrial uses.	Groundwater that is not currently used for human consumption, but which is within Secondary Aquifers that display generally good chemical quality (e.g., WFD Good chemical status) and/or groundwater quantities. Groundwater that is currently used for agricultural purposes (e.g., field irrigation).
Low	Local interested geology sites. Mineral present but outside Mineral Preferred Areas Mineral Safeguarded Areas and Mineral Consultation Areas. Low sensitivity land use such as highway and rail.	Groundwater that is not currently used for human consumption and is within Secondary Aquifers that display poor chemical quality (i.e., WFD Poor chemical status) and groundwater quantity).
Negligible	Very low important geology site. No mineral identified. Undeveloped surplus land with no sensitive land use proposed.	Unproductive strata.

Table 10-12: Magnitude of Impact

Sensitivity	Geology	Hydrogeology
High	Permanent loss of geological feature/designation. Significant contamination significantly exceeding assessment criteria restricting future land use.	Release of Priority Hazardous Substances or substances regulated under 'The Water Framework Directive (Standards and Classification) Directions (England and Wales) (2015)' of the 'Water Supply (Water Quality) Regulations (2000)' at concentrations that may present a direct/imminent risk to abstractions. Physical or chemical effects on an aquifer (i.e. changes in groundwater levels, flows or quality) that substantively restrict its

Sensitivity	Geology	Hydrogeology
		viability as an abstractable resource and/or its WFD status.
Medium	Partial loss of geological feature/designation. Contamination levels marginally exceeding assessment criteria and control/remediation required.	Release of Priority Hazardous Substances or substances regulated under ‘‘The Water Framework Directive (Standards and Classification) Directions (England and Wales) (2015)’ of the ‘Water Supply (Water Quality) Regulations (2000)’ at concentrations that exceed regulatory compliance criteria and may lead to substantial localised degradation in groundwater quality, but not present a direct/imminent risk to abstractions. Physical or chemical effects on an aquifer (i.e. changes in groundwater levels, flows or quality) that limit its effectiveness as a resource and may affect its status.
Low	Minor change in geological feature/designation. Contamination below assessment criteria and remediation not required.	Release of Priority Hazardous Substances or substances regulated under ‘The Water Framework Directive (Standards and Classification) Directions (England and Wales) (2015)’ of the ‘Water Supply (Water Quality) Regulations (2000)’ at concentrations that may lead to minor localised degradation in groundwater quality but have no significant potential to present a risk to abstractions. Reduction of groundwater levels/ quantities or changes in groundwater flows, but with little effect on the use or status of the groundwater resource.
Negligible	Very minor loss or detrimental alteration to 1 or more characteristics/features or elements of the geological feature/designation. Contamination levels substantially below assessment criteria and no control/remediation required	No/minimal measurable effect on groundwater levels, quantities, flows or chemical quality, or on the use or status of a groundwater resource.

Assessment of Significance

10.7.7. Significance would be derived using the matrix set out in **Part 2, Chapter 5: EIA Approach and Methodology**.

10.7.8. There is no equivalent published assessment methodology that relates to impacts relating to geology (for example geological sites). For consistency, a source – pathway – receptor approach would be adopted to assess these effects (combination of receptor

identification and associated sensitivity and magnitude of potential impacts) as stated above and in accordance with Table 3.11 and 3.12 of the DMRB guidance (Ref 10.21).

10.7.9. The assessment will classify each potential effect as either negligible, minor, moderate or major. However, it should be noted that the output of the assessment is a risk classification, rather than a predicted effect. For example, minor 'effects' in relation to health risks from exposure to soil contamination would reflect an assessment that there is a low / very low risk of significant effects occurring, rather than indicating that there is a predicted adverse effect that would be of a minor nature.

10.7.10. Where the outcome of the assessment is a moderate or major risk, then the effect (risk) will be considered significant and mitigation would be required. Where the outcome is a minor or negligible risk, then the effect (risk) will be considered not significant and mitigation would not ordinarily be required.

10.8 Assessment Limitations and Assumptions

10.8.1. The following limitations and assumptions have been identified:

- A site walkover has not been carried out. Given the size of the study area, the likely limitations on access and the current uses as agricultural fields, specific areas of concern/interest will be targeted for surveying and reported in the PEIR (where available) and ES;
- For the purpose of this Scoping Report, a high level summary of available setting information for the study area is presented which is based on available third party publicly available desk-based information;
- No ground investigation has been carried out to date for the English Onshore Scheme;
- Depths stated are based on metres below ground level and approximate distances to features;
- The English Onshore Scheme would predominantly comprise shallow open-cut trenches to up to depths of 1.5 m below ground level. Trenchless installations and piled foundations would be utilised locally within the Scoping Boundary, for example at watercourse crossings and the proposed above ground installations;
- Provision of Private Water Supply information from the local authorities will be available in suitable time to organise surveys and inform the ES; and
- No coolant or other chemicals will be associated with the cable in the permanent state of the English Onshore Scheme.

Assessment of Cumulative Impacts and Effects

10.8.2. It is recognised that there are a number of other proposed and committed developments within the surrounding area that could alter the future baseline in the absence of the Project. The potential for cumulative effects will be considered later in the EIA process according to the approach outlined within **Part 4, Chapter 30: Cumulative Effects**.

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11. Agriculture and Soils

11.1 Introduction

11.1.1. The agriculture and soils assessment will consider the potentially significant effects on soils, agricultural land and agricultural land holdings that may arise from the construction and operation of the English Onshore Scheme.

11.1.2. This chapter of the Scoping Report sets out the relevant legislation, planning policy context and technical guidance used to inform the scope of the assessment and summarises any consultation and engagement in relation to agriculture and soils undertaken to date. It provides an overview of the baseline conditions relevant to agriculture and soils within the English Onshore Scheme Scoping Boundary, the measures which will be incorporated into the design, construction and operation of the English Onshore Scheme to mitigate effects on agricultural and soil receptors, the likely significant effects to be considered within the assessment, and how these likely significant effects will be assessed for the purpose of an Environmental Impact Assessment (EIA).

11.1.3. This chapter should be read in conjunction with **Part 1, Chapter 4: English Onshore Scheme** and given the interface with other technical aspects, considered alongside the following chapters found in **Volume 1**.

- **Part 2, Chapter 6: Biodiversity** considers ecologically sensitive receptors which may rely on certain agricultural features or practices, which may be impacted by the English Onshore Scheme.
- **Part 2, Chapter 9: Water Environment** considers impacts to surface water and the water environment and there are likely to be impact pathways between agricultural land and soils and the water environment.
- **Part 2, Chapter 10: Geology and Hydrogeology** considers impacts to ground water, hydrogeology and the local geology and may be used to inform the assessment of agricultural land and soils.
- **Part 2, Chapter 15: Socio-economics, Recreation and Tourism** considers impacts on employment, recreation and tourism, where there may be common receptors considered between the assessments.

11.1.4. This chapter is supported by the following figures found in **Volume 3**:

- **Figure 11-1 National Soil Association**
- **Figure 11-2 Provisional Agricultural Land Classification**
- **Figure 11-3 Woodland and Forestry Schemes**
- **Figure 11-4 Agri-Environment Schemes**

11.2 Relevant Legislation, Planning Policy and Technical Guidance

11.2.1. This section identifies the relevant legislation, national and local policy and guidance which has informed the scope of the agriculture and soils assessment.

Legislation

11.2.2. A summary of the key legislation considered in, but not limited to, the scope of agriculture and soils effects is outlined in **Table 11-1.** The legislation presented in **Table 11-1** underpins and/or is considered throughout this chapter.

Table 11-1: Legislation relevant to Agriculture and Soils

Legislation	Legislative context
Environment Act2021 (Ref 11.1)	Outlines the targets to protect and improve the quality of environment for the next 15 years.
The Agricultural Land (Removal of Surface Soil) Act 1953(Ref 11.2)	"*An Act to make it an offence to remove surface soil from land in certain circumstances; and for purposes connected therewith*."

Planning Policy

11.2.3. A summary of the planning policies at both a national and local level relevant to the scope of agriculture and soils effects is outlined in **Table 11-2** and **Table 11-3**. The legislation presented in **Table 11-2** underpins and/or is considered in the following sections of this chapter:

- Section **11.4 Baseline conditions**
- Section **11.5 Design and Control Measures**
- Section **11.7 Assessment Methodology**

Table 11-2: National Planning Policy relevant to agriculture and soils

Policy Reference	Policy Context
Overarching National Policy Statement for Energy (EN-1) 2024 (Ref 11.3)	
Paragraph 5.11.12	Sets out the preference for the use of poorer quality land (Grades 3b, 4 and 5) over Best and Most Versatile (BMV) land (defined as land in grades 1, 2 and 3a).
Paragraph 5.11.13	*"Applicants should also identify any effects and seek to minimise impacts on soil health and protect and improve soil quality taking into account any mitigation measures proposed."*

Policy Reference	Policy Context
Paragraph 5.11.14	*"Applicants are encouraged to develop and implement a Soil Management Plan which could help minimise potential land contamination. The sustainable reuse of soils needs to be carefully considered in line with good practice guidance where large quantities of soils are surplus to requirements or are affected by contamination."*
Paragraph 5.11.34	This paragraph states that schemes should not be built on BMV land without justification, and poorer quality land should be used preferentially. Economic benefits of the land should also be accounted for.
Overarching Draft National Policy Statement for Energy (EN-1) 2025 (Ref 11.4)	
Paragraph 5.11.12, 5.11.13, 5.11.14 and 5.11.33	The Government has published a draft update to the Overarching National Policy Statement for Energy. For agriculture and soils, the 2025 Draft NPS EN-1 is largely the same as in the 2024 document, however some paragraph numbers will be updated.
National Policy Statement for Electricity Networks (EN-5) 2024 (Ref 11.5)	
Paragraph 2.9.25	Final bullet point: *"the applicant's commitment, as set out in their ES, to mitigate the potential detrimental effects of undergrounding works on any relevant agricultural land and soils (including peat soils), particularly regarding Best and Most Versatile land, including development and implementation of a Soil Resources and Management Plan. Such a commitment must guarantee appropriate handling of soil, backfilling, and return of the land to the baseline Agricultural Land Classification (ALC), thus ensuring no loss or degradation of agricultural land. Such a commitment should be based on soil and ALC surveys in line with the 1988 ALC criteria and due consideration of the Defra Construction Code of Practice for Sustainable Use of Soils on Construction Sites."*
Paragraph 2.9.58	*"There is little evidence that exposure of crops, farm animals or natural ecosystems to transmission line EMFs has any agriculturally significant consequences."*
Draft National Policy Statement for Electricity Networks (EN-5) 2025 (Ref 11.6)	
Paragraph 2.9.26 and 29.59	The Government has published a draft update to the Overarching National Policy Statement for Energy. For agriculture and soils, the 2025 Draft NPS EN-5 is largely the same as in the 2024 document, however relevant paragraph numbers will be updated.
National Planning Policy Framework (NPPF) (2024) (Ref 11.7)	
Paragraph 187	"*Planning policies and decisions should contribute to and enhance the natural and local environment by:* *Protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils…* *Recognising the intrinsic character and beauty of the countryside…including the economic and other benefits of the BMV agricultural land…; and*

Policy Reference	Policy Context
	Preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability."
Paragraph 187, Footnote 65	This footnote states that schemes should not be built on BMV land without justification, and poorer quality land should be used preferentially. Emphasis on the availability of land for food production.

Table 11-3: Local Planning Policy relevant to agriculture and soils

Policy Reference	Policy Context
East Lindsey District Council: East Lindsey Local Plan Core Strategy, Adopted 2018 (Ref 11.8)	Strategic Policy 10 (SP10) – Design This paragraph states that schemes should not be built on BMV land without justification, and poorer quality land should be used preferentially. Emphasis on maintaining character of the surrounding villages and countryside.
	Strategic Policy 24 (SP24) - Biodiversity and Geodiversity; Paragraph 12.17 emphasises the multifaceted importance of soils to a landscape, environment and society. Reference is made to the Defra Construction Code of Practice (Ref 11.9).

Technical Guidance

11.2.4. A summary of the relevant technical guidance, specific to the agriculture and soils assessment, that has informed this Scoping Report, and which will inform the assessment within the Preliminary Environmental Information Report (PEIR) and Environmental Statement (ES), is presented in **Table 11-4**. The technical guidance documents underpin soil assessment and management throughout the process, specifically sections 11.5 Design and Control Measures, 11.6 Scope of the Assessment, 11.7 Assessment Methodology.

Table 11-4: Technical Guidance relevant to agriculture and soils

Technical Guidance Document	Context
Safeguarding our Soils. A strategy for England, Defra, 2009 (Ref 11.10)	This outlines how to better manage, reduce degradation and build resilience to increasing pressures on soil in order to provide a sustainable food supply.
Guide to Assessing Development Proposals on Agricultural Land: Natural England, 2021 (Ref. 11.9) (taking into account Technical Information Note 049. ALC [Agricultural Land Classification] Protecting the Best and Most Versatile	This outlines how construction activities can manage soils sustainably while protecting them from damage and avoiding peat extraction.

Technical Guidance Document	Context
Agricultural Land: Natural England, 2012, Ref 11.12)	
Working with Soil Guidance Note on Benefitting from Soil Management in Development and Construction: The British Society of Soil Science, 2022 (Ref 11.13).	This assists soil professionals in developing Soil Management Plans (SMP).
Specification for topsoil (BS3882:2015): British Standards Institute, 2015 (Ref 11.14)	This outlines the specific characteristics required to be assessed to classify topsoil for import/export against a range of re-use options.
Agricultural Land Classification of England and Wales, Revised Criteria and Guidelines for Grading the Quality of Agricultural Land: Ministry of Agriculture, Fisheries and Food, 1988 (Ref 11.15)	This sets out the required methodology for the assessment of the quality of agricultural land across England and Wales.
Construction Code of Practice for the Sustainable Use of Soils on Construction Sites: Defra, 2009 (Ref 11.9)	This provides a practical guide to the protection of soil resources throughout construction work.
Good Practice Guide for Handling Soils in Mineral Workings, Institute of Quarrying, 2021 (Ref. 11.16).	This is a practical guide containing theory and knowledge to best protect soil during handling.
A New Perspective on Land and Soil in Environmental Impact Assessment: Institute of Environmental Management and Assessment (herein the 'IEMA Guidance'), 2022 (Ref 11.17)	This outlines the EIA assessment approach in relation to land and soil to ensure all soil functions are accounted for in the assessment.
Design Manual for Roads and Bridges (DMRB) LA 112 Population and Human Health (Ref 11.18)	This sets out the EIA assessment approach to ensure that impacts to agricultural land holdings are accounted for within the assessment.

11.3 Consultation and Engagement

11.3.1. In respect of agriculture and soils, key consultees have been identified and focussed engagement (through both informal and formal consultation) will be undertaken and recorded throughout the pre-application stages of the project. Key consultees identified to date are:

- Natural England;
- Landowners / Land Managers;
- Farmers/agricultural operations;
- Lincolnshire County Council; and
- East Lindsey District Council.

11.3.2. Key areas of consultation are intended to include the scope of soil and Agricultural Land Classification (ALC) surveying to inform the PEIR and ES, and soil handling principles which will contribute to the development of an Outline SMP such that, where possible, agricultural land can be reinstated to its pre-construction condition (including ALC grade). Communication with consultees will also be an important part of establishing land drainage and land holding ownership.

11.3.3. Local or specialist groups will be contacted should the assessment process identify a need to engage further detailed local knowledge, or if requested during the statutory consultation process.

11.4 Baseline Conditions

Study Area

11.4.1. The study area for agriculture and soils comprises the area directly impacted by the Project, which for the purposes of informing this Scoping Report, comprises all agricultural land within the English Onshore Scheme Scoping Boundary. This land lies within the English county of Lincolnshire. The English Onshore Scheme Scoping Boundary study area is presented on **Volume 3, Figure 11-1** to **Figure 11-4**.

11.4.2. As the iterative design process continues, the study area would be altered and reduced within the ES to comprise the Order Limits which will be defined for the DCO application. Data will also be gathered for the ES in relation to areas of land owned/farmed by individual landowners such that the proportion of land directly affected can be assessed, along with potential disruption to access/egress to other land parcels.

Data Gathering Methodology

11.4.3. Baseline data has been collated to determine the existing agriculture and soils conditions in the study area. This enables identification of areas that are likely to be sensitive to changes resulting from the English Onshore Scheme. The baseline has been informed by a desk-based study which has drawn on the following sources of information:

- British Geological Survey (BGS) Geology Viewer (Ref 11.18);
- Agricultural Land Classification – Provisional (England), available via MAGIC maps (Ref 11.20);
- Post-1988 Agricultural Land Classification (England), available via MAGIC maps (Ref 11.20);
- OS mapping and aerial photography (Ref 11.21);
- Soil data and map from the Land Information System (“LandIS”) from National Soils Resources Institute at Cranfield University (NSRI) (Ref 11.22);
- Likelihood of BMV Agricultural Land map (Ref 11.23); and
- Climate data sets for Agricultural Land Classification (ALC) assessment (Ref 11.24).

11.4.4. Field data collection will be undertaken through a soil and ALC survey. The survey outcome will be used to determine the impact on agricultural land and soils as a result of the English Onshore Scheme.

11.4.5. The soil and ALC survey and assessment will be undertaken in accordance with the Soil Survey Field Handbook (Ref 11.25) and the ALC guidelines (Ref 11.15). This will provide a survey coverage of at least one auger per hectare (ha) (where possible) and will characterise soil properties based on an examination of soil profiles, from which ALC grade as well as soil resilience to handling can be calculated and assessed.

11.4.6. Survey data gathered will be used to inform the development of an Outline SMP, to minimise the risk of damage to soils and ensure their appropriate reinstatement or re-use. Along the proposed route of the cable once Order Limits are defined, the survey will be based around the centre line of the alignment, with boreholes spaced at 100 m intervals, which is equivalent to one per ha (assuming the width of the corridor does not exceed 100 m). In wider areas a grid of survey points will be established at a density of one auger per ha.

11.4.7. Natural England will be consulted on the soil and ALC survey methodology prior to the survey commencing.

11.4.8. Information on individual landholdings will be gathered through landowner / land manager engagement to collate information on the extent of land held, how land is accessed, fixed capital and the type of land management employed.

Current Baseline

Geology

11.4.9. The area within the English Onshore Scheme Scoping Boundary is mapped as comprising chalky sedimentary bedrock formed during the Cretaceous period: mainly the Burnham Chalk Formation, with areas of Welton Chalk Formation running through the centre (north to south, along the line of Boy Grift Drain) of the English Onshore Scheme Scoping Boundary area, and small areas of Ferriby Chalk Formation (around Huttoft Road and north-west of Alford).

Soils

11.4.10. Within the English Onshore Scheme Scoping Boundary, there are six different Soil Associations shown on the available survey mapping presented on **Volume 3, Figure 11-1**. The study area largely comprises loamy and clay mineral soils, often affected by seasonal waterlogging. The six Associations are outlined on the LandIS Soils Guide (Ref 11.22) which summarises Soil Association characteristics. These are described below:

- Andover 1: shallow, well drained calcareous silty soils over chalk on slopes and crests. Deep calcareous and non-calcareous fine silty soils in valley bottoms. Permeable, well-drained and well-structured.
- Fladbury 2: stoneless clayey soils variably affected by groundwater, some with sandy subsoils. Flat land. Risk of flooding.
- Holderness: slowly permeable seasonally waterlogged fine loamy soils and similar soils with only slight waterlogging. Narrow strips of clayey alluvial soils.
- Salop: slowly permeable seasonally waterlogged reddish fine loamy over clayey, fine loamy and clayey soils associated with fine loamy over clayey soils with slowly permeable subsoils and slight seasonal waterlogging.

- Wallasea 2: deep stoneless clayey soils. Calcareous in places. Some deep calcareous silty soils. Flat land often with low ridges giving a complex soil pattern. Groundwater controlled by ditches and pumps.
- Wick 1: deep, well drained coarse loamy and sandy soils locally over gravel. Some similar soils affected by groundwater. Slight risk of water erosion.

11.4.11. Soil Association mapping indicates that there are not anticipated to be any peaty soils present within the study area.

Agricultural Land Classification

11.4.12. The quality of agricultural land is defined by the ALC system which assigns land to one of six grades as set out below:

- Grade 1: Excellent quality agricultural land (Land with no or very minor limitations to agricultural use. A very wide range of agricultural and horticultural crops can be grown and commonly includes top fruit, soft fruit, salad crops and winter harvested vegetables. Yields are high and less variable than on land of lower quality).
- Grade 2: Very good quality agricultural land (Land with minor limitations which affect crop yield, cultivations or harvesting. A wide range of agricultural and horticultural crops can usually be grown but on some land in the grade there may be reduced flexibility due to difficulties with the production of the more demanding crops such as winter harvested vegetables and arable root crops. The level of yield is generally high but may be lower or more variable than Grade 1).
- Grade 3a: Good quality agricultural land (Land capable of consistently producing moderate to high yields of a narrow range of arable crops, especially cereals, or moderate yields of a wide range of crops including cereals, grass, oilseed rape, potatoes, sugar beet and the less demanding horticultural crops).
- Grade 3b: Moderate quality agricultural land (Land capable of producing moderate yields of a narrow range of crops, principally cereals and grass or lower yields of a wider range of crops or high yields of grass which can be grazed or harvested over most of the year).
- Grade 4: Poor quality agricultural land (Land with severe limitations which significantly restrict the range of crops and/or level of yields. It is mainly suited to grass with occasional arable crops (e.g., cereals and forage crops) the yields of which are variable. In moist climates, yields of grass may be moderate to high but there may be difficulties in utilisation. The grade also includes very droughty arable land).
- Grace 5: Very poor quality agricultural land (Land with very severe limitations which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops).

11.4.13. Provisional ALC mapping for the study area is presented on **Volume 3, Figure 11-2** and shows that the majority of land is mapped as Provisional ALC Grade 3, with some areas in the western half of the Project mapped as Provisional ALC Grade 2.

11.4.14. The Provisional ALC mapping does not split Grade 3 land into Subgrades 3a (good quality agricultural land) and 3b. Subgrade 3a land, along with Grade 1 and Grade 2 land, comprises BMV agricultural land. The distinction between Grade 3a and 3b can only be confirmed through a detailed ALC survey.

11.4.15. Information publicly available via MAGIC maps shows that there is no detailed ALC mapping available for the study area.

Land Use

11.4.16. Satellite imagery (Ref 11.21) indicates that the agricultural land within the English Onshore Scheme Scoping Boundary is predominately arable land and grassland. Field boundaries are lined with hedges, trees and roads throughout the English Onshore Scheme Scoping Boundary. Within the English Onshore Scheme Scoping Boundary, some areas of land are covered by Countryside Stewardship Agreements, and there are two Environmental Stewardship Agreements. These are presented on **Volume 3, Figure 11-4**.

11.4.17. There are no Woodland Grant Schemes or Felling Licences within the English Onshore Scheme Scoping Boundary as confirmed by **Volume 3, Figure 11-3**.

Future Baseline

11.4.18. The Met Office's UK Climate Projects (UKCP18) predict that the future climate will consist of warmer winters with more intense rainfall events. However, the overall annual rainfall is expected to remain consistent with current levels as there is expected to be a change to a larger volume in winter and lower volume in summer. The increased intensity of rainfall events will increase the risk of soil erosion and runoff, risking reducing topsoil thickness and thus land quality if not properly mitigated.

11.4.19. The global annual temperature is predicted to increase by 2 degree Celcius. This increase in global temperature will increase soil surface cracking but also increase total field capacity days. However, these changes will be slight to negligible.

11.4.20. The overall future baseline of soils and land use will stay more or less the same although the climate change will have a slight impact on soils and land use and its management (Ref 11.26).

11.4.21. There could potentially be changes to land management practices and business approaches across the landowners/land mangers within the timeframe of the construction and operation of the English Onshore Scheme.

11.4.22. It is recognised that there are a number of other proposed and committed developments within the surrounding area that could alter the future baseline in the absence of the Project. The potential for cumulative effects will be considered later in the EIA process according to the approach outlined within **Part 4, Chapter 30: Cumulative Effects**.

11.5 Design and Control Measures

Construction Phase

11.5.1. A range of standard measures for the construction of the English Onshore Scheme are likely to be adopted throughout the duration of the construction phase. Design and control measures relevant to agriculture and soils and proportionate to risk would be set out in the Outline Construction Environmental Management Plan (Outline CEMP), prepared to accompany the ES. A summary of the likely measures is detailed below (which is not an exhaustive list):

- The Project will be run in compliance with all relevant legislation, consents and permits.
- An Outline CEMP, an Outline Landscape and Ecology Management Plan (Outline LEMP), an Outline Site Waste Management Plan (Outline SWMP) and an Outline Construction Traffic Management Plan (Outline CTMP), along with an Outline SMP will be produced prior to construction. These are collectively referred to as 'the Management Plans.'
- The Outline CEMP shall include measures to manage dust, waste, water, noise, vibration during construction. The Construction Contractor(s) shall undertake site inspections at appropriate intervals to check conformance to the Management Plans.
- A suitably experienced Environmental Manager will be appointed for the duration of the construction phase. In addition, a qualified and experienced Environmental Clerk of Works (EnvCoW) will be available during the construction phase to advise, supervise and report on the delivery of the mitigation methods and controls outlined in the Outline CEMP. The EnvCoW will monitor that the works proceed in accordance with relevant environmental DCO requirements and adhere to the required good practice and mitigation measures. The EnvCoW will be supported as necessary by appropriate specialists, including soil scientists, ecologists and arboriculturists.
- Construction workers will undergo training to increase their awareness of environmental issues as applicable to their role on the Project. Topics will include but not be limited to:
  - pollution prevention and pollution incident response;
  - dust management and control measures;
  - location and protection of sensitive environmental sites and features;
  - adherence to protected environmental areas around sensitive features;
  - working hours and noise and vibration reduction measures;
  - working with potentially contaminated materials;
  - waste management and storage;
  - flood risk response actions; and
  - agreed traffic routes, access points, etc.
- A record of condition will be carried out (photographic and descriptive) of the working areas that may be affected by the construction activities, prior to works commencing. This record will be available for comparison following reinstatement after the works have been completed to ensure that the standard of reinstatement at least meets that recorded in the pre-condition survey.
- Land used temporarily will be reinstated where practicable to its pre-construction condition (including ALC grade) and use. Hedgerows, fences, and walls (including associated earthworks and boundary features) will be reinstated to a similar style and quality to those that were removed, unless otherwise agreed.
- Earthworks and stockpiled soil will be protected by covering, seeding, or using water suppression where appropriate.

- Stone pads will be installed in areas where heavy equipment, such as cranes and piling rigs, are to be used. The stone pads will provide stable working areas and will reduce disturbance to the ground. The stone pad area will be stripped of the topsoil, which will be stored and reinstated in accordance with the Outline SMP.
- A five-year aftercare period will be established for all reinstatement and mitigation planting.
- Soil management measures will be set out in the Outline SMP. The Outline SMP will include, but not be limited to, the following:
  - details of the soil resources present;
  - roles and responsibilities (and required competencies and training);
  - how topsoil and subsoil will be stripped and stockpiled;
  - suitable conditions for when handling soil will be undertaken, for example avoiding handling of waterlogged soil;
  - indicative soil storage locations;
  - how soil stockpiles will be designed taking into consideration site conditions and the nature/composition of the soil;
  - specific measures for managing sensitive soils;
  - suitable protective surfacing where soil stripping can be avoided, based on sensitivity of the environment and proposed works;
  - approach to reinstating soil that has been compacted, where required;
  - details of measures required for and objectives of soil restoration; and
  - requirements for monitoring.
- Where land is being returned to agricultural use, the appropriate soil conditions (for example through the replacement of stripped layers and the removal of any compaction) will be recreated.
- Access to and from residential, commercial, community and agricultural land uses will be maintained throughout the construction period or as agreed through the landowner discussions. This may require signed diversions or temporary restrictions to access. The means of access to affected properties, facilities and land parcels will be communicated to affected parties at the start of the Project, with any changes communicated in advance of the change being implemented. Where field-to-field access points require alteration as a result of construction, alternative field access will be provided in consultation with the landowner/occupier.

Operational Phase

11.5.2. As described in Section 4.7 Operation and maintenance, activity along the proposed DC and AC cable routes during the operational phase would generally be limited to non-intrusive inspections and cable repairs if required. In the unlikely event of a section of cable needing repairing or replacing, the extent of works required would be over a much more limited area than the original installation. Works may involve temporary access tracks and small compound areas; however, these are likely to be limited in extent and duration, and all soil handling would be undertaken in line with published good practice.

11.6 Scope of the Assessment

Potential sensitive receptors

11.6.1. The identified sensitive receptors in relation to agriculture and soils are:

- Agricultural land, including BMV land (defined through the ALC system);
- Soil function; and
- Land Use (including agricultural landholdings).

Scoping of Potentially Significant Effects

11.6.2. **Table 11-5** outlines the potential effects associated with the above sensitive receptors which have been defined as likely to be significant (and therefore scoped in) or not significant (and therefore scoped out) as part of the agriculture and soils assessment.

Table 11-5: Receptors and impact pathways relevant to agriculture and soils

Project phase	Impact	Receptor	Potential for significant effects	Proposed to be scoped in / out
Construction	Temporary and permanent loss of agricultural land (including BMV land) during construction.	Quality of agricultural land (as defined through the ALC system)	**Yes** – the installation of the cables, associated above ground infrastructure (including the converter station) and access tracks will result in an unavoidable temporary and permanent loss of agricultural land which is likely to include BMV land.[1] Where agricultural land is temporarily lost, it will be reinstated where practicable to its pre-construction condition (including ALC grade) and use.	**Scoped In**
	Impacts upon soil ecosystem services during construction.	Soil Ecosystems and Structure	**Yes** – impacts on soil function and quality will occur once construction activities commence, as soil disturbance during soil stripping, stockpiling and re-use may result in structural damage and detrimental impacts on soil characteristics.	**Scoped In**
	Temporary acquisition and permanent loss of agricultural land holdings during construction.	Agricultural Land Holdings	**Yes** – the temporary acquisition of land to accommodate construction activities will result in temporary disruption and severance to agricultural land holdings and the permanent loss of some land from agricultural landholdings resulting in reduction in the operational capacity and loss of income to farm businesses.	**Scoped In**
Operation and Maintenance	Temporary and permanent loss of agricultural land	Quality of agricultural land (as	**No** – periodic vehicle access for routine maintenance and emergency repairs may require temporary access tracks and small compound areas but these are likely to be limited in extent and duration and all soil handling	**Scoped Out**

[1] For the purpose of this assessment, it is assumed that the permanent loss of land occurs during the construction and therefore the impact is assessed during that phase. As such, there is no additional impact assessed during the operational phase of the Proposed Development.

Project phase	Impact	Receptor	Potential for significant effects	Proposed to be scoped in / out
	(including BMV land) during operation and maintenance.	defined through the ALC system)	would be undertaken in line with published good practice; therefore, no likely significant effects are expected.	
	Impacts upon soil ecosystem services during operation and maintenance.	Soil Ecosystems and Structure	**No** – any soil disturbance associated with maintenance during the operational phase will be very infrequent, minimal and limited to small areas as described in Section **11.5 Design and Control Measures**. Any disturbance to soils during maintenance would also be undertaken in accordance with good practice soil handling methods; therefore, no likely significant effects are expected.	**Scoped Out**
	Temporary acquisition and permanent loss of agricultural land holdings during operation and maintenance.	Agricultural Land Holdings	**No** – periodic vehicle access for routine maintenance and emergency repairs may require temporary access tracks and small compound areas but these are likely to be limited in extent and access arrangements will be designed to limit disturbance to landowners; therefore, no likely significant effects are expected.	**Scoped Out**

11.7 Assessment Methodology

Further Data to be Gathered / Processed

Desk-Based Assessments

11.7.1. To inform the assessment of farm holdings, data on agricultural land holdings will be collected through landowner/occupier or land agent interviews where possible. The agricultural land holding information will enable an understanding of agricultural operations and an assessment of impacts (including cumulative impacts) on agricultural holdings.

Surveys

11.7.2. To fully inform the assessment of agricultural land and soils, an ALC and soil survey will be undertaken to determine the sensitivities of soils and the grade(s) of agricultural land within the English Onshore Scheme Scoping Boundary. The survey and assessment will be undertaken in accordance with the Soil Survey Field Handbook (Ref 11.25) and the ALC guidelines (Ref 11.15) and will characterise soil properties based on an examination of soil profiles, from which agricultural land grade as well as soil resilience can be calculated and assessed.

Assessment of Significance

11.7.3. The IEMA Guidance (Ref 11.17) will be used to assess the impact on agricultural land quality and soils. The DMRB LA112 (Ref 11.18) will be used to assess the impact on agricultural landholdings.

11.7.4. **Table 11-6** to **Table 11-12** set out the criteria which would be used to determine the sensitivity of and the magnitude of impacts on agricultural land and soils through assessing soil quality, the presence of BMV land and agricultural landholdings. Once the magnitude and sensitivity of receptors has been identified this will be used to determine the significance of the effect. Effects that are deemed to be significant for the purpose of this assessment are those that are described as being moderate or major, beneficial or adverse. Terminology used within the criteria tables are consistent with the terminology used within the IEMA guidance.

Table 11-6: Determination of sensitivity of soils and agricultural land

Receptor Sensitivity	Soil Resource and Function
Very High	• Biomass production: ALC Grades 1 & 2; • Ecological habitat, soil biodiversity and platform for landscape: Soils supporting protected features within a European site (e.g., SAC, SPA, Ramsar site); Peat soils; Soils supporting a National Park, or Ancient Woodland; • Soil carbon: Peat soils; • Soils with potential for ecological / landscape restoration; • Soil hydrology: Very important catchment pathway for water flows and flood risk management; • Archaeology, Cultural Heritage, Community Benefits and Geodiversity: Scheduled Monuments and adjacent areas; World Heritage and European designated sites; Soils with known archaeological interest; Soils supporting community / recreational / educational access to land covered by National Park designation; and • Source of materials: Important surface mineral reserves that would be sterilised (i.e., without future access).
High	• Biomass production: ALC Grade 3a; • Ecological habitat, soil biodiversity and platform for landscape: Soils supporting protected features within a UK designated site (e.g., United Nations Educational, Scientific and Cultural Organisation (UNESCO) Geoparks, SSSI or National Landscape, Special Landscape Areas (SLAs) and Geological Conservation Review sites); Native Forest and woodland soils; Unaltered soils supporting seminatural vegetation; • Soil carbon: Organo-mineral soils (e.g., peaty soils); • Soil hydrology: Important catchment pathway for water flows and flood risk management; • Archaeology, Cultural Heritage, Community Benefits and Geodiversity: Soils with probable but as yet unproven (prior to being revealed by construction) archaeological interest; historic parks and gardens; Regionally Important Geological Site (RIGS); Soils supporting community / recreational / educational access to RIGS and National Landscapes; and • Source of materials: Surface mineral reserves that would be sterilised (i.e., without future access).
Medium	• Biomass production: ALC Grade 3b; • Ecological habitat, soil biodiversity and platform for landscape: Soils supporting protected or valued features within non-statutory designated sites

Receptor Sensitivity	Soil Resource and Function
	(e.g., LNRs, Local Geological Sites (LGSs), Sites of Nature Conservation Importance (SNCIs), SLAs; Non-Native Forest and woodland soils; • Soil carbon: Mineral soils; • Soil hydrology: Important minor catchment pathway for water flows and flood risk management; • Archaeology, Cultural Heritage, Community Benefits and Geodiversity: Soils with possible but as yet unproven (prior to being revealed by construction) archaeological interest; Soils supporting community / recreational / educational access to land; and • Source of materials: Surface mineral reserves that would remain accessible for extraction.
Low	• Biomass production: ALC Grade 4 and 5 or Urban soils; • Ecological habitat, soil biodiversity and platform for landscape: Soils supporting valued features within non designated notable or priority habitats / landscapes. Agricultural soils; • Soil carbon: Mineral soils; • Soil hydrology: Pathway for local water flows and flood risk management; • Archaeology, Cultural Heritage, Community Benefits and Geodiversity: Soils supporting no notable cultural heritage, geodiversity nor community benefits; Soils supporting limited community / recreational / educational access to land; and • Source of materials: Surface mineral reserves that would remain accessible for extraction.
Negligible	As for low sensitivity, but with only indirect, tenuous, and unproven links between sources of impact and soil functions.

Table 11-7: Determination of sensitivity of soils to handling

Soil Texture, Field Capacity Days (FCD) and Wetness Class (WC)	Soil Texture, Field Capacity Days (FCD) and Wetness Class (WC)
High (low resilience to structural damage)	• Soils with high clay and silt fractions (clays, silty clays, sandy clays, heavy silty clay loams and heavy clay loams) and organo-mineral and peaty soils where the FCD are 150 or greater; • Medium-textured soils (silt loams, medium silty clay loams, medium clay loams and sandy clay loams) where the FCDs are 225 or greater; and • All soils in wetness class (WC) V or WC VI.

Soil Texture, Field Capacity Days (FCD) and Wetness Class (WC)	Soil Texture, Field Capacity Days (FCD) and Wetness Class (WC)
Medium (medium resilience to structural damage)	• Clays, silty clays, sandy clays, heavy silty clay loams, heavy clay loams, silty loams and organo-mineral and peaty soils where the FCDs are fewer than 150; • Medium-textured soils (silt loams, medium silty clay loams, medium clay loams and sandy clay loams) where FCDs are fewer than 225; and • Sands, loamy sands, sandy loams and sandy silt loams where the FCDs are 225 or greater or are in WC III and IV.
Low (high resilience to structural damage)	• Soils with a high sand fraction (sands, loamy sands, sandy loams and sandy silt loams) where the FCDs are fewer than 225 and are in wetness classes WC I to WC II.

Table 11-8: Determination of sensitivity of agricultural land holdings

Receptor Sensitivity	Description
Very High	1) Areas of land in which the enterprise is wholly reliant on the spatial relationship of land to key agricultural infrastructure; and 2) Access between land and key agricultural infrastructure is required on a frequent basis (daily).
High	1) Areas of land in which the enterprise is dependent on the spatial relationship of land to key agricultural infrastructure; and 2) Access between land and key agricultural infrastructure is required on a frequent basis (weekly).
Medium	1) Areas of land in which the enterprise is partially dependent on the spatial relationship of land to key agricultural infrastructure; and 2) Access between land and key agricultural infrastructure is required on a reasonably frequent basis (monthly).
Low	1) Areas of land which the enterprise is not dependent on the spatial relationship of land to key agricultural infrastructure; and 2) Access between land and key agricultural infrastructure is required on an infrequent basis (monthly or less frequent).
Negligible	1) Areas of land which are infrequently used on a non-commercial basis.

Table 11-9: Determination of magnitude criteria for impact on soils and agricultural land

Magnitude of Impact (Change)	Description of Impacts Restricting Proposed Land Use
Major	Permanent, irreversible loss of one or more soil functions or soil volumes (including permanent sealing or land quality downgrading), over an area of more than 20 ha or loss of soil-related features as set out in **Table 11-6** (including effects from 'Temporary Developments'). Or Potential for permanent improvement in one or more soil functions or soil volumes due to remediation or restoration over an area of more than 20 ha or gain in soil-related features set out in **Table 11-6**(including effects from 'Temporary Developments').
Moderate	Permanent, irreversible loss of one or more soil functions or soil volumes, over an area of between 5 and 20 ha or loss of soil-related features as set out in **Table 11-6** (including effects from 'Temporary Developments'). or Potential for improvement in one or more soil functions or soil volumes due to remediation or restoration over an area of between 5 and 20 ha or gain in soil related features as set out in **Table 11-6** (including effects from 'Temporary Developments').
Minor	Permanent, irreversible loss over less than 5 ha or a temporary, reversible loss of one or more soil functions or soil volumes), or temporary, reversible loss of soil related features set out in **Table 11-6**. or Potential for permanent improvement in one or more soil functions or soil volumes due to remediation or restoration over an area of less than 5 ha or a temporary improvement in one or more soil functions due to remediation or restoration or off-site improvement, or temporary gain in soil-related features set out in **Table 11-6**.
Negligible	No discernible loss or reduction or improvement of soil functions or soil volumes that restrict current or proposed land use.

Table 11-10: Determination of magnitude criteria for impact of agricultural land holdings

Magnitude of Impact (Change)	Description of Impacts Restricting Proposed Land Use
Major	Private property and housing, community land and assets, development land and businesses and agricultural land holdings: 1) Loss of resource and / or quality and integrity of resource; Severe damage to key characteristics, features or elements. e.g., direct acquisition and demolition of buildings and direct development of land to accommodate highway assets; and / or

Magnitude of Impact (Change)	Description of Impacts Restricting Proposed Land Use
	2) Introduction (adverse) or removal (beneficial) of complete severance with no / full accessibility provision.
Moderate	Private property and housing, community land and assets, development land and businesses and agricultural land holdings: 1) Partial loss of / damage to key characteristics, features or elements, e.g., partial removal or substantial amendment to access or acquisition of land compromising viability of property, businesses, community assets or agricultural holdings; and/or 2) Introduction (adverse) or removal (beneficial) of severe severance with limited / moderate accessibility provision.
Minor	Private property and housing, community land and assets, development land and businesses and agricultural land holdings: 1) A discernible change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements, e.g., amendment to access or acquisition of land resulting in changes to operating conditions that do not compromise overall viability of property, businesses, community assets or agricultural holdings; and / or 2) Introduction (adverse) or removal (beneficial) of severance with adequate accessibility provision.
Negligible	Private property and housing, community land and assets, development land and businesses and agricultural land holdings: 1) Very minor loss or detrimental alteration to one or more characteristics, features or elements. e.g., acquisition of non-operational land or buildings not directly affecting the viability of property, businesses, community assets or agricultural holdings; and / or 2) Very minor introduction (adverse) or removal (beneficial) of severance with ample accessibility provision.
No Change	No loss or alteration of characteristics, features, elements or accessibility; no observable impact in either direction.

Table 11-11: Determination of significance matrix

Nature of Receptor (Sensitivity / Value / Importance)	Nature of Impact (Magnitude / Probability / Reversibility)			
	Major	Moderate	Minor	Negligible
Very High	Large or Very Large	Moderate or Large	Slight or Moderate	Slight
High	Moderate or Large	Moderate	Slight	Neutral
Medium	Slight or Moderate	Slight	Neutral or Slight	Neutral
Low	Slight	Neutral	Neutral	Neutral
Negligible	Neutral	Neutral	Neutral	Neutral

Table 11-12: Significance descriptors

Significance Category	Description
Very Large	Effects at this level are material in the decision-making progress
Large	Effects at this level are likely to be material in the decision-making progress
Moderate	Effects at this level can be considered to be material in the decision-making process
Slight	Effects at this level are not material in the decision-making process
Neutral	No effects or those that are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error

Assessment of Cumulative Impacts and Effects

11.7.5. It is recognised that there are a number of other proposed and committed developments within the surrounding area that could alter the future baseline in the absence of the Project. The potential for cumulative effects will be considered later in the EIA process according to the approach outlined within **Part 4, Chapter 30: Cumulative Effects**.

Assessment Limitations and Assumptions

11.7.6. The ALC assessment assumes that the auger borings at one auger per ha are sufficient to determine the spatial distribution of ALC grades.

11.7.7. Along the proposed route of the cable, boreholes will be spaced at 100 m intervals, which assumes that the width of the corridor does not exceed 100 m. Since the assessment of the corridor will be based on linear point data, it may be possible that the boundaries would be drawn slightly differently than if a wider area was surveyed. The potential implications of this will be addressed in the ES.

11.7.8. The full assessment will be reliant on land access to enable focused soil and ALC surveys; the extent of surveys undertaken will be fully detailed in the assessment reported in the ES.

11.7.9. It is assumed that at the end of the construction phase, land temporarily taken by the Project will be reinstated and returned to agricultural use, whilst land required permanently for the Project will remain out of agricultural use.

11.7.10. The assessment of impacts on farm holdings will be dependent on obtaining sufficient and accurate information from landowner/land managers. If individual landowners/land managers do not engage sufficiently the assessment will be based on the best available publicly available information and this will be clearly noted in the assessment.

11.8 Bibliography

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12. Traffic and Transport

12.1 Introduction

12.1.1. The traffic and transport assessment will consider the potentially significant effects on sensitive human and ecological receptors which may arise from the construction and operation of the English Onshore Scheme.

12.1.2. This chapter of the Scoping Report sets out the relevant legislation, planning policy context and technical guidance used to inform the assessment and summarises any consultation and engagement in relation to traffic and transport undertaken to date. It provides an overview of the baseline conditions relevant to traffic and transport within and / or around the English Onshore Scoping Boundary (**Volume 3, Figure 1-2**), the measures that will be incorporated into the English Onshore Scheme to mitigate traffic and transport effects, the likely significant effects to be considered within the assessment, and how these likely significant effects will be assessed for the purpose of an Environmental Impact Assessment (EIA).

12.1.3. This chapter should be read in conjunction and considered alongside the following chapters found in **Volume 1**:

- **Part 2, Chapter 13: Noise and Vibration:** While all construction traffic is likely to result in a temporary increase in noise levels, heavy goods vehicles (HGVs) could also have an impact in terms of vibration, with both impacts being of greater importance where construction vehicles pass close to sensitive receptors. The level of construction traffic will be quantified within the Traffic and Transport chapter, with this data used to inform the noise and vibration impact assessment.
- **Part 2, Chapter 14: Air Quality:** Construction traffic will generate a temporary worsening of air quality, with this being of greater importance in existing air quality management areas and where the construction traffic access route passes through residential areas. The level of construction traffic will be quantified within the Traffic and Transport chapter, with this data used to inform the air quality assessment.
- **Part 2, Chapter 15: Socio-economics, Recreation and Tourism:** There will be crossover between the two topics on impacts on public rights of way and other recreational routes affected by the English Onshore Scheme.
- **Part 2, Chapter 16: Health and Wellbeing:** The health and wellbeing assessment will draw on the outcomes of the air quality and noise and vibration assessments, with regards to impacts deriving from traffic and transport changes.

12.1.4. This chapter is supported by the following figures found in **Volume 3**:

- **Figure 12-1 Traffic and Transport Study Area; and**
- **Figure 12-2 Public Rights of Way (PRoW) anticipated to be impacted by EGL 5.**

12.2 Relevant Legislation, Planning Policy and Technical Guidance

12.2.1. This section identifies the relevant legislation, national and local policy and guidance which has informed the scope of the traffic and transport assessment.

Legislation

12.2.2. A summary of the key legislation considered in, but not limited to, the scope of traffic and transport effects is outlined in **Table 12-1**.

Table 12-1: Legislation relevant to traffic and transport

Legislation	Legislative context	Sections considered
The Highways Act (1980) (Ref 12.1).	The Highways Act (1980) sets out the requirements pertaining to delivering highways infrastructure, managing existing highways and managing highway activity including off site highway works, for example, the creation of temporary site access.	All Sections
New Roads and Street Works Act (1991) (Ref 12.2).	The New Roads and Street Works Act (1991) provides a legislative framework for street works by undertakers and works for road purposes to the extent that these must be coordinated by street authorities.	Section 12.5 Design and Control Measures.
Traffic Management Act (2004) (Ref 12.3).	The Traffic Management Act (2004) provides powers to tackle congestion and disruption on the road network and requires local authorities, where possible, to ensure that traffic can move quickly and freely on their roads.	Section 12.7 Assessment Methodology.

Planning Policy

12.2.3. A summary of the planning policies at both a national and local level relevant to the scope of traffic and transport effects is outlined in **Table 12-2** and **Table 12-3**.

12.2.4. The National Policy Statement for Electricity Networks Infrastructure (EN-5) (Ref 12.29) is not included in **Table 12-2** below as it does not give regard to traffic and transport considerations.

Table 12-2: National planning policy relevant to traffic and transport

Policy reference	Policy context	Sections considered
Overarching National Policy Statement for Energy (EN-1) (2024) (Ref 12.4)		
Section 2.6 Paragraph 5.14.4	The consideration and mitigation of transport impacts is an essential part of Government's	Section 12.6

Policy reference	Policy context	Sections considered
	wider policy objectives for sustainable development as set out in Section 12.6 of NPS EN-1.	Scope of the Assessment.
Paragraph 5.14.5 Paragraph 5.14.6	If a project is likely to have significant transport implications, the Environmental Statement (ES) should include a transport appraisal, developed in consultation. National Highways and Highways Authorities are statutory consultees where it is expected to affect the Strategic Road Network (SRN) and / or have an impact on the local road network. Applicants should consult with National Highways and Highways Authorities as appropriate on the assessment and mitigation to inform the application to be submitted.	Section 12.7 Assessment Methodology.
Paragraph 5.14.7	Requirement, where appropriate, to prepare a Travel Plan (TP) and provide details of proposed measures to improve access by active, public, and shared transport to reduce the need for parking, contribute to decarbonisation, and improve user travel options.	Section 12.6 Scope of the Assessment.
Paragraph 5.14.14	Where substantial Heavy Goods Vehicle (HGV) traffic is likely to occur the Secretary of State (SoS) may attach requirements to DCO consent to control numbers and routeing of HGV movements, make sufficient provision for HGV parking and make arrangement for reasonably foreseeable abnormal disruption.	Section 12.6 Scope of the Assessment.
Paragraph 5.14.18 Paragraph 5.14.19	The SoS should ensure the applicant has sought to mitigate substantial impacts on transport infrastructure. Where the proposed mitigation is insufficient the SoS should consider the requirements to mitigate adverse impacts arising from the development.	Section 12.6 Scope of the Assessment.
Draft Overarching National Policy Statement for Energy (EN-1) (April 2025) (Ref 12.5)		
Section 2.5. Paragraphs 5.14.4, 5.14.5, 5.14.7, 5.14.8, 5.14.16, 5.14.20, and 5.14.21	The Government has published a draft update to the Overarching National Policy Statement for Energy. For Traffic and Transport, the 2025 Draft NPS EN-1 is largely the same as in the 2024 document, with relevant changes in section and paragraph numbers.	Section 12.6 Scope of the Assessment. Section 12.7 Assessment Methodology.

Policy reference	Policy context	Sections considered
National Planning Policy Framework (NPPF) (2024) (Ref 12.6)		
Paragraph 116	In terms of transport, a development should only be prevented or refused on highways grounds if there would be unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe.	Section 12.6 Scope of the Assessment. Section 12.7 Assessment Methodology.
Paragraph 118	All developments that will generate significant amounts of movement should be required to provide a travel plan, and the application should be supported by a Transport Statement (TS) or Transport Assessment (TA) so that the likely impacts of the proposal can be assessed.	Section 12.6 Scope of the Assessment.
National Highways		
Department for Transport (DfT) Circular 01/2022 "*Strategic road network and the delivery of sustainable development*" (Ref 12.7).	Sets out the ways in which National Highways will engage with the development industry, public bodies and communities to assist the delivery of sustainable development. Environmental assessments must be comprehensive enough to establish the likely impacts on air quality, light pollution and noise arising from traffic generated by a development, along with the impacts from any proposed works to the SRN and identify measures to mitigate these impacts. Requirements and advice for undertaking environmental assessments in respect of transport impacts can be found in the Design Manual for Roads and Bridges (DMRB).	Section 12.3 Consultation and Engagement. Section 12.5 Design and Control Measures. Section 12.7 Assessment Methodology.

Table 12-3: Local planning policy relevant to traffic and transport

Policy reference	Policy context	Sections considered
Lincolnshire County Council Local Transport Plan 5 (2022) (Ref 12.8)		
Policy SH4	Seeks to reduce air, light and noise pollution created by the transport system, focussing on areas with designated Air Quality Management Areas (AQMA) and where impacts are felt by significant populations.	Section 12.7 Assessment Methodology.

Policy reference	Policy context	Sections considered
Policy E4	Identify and support a range of transport improvements to better connect employment centres with workforce and broaden the opportunities for those seeking employment to access and increasingly diverse range of opportunities.	Section 12.4 Baseline Conditions.
Policy GREEN4	Deliver sustainable development by ensuring that new developments are designed to minimise the need to travel, minimise car use and support the use of more sustainable modes.	Section 12.7 Assessment Methodology.
East Lindsey District Council: East Lindsey Local Plan Core Strategy (2018) (Ref 12.9)		
Strategic Policy 22 (SP22) (Transport and Accessibility).	SP22 outlines how East Lindsey will support accessibility and seek to reduce isolation.	Section 12.5 Design and Control Measures. Section 12.6 Scope of the Assessment.

Technical Guidance

12.2.5. A summary of the relevant technical guidance, specific to the traffic and transport assessment, that has informed this Scoping Report and will inform the assessment within the Preliminary Environmental Information Report (PEIR) and ES, is given in **Table 12-4**.

Table 12-4: Technical guidance relevant to traffic and transport

Technical guidance document	Context	Sections considered
Planning Practice Guidance Travel Plans, Transport Assessments and Statements (2014) (Ref 12.10).	This Planning Practice Guidance (PPG) was published in March 2014. Together, PPGs and the NPPF set out what the Government expects of local authorities. The overall aim is to ensure the planning system allows land to be used for new homes and jobs, while protecting valuable natural and historic environments. The guidance includes specific details in relation to the preparation of a TA, TS and TP.	Section 12.7 Assessment Methodology.
The Institute of Environmental Management and Assessment (IEMA) (now known as the	The IEMA Environmental Assessment of Traffic and Movement (EATM) guidelines provide practitioners with good practice advice on how to carry out the assessment of traffic and movement of people as part	Section 12.7 Assessment Methodology.

Technical guidance document	Context	Sections considered
Institute of Sustainability and Environmental Professionals (ISEP)) Environmental Assessment of Traffic and Movement (2023) (Ref 12.11).	of a statutory EIA or non-statutory environmental assessment.	
LA 101 - Introduction to Environmental Assessment (2019) (Ref 12.12).	LA 101 sets out the overarching requirements and principles that form an introduction to the environmental assessment of motorway and all-purpose trunk roads.	Section 12.7 Assessment Methodology.
LA 103 - Scoping Projects for Environmental Assessment (2020) (Ref 12.13).	This document sets out the requirements for scoping motorway and all-purpose trunk road projects for environmental assessment.	Section 12.7 Assessment Methodology.
LA 104 - Environmental assessment and monitoring (2020) (Ref 12.14).	This document sets out the requirements for environmental assessment of projects, including reporting and monitoring of significant adverse environmental effects.	Section 12.7 Assessment Methodology.
LA 112 - Population and Human Health (2020) (Ref 12.15).	This document sets out the requirements for assessing and reporting the environmental effects on population and health from construction, operation, and maintenance of highways projects.	Section 12.7 Assessment Methodology.

12.3 Consultation and Engagement

12.3.1. For traffic and transport, key consultees have been identified and focussed engagement (through both informal and formal consultation) will be undertaken and recorded throughout the pre-application stages of the Project. Key consultees identified to date are:

- Lincolnshire County Council; and
- National Highways (regarding any potential impacts on the SRN).

12.3.2. The consultation and engagement would discuss the proposed traffic and transport assessment methodology, covering:

- The scope of the assessment;
- The proposed traffic growth to future year;
- Committed highways schemes that may affect the future baseline;
- Committed developments that may affect the future baseline;

- Availability of existing traffic data and data collection techniques;
- Potential traffic generation;
- Management of traffic impacts on the Public Rights of Way (PRoW) network; and
- Management of traffic impacts on the highway network including HGV management.

12.4 Baseline conditions

Study Area

12.4.1. The study area for the traffic and transport assessment has been informed by:

- Roads providing access for construction and operational traffic generated by the English Onshore Scheme, including the proposed Alford Bypass construction route, and points on the transport network that would be crossed by any element of the English Onshore Scheme. Temporary construction working areas and laydown areas would be required throughout the English Onshore Scheme and would be located within the English Onshore Scoping Boundary (**Volume 3, Figure 1-2**).
- The key routes outside of the English Onshore Scoping Boundary (**Volume 3, Figure 1-2**) that construction and operational traffic would take to access the construction areas and permanent infrastructure of the English Onshore Scheme.

12.4.2. The Traffic and Transport study area will be refined based upon ‘Rule 1’ and ‘Rule 2’ of the IEMA EATM (Ref 12.11) guidelines which can be used to determine the effect of increased traffic volumes on links within the study area, as described below:

- Rule 1 - Include highway links where traffic flows (or HGV flows) are predicted to increase by more than 30%; and
- Rule 2 - Include any other specifically sensitive areas where traffic flows (or HGV flows) are predicted to increase by 10% or more.

12.4.3. The proposed transport study area is set out in **Volume 3, Figure 12-1**. It consists of the area within the English Onshore Scoping Boundary (**Volume 3, Figure 1-2**) and roads that are expected to be used as construction routes and to meet the criteria of inclusion for either ‘Rule 1’ or ‘Rule 2’ of IEMA EATM (Ref 12.11). For a complete list of roads within the study area, refer to **Table 12-6**. The links which are to be assessed within the EIA will be refined as more data is received with regards to the traffic flows associated with the construction phase and routeing.

12.4.4. The study area will further be reviewed and amended in response to the identification of any additional impact pathways, estimates of construction traffic levels, identification of working and laydown areas and in response to feedback from consultation.

Data Gathering Methodology

12.4.5. The data sources used to inform the traffic and transport assessment are summarised in **Table 12-5**.

Table 12-5: Data sources used to inform the traffic and transport assessment

Organisation	Data source	Data utilised
Office for National Statistics (ONS).	2011 and 2021 Census (Ref 12.16 and 12.17).	2011 and 2021 Census data.
Ordnance Survey (OS).	OS Online Mapping	1:25,000 and 1:50,000 OS maps.
Google	Google Maps (Ref 12.18).	Congestion and traffic data. Street View imagery.
Department for Transport.	Road traffic statistics manual count point data (Ref 12.19).	Vehicle counts / flows.
	Road safety statistics (Ref 12.20).	Personal Injury Collision (PIC) data.
Lincolnshire County Council.	Lincolnshire electronic working copy definitive map (Ref 12.21).	PRoW information.
	Lincolnshire County Council website (Ref 12.22).	Local cycling routes.
Visit Lincolnshire.	Visit Lincolnshire website (Ref 12.23).	Local cycling routes.
Sustrans	Map of the National Cycle Network (Ref 12.24).	National Cycle Network (NCN) information.
National Rail.	National Rail All Stations Route Map (Ref 12.25).	Active railway lines in the study area.
Inland Waterways Association.	Inland Waterways Association Map of the Inland Waterways of Great Britain (Ref 12.26).	Navigable waterways in the study area.

12.4.6. An initial desk-based baseline assessment will be undertaken to gather information on highway infrastructure, construction routes and restrictions. Google Maps and Google Street View will be used to provide an overview of the study area and the transport network.

12.4.7. Site-based work will be undertaken to inform the baseline. This may include:

- Commissioned traffic counts – to supplement the existing traffic data from Department for Transport and Local Authorities.
- Non-motorised user counts on PRoW – to supplement any existing data available from the Local Authorities.
- Site visit – a site visit may be required to inform the assessment and clarify the high-level desk-based assessment. Detailed notes and a photographic record would be

undertaken on a site visit and consideration will be given to sensitive receptor locations.

12.4.8. These data sets will be collated, reviewed, and updated as the English Onshore Scheme progresses to enable completion of a robust assessment which will be presented in the PEIR and ES.

Current Baseline

12.4.9. This section sets out the traffic and transport information and data that would be relied upon to produce a detailed review of baseline conditions that would be contained within the PEIR and ES.

Roads

12.4.10. There are a number of 'A', 'B', 'C' and unclassified roads within the study area which have the potential to be affected directly by the English Onshore Scheme, either by a crossing of the proposed infrastructure or as an access route. There are 3 numbered A Roads (A52, A1104 and A1111), 1 numbered B Road (B1449), 6 classified unnumbered 'C' Roads, and 16 unclassified road links. **Table 12-6** contains a full list of roads affected within the study area.

Table 12-6: List of roads within the traffic and transport study area

Type of road	Road number	Road name	Highway authority
A Roads	A1104	Ulceby Cross, Ulceby.	Lincolnshire County Council.
		Alford Road, Ulceby.	Lincolnshire County Council.
		Miles Cross Hill, Well.	Lincolnshire County Council.
		Station Road, Alford.	Lincolnshire County Council.
		West Street, Alford.	Lincolnshire County Council.
		High Street, Alford.	Lincolnshire County Council.
		Church Street, Alford.	Lincolnshire County Council.
		East Street, Alford.	Lincolnshire County Council.
		Alford Road, Thoresthorpe.	Lincolnshire County Council.
		Alford Road, Saleby.	Lincolnshire County Council.
	A1111	Bilsby Road, Alford.	Lincolnshire County Council.
		Alford Road, Bilsby.	Lincolnshire County Council.
		Sutton Road, Bilsby.	Lincolnshire County Council.
		Sutton Road, Markby.	Lincolnshire County Council.
	A52	Huttoft Road, Mumby.	Lincolnshire County Council.

Type of road	Road number	Road name	Highway authority
		Mumby Road, Huttoft.	Lincolnshire County Council.
		Sutton Road, Huttoft.	Lincolnshire County Council.
		Huttoft Road, Sutton-on-Sea.	Lincolnshire County Council.
B Roads	B1449	Thurlby Road, Bilsby.	Lincolnshire County Council
		Bilsby Road, Bilsby.	Lincolnshire County Council.
		Mumby Road, Bilsby.	Lincolnshire County Council.
		Long Lane, Mumby.	Lincolnshire County Council.
C Roads		Rectory Road, Anderby.	Lincolnshire County Council.
		Sea Road, Anderby.	Lincolnshire County Council.
		Roman Bank, Anderby.	Lincolnshire County Council.
		Huttoft Bank, Huttoft.	Lincolnshire County Council.
		Tothby Lane, Alford.	Lincolnshire County Council.
		Mill Lane, Saleby.	Lincolnshire County Council.
Unclassified Roads		Tothby, Alford.	Lincolnshire County Council.
		The Lane, Thoresthorpe.	Multiple – to be confirmed at PEIR stage.
		Mill Lane, Saleby.	Lincolnshire County Council.
		Asserby Road, Asserby.	Lincolnshire County Council.
		Crawcroft Lane, Sutton-on-Sea.	Lincolnshire County Council.
		North Ings Lane, Huttoft.	Private – to be confirmed at PEIR stage.
		Mill Lane, Huttoft.	Lincolnshire County Council.
		Widow Fen Lane, Bilsby.	Lincolnshire County Council.
		Bilsby Road, Bilsby.	Lincolnshire County Council.
		Huttoft Road, Thurlby near Alford.	Lincolnshire County Council.
		Alford Road, Huttoft.	Lincolnshire County Council.
		Jolly Common Lane, Huttoft.	Lincolnshire County Council.
		Sea Lane, Huttoft.	Lincolnshire County Council.

Type of road	Road number	Road name	Highway authority
		Green Lane Huttoft.	Lincolnshire County Council.
		Track off Roman Bank, Anderby.	Lincolnshire County Council.
		Huttoft Footpath 9/1, Huttoft[6].	Lincolnshire County Council.

Traffic Data

12.4.11. Traffic data has been obtained from the latest available Department for Transport manual count points to understand the existing traffic flow on the highway network within the study area. **Table 12-7** summarises the two-way traffic data on the A and B Roads within the study area.

Table 12-7: Average annual daily traffic (AADT)

Road	Count ID	Two-way traffic flow	Year
A1104 West Street	7,516	9,386	2023
A1104 Maltby Road	37,590	3,778	2023
B1449 Thurlby Road	9,40,412	2,690	2019

Personal Injury Collision Data

12.4.12. Highway safety is assessed by the frequency and severity of injury accidents that are attended by the police and recorded in official accident statistics. Intensification of use or changes in the composition of traffic have the potential to influence collision rates.

12.4.13. The examination of recent collision statistics on routes within the study area will highlight any hotspots that need further examination. PIC records for the local highway network will be examined for the five-year period prior to the onset of the Covid-19 pandemic to allow for a full highway safety analysis to be undertaken which is unaffected by the Covid-19 pandemic, along with obtaining all PIC records since then to ensure a comprehensive analysis has been undertaken.

Public Rights of Way (PRoW)

12.4.14. Up to 46 PRoWs would potentially be affected by the English Onshore Scheme. An initial list of affected PRoW, all public footpaths, was compiled based on Lincolnshire County Council's Electronic working copy definitive map (Ref 12.21) and is given in **Table 12-8,** and is shown on **Figure 12-2**. This list will be updated during the preparation of the PEIR and finalised for the ES. For further baseline information, see **Section 15.4** in **Part 2, Chapter 15: Socio-economics, Recreation and Tourism**.

[6] Huttoft Footpath 9/1, Huttoft, has been included as a tarmacked road is situated at the footpath's location, the footpath has the Unique Street Reference Number (USRN) 12603511, and is reported to be maintainable at public expense by Lincolnshire County Council. https://www.findmystreet.co.uk/map?usrn=12603511 [Accessed June 2025]

12.4.15. An assessment of all the affected PRoW will be carried out and mitigation proposed where appropriate and reported in the PEIR and ES. Further detail will also be provided in an Outline Public Rights of Way Management Plan (PRoWMP) provided to support the application.

Table 12-8: PRoW within the study area (Ref 12.21)

PRoW reference number	PRoW reference number
Alfo/289/1	Hutt/10/2
Alfo/283/4	Hutt/10/3
Alfo/283/3	Hutt/10/4
Alfo/283/2	Hutt/10/5
Alfo/282/4	Hutt/965/1
Alfo/282/3	Ande/964/1
Alfo/282/2	Hutt/12/1
Alfo/290/1	Hutt/2/1
Alfo/281/2	Hutt/2/2
Alfo/281/1	Hutt/4/2
Sale/281/3	Hutt/1139/1
Sale/284/2	Hutt/2/3
Sale/284/3	Hutt/9/1
Bils/69/1	Hutt/2/4
Mumb/69/1	Bils/11/1
Hutt/1/1	Hutt/11/2
Ande/1/1	Hutt/11/1
Bils/13/1	Hutt/14/2
Ande/16/1	Hutt/4/1
Hutt/10/1	Hutt/14/1
Sale/284/4	Hutt/15/1
Hutt/4/4	Hutt/854/1
Hutt/6/2	Hutt/6/1

Key Cycling Routes

12.4.16. No NCN routes and none of the local cycle routes listed on Lincolnshire County Council's website are located in or pass through the study area. However, part of the Lincolnshire Wolds, Humber to the Wash, and Alford to the Coast Cycle Routes publicised by Visit Lincolnshire (Ref 12.23) pass through the study area. For further baseline information see **Section 15.4** in **Part 2, Chapter 15: Socio-economics, Recreation and Tourism**.

12.4.17. The details of the specific sections of Visit Lincolnshire routes that could be impacted by the English Onshore Scheme will be defined in the PEIR and ES.

Future Baseline

12.4.18. In accordance with IEMA EATM (Ref 12.11) guidelines, the assessment will be undertaken at the construction phase, year of opening of the English Onshore Scheme and / or the first full year of operation. Consideration will also be given to the phasing of construction for the English Onshore Scheme.

12.4.19. The future baseline will take into account traffic growth as a result of new development which will be based on growth factors from the Department for Transport National Trip End Model (NTEM) (Ref 12.27) derived from the Trip End Model Presentation Programme (TEMPro). The use of TEMPro will include for cumulative traffic growth within the study area.

12.4.20. Engagement with the highway authority will identify appropriate growth rates based on the traffic data available, future year of assessment and location of the English Onshore Scheme. This engagement will also seek to agree any significant development that may need to be included as a specific committed development on top of the agreed TEMPro growth rate.

12.4.21. The future baseline will also consider the implications of changes to the transport infrastructure, such as changes to roads and or junctions and new infrastructure.

12.4.22. It is recognised that there are a number of other proposed and committed developments within the surrounding area that could alter the future baseline in the absence of the English Onshore Scheme. The potential for cumulative effects will be considered as part of the future EIA documents in accordance with the approach and guidance outlined in **Part 4, Chapter 30: Cumulative Effects**.

12.5 Design and Control Measures

12.5.1. Design and control measures that will be implemented as part of the English Onshore Scheme are listed in **Table 12-9**. As these design and control measures, as well as standard sectoral practices and procedures, are considered inherent parts of the design of the English Onshore Scheme, they have been considered in the scoping assessment.

Table 12-9: Design and control measures

Receptor	Potential change and effect	Measure
Motorised and non-motorised users within the study area.	Potential changes to the layout of the public highway and associated potential road safety effects.	All changes to the highway designed and carried out in accordance with appropriate design guidance.
Motorised and non-motorised users within the study area.	Potential changes in traffic flows within the study area during the Construction / Decommissioning Phase and associated Traffic and Transport effects.	Haul roads and loop road arrangements to be considered in the design of the English Onshore Scheme.
Motorised and non-motorised users within the study area.	Potential changes in traffic flows within the study area during the Construction / Decommissioning Phase and associated Traffic and Transport effects.	Outline CTMP and Outline Construction Environmental Management Plan (CEMP).
Non-motorised users within the study area.	Changes in traffic flows within the study area during the Construction / Decommissioning Phase and associated Traffic and Transport effects.	Appropriate mitigation and management measures to be detailed in the Outline PRoWMP.
Non-motorised users within the study area.	Potential temporary closure of PRoW due to construction works.	All PRoW potentially impacted by the Project to be identified in the Outline PRoWMP. Appropriate PRoW closures and diversions to be implemented and detailed in the Outline PRoWMP.

12.6 Scope of the assessment

Potential sensitive receptors

12.6.1. The scope of the assessment provides comprehensive coverage of the routes surrounding the English Onshore Scheme and it will consider the implications of the construction and operation of the English Onshore Scheme. This will be focused on a series of traffic and transport receptors on the local road network and the SRN. These receptor locations will be defined as the English Onshore Scheme design develops in line with consultation with the highway authority. It is these receptors which will be taken forward into the assessment in relation to potential traffic and transport-related effects.

12.6.2. Receptors are the users or beneficiaries of the highways network assets and facilities who travel within the vicinity of the English Onshore Scheme. IEMA EATM (Ref 12.11, paragraph 1.28) guidelines identify the following user groups that may be affected:

- Non-motorised users;
- PRoW users;
- Motorists and freight vehicles;

- Public transport; and
- Emergency services.

12.6.3. Paragraph 1.30 of the IEMA EATM (Ref 12.11) guidelines also identify the following special interest that should be considered when defining sensitive receptors:

- People at home;
- People at work;
- Sensitive and / or vulnerable groups (including young age; older age; income; health status; social disadvantage; and access and geographic factors);
- Locations with concentrations of vulnerable users (e.g., hospitals, places of worship, and schools);
- Retail areas;
- Recreational areas;
- Tourist attractions;
- Collision clusters and routes with road safety concerns; and
- Junctions and highway links at or over capacity.

12.6.4. The IEMA EATM (Ref 12.11, paragraph 1.31) guidelines advise that sensitive receptors within the study area should be assigned to the nearest highway link, and the relationship with the highway environment examined to understand the sensitivity of those receptors to change.

12.6.5. The highway link will then be assigned a sensitivity value according to the user groups and special interest potentially affected and this sensitivity to change is used in the assessment of significance.

Likely Significant Effects

12.6.6. **Table 12-10** outlines the likely significant effects associated with the above sensitive receptors which have been scoped into and out of the traffic and transport assessment.

Table 12-10: Likely significant traffic and transport effects

Cause of effects	Project phase	Impact	Receptor	Potential for significant effects	Proposed to be scoped in/ out
Traffic generated by the construction of the English Onshore Scheme (excluding Abnormal Indivisible Loads (AILs)).	Construction	Severance, driver delay, pedestrian delay (incorporating delay to all non-motorised users), non-motorised user amenity, fear and intimidation, and road safety.	Non-motorised users, PRoW users, motorists and freight vehicles, public transport users, and emergency services.	Yes – There is the potential for significant effects where the assessment shows that the significance of effect is classified as significant for receptor(s).	**Scoped in**
AILs	Construction	Severance, driver delay, pedestrian delay (incorporating delay to all non-motorised users), non-motorised user amenity, fear and intimidation, and road safety.	Non-motorised users, PRoW users, motorists and freight vehicles, public transport users, and emergency services.	Yes – There is the potential for significant effects where the assessment shows that the significance of effect is classified as significant for receptor(s).	**Scoped in**
Traffic generated by the operation of the English Onshore Scheme.	Operation	Severance, driver delay, pedestrian delay (incorporating delay to all non-motorised users), non-motorised user amenity, fear and intimidation, and road safety.	Non-motorised users, PRoW users, motorists and freight vehicles, public transport users, and emergency services.	No – During operation the converter station would be operated by a small team and maintenance will be limited to routine activities that would not exceed the EATM thresholds therefore the magnitude of change and significance of effect will be negligible. The ES will confirm the operational vehicle types and numbers (with reference to thresholds within the guidance) to justify this position.	**Scoped out**

Cause of effects	Project phase	Impact	Receptor	Potential for significant effects	Proposed to be scoped in/ out
Hazardous loads	Construction and operation.	Severance, driver delay, pedestrian delay (incorporating delay to all non-motorised users), non-motorised user amenity, fear and intimidation, and road safety.	Roads, PRoW and users of these routes.	No – No hazardous loads are anticipated during either the construction or operation phases and effects from these are therefore scoped out of the assessment.	**Scoped out**

12.6.7. These conclusions have been made based on the knowledge of the baseline environment and the nature of planned works.

12.6.8. It is considered that a Transport Assessment (TA) will not be required as the peak hour traffic flows associated with the operational phase of the English Onshore Scheme are anticipated to be very low and, therefore, the operational phase has been scoped out. However, a transport technical note will be provided to supplement the ES / EIA Report to contain all movement-related forecasting and the methodology upon which some of the other assessment chapters are based.

12.7 Assessment Methodology

Further Data to be Gathered / Processed

12.7.1. The overarching approach to the assessment methodology is set out in **Part 1, Chapter 5: EIA Approach and Methodology**. However, whilst this has informed the approach that has been used in this section, it is necessary to set out how this methodology will be applied, and adapted as appropriate, to address the specific needs of the transport assessment based on the appropriate guidance.

12.7.2. The IEMA EATM (Ref 12.11) guidelines set out that the following transport impacts that need to be considered in any traffic and transport assessment:

- Severance: the perceived division that can occur within a community when it becomes separated by major transport infrastructure. The term is used to describe a complex series of factors that separate people from places and other people.
- Driver Delay: traffic delays to non-development traffic.
- Pedestrian delay (incorporating delay to all non-motorised users): the ability of people to cross roads as a result of changes in traffic volume, composition and speed, the level of pedestrian activity, visibility and general physical conditions. Pedestrian delay and severance are closely related effects and be grouped together.
- Non-motorised user amenity: non-motorised user amenity is broadly defined as the relative pleasantness of a journey, considered to be affected by traffic flow, traffic composition and pavement width / separation from traffic.
- Fear and intimidation: a further environmental impact that affects people is the fear and intimidation created by all moving objects. The extent of fear and intimidation is dependent on the total volume of traffic, the heavy vehicle composition, the speed at which vehicles are passing, and the proximity of traffic to people.
- Road safety: the risk of accidents occurring at locations where the English Onshore Scheme is expected to produce a change in the character of traffic.
- Hazardous loads / large loads: the transportation of dangerous and / or hazardous loads by road.

12.7.3. The significance of an effect resulting from a development during construction or operation is most commonly assessed by reference to the sensitivity (or value) of a receptor and the magnitude of the change. This approach provides a mechanism for identifying areas where additional mitigation measures may be required to alleviate the risk presented by the English Onshore Scheme.

Receptor Sensitivity

12.7.4. The sensitive receptors within the agreed study area will be assigned to the nearest highway link and the relationship with the highway environment examined to understand the sensitivity of those receptors to change in relation to the traffic and transport impacts being assessed.

12.7.5. The sensitivity of each highway link to be included in the assessment will be assigned a sensitivity in accordance with the advice provided in the IEMA EATM (Ref 12.11) guidelines, as summarised in **Table 12-11**, and based on professional judgement. For example, if the route passes a school, care home or similar, it will have a higher sensitivity due to the presence of vulnerable users. Similarly, if the route runs through the middle of a town or village, it will have a higher sensitivity than if there was limited direct access to the frontage of the infrastructure of the English Onshore Scheme.

Table 12-11: Receptor sensitivity

Sensitivity	Reason for receptor sensitivity	Receptor type
High	High concentration of people at home, people at work, sensitive and / or vulnerable groups (including young age; older age; income; health status; social disadvantage; and access and geographic factors), locations with concentrations of vulnerable users (e.g., hospitals, places of worship, schools), retail areas, recreational areas, tourist attractions. Limited separation of footway / cycleways from traffic. Significant level of pedestrian / cycle desire lines. A volume / highway capacity (i.e. V / C) ratio greater than 100%. A link with three or more fatal and / or serious collisions happening either within a junction or within a 100 m stretch.	Motorised users of the highway network. Non-motorised users (pedestrians / cyclists /horse riders) of the highway network and PRoW users. Public transport (bus) users.
Medium	Medium concentration of people at home, people at work, sensitive and / or vulnerable groups (including young age; older age; income; health status; social disadvantage; and access and geographic factors), locations with concentrations of vulnerable users (e.g., hospitals, places of worship, schools), retail areas, recreational areas, tourist attractions. Limited separation of footway / cycleways from traffic. Moderate level of pedestrian / cycle desire lines. A V / C ratio between 90% and 100%. A link where there are six or more injury collisions occurring within a junction or a 100 m stretch.	Motorised users of the highway network. Non-motorised users (pedestrians / cyclists /horse riders) of the highway network and PRoW users. Public transport (bus) users.
Low	Low concentration of people at home, people at work, sensitive and / or vulnerable groups (including young age; older age; income; health status; social disadvantage; and access and geographic factors), locations with concentrations of vulnerable users (e.g., hospitals, places	Motorised users of the highway network. Non-motorised users (pedestrians /

Sensitivity	Reason for receptor sensitivity	Receptor type
	of worship, schools), retail areas, recreational areas, tourist attractions. Provision of footway / cycleways that meet highway design standards. Footway /cycleways adequately separated from traffic. Limited pedestrian / cycle desire lines. A V / C ratio between 85% and 90%. A link where no clusters have been identified but there are isolated incidents.	cyclists /horse riders) of the highway network and PRoW users. Public transport (bus) users.
Negligible	Very low concentration of people at home, people at work, sensitive and / or vulnerable groups (including young age; older age; income; health status; social disadvantage; and access and geographic factors), locations with concentrations of vulnerable users (e.g., hospitals, places of worship, schools), retail areas, recreational areas, tourist attractions. Provision of footway / cycleways that meet highway design standards. Footway / cycleways well separated from the carriageway. Minimum level of pedestrian / cycle desire lines. A V / C ratio less than 85%. A link where there have been no recorded personal injury collisions.	Motorised users of the highway network. Non-motorised users (pedestrians / cyclists /horse riders) of the highway network and PRoW users. Public transport (bus) users.

12.7.6. The sensitivity of a highway link is therefore assessed with reference to the type of user groups who may use it and the special interests present in an area.

Magnitude of Impact

12.7.7. The traffic generated by the English Onshore Scheme has been used to assess the impacts on the highway links and junctions on the surrounding road network. The likely effects of the English Onshore Scheme in environmental terms would be evaluated in accordance with IEMA EATM (Ref 12.11) guidelines as outlined in the following subsections.

12.7.8. The guidelines acknowledge that, for many effects, there are no simple rules or formulae which define thresholds of significance and there is, therefore, a need for interpretation and the application of professional judgement on the part of the assessor, supported by data or quantified information. Such judgment would include the assessment of the number of user groups impacted and the sensitivity of those user groups, as well as the assessment of damage to various natural or cultural resources.

Severance and Pedestrian Delay (incorporating delay to all non-motorised users)

12.7.9. Severance occurs in a community when a major artery separates people from places and other people. Severance occurs from difficulty of crossing a road or where the road itself creates a physical barrier. Severance can be caused to pedestrians or motorists. IEMA EATM (Ref 12.11) guidelines state that historical guidance published by the Department for Transport suggested changes in total traffic flow of 30%, 60% and 90% result in slight, moderate, and substantial changes in severance respectively.

12.7.10. IEMA EATM (Ref 12.11) notes that this guidance no longer appears in Department for Transport guidance but has not been superseded by subsequent changes and is established through planning case law. On this basis, it is considered appropriate to continue using these indicators to assess severance. **Table 12-12** contains how the magnitude of impacts on sensitive receptors shall be reported within this preliminary assessment with respect to severance.

Table 12-12: Magnitude of impact (severance and pedestrian delay)

	Magnitude of impact (degree of change)				
	No change	**Negligible**	**Minor**	**Moderate**	**Major**
Severance /Pedestrian Delay.	No change in traffic flow.	Change in total traffic flow of less than 30%.	Change in total traffic flow of 30% - 60%.	Change in total traffic flow of greater than 60% - 90%.	Change in total traffic flow of greater than 90%.

Driver Delay

12.7.11. The use of industry standard junction capacity modelling programmes provides a methodology to quantify junction delay. Driver delay is only likely to be significant where the existing study area highway network is at or close to capacity

12.7.12. The magnitude of impact is derived using professional judgment informed by the increase in vehicle delay, and whether a junction is at, or close to capacity. Alternatively, the forecast change in traffic flows can be used to assess the magnitude of impact. Impacts to local network performance would be assessed, and the impacts to driver delay would be presented in the ES. In accordance with IEMA EATM (Ref 12.11), this approach is considered to be appropriate to assess driver delay.

Non-motorised User Amenity

12.7.13. Non-motorised user amenity is broadly defined as the relative pleasantness of a journey, and is considered to be affected by traffic flow, traffic composition, pavement width and separation between vehicles and pedestrians. The impact manifests itself in fear and intimidation, exposure to noise and vehicle emissions. IEMA EATM (Ref 12.11) states that historical guidance published by the Department for Transport suggested that a doubling or halving of total traffic flow or the HGV composition could lead to perceptible adverse or beneficial impacts upon non-motorised user amenity. IEMA EATM (Ref 12.11) guidelines note that this guidance no longer appears in Department for Transport guidance but has not been superseded by subsequent changes and is established through planning case law. On this basis, it is considered appropriate to continue using these indicators to assess non-motorised user amenity. **Table 12-13** sets out how the magnitude of impacts on receptors shall be reported within this preliminary assessment with respect to non-motorised user amenity.

Table 12-13: Magnitude of impact (non-motorised user amenity)

	Magnitude of impact (degree of change)				
	No change	**Negligible**	**Minor**	**Moderate**	**Major**
Non-motorised User Amenity.	No change in traffic flow.	Change in total traffic flow (or HGV component) of less than 30%.	Change in total traffic flow of (or HGV component) 30% - 50%.	Change in total traffic flow (or HGV component) of 50% - 100%.	Change in total traffic flow (or HGV component) of greater than 100%.

Fear and Intimidation

12.7.14. The IEMA EATM (Ref 12.11) guidelines state that the extent of fear and intimidation is dependent on the total volume of traffic, the heavy vehicle composition, the speed at which vehicles are passing and the proximity of traffic to people. IEMA EATM (Ref 12.11) guidelines provide a weighted system to provide an approximation of the likelihood of pedestrian fear and intimidation. The degree of hazard is assessed with reference to the established thresholds (a, b and c) (see **Table 12-14**) and a score is provided for each combination on a highway link under consideration (see **Table 12-15**). The magnitude of impact is approximated with reference to changes in the level of fear and intimidation from baseline conditions (see **Table 12-16**).

Table 12-14: Fear and intimidation degree of hazard

Average traffic flow over 18-hour day – all vehicles / hour two-way (a)	Total 18-hour heavy vehicle flow (b)	Average vehicle speeds (mph) (c)	Degree of hazard score
+1,800	+3,000	>40	30
1,200 – 1,800	2,000 – 3,000	30 – 40	20
600 – 1,200	1,000 – 2,000	20 – 30	10
<600	<1,000	<20	0

Table 12-15: Levels of fear and intimidation

Level of fear and intimidation	Total hazard score ((a) + (b) + (c))
Extreme	71+
Great	41 – 70
Moderate	21 – 40
Small	0 – 20

Table 12-16: Magnitude of impact (fear and intimidation)

Magnitude of impact	Change in step / traffic flows (AADT) from baseline conditions
High	Two step changes in level.
Medium	One step change in level, but with a >400-vehicle increase in average 18hr All Vehicle (AV) two-way all vehicles flow; and / or >500 Heavy Vehicle (HV[7]) increase in total 18hr HV flow.
Low	One step change in level with <400-vehicle increase in average 18hr AV two-way all vehicle flow; and / or <500 HV increase in total 18hr HV flow.
Negligible	No step changes in level.
No change	No observable impact.

Road Safety

12.7.15. Road safety is assessed by the frequency and severity of injury accidents that are attended by the police and recorded in official accident statistics. Intensification of use or changes in the composition of traffic has the potential to have an effect on collision rates. The examination of recent collision statistics on routes within the study area would highlight any hotspots that need further examination.

12.7.16. The Personal Injury Collision (PIC) records for the local highway network will be examined for the three-year period 2021 - 2023.

12.7.17. The magnitude of impact will be derived using professional judgment informed by the frequency and severity of recorded collisions within the study area and the forecast increase in traffic.

12.7.18. The IEMA EATM (Ref 12.11) guidelines state that the standard and prescribed Road Safety Audits (GG 119 – Road Safety Audit (Ref 12.28)) should be used to review the road safety attributes of any proposed engineering changes in the adopted highway prior to submission. However, local highway authorities often have their own standards and audit processes and, therefore, the approach may need to be agreed with the local highway authorities where changes to the highway are proposed.

Further Data to be Gathered / Processed

12.7.19. In addition to the data sources listed in **Section 12.4**, the assessment within the PEIR and ES would be supported by the following additional information:

- Commissioned traffic counts – to supplement the existing traffic data from Department for Transport and Local Authorities.
- Counts of non-motorised users on PRoW – to supplement any available existing data available from the Local Authorities.
- Site visit – a site visit will be required to inform the assessment and refine the high-level desk-based assessment. Detailed notes and a photographic record will be

[7] Heavy Vehicle (HV) includes goods vehicles and buses exceeding 3.5t gross vehicle weight

undertaken on the site visit and consideration will be given to the identification of sensitive receptor locations.

- Traffic generation as a result of the English Onshore Scheme will be identified as the Scheme progresses and the transport-related environmental effects will be assessed.

12.7.20. The scope and extent of data to be gathered and processed will be discussed and agreed with the Local Highway Authority through further technical discussions.

Assessment of Significance

12.7.21. **Table 12-17** and **Table 12-18** combine receptor sensitivity with the magnitude of impact (degree of change), classifying the effects as neutral, slight, moderate, or very large. The significance matrices are based on Table 3.8.1 from LA 104 (Ref 12.14) and adjusted where required to align with IEMA EATM (Ref 12.11) guidelines. For some categories, LA 104 Table 3.8.1 contains two significance categories. Since we are unable to provide evidence to support the reporting of a single significance category, we are reporting both, in accordance with paragraph 3.1.1 of LA 104.

Table 12-17: Significance evaluation matrix (severance, pedestrian delay, non-motorised user amenity, driver delay)

		Magnitude of change				
		Major	**Moderate**	**Minor**	**Negligible**	**No change**
Receptor sensitivity	**Very High**	Very Large (significant)	Large or Very Large (significant)	Moderate or Large (significant)	Slight (not significant)	Neutral (not significant)
	High	Large or Very Large (significant)	Moderate or Large (significant)	Slight or Moderate (not significant or significant)	Slight (not significant)	Neutral (not significant)
	Medium	Moderate or large (significant)	Moderate (significant)	Slight (not significant)	Neutral or Slight (not significant)	Neutral (not significant)
	Low	Slight or Moderate (not significant or significant)	Slight (not significant)	Neutral or Slight (not significant)	Neutral or Slight (not significant)	Neutral (not significant)
	Negligible	Slight (not significant)	Neutral or Slight (not significant)	Neutral or Slight (not significant)	Neutral (not significant)	Neutral (not significant)

Table 12-18: Significance evaluation matrix (fear and intimidation)

		Magnitude of change				
		High	**Medium**	**Low**	**Negligible**	**No change**
Receptor sensitivity	**Very High**	Very Large (significant)	Large or Very Large (significant)	Moderate or Large (significant)	Slight (not significant)	Neutral (not significant)
	High	Large or Very Large (significant)	Moderate or Large (significant)	Slight or Moderate (not significant or significant)	Slight (not significant)	Neutral (not significant)
	Medium	Moderate or Large (significant)	Moderate (significant)	Slight (not significant).	Neutral or Slight (not significant)	Neutral (not significant)
	Low	Slight or Moderate (not significant or significant)	Slight (not significant)	Neutral or Slight (not significant)	Neutral or Slight (not significant)	Neutral (not significant)
	Negligible	Slight (not significant)	Neutral or Slight (not significant)	Neutral or Slight (not significant)	Neutral (not significant)	Neutral (not significant)

12.7.22. The assessment of the significance of environmental effects shall also cover the following factors:

- The duration (long- or short-term); permanence (permanent or temporary) and changes in significance (increase or decrease);
- Reversibility – e.g., whether the change is reversible or irreversible, permanent or temporary; and
- Feasibility and mechanisms for delivering mitigating measures – e.g., whether there is evidence of the ability to legally deliver the environmental assumptions which are the basis for the assessment.

12.7.23. ‘Significant effects’ comprise residual effects that are within the moderate, large or very large categories for the purposes of this EIA; neutral or slight effects are ‘not significant’.

12.8 Assessment Limitations and Assumptions

12.8.1. The following limitations and assumptions have been identified:

- The construction phasing and associated construction worker profile will be developed with the Applicant and the Front End Engineering Design (FEED) team. This will feed into discussions regarding assessment scenarios and will be shared with the highway authority.

- The assessment presented in the PEIR and ES will include the latest design information available at the time of the submission. Where design information is not available, reasonable worst-case assumptions will be made.

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13. Noise and Vibration

13.1 Introduction

13.1.1. The noise and vibration assessment will consider the potentially significant effects on sensitive human receptors which may arise from the construction and operation of the English Onshore Scheme.

13.1.2. This chapter of the Scoping Report sets out the relevant legislation, planning policy context and technical guidance used to inform the scope of the assessment and summarises any consultation and engagement in relation to noise and vibration undertaken to date. It provides an overview of the baseline conditions relevant to noise and vibration within / around the English Onshore Scoping Boundary, the measures which will be incorporated into the Project to mitigate noise and vibration effects, the likely significant effects to be considered within the assessment, and how these likely significant effects will be assessed for the purpose of an Environmental Impact Assessment (EIA).

13.1.3. This chapter should be read in conjunction and considered alongside the following chapters found in **Volume 1**:

- **Part 2, Chapter 6: Biodiversity**: Consideration of noise and vibration effects relating to operational noise of the converter station and Construction noise on ecological receptors including designated sites.
- **Part 2, Chapter 7: Cultural Heritage**: Consideration of noise and vibration effects relating to operational noise of the converter station and Construction noise on Cultural Heritage Receptors including both inhabited and uninhabited buildings and monuments as advised by the Cultural Heritage Team.
- **Part 2, Chapter 8: Landscape and Visual Amenity**: Consideration of noise and vibration effects relating to operational noise of the converter station and Construction noise on public open spaces, footpaths and AONBs/designated sites.
- **Part 2, Chapter 16: Health and Wellbeing**: Consideration of noise and vibration effects relating to operational noise of the converter station and Construction noise relating to public health and wellbeing.

13.2 Relevant Legislation, Planning Policy and Technical Guidance

13.2.1. This section identifies the relevant legislation, national and local policy and guidance which has informed the scope of the noise and vibration assessment.

Legislation

13.2.2. A summary of the key legislation considered, but not limited to, in the scope of the noise and vibration assessment is outlined in **Table 13-1**.

Table 13-1: Legislation relevant to noise and vibration

Legislation	Legislative context	Section considered
Environmental Protection Act 1990 (EPA) (as amended by the Noise and Statutory Nuisance Act 1993) (particularly Section 79) (Ref 13.1).	The EPA sets out: the definition of statutory nuisance due to noise; the duty on local authorities to investigate and abate nuisance; and defence against abatement because *"best practicable means"* has been employed to minimise noise (including vibration) for business premises. The EPA sets out the means for a person affected by noise nuisance to seek abatement through the courts. The Noise and Statutory Nuisance Act sets out an extension of powers to abate noise nuisance to a wider range of sources than the EPA.	"*Design and Control Measures*" and "*Assessment Methodology*".
The Control of Pollution Act 1974 (particularly Sections 60 and 61) (CoPA) (Ref 13.2).	Sets out the Section 60 notice which local authorities can serve so as to impose requirements upon relevant construction activities with regard to the control of noise. Under Section 61 of the CoPA, the party that intends to carry out works to which Section 60 applies may apply to the local authority for consent and "*an application under this section shall contain particulars of –* *The works, and method by which they are to be carried out; and* *The steps proposed to be taken to minimise noise resulting from the works."*	"*Design and Control Measures*" and "*Assessment Methodology*".

Planning Policy

13.2.3. A summary of the planning policies at both a national and local level relevant to the scope of noise and vibration assessment is given in **Table 13-2** and **Table 13-3**.

Table 13-2: National planning policy relevant to noise and vibration

Policy reference	Policy context	Section considered
Overarching National Policy Statement for Energy (EN-1) 2024 (Ref 13.3)		
Paragraph 5.12.1 - 5.12.4	These paragraphs of EN-1 set the context of the potential adverse effects that excessive noise and vibration can have on human health, wildlife and buildings. Noise can also have an adverse impact on the value of a landscape and quality of enjoyment in an area.	Section 13.7
Paragraph 5.12.5	Sets out "*the factors that will determine the likely noise impact of a proposed development include:* • *The inherent operational noise from the proposed development, and its characteristics.* • *The proximity of the proposed development to noise sensitive premises (including residential properties, schools and hospitals) and noise sensitive areas (including certain parks and open spaces).* • *The proximity of the proposed development to quiet places and other areas that are particularly valued for their soundscape or landscape quality.* • *The proximity of the proposed development to sites where noise may have an adverse impact on protected species or other wildlife, including migratory species.* • *The potential of unexploded ordnance on the seabed."*	Section 13.7
Paragraph 5.12.6	States that: "*Where noise impacts are likely to arise from the proposed development, the applicant should include the following in the noise assessment:* • *A description of the noise generating aspects of the development proposal leading to noise impacts, including the identification of any distinctive tonal characteristics, if the noise is impulsive, whether the noise contains particular high or low frequency content or any temporal characteristics of the noise.* • *Identification of noise sensitive receptors and noise sensitive areas that may be affected.* • *The characteristics of the existing noise environment.* • *A prediction of how the noise environment will change with the proposed development.* • *In the shorter term, such as during the construction period.*	Sections 13.5 and 13.7

Policy reference	Policy context	Section considered
	• *In the longer term, during the operating life of the infrastructure.* • *At particular times of the day, evening and night (and weekends) as appropriate, and at different times of year.* • *An assessment of the effect of predicted changes in the noise environment on any noise-sensitive receptors, including an assessment of any likely impact on health and quality of life / well-being where appropriate, particularly among those disadvantaged by other factors who are often disproportionately affected by noise-sensitive areas.* • *If likely to cause disturbance, an assessment of the effect of underwater or subterranean noise.* • *All reasonable steps taken to mitigate and minimise potential adverse effects on health and quality of life.*"	
Paragraph 5.12.7	The nature and extent of the noise assessment should be proportionate to the likely noise impact.	Section 13.7
Paragraph 5.12.8	Applicants should consider the noise impact of ancillary activities associated with the development, such as increased road and rail traffic movements, or other forms of transportation.	Section 13.7
Paragraph 5.12.9	Paragraph states that: *"Operational noise, with respect to human receptors, should be assessed using the principles of the relevant British Standards and other guidance."* It further describes *"For the prediction, assessment and management of construction noise, reference should be made to any relevant British Standards and other guidance which also give examples of mitigation strategies."*	Section 13.7
Draft Overarching National Policy Statement for Energy (EN-1) (April 2025) (Ref 13.4)		
Paragraphs 5.12.1 - 5.12.4, 5.12.5, 5.12.6, 5.12.7, 5.12.8, and 5.12.9.	The Government has published a draft update to the Overarching National Policy Statement for Energy. For Noise and Vibration, the 2025 Draft NPS EN-1 is largely the same as in the 2024 document, with relevant section and paragraph numbers remaining the same.	Sections 13.5 and 13.7

Policy reference	Policy context	Section considered
National Policy Statement for Electricity Networks Infrastructure (EN-5) 2024 (Ref 13.5)		
Paragraph 2.9.26	All high voltage transmission lines have the potential to generate noise under certain conditions.	Sections 13.5 and 13.7
Paragraph 2.9.27 - 2.9.26	These paragraphs set the context of the potential for adverse noise effects that may be associated with the operation of overhead lines and overhead line fittings such as spacers, insulators and clamps. Paragraph 2.9.34 notes that transmission line audible noise is "*generally categorised as 'crackle' or 'hum', according to its tonal content.*"	Sections 13.6 and 13.7
Paragraph 2.9.37 – 2.9.39	Paragraphs note the potential audible noise effects that can arise from substation equipment such as transformers, quadrature boosters and mechanically switched capacitors which can generate low frequency hum. EN-5 also state that: "*For the assessment of noise from substations, standard methods of assessment and interpretation using the principles of the relevant British Standards are satisfactory.*"	Section 13.7
Paragraph 2.9.40 – 2.9.42	It is noted within EN-5 that: *"For the assessment of noise from overhead lines, the applicant must use an appropriate method to determine the sound level produced by the line in both dry and wet weather conditions, in addition to assessing the impact on noise-sensitive receptors. For instance, the applicant may use an appropriate noise modelling tool or tools for the prediction of overhead line noise and its propagation over distance, such as an ISO 9613-2 or Technical Report TR(T)94.* *When assessing the impact of noise generated by overhead lines in wet weather relative to existing background sound levels, the applicant should consider the effect of varying background sound levels due to rainfall."*	Sections 13.6 and 13.7
Draft National Policy Statement for Electricity Networks Infrastructure (EN-5) (April 2025) (Ref 13.6)		
Paragraphs 2.9.26, 2.9.27 – 2.9.26, 2.9.37 - 2.9.39, and 2.9.40 - 2.9.42.	The Government has published a draft update to the National Policy Statement for Electricity Networks Infrastructure For Noise and Vibration, the 2025 Draft NPS EN-5 is largely the same as in the 2024 document, with changes in the paragraph numbers.	Sections 13.5, 13.6 and 13.7

Policy reference	Policy context	Section considered
Noise Policy Statement for England (NPSE) (Ref 13.7)		
Paragraph 1.6	Sets out the long-term vision of Government noise policy, i.e., to "*promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development.*"	Sections 13.5 and 13.7
Paragraph 1.7	The NPSE vision is supported by aims to effectively manage and control environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development by avoiding significant adverse impacts, mitigating and minimising adverse impacts and contributing to the improvement of health and quality of life.	Sections 13.5 and 13.7
Paragraph 2.20	*"To identify 'significant adverse' and 'adverse' impact in line with the three aims of NPSE there are two established concepts from toxicology that are currently being applied to noise impacts, for example, by the World Health Organization:* • *No Observed Effect Level (NOEL): This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise.* • *Lowest Observed Adverse Effect Level (LOAEL): This is the level above which adverse effects on health and quality of life can be detected. Extending these concepts for the purpose of this NPSE leads to the concept of a significant observed adverse effect level.* • *Significant Observed Adverse Effect Level (SOAEL). This is the level above which significant adverse effects on health and quality of life occur.*"	Section 13.7
Paragraph 2.24	*"Where an impact lies somewhere between LOAEL and SOAEL all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life while also taking into account the guiding principles of sustainable development. This does not mean that such adverse effects cannot occur."*	Sections 13.5 and 13.7
Paragraph 2.22	The NPSE notes that "*it is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times. It is acknowledged that further research is*	Section 13.7

Policy reference	Policy context	Section considered
	required to increase our understanding of what may constitute a significant adverse impact on health and quality of life from noise. *However, not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available.*"	
National Planning Policy Framework (NPPF) 2024 (Ref 13.8)		
Paragraph 187	Planning policies and decisions should contribute to and enhance the natural and local environment by: (a) Protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan). (b) Recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland. (c) Maintaining the character of the undeveloped coast, while improving public access to it where appropriate. (d) Minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures and incorporating features which support priority or threatened species such as swifts, bats and hedgehogs. (e) Preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans. (f) Remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.	Sections 13.5 and 13.7
Paragraph 198	Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site	Sections 13.5 and 13.7

Policy reference	Policy context	Section considered
	or the wider area to impacts that could arise from the development. In doing so they should: (a) Mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life. (b) Identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason. (c) Limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.	

Table 13-3: Local planning policy relevant to noise and vibration

Policy reference	Policy context	Section considered
Central Lincolnshire Local Plan adopted April 2023 (Ref 13.9)		
Policy S53: Design and Amenity.	*"All development, including extensions and alterations to existing buildings, must achieve high quality sustainable design that contributes positively to local character, landscape and townscape, and supports diversity, equality and access for all."* *"Good design will be at the centre of every development proposal and this will be required to be demonstrated through evidence supporting planning applications to a degree proportionate to the proposal. Design Codes may be produced for parts of Central Lincolnshire or in support of specific developments. The approach taken in these Design Codes should be informed by the National Model Design Code and where these codes have been adopted, developments will be expected to adhere to the Code."* *"Proposals for new buildings should incorporate the Design Principles for Efficient Buildings in Policy S6 at the centre of design."* *"All development proposals will be assessed against, and will be expected to meet the following*	Sections 13.5 and 13.7

Policy reference	Policy context	Section considered
	relevant design and amenity criteria. All development proposals will: *a) Create or contribute to a variety of complementary uses that meet the needs of the community.* *b) Be compatible with neighbouring land uses and not result in likely conflict with existing uses unless it can be satisfactorily demonstrated that both the ongoing use of the neighbouring site will not be compromised, and that the amenity of occupiers of the new development will be satisfactory with the ongoing normal use of the neighbouring site.* *c) Not result in adverse noise and vibration taking into account surrounding uses nor result in adverse impacts upon air quality from odour, fumes, smoke, dust and other sources."*	
East Lindsey local Plan Core Strategy adopted July 2018 (Ref 13.10)		
Strategic Policy 27 (SP27) – Renewable and Low Carbon Energy.	*"1. Large-scale renewable and low carbon energy development, development for the transmission and interconnection of electricity, and infrastructure required to support such development, will be supported where their individual or cumulative impact is, when weighed against the benefits, considered to be acceptable in relation to:* *a) residential amenity;* *c) the significance (including the setting) of a historic garden, park, battlefield, building, conservation area, archaeological site or other heritage asset;* *d) sites or features of biodiversity or geodiversity importance, or protected species;* *3. Development within or affecting the setting of the Lincolnshire Wolds Area of Outstanding Natural Beauty, and landscape areas defined as highly sensitive within the East Lindsey Landscape Character Assessment, will only be permitted in exceptional circumstances, where the development is in the public interest and considering the following:* *c) any detrimental effect on the environment, the landscape and recreational opportunities, and the extent to which that could be satisfactorily moderated.* *3.[sic] The presumption will be for connecting cables to be placed underground, or use made of existing or replacement infrastructure (of the same*	Sections 13.5 and 13.7

Policy reference	Policy context	Section considered
	size and scale) along existing routes to carry any additional base load cabling."	
Strategic Policy 28 (SP28) – Infrastructure and S106 Obligations.	*"1. Infrastructure schemes will be supported provided they are essential in the national interest; contribute to sustainable development and respect the distinctive character of the district.* *2. Infrastructure schemes should be accompanied by an impact assessment that shows how the proposal impacts on the landscape or local setting of the area, including individual and cumulative effects. It should identify what steps have been taken to minimize its effects and the alternative options that have been considered."*	Sections 13.5 and 13.7
Strategic Policy 27 (SP27) – Renewable and Low Carbon Energy.	*"1. Large-scale renewable and low carbon energy development, development for the transmission and interconnection of electricity, and infrastructure required to support such development, will be supported where their individual or cumulative impact is, when weighed against the benefits, considered to be acceptable in relation to:* *a) residential amenity;* *c) the significance (including the setting) of a historic garden, park, battlefield, building, conservation area, archaeological site or other heritage asset;* *d) sites or features of biodiversity or geodiversity importance, or protected species;* *3. Development within or affecting the setting of the Lincolnshire Wolds Area of Outstanding Natural Beauty, and landscape areas defined as highly sensitive within the East Lindsey Landscape Character Assessment, will only be permitted in exceptional circumstances, where the development is in the public interest and considering the following:* *c) any detrimental effect on the environment, the landscape and recreational opportunities, and the extent to which that could be satisfactorily moderated.* *3.[sic] The presumption will be for connecting cables to be placed underground, or use made of existing or replacement infrastructure (of the same size and scale) along existing routes to carry any additional base load cabling."*	Sections 13.5 and 13.7

Technical Guidance

13.2.4. A summary of the relevant technical guidance is given in **Table 13-4**.

Table 13-4: Technical guidance relevant to noise and vibration

Technical guidance document	Context
National Planning Practice Guidance (Ref 13.11).	Guidance relating to the processes and tools that can be used through the planning system in England. It includes guidance relating to how planning can manage potential noise effects in new development.
Institute of Environmental Management and Assessment (IEMA) (now known as Institute of Sustainability and Environmental Professionals (ISEP)), Guidelines for Environmental Noise Impact Assessment (Ref 13.12).	Presents guidelines on how the assessment of noise effects should be presented within the Environmental Impact Assessment (EIA) process. The IEMA guidelines cover aspects such as; scoping, baseline, prediction and example definitions of significance criteria.
British Standard (BS) 5228-1:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites. Noise' (herein referred as BS 5228-1) (Ref 13.13).	Provides guidance on the assessment and control of noise from construction sites, along with suggestions for the derivation of guideline levels for impact assessment.
BS 5228-2:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites. Vibration' (herein referred as BS 5228-2) (Ref 13.14).	Provides guidance on the assessment and control of vibration from construction sites, along with suggestions for the derivation of guideline vibration levels.
BS 7385-2:1993, Evaluation and measurement for vibration in buildings. Guide to damage levels from groundborne vibration' (herein referred as BS 7385-2) (Ref 13.15).	Guidance on the levels of ground borne vibration which could have the potential to lead to the damage of building structures.
Calculation of Road Traffic Noise (CRTN) 1988 (Ref 13.16).	Describes procedures for calculating noise from road traffic.
Design Manual for Roads and Bridges (DMRB) LA 111: Noise and Vibration (National Highways, 2020) (Ref 13.17).	Guidance document provides methodology for the assessment of noise from road traffic, particularly from new and altered roads. Also provides modifications to CRTN and a methodology for the assessment of noise and vibration from construction traffic.
BS 4142:2014+A1:2019, Methods for rating and assessing industrial and	The standard is used to rate and assess sound of an industrial nature including, but not limited to, assessing sound from proposed, new, modified or

Technical guidance document	Context
commercial sound (herein referred as BS 4142) (Ref 13.18).	additional sources of industrial sound, and sound at proposed new dwellings. It contains guidance on the monitoring and assessment of industrial and commercial sound sources (including fixed installations comprising mechanical and electrical plant and equipment) affecting sensitive receptors.
ISO 9613-2:2024 Acoustics Attenuation of sound during propagation outdoors Part 2: Engineering method for the prediction of sound pressure levels outdoors (Ref 13.19).	Defines a method for calculating the attenuation of sound during propagation outdoors in order to predict the levels of environmental noise at distances from a source.

13.3 Consultation and Engagement

13.3.1. General engagement in relation to the proposed development has been undertaken with the following key stakeholders:

- Lincolnshire County Council; and
- East Lindsey District Council.

13.3.2. In advance of the Preliminary Environmental Information Report (PEIR) and Environmental Statement (ES), further engagement specific to noise and vibration would be undertaken relating to the English Onshore Scheme:

13.4 Baseline conditions

Study Area

13.4.1. A number of specific study areas for the noise and vibration assessment will be defined as part of the PEIR / ES. These study areas will be in accordance with appropriate guidance, as set-out below and through consultation with relevant stakeholders as noted in **Section 13.3**.

Construction Noise (Including Haul Roads and Alford Bypass Construction Route)

13.4.2. For the assessment of construction noise, the study area would comprise the closest Noise Sensitive Receptors (NSRs) within 300 m from the proposed construction works associated with the English Onshore Scheme. This is based on guidance contained within BS 5228-1 (Ref 13.13).

Construction Vibration

13.4.3. The proposed study area for construction vibration, based on guidance BS 5228-2 (Ref 13.14) comprises vibration sensitive receptors (VSRs) within 100 m from the closest construction activity associated with the English Onshore Scheme with a potential to generate vibration impacts.

Construction Traffic

13.4.4. Noise from construction traffic on the existing road network would be assessed for each applicable road affected and defined based on the traffic data. The assessment would consider the change in Basic Noise Level (BNL), calculated in line with the methodology described in technical memorandum CRTN (Ref 13.16), with a subsequent assessment of the impacts on NSRs within 50 m of routes where potential significant effects are identified.

Operation

13.4.5. The proposed study area for operational static facility noise would include the converter station, and would consist of the closest NSRs to the facility to enable assessment in accordance with BS 4142 (Ref 13.18).

Data Gathering Methodology

13.4.6. The baseline assessment has been informed by a desk study which has drawn on the following information sources:

- 1:25,000 and 1:50,000 Ordnance Survey (OS) maps;
- Aerial photography, Google Earth and Google Maps Street View;
- Open source GIS data; and
- Noise Important Area (NIAs) data.

Current Baseline

13.4.7. This section sets out the noise and vibration information and data that would be relied upon to produce a detailed review of baseline conditions that will be contained within the PEIR and ES.

13.4.8. The English Onshore Scheme Scoping Boundary has been designed, as far as practicable, to avoid towns and large collections of noise and vibration sensitive receptors. A description of the option selection process is set out in the Corridor Preliminary Routeing and Substation Siting study (CPRSS) as described in **Chapter 4: English Onshore Scheme**.

13.4.9. The English Onshore Scheme Scoping Boundary does not particularly cross any large built-up settlements but does pass in proximity to a number of smaller settlements that fall within the English Onshore Scoping Boundary, as listed in **Table 13-5**.

Table 13-5: Settlements that fall within the scoping boundary

Settlement name	Local authority	Settlement type
Beesby	East Lindsey	Village
Saleby	East Lindsey	Village
Huttoft	East Lindsey	Village
Anderby	East Lindsey	Village
Alford	East Lindsey	Village

Settlement name	Local authority	Settlement type
Bilsby	East Lindsey	Village
Markby	East Lindsey	Village
Asserby	East Lindsey	Village
Thurlby	East Lindsey	Village
The Grange	East Lindsey	Village

13.4.10. The English Onshore Scheme study area identified herein, crosses over, or is close to, a number of main transport routes, including the following national and regional roads:

- A Roads (main trunk roads): A52 and A1104; and,
- B Roads (lower traffic densities than the main trunk roads): B1111, Sea Road and Roman Bank.

13.4.11. No railway lines are located within the English Onshore Scheme Scoping Boundary.

13.4.12. NIAs are determined via strategic noise maps and highlight the residential areas experiencing the highest 1% of noise levels from road and rail sources in England. There are no NIAs related to road traffic noise or railway noise within the English Onshore Scheme Scoping Boundary.

13.4.13. The noise climate is expected to vary along the English Onshore Scheme Scoping Boundary depending on the nature of the area. For example, close to noise sources, such as roads and in more built-up areas, ambient noise levels would be expected to be higher. Further away from road sources and in more rural areas, ambient and background noise levels would be expected to be lower.

13.4.14. Ecological and heritage sites that have the potential to be affected by noise and vibration would be considered within **Part 2, Chapter 6: Biodiversity** and **Part 2, Chapter 7: Cultural Heritage**.

13.4.15. It is assumed that the existing vibration levels within the English Onshore Scheme Scoping Boundary would be negligible when compared to construction vibration threshold values, which is likely to be the case even close to busy main roads. The assessment forming the ES will therefore consider potential construction vibration impacts against threshold values assuming no significant existing vibration sources are present.

Future Baseline

13.4.16. In the absence of the English Onshore Scheme, it is expected that road traffic noise will steadily increase due to the natural growth in road traffic flows over time.

13.4.17. With regard to the modelling of traffic, the future baseline will also take into account traffic growth as a result of new development based on growth factors from the Department for Transport models. Ongoing engagement with local planning authorities will also identify any potential development which could also contribute to increases in future baseline ambient noise levels and these would be accounted for in the assessments as and where appropriate.

13.4.18. It is recognised that there are a number of other proposed and committed developments within the surrounding area that could alter the future baseline in the absence of the project. The potential for cumulative effects will be considered later in the EIA process according to the approach outlined within **Part 4, Chapter 30: Cumulative Effects.**

13.5 Design and Control Measures

Design Phase

13.5.1. A range of standard design measures for the English Onshore Scheme are likely to be adopted in order to reduce noise and vibration effects throughout the duration of the operational phase, these measures will be inherent in the evolving design of the English Onshore Scheme:

- Undergrounding of High Voltage Alternating Current (HVAC) and High Voltage Direct Current (HVDC) cables:
  - Undergrounding of the cables is considered to be a significant mitigation for operational electricity cable noise. The fact that the cables would not be exposed or overhead on pylons effectively minimises the occurrence of audible noise and tones from all types of cable and fittings, including insulators.
- Converter station – Noise Control Measures:
  - The proposed new converter station would include any required noise mitigation measures by design. This may include plant selection, siting, screening and enclosure (as appropriate).
- Converter station – Vibration Control Measures:
  - Plant with moving parts, such as cooling equipment and transformers, where appropriate would be mounted on suitable anti-vibration mounts to protect the plant from potential vibration impacts and also to attenuate vibration generated by the plant.

Construction Phase

13.5.2. A range of standard measures for the English Onshore Scheme are likely to be adopted throughout the duration of the construction phase. Outline measures relevant to noise and vibration would be outlined in the Outline Construction Environmental Management Plan (CEMP), prepared to accompany the ES; these will include but are not limited to:

- Measures to manage dust, waste, water, noise, vibration and soil during construction. The contractor(s) shall undertake regular site inspections to check conformance to the CEMP (developed in accordance with the Outline CEMP) and other Management Plans.
- Suitably experienced Environmental Manager(s) will be appointed for the duration of the construction phase. In addition, qualified and experienced Environmental Clerk of Works will be available during the construction phase to advise, supervise and report on the delivery of the mitigation methods and controls in the CEMP (developed in accordance with the Outline CEMP).

- Construction workers will undergo training to increase their awareness of environmental issues as applicable to their role on the English Onshore Scheme. Topics will include but not be limited to:
  - Location and protection of sensitive environmental sites and features;
  - Adherence to protected environmental areas around sensitive features;
  - Working hours, and noise and vibration reduction measures; and
  - Agreed traffic routes and access points.
- Any activity carried out or equipment located within a construction compound that may produce a noticeable noise will be located as far as practicable away from sensitive receptors.
- Plant and vehicles will conform to relevant applicable standards for the vehicle type. Vehicles will be correctly maintained and operated in accordance with manufacturer's recommendations and in a responsible manner. All plant and vehicles will be required to switch off their engines when not in use and when it is safe to do so.
- Materials and equipment will not be moved or handled unnecessarily.
- Contractors will be required to follow good construction practices (referred to as best practicable means (BPM)) as outlined in BS 5228-1 (Ref 13.13) and BS 5228-2 (Ref 13.14) to control noise and vibration respectively.
- Best Practicable Means measures will be identified within the Outline CEMP and may include housing continuous noisy plant in acoustic enclosures, siting semi-static equipment as far as reasonably practicable away from occupied buildings and fitting equipment with suitable enclosures or screening.
- In certain instances where construction noise or vibration may cause a significant adverse effect at nearby NSRs, applications for prior consent under Section 61 of the Control of Pollution Act 1974 may be submitted to the relevant local authority to ensure that BPM are applied to control noise and vibration. If required, this will be clearly stated in the ES and Outline CEMP.

13.6 Scope of the Assessment

Potential sensitive receptors

13.6.1. The NSRs are determined based on property type and usage. The sensitivity of NSRs is factored into the assessment criteria for noise and vibration impacts, with all considered receptors carrying the same level of sensitivity.

13.6.2. Sensitive receptors are defined as below, drawing from the guidance of DMRB LA 111 (Ref 13.17) relative to the setting of sensitive receptors:

- Residential dwellings;
- Hotels and guest houses;
- Schools and education premises;
- Hospitals and healthcare facilities;

- Care homes;
- Places of worship; and
- Community facilities.

13.6.3. Areas primarily used for leisure activities, public rights of way, sports facilities, sites of historic or cultural importance, sites of ecological importance, and parks are not covered within the noise and vibration chapter but are considered in **Part 2, Chapter 6: Biodiversity, Part 2, Chapter 7: Cultural Heritage, Part 2, Chapter 8 Landscape and Visual Amenity** and **Part 2, Chapter 16 Health and Wellbeing**.

13.6.4. Industrial and commercial receptors would not generally be considered as noise and vibration sensitive receptors within the assessment unless agreed otherwise during consultation with the local planning authorities, as part of the consultation and engagement, for identified reasons.

Construction Phase - Noise Impacts

13.6.5. Likely construction activities are outlined in **Part 1, Chapter 4 English Onshore Scheme**. The activities with the potential to cause noise impacts include:

- Construction and installation of underground HVAC and HVDC cables, including the excavation and backfill of trenches and earthwork operations;
- Construction of trenchless crossings, including at the selected landfall site;
- Fixed plant areas including the converter station, as required; and
- Construction related traffic movements.

Construction Phase - Vibration Impacts

13.6.6. Likely construction activities are outlined in **Part 1, Chapter 4 English Onshore Scheme**. The activities with the potential to cause vibration impacts include:

- Piling;
- Vibratory compaction;
- General construction vibration; and
- Construction related traffic movements.

Operational Phase - Noise Impacts

13.6.7. The likely operational activities are outlined in **Part 1, Chapter 4 English Onshore Scheme**. The activities with the potential to cause noise impacts include:

- HVDC cables at the landfall location;
- Up to 9 km of terrestrial HVDC and 3 km of HVAC underground cables; and
- One new converter station in a location to be confirmed at the western end of the English Onshore Scheme in either of the converter station siting zones identified as CS05 or CS06 as detailed on **Figure 1-7**.

13.6.8. Cumulative effects will be considered of the English Onshore Scheme, especially the converter station, with the noise generated by the Lincolnshire Connection Substation B (LCS-B) proposed within the scope of the NGET Grimsby to Walpole Project, in East Lindsey.

Operational Phase - Vibration Impacts

13.6.9. The likely operational activities are outlined in **Part 1, Chapter 4 English Onshore Scheme**. The activities with the potential to cause vibration impacts comprise vibration associated with the plant and equipment required in the converter station only.

Operational Phase (Maintenance) - Noise Impacts

13.6.10. The likely maintenance activities are outlined in **Chapter 4 English Onshore Scheme**. The activities with the potential to cause noise impacts include:

- Underground HVAC and HVDC cables – activities would be limited to non-intrusive inspections.
- Converter station – activities would likely include vehicular transport of workers and new materials / equipment to the site. Faulty and old equipment would be removed.

Likely Significant Effects

13.6.11. **Table 13-6** outlines the likely significant effects which have been scoped into and out of the noise and vibration assessment.

Table 13-6: Aspects of the noise and vibration assessment scoped in and scoped out

Impact	Receptor	Potential for significant effects	Proposed to be scoped in / out
Construction			
Construction noise resulting from the installation of HVAC / HVDC cables and trenchless crossings. Construction noise resulting from the construction of Static Plant facilities. Construction noise resulting from the construction and usage of the haul road bypassing to the north of Alford.	Receptors located within 300 m of areas of proposed construction activity.	**Yes** – There is the potential for significant effects in the absence of further primary (embedded) environmental mitigation measures or additional mitigation measures.	**Scoped in**
Noise generated by construction traffic on existing roads in the area.	Receptors located within 50 m of roads identified as construction traffic routes (not including motorways, where it is considered that construction traffic will not significantly alter flows) with the potential for an increase in road traffic noise of 1 dB(A) or more as a result of the addition of construction traffic to existing traffic levels.	Yes	**Scoped in**
Construction vibration generated from piling and ground stabilisation.	Receptors located within 100 m of locations where piling activities are expected to occur.	Yes	**Scoped in**
General construction vibration resulting from construction activities other than piling and ground stabilisation, including on site Haul Roads.	Receptors located within 100 m of locations where construction activities are expected to occur.	No Transport and Road Research Laboratory Supplementary Report 328 '*Ground vibrations caused by road construction activities'* (Ref 13.20),	**Scoped out**

Impact	Receptor	Potential for significant effects	Proposed to be scoped in / out
		concluded that, '*at distances greater than 20m, the vibration levels measured were below the level of human perception because of attenuation in the ground and that it is unlikely that people would be disturbed by vibration from general construction activities at distances of 20 m or more.'*	
Vibration associated with construction traffic on existing highways.	Receptors located within 10 m of roads identified as construction traffic routes (not including motorways, where it is considered that construction traffic will not significantly alter flows).	No Vibration from traffic is caused by the road surface. Assuming the road surfaces used by construction traffic are free from irregularities, significant effects would not be expected.	**Scoped out**
Operation and Maintenance			
Noise associated with the static plant from the proposed converter station.	The closest sensitive receptors from the proposed converter stations, substations and potential direct current switching station.	Yes	**Scoped in**
Noise associated with operational traffic from the proposed converter station.	The closest sensitive receptors to the proposed access route(s).	No The converter station is not envisaged to generate levels of road traffic noise that would change the current levels of	**Scoped out**

Impact	Receptor	Potential for significant effects	Proposed to be scoped in / out
		road traffic noise in the area by greater than 1dB(A).	
Noise associated with the operation of the underground Cables.	The closest sensitive receptors from the proposed cable route.	No Undergrounding of cables is considered to significantly mitigate operational noise from Cable surfaces to the point where they would not be audible above ground. As such significant effects would not be expected.	**Scoped out**
Vibration associated with the static plant associated with the converter station.	The closest sensitive receptors from the proposed converter station.	No All plant with moving parts would be mounted on suitable anti-vibration mounts and vibration eliminated at source.	**Scoped out**
Noise and vibration associated with future maintenance of the underground HVAC and HVDC cables, and converter station.	The closest sensitive receptors from the proposed converter station and underground cable route.	No Maintenance activities are likely to be infrequent, localised, and short term. Activities would follow standard measures to reduce noise and vibration and therefore significant effects are not expected.	**Scoped out**

13.6.12. Once the alignment of the cable and location of the static facilities are concluded there is a potential that impacts currently scoped in (as detailed in **Table 13-6**) could be further scoped out in consultation with the local planning authorities as a result of the lack of a suitable impact pathways.

13.7 Assessment Methodology

Further Data to be Gathered / Processed

13.7.1. In addition to the data sources listed in **Section 13.4**, assessment within the PEIR and ES would be supported by the following additional information:

- Extent and nature of construction phase activities potentially leading to noise emissions;
- Traffic data for the construction, operation and maintenance phases;
- Extent and nature of static plant facilities associated with the operation of the English Onshore Scheme; and
- Baseline noise surveys (as described below).

Baseline Noise Surveys

13.7.2. Baseline noise surveys would be required around the proposed at the converter station. It is not proposed to undertake baseline noise surveys along the proposed HVDC and HVAC cable routes.

13.7.3. Baseline noise surveys would be conducted in accordance with the methodology described in BS 7445-1:2003 Description and measurement of environmental noise. Guide to quantities and procedures (BS 7445) (Ref 13.21).

13.7.4. The sound level meters would measure a range of parameters including the following:

- $L_{Aeq, T}$ – The A-weighted equivalent continuous sound pressure level over the measurement period T, representative of the 'average' sound pressure level over a given period, in this case 15 minutes.
- $L_{A10, T}$ – The L_{A10} is defined as the noise level that is exceeded for 10% of the measurement period and is usually regarded as a descriptor of road traffic noise.
- $L_{A90, T}$ – The L_{A90} is defined as the noise level that is exceeded for 90% of the measurement period and is usually regarded as a descriptor of the background noise level.
- $L_{A,max}$ – The $L_{A,max}$ is the maximum A-weighted noise level during the sample period, measured using a fast time weighting.

13.7.5. The measurement periods and durations would be consulted on with the local planning authorities and would be undertaken by methods including:

- Unattended long-term surveys for up to seven days; and
- Attended surveys where equipment safety concerns arise for key weekday and weekend time periods.

13.7.6. Unattended surveys would be subject to the safety of equipment and land access provisions. All survey durations and locations would be consulted with the local planning authority to present locations, durations and specifics of the surveys in advance.

13.7.7. Weather conditions would be monitored during the survey through the use of long-term meteorological stations linked to sound level meter equipment, or through handheld anemometers and subjective description of the prevailing weather conditions.

Construction Phase - Noise Assessment

13.7.8. Construction noise impacts would be assessed in accordance with BS 5228-1 (Ref 13.13).

13.7.9. Construction noise levels would be calculated within the study area in accordance with the methodology described in Annex F of BS 5228-1 relating to threshold Categories linked to baseline noise climates. The predicted construction noise levels at NSRs would be compared against the lower noise thresholds (Category A) as detailed in Section E.3.2 of BS 5228-1 (the 'ABC' method) as a result of baseline assumptions in a rural setting. The Category A construction noise thresholds represent the lowest assessment criteria (typically used to assess impacts in rural areas) and are proposed to be used throughout the English Onshore Scheme as a worst-case unless there is a justification for a higher threshold Categories B or C to be set (e.g., via noise survey or Defra noise mapping data) at specific locations.

13.7.10. The LOAEL and the SOAEL (as defined in **Table 13-2**) would be established in accordance with **Table 13-7**.

Table 13-7: Construction noise LOAELs and SOAELs at residential receptors

Time period	LOAEL	SOAEL
Weekdays 07:00 to 19:00, and Saturdays 07:00 to 13:00.	Baseline noise levels $L_{Aeq, T}$	75dB $L_{Aeq, T}$ *(1) *(2)
Weekdays 19:00 to 23:00, Saturdays 13:00 to 23:00, and Sundays 07:00 to 23:00.	Baseline noise levels $L_{Aeq, T}$	65dB $L_{Aeq, T}$ *(1) *(2)
Night-time 23:00 to 07:00.	Baseline noise levels $L_{Aeq, T}$	55dB $L_{Aeq, T}$ *(1) *(2)

Notes:

*(1) Based upon lowest eligibility for noise insulation as defined in Table E.2 of BS5228-1:2009 (+A1 2014). Additional note to noise insulation; in noisy environments an offer of insulation is made where a noise level 5 dB or more above the existing pre-construction ambient noise level for the corresponding times of day is measured; hence the threshold for SOAEL is set relative to the higher of these values and as such could increase in noisy environments with justification.

*(2) If the ambient noise level exceeds the SOAEL values given in the table (i.e. the ambient noise level is higher than the above values), then a potential significant effect is indicated if the total $L_{Aeq, T}$ noise level for the period increases by more than 3 dB due to site noise.

13.7.11. Based on the criteria presented in **Table 13-7**, a semantic magnitude of impact scale has been defined relative to both environment, and health and quality of life impacts. As such, the following impact magnitudes are applicable:

- **Negligible:** Below LOAEL;

- **Minor:** Above or equal to LOAEL but below appropriate BS 5228-1 Category;
- **Moderate:** Above or equal to appropriate BS 5228-1 Category but below an SOAEL; and
- **Major:** Above or equal to an SOAEL.

Construction Phase - Traffic Assessment

13.7.12. The LOAEL and the SOAEL for the construction traffic noise assessment would be established in accordance with **Table 13-8**.

Table 13-8: Construction traffic noise LOAELs and SOAELs

Time period	Adverse effect level	$L_{night, outside}$ noise level (dB)	L_{A10} noise level (dB)
Day	LOAEL	n/a	55dB $L_{A10, 18 façade}$
	SOAEL	n/a	68dB $L_{A10, 18hr facade}$
Night	LOAEL	40dB $L_{night, outside}$ (free field)	n/a
	SOAEL	55dB $L_{night, outside}$ (free field)	n/a

13.7.13. Noise from construction traffic on the public highway would be calculated in accordance with CRTN and assessed against the criteria detailed in DMRB LA 111: Noise and vibration (Ref 13.17).

13.7.14. The Baseline noise levels from roads within the construction traffic study area would be calculated in accordance with CRTN for the ‘do-nothing’ and ‘do something’ scenarios in the construction year. The calculated baseline noise level values would be compared to determine the magnitude of the impact in line with the semantic scale below:

- **Negligible:** Less than 1.0dB change in road traffic noise;
- **Minor:** Greater than or equal to a 1.0dB, but less than a 3.0dB, change in road traffic noise;
- **Moderate:** Greater than or equal to a 3.0dB, but less than a 5.0dB, change in road traffic noise; and
- **Major:** Greater than or equal to a 5.0dB change in road traffic noise.

Significance of Effects – Construction Noise and Traffic Noise

13.7.15. Significant effects for construction are then defined in accordance with DMRB LA 111 (Ref 13.17) on the following grounds.

“Construction noise and construction traffic noise shall constitute a significant effect where it is determined that a major or moderate magnitude of impact will occur for a duration exceeding:

- 10 or more days or nights in any 15 consecutive days or nights; or,

- a total number of days exceeding 40 in any six consecutive months."

Construction Phase – Vibration Assessment

13.7.16. Construction vibration levels would be calculated and assessed in accordance with the methodologies described in BS5228-2 (Ref 13.14) relating to piling and ground stabilisation. No vibration baseline study is proposed within the ES and construction vibration levels would be compared against fixed assessment criteria detailed in BS5228-2.

13.7.17. Vibration levels from piling and ground stabilisation would be calculated in accordance with the methodology described in Annex E of BS 5228-2. Construction vibration effect threshold levels, including applicable LOAEL and SOAEL. These are presented in **Table 13-9**.

Table 13-9: Construction vibration effect magnitudes at residential receptors

Vibration level mm/s PPV (Peak Particle Velocity)	Effect	Observed adverse effect level
<0.3 mm/s	Vibration might be just perceptible in the most sensitive situations for most vibration frequencies associated with construction. At lower frequencies, people are less sensitive to vibration.	n/a
≥0.3 to <1.0 mm/s	Vibration might be perceptible in residential environments.	
≥1.0 to <10 mm/s	It is likely that vibration of this level in residential environments will cause complaint but can be tolerated if prior warning and explanation has been given to residents.	LOAEL
≥10 mm/s	Vibration is likely to be intolerable for any more than a brief exposure to this level in most building environments.	SOAEL

13.7.18. Based on the above a semantic magnitude of impact scale has been defined relative to environment, and health and quality of life impacts. As such, the following impact magnitudes are applicable with regard to piling and ground stabilisation ground-borne vibration:

- **Negligible:** <0.3 mm/s (as defined in **Table 13-9**);
- **Minor:** ≥0.3 mm/s and <1.0 mm/s (**Table 13-9**);
- **Moderate:** ≥1.0 mm/s and <10.0 mm/s (**Table 13-9**); and
- **Major:** ≥10.0 mm/s (**Table 13-9**).

13.7.19. Significant effects are then defined in accordance with DMRB LA 111 on the following grounds:

'Construction vibration shall constitute a significant effect where it is determined that a major or moderate magnitude of impact will occur for a duration exceeding:

- 10 or more days or nights in any 15 consecutive days or nights;
- a total number of days exceeding 40 in any six consecutive months.'

Operational Phase – Noise Assessment (static plant)

13.7.20. BS 4142 (Ref 13.18) provides a methodology and criteria for assessing new or existing industrial sound sources by comparing the operational sound (rating level) at the location of a sensitive receptor, with the background sound levels that are currently experienced without the English Onshore Scheme.

13.7.21. The rating level is defined as the specific sound level, with the addition of character corrections to consider certain acoustic features that could potentially increase the significance of impact. A penalty will be applied to the specific sound level if a tone, impulsive or other characteristic occurs or is expected to be present for new or modified sound sources.

13.7.22. The assessment methodology outlined in BS 4142 indicates that the greater the difference of the rating level in comparison with the background sound level (L_{A90}) the greater the significance of the impact, as set out in **Table 13-10**.

Table 13-10: Operation vibration effect magnitudes at residential receptors

Effect	Observed adverse effect level
≤ L_{A90} -0dB Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.	n/a
> L_{A90} -0dB and ≤ L_{A90} +5dB The lower the rating level is, relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact.	LOAEL
> L_{A90} +5dB and ≤ L_{A90} +10dB A difference of around + 5 dB is likely to be an indication of an adverse impact, depending on the context.	
> L_{A90} +10dB A difference of +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.	SOAEL

13.7.23. Based on **Table 13-10**, a semantic magnitude of impact scale has been defined relative to environment, and health and quality of life impacts. As such, the following impact magnitudes are applicable with regard to operational static plant noise:

- **Negligible:** < L_{A90} -0dB (as defined in **Table 13-10**);
- **Minor:** > L_{A90} -0dB and ≤ L_{A90} +5dB (**Table 13-10**);
- **Moderate:** > L_{A90} +5dB and ≤ L_{A90} +10dB (**Table 13-10**); and
- **Major:** > L_{A90} +10dB (**Table 13-10**).

13.7.24. For the purposes of the assessment in line with UK Policy on noise a Significant Adverse effect would be defined as a Moderate or Major magnitude of impact.

13.8 Assessment Limitations and Assumptions

13.8.1. The following limitations and assumptions have been identified that will form the basis of the ES:

- Assumptions have been made regarding the condition of the roads (including on site haul roads) when assessing the impact of construction traffic related vibration. Vibration is caused by irregularities in the road surface and for the purposes of the scope, there is an assumption that the roads used by construction traffic would be free from significant irregularities.
- The assumption is made that, due to the rural setting of the proposed developments, baseline noise monitoring will not be conducted for undergrounding the HVAC and HVDC cables. It is also assumed that the lowest threshold criteria from BS5228-1 would apply for construction noise unless local factors suggest otherwise. This ensures a robust evaluation, as limits below the lowest threshold will not be set, presenting a worst-case assessment regarding the potential for significant effects.
- Baseline noise surveys are necessary to determine baseline noise levels at NSR near fixed plant installations. The survey data, along with surveyor observations, form the basis of operational noise assessments for static plant facilities. Monitoring methods will be adapted based on external factors like land access and equipment safety, subject to discussion and agreement with local planning authorities during project advancement.

13.9 Bibliography

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14. Air Quality

14.1 Introduction

14.1.1. The air quality assessment will consider the potentially significant effects on sensitive human and ecological receptors which that may arise from the construction and operation of the English Onshore Scheme.

14.1.2. This chapter of the Scoping Report sets out the relevant legislation, planning policy context and technical guidance used to inform the scope of the assessment and summarises any consultation and engagement in relation to air quality undertaken to date. It provides an overview of the baseline conditions relevant to air quality within and in the vicinity of the English Onshore Scheme Scoping Boundary, the measures which will be incorporated into the English Onshore Scheme to mitigate air quality effects, the likely significant effects to be considered within the assessment, and how these likely significant effects will be assessed for the purpose of an Environmental Impact Assessment (EIA).

14.1.3. This chapter should be read in conjunction and considered alongside the following chapters found in Volume 1:

- **Part 2, Chapter 6: Biodiversity** which summarises the likelihood of significant effects on sensitive ecological receptors due to dust soiling and impacts on local air quality due to construction of the Onshore Scoping Scheme
- **Part 2, Chapter 12: Traffic and Transport** which informs the assessment of construction vehicle movements and traffic routing considered in this assessment
- **Part 2, Chapter 16: Health and Wellbeing** which summarises human health impacts due to the Onshore Scoping Scheme including those due to dust soiling and changes in local air quality.
- **Part 3, Chapter 21: Intertidal and Offshore Ornithology** which summarises the likelihood of significant effects on sensitive ornithological receptors in the intertidal area due to dust soiling and impacts on local air quality due to construction of the Onshore Scoping Scheme.

14.1.4. This chapter is supported by the following figures found in Volume 3:

- **Figure 14-1: Air Quality Constraints**

14.1.5. The Scoping Report has identified the following potential air quality impact pathways based on the current English Onshore Scheme proposal, and provides an evaluation of which of these aspects are scoped in for further assessment at Environmental Statement (ES) stage, or which are scoped out:

- Construction phase dust impacts on human and ecological receptors;
- Construction phase vehicle emissions on human and ecological receptors;
- Construction phase emissions from non-road mobile machinery (NRMM) on human and ecological receptors;
- Operational phase vehicle emissions on human and ecological receptors; and

- Operational phase emergency generator emissions on human and ecological receptors.

14.2 Relevant Legislation, Planning Policy and Technical Guidance

14.2.1. This section identifies the relevant legislation, national and local policy, and guidance which has informed the scope of the air quality assessment.

Legislation

14.2.2. A summary of the key legislation considered in, but not limited to, the scope of air quality effects is outlined in **Table 14-1**. The legislation presented in **Table 14-1** underpins and/or is considered in the following sections of this chapter:

- **Section 14.4**
- **Section 14.6**
- **Section 14.7**

Table 14-1: Legislation relevant to air quality

Legislation	Legislative context
Directive 2008/50/EC on Ambient Air Quality and Cleaner Air for Europe (Ref 14.1).	This sets legally binding limits for concentrations of specific air pollutants. It merges, consolidates and replaces the majority of previous EU air quality legislation, and incorporates the Fourth Daughter Directive. While the UK has now left the EU, the Air Quality Standards Regulations (2010) (as amended) (Ref 14.2) which implement the Directive still apply in UK legislation as 'retained EU law'.
The Air Quality (Amendment of Domestic Regulations) (EU Exit) Regulations (2019) (Ref 14.3)	These regulations amend the Air Quality Standards Regulations (2010) to reflect the UK's departure from the EU.
The Air Quality (England) Regulations (2000) (Ref 14.4)	The Air Quality (England) Regulations (2000) set national air quality objective levels for local authorities to meet in England.
Air Quality (England) (Amendment) Regulations (2002) (Ref 14.5)	The Air Quality (England) (Amendment) Regulations (2002) set national air quality objective levels for local authorities to meet in England.
Part IV of the Environment Act (1995) (Ref 14.6)	The Environment Act (1995) contains provisions for protecting air quality in the UK and for local air quality management. It requires the UK Government to produce a national Air Quality Strategy (AQS) which contains standards, objectives and measures for improving ambient air quality, and defines Local Air Quality Management (LAQM). It introduced an obligation on local authorities to issue, where the air quality standards are not being met, an

Legislation	Legislative context
	order designating an Air Quality Management Area (AQMA).
Environmental Protection Act (EPA) (1990) (Ref 14.7)	Part III of the Environmental Protection Act (1990) provides legislation around statutory nuisance, which applies to dust.
Environment (Miscellaneous Amendments) (EU Exit) Regulations (2020) (Ref 14.8)	Regulation 2 of the Environment (Miscellaneous Amendments) (EU Exit) Regulations (2020) updated the Air Quality Standards Regulations (2010) to include a Limit Value (LV) of 20 µg/m^3 for $PM_{2.5}$[8] from 2020. The Limit Values for nitrogen dioxide (NO_2) and PM_{10}[9] remained the same concentration levels as the relevant AQS objectives.
Environment Act (2021) (Ref 14.9)	Creates the legislative framework by which statutory air quality targets are set by reference to plans such as the Environmental Improvement Plan (2024) (Ref 14.10).
The Environmental Targets (Fine Particulate Matter) (England) Regulations (2023) (Ref 14.11)	The legislation sets out targets to reduce concentrations of $PM_{2.5}$ to be equal to or less than 10 µg/m^3 by 2040 (interim target of 12 µg/m^3 by 2028). It also states that exposure to $PM_{2.5}$ must be reduced by at least 35% by 2040.

Planning Policy

14.2.3. A summary of the planning policies at both a national and local level relevant to the scope of air quality effects is outlined in **Table 14-2** and **Table 14-3**.

14.2.4. The National Policy Statement for Electricity Networks Infrastructure (EN-5) (Ref 14.12) is not included in **Table 14-2** below as it does not give regard to air quality considerations.

Table 14-2: National planning policy relevant to air quality

Policy Reference	Policy Context
Overarching National Policy Statement for Energy (EN-1) (2024) (Ref 14.13)	*Paragraph 5.2.2 to paragraph 5.2.7:* These paragraphs prompt the consideration of environmental assessment levels (LVs and Objectives), human and ecological receptors as a means of informing any required air quality assessment.
	Paragraph 5.2.9 outlines that: *"The ES should describe:* • *existing air quality concentrations and the relative change in air quality from existing levels;* • *any significant air quality effects, mitigation action taken and any residual effects, distinguishing between the project*

[8] Particulate Matter less than 2.5 microns (µm) in aerodynamic diameter

[9] Particulate Matter less than 10 microns (µm) in aerodynamic diameter

Policy Reference	Policy Context
	stages and taking account of any significant emissions from any road traffic generated by the project; • *the predicted absolute emissions, concentration change and absolute concentrations as a result of the proposed project, after mitigation methods have been applied; and* • *any potential eutrophication impacts".* Should the screening of traffic data for any of the proposed project stages indicate that detailed assessment is required, then dispersion modelling would be undertaken as part of the air quality assessment to determine the impact of pollutant concentrations resulting from the proposed development at relevant sensitive human and ecological receptors.
	Paragraph 5.2.12 Should the proposed project be expected to lead to a breach of any relevant statutory air quality limits, objectives or targets, or affect the ability of a non-compliant area to achieve compliance, relevant mitigation to reduce significant adverse environmental effects will be proposed.
	Paragraph 5.2.16 This paragraph explains that with regards to decision making, the Secretary of State (SoS) would give air quality considerations substantial weight where a project leads to a new breach of LVs and/or statutory air quality objectives, or where it makes an existing breach worse. It also adds that air quality considerations will be important where substantial increases in pollutant concentrations below these thresholds. Therefore, changes in pollutant concentrations in AQMAs and on Department for Environment, Food & Rural Affairs Pollution Climate Mapping (PCM) links (as a means of assessing compliance risk with LVs) are expected to be key considerations for the proposed project.
	Paragraphs 5.2.16 to 5.2.19 These sections state that air quality would be given substantial weight if there are adverse air quality effects on sensitive human and ecological receptors as a result of the project. If the applicant cannot justify the location or provide a suitable plan of mitigation, the SoS would refuse consent.
	Paragraphs 5.2.19 This paragraph re-emphasises that air quality environmental assessment levels (statutory LVs and Objectives) must be taken into accountant in decision making, but that consent would be refused if the construction and/or operational phase of the proposed project led to non-compliance with a LV.

Policy Reference	Policy Context
Draft Overarching National Policy Statement for Energy (EN-1) (April 2025) (Ref 14.14)	Relevant paragraph in extant EN-1: 5.2.2 to 5.2.7. No change in Paragraph number.
	Relevant paragraph in extant EN-1: Paragraph 5.2.8 Change in Paragraph number 5.2.8 to 5.2.9.
	Relevant paragraph in extant EN-1: Paragraph 5.2.10 Change in Paragraph number 5.2.10 to 5.2.12.
	Relevant paragraph in extant EN-1: Paragraph 5.2.14 Change in Paragraph number 5.2.10 to 5.2.16.
	Relevant paragraph in extant EN-1: Paragraphs 5.2.15 to 5.2.16 Change in Paragraphs number from 5.2.15-5.2.16 to 5.2.17-5.2.18.
	Relevant paragraph in extant EN-1: Paragraphs 5.2.17 Change in Paragraph number 5.2.17 to 5.2.19.
National Planning Policy Framework (NPPF) (2024) (Ref 14.15)	Paragraph 199 of the NPPF states that decisions and policies should regard LV or National Objectives and take into account AQMAs and Clean Air Zones as well as cumulative impacts. Mitigation should be identified.
Environmental Improvement Plan (2023) (Ref 14.16)	Details government actions to reduce air pollution over next 25 years to achieve 'clean air' as a means of complying with concentration and emissions reduction targets, such as those facilitated by the Environment Act (2021). The delivery plan focusses on reducing domestic emissions, empowering local authorities to deliver clean air, maintaining and improving the regulatory framework for industrial emissions, reducing agricultural ammonia emissions and reducing emissions from transport.

Table 14-3: Local Planning Policy relevant to Air Quality

Policy Reference	Policy Context
East Lindsey District Council (ELDC): East Lindsey Local Plan Core Strategy, (2018) (Adopted 2018) (Ref 14.17)	SP24: Biodiversity and Geodiversity Policy SP24 outlines that developments can impact upon sites protected for their biodiversity importance, this includes air pollution caused by increased traffic movements and operational needs of a given development.

Technical Guidance

14.2.5. A summary of the relevant technical guidance, specific to the air quality assessment, that has informed this Scoping Report, and will inform the assessment within the ES, is given in **Table 14-4**.

Table 14-4: Technical guidance relevant to air quality

Technical Guidance Document	Context	Section Considered
Ministry of Housing Communities and Local Government (2019). National Planning Policy Guidance (NPPG) (Ref 14.16)	Provides guidance on the relevant principals of air quality assessment; including the regulatory framework, the role of plan making, available air quality information, when assessment is required, what potential air quality issues require consideration, the level of detail required, and mitigation. The assessment follows the guidance which contains recommendations which may be relevant in undertaking air quality assessments to inform compliance with the 2024 National Planning Policy Framework and the 2024 National Policy Statement for Energy (EN-1).	**Section 14.4** **Section 14.6** **Section 14.7**
Defra $PM_{2.5}$ Targets: Interim Planning Guidance (2024) (Ref 14.17)	Defra is developing guidance for applicants and Planning Authorities in England to demonstrate that they have appropriately considered the $PM_{2.5}$ targets when making planning applications and planning decisions. In the meantime, the following interim guidance is provided: 1. How has exposure to $PM_{2.5}$ been considered when selecting the development site? Applicants are advised to consider the following in their application: • Site proximity to people (particularly large populations and/or vulnerable groups, e.g. schools, hospitals, care homes, areas of deprivation) and the impact of the development on these; and • Exposure and emissions during both construction and in-use. 2. What actions and/or mitigations have been considered to reduce $PM_{2.5}$ exposure at nearby receptors (houses, hospitals, schools etc.) and to reduce emissions of $PM_{2.5}$ and its precursors? Applicants are advised to explain why each measure was	**Section 14.5** **Section 14.7**

Technical Guidance Document	Context	Section Considered
	implemented, or why it was not proposed. Actions may include: • Site layout; • The development's design; • Technology used in the construction or installed for use in the development; and • Construction and future use of the development.	
The Institute of Air Quality Management (IAQM) (2024) Guidance on the assessment of dust from demolition and construction (Ref 14.18)	Provides a mechanism for the assessments to consider both the magnitude of emissions and sensitivity of an area to define the level of risk of dust soiling and human health impacts during the construction phase. Defining the construction dust risk levels allows proportionate mitigation measures to be adopted. This guidance is referred to hereafter as the '*IAQM construction dust guidance*'.	**Section 14.7**
IAQM (2017) Land-Use Planning & Development Control: Planning for Air Quality (Ref 14.19)	Applicable in assessing the effect of changes in exposure of members of the public resulting from developments. It provides guidance on how to decide whether an air quality assessment is required, how to undertake a suitable assessment of air quality impacts and whether these are to be considered significant or not, and how to identify whether additional mitigation is required. This guidance would be used to inform the assessment methodology for construction and operational phase vehicle emissions. This guidance is referred to hereafter as the '*IAQM development control guidance*'.	**Section 14.7**
IAQM (2020) A guide to the assessment of air quality impacts on designated nature conservation sites (Ref 14.20)	This document has been produced by the IAQM to assist its members in the assessment of the air quality impacts of development on designated nature conservation sites. It may also be useful for ecologists, who use the results of air quality assessments (AQAs) to evaluate the effects of air pollution on habitats and species, by increasing their understanding of the information provided by air quality specialists. This document focuses on air quality assessments in support of HRA, but it's principles can be used as the basis for	**Section 14.7**

Technical Guidance Document	Context	Section Considered
	assessing the air quality impact on national or local designated nature conservation sites. This guidance is referred to hereafter as the '*IAQM guidance on the assessment of ecological sites'*.	
Department for Environment, Food & Rural Affairs (2022) Local Air Quality Management Technical Guidance (LAQM.TG (22)) (Ref 14.21)	Provides best practice principles for the technical assessment of local air quality including the use of monitoring data, selection of receptors and verification procedure. LAQM.TG (22) also provides guidance for the application of Department for Environment, Food & Rural Affairs tools and resources used for the technical assessment of air quality.	**Section 14.7**
National Highways (2019) Design Manual for Roads and Bridges (DMRB) LA 105 Air Quality (Ref 14.22)	Provides the relevant traffic screening criteria (as cited in IAQM guidance on the assessment of ecological sites) to evaluate requirement for assessment of designated ecological sites and also provides methodology for any work informing a compliance risk assessment.	**Section 14.7**

Air Quality Criteria

14.2.6. The Government has established a set of air quality standards and objectives to protect human health. The 'standards' are set as concentrations below which effects are unlikely even in sensitive population groups, or below which risks to public health would be exceedingly small. They are based purely upon the scientific and medical evidence of the effects of an individual pollutant. The 'objectives' set out the extent to which the Government expects the standards to be achieved by a certain date.

14.2.7. Understanding these standards and objectives provides the requisite context for the proposed assessment work as the written technical guidance (which is considerate of the standards and objectives) provides the framework for establishing the effect of a project on air quality.

14.2.8. **Table 14-5** presents the Air Quality Strategy (AQS) objectives for the protection of human health which are applicable to this assessment and provide context to the guidance and baseline data reported.

14.2.9. The air quality objectives only apply where members of the public are likely to be regularly present for the averaging time of the objective (i.e., where people will be exposed to pollutants). As detailed in Defra LAQM (TG.22), the annual mean objectives apply to all locations where members of the public might be regularly exposed; these include building façades of residential properties, schools, hospitals, care homes.

14.2.10. The 24-hour mean objective applies to all locations where the annual mean objective would apply, together with hotels and gardens of residential properties. The one hour mean objective also applies at these locations as well as at any outdoor location where a member of the public might reasonably be expected to stay for one hour or more,

such as shopping streets, parks and sports grounds, as well as bus stations and railway stations that are not fully enclosed.

14.2.11. Owing to the nature of the Project, it is not expected that short term objectives would be at risk of exceedance. Defra LAQM TG.22 provides guidance on the circumstances where the annual mean concentration may be used as a proxy for identifying the likelihood of exceedances of the short-term objectives for NO_2 and PM_{10}. The guidance states that exceedances of the 1-hour mean objective are unlikely to occur where the annual mean concentration is less than 60 µg/m^3. For PM_{10}, it is calculated that the 24-hour objective is unlikely to be breached if the annual mean concentration is less than 32 µg/m^3.

14.2.12. EU Directive 2008/50/EC (The European Parliament and the Council of the European Union, 2008) (sets LVs for NO_2, PM_{10} and $PM_{2.5}$, and is implemented in UK law through the Air Quality Standards Regulations (2010). The LVs for NO_2 are the same numerical concentrations as the UK objectives, but achievement of these values is a national obligation rather than a local one. In the UK, only monitoring and modelling carried out by UK Central Government meets the specification required to assess compliance with the LVs.

Table 14-5: Air quality criteria for relevant pollutants

Pollutant	Concentration (µg/m^3)	Averaging period
NO_2	40	Annual mean
	200	1-hour mean; not to be exceeded more than 18 times a year
PM_{10}	40	Annual mean
	50	24-hour mean; not to be exceeded more than 35 times a year
$PM_{2.5}$	20	Annual mean
$PM_{2.5}$ (Population Exposure Reduction Target)	N/A – 35% reduction in population exposure compared with average population exposure baseline period (2016-2018)	Long term population exposure reduction by 2040
$PM_{2.5}$ (Annual Mean Concentration Target)	10 – not to be exceeded at any relevant monitoring station	Annual mean – achieved by 2040
$PM_{2.5}$ (Annual Mean Concentration Interim Target)	12 – not to be exceeded at any relevant monitoring station	Annual mean interim target – to be achieved by 2028

14.3 Consultation and Engagement

14.3.1. In respect of air quality key consultees have been identified and focussed engagement (through both informal and formal consultation) will be undertaken and recorded throughout the pre-application stages of the Project. Key consultees identified to date are:

- Lincolnshire County Council (LCC);
- East Lindsey District Council (ELDC); and
- Natural England (following design development).

14.3.2. Key areas of consultation are intended to include baseline conditions (including information requests), assessment methodology, and evaluation of significant effects.

14.3.3. Natural England will be engaged to discuss the proposed position on the potential scoping out of air quality effects on the Greater Wash SPA (see **Section 14.6**).

14.3.4. Local or specialist groups will be contacted should the assessment process identify a need to engage further detailed local knowledge, or if requested during the statutory consultation process.

14.4 Baseline conditions

Study Area

14.4.1. The reporting of baseline conditions has been informed by a review of existing air quality reporting undertaken at local authority level, Department for Environment, Food and Rural Affairs (Defra) background maps and available monitoring data within 2 km of the English Onshore Scheme Scoping Boundary (including the area within the English Onshore Scheme Scoping Boundary). The 2 km buffer area reflects industry standard / good practice and is considered appropriate in order to account for the as yet undefined geographical extent of the air quality assessment study area for vehicle emissions, which can extend well beyond the eventual Order Limits along affected road corridors.

14.4.2. The extent of the English Onshore Scheme Scoping Boundary and 2 km buffer are presented on **Volume 3, Figure 14-1**.

Data Gathering Methodology

14.4.3. Baseline data has been collated to determine the existing air quality conditions in the area that is likely to be affected by the English Onshore Scheme. A review of the existing baseline has been undertaken to establish an understanding of the current air quality conditions and to identify areas that are likely to be sensitive to changes in emissions resulting from the English Onshore Scheme. The baseline assessment has been informed by a desk-based study which has drawn on the following sources of information:

- Department for Environment Food & Rural Affairs UK AIR website (2024) (Ref 14.23) - to establish predicted background concentrations for NO_2, PM_{10} and $PM_{2.5}$ and to review AQMA designated by local authorities.

- Magic.Defra.gov.uk website (2024) (Ref 14.24) - to identify ecological sites within and near to the English Onshore Scheme Scoping Boundary (these are identified in **Section 14.6**).
- Department for Environment Food & Rural Affairs Pollution Climate Mapping Model website (2024) (Ref 14.25) – to identify projections of NO_2, PM_{10} and $PM_{2.5}$ across the study area.
- East Lindsey District Council (2024) – 2024 Air Quality Annual Status Report (ASR) (Ref 14.26)
- National Grid (2025) – Eastern Green Link 3 (EGL 3) and Eastern Green Link 4 (EGL 4), Preliminary Environmental Information Report (PEIR, Volume 1, Part 2, Chapter 14: Air Quality (Ref 14.27) – to identify scope of assessment, methodology and likely effects from the Projects.
- Liaison with the EGL 3 and EGL 4 project team to acquire information on project-specific air quality monitoring.

Current Baseline

14.4.4. This section sets out the air quality information and data that would be relied upon to produce a detailed review of baseline conditions that would be contained within the ES.

East Lindsey District Council: Air Quality Management Areas and Local Authority Monitoring

14.4.5. As required by the Environment Act 1995, East Lindsey District Council (ELDC) undertake review and assessment of air quality as part of their Local Air Quality Management (LAQM) duties within their area of jurisdiction. ELDC have produced Annual Status Reports (ASRs) on a yearly basis which have appraised local air quality over the most recent full calendar year. This annual reporting regime informs the declaration or revocation of AQMAs, which are areas where monitoring has concluded that there are exceedances of AQS objectives.

14.4.6. ELDC's administrative area is predominantly rural in character and landscape (as is the area within the English Onshore Scheme Scoping Boundary). The primary source of air pollution in ELDC is vehicular emissions on the A-road network leading to Louth, Horncastle and Skegness, and hence ELDC's air quality monitoring is focussed on these areas. Each of these towns and road corridors are all located outside both the English Onshore Scheme Scoping Boundary and the 2 km buffer of the English Onshore Scheme Scoping Boundary.

14.4.7. A review of the most recent available ASR published by ELDC (published during 2024) shows that only non-automatic (NO_2 diffusion tube) monitoring was undertaken in 2023. The monitoring data shows no exceedances of the AQS objectives and no AQMAs have been declared or are planned to be declared within ELDC's administrative area; indicating that air pollutant concentrations are low in this area.

14.4.8. ELDC monitor L5 is the only location where the background annual mean NO_2 concentration was sampled in ELDC's area. L5 is located in a suburban area of Louth (approximately 24 km to the northwest of the English Onshore Scheme Scoping Boundary) and recorded an annual mean NO_2 concentration of 8.4 $\mu g/m^3$ in 2023; this is a very low concentration and is well below the annual mean AQS objective for NO_2.

14.4.9. It is expected that 2023 background concentrations within the English Onshore Scheme Scoping Boundary would be even lower than that recorded at L5 given the rural nature of the area. The low nature of the modelled Defra and monitored ELDC concentrations demonstrates why air quality monitoring is not widespread in this area.

Air quality monitoring undertaken by National Grid in support of the Eastern Green Link 3 (EGL 3) and Eastern Green Link 4 (EGL 4) Projects

14.4.10. A project-specific air quality monitoring survey commenced during May 2025 across the geographical extent of the EGL 3 and EGL 4 Order Limits. Nine monitoring sites were established, to be maintained for a period of six months.

14.4.11. The EGL 3 and EGL 4 ES, expected to be submitted in their application for development consent in 2026, will present any data generated from this monitoring. Any relevant data will be referenced in the EGL 5 ES as a means of adequately characterising the baseline.

Defra Modelled Background Pollutant Concentrations

14.4.12. A review of the available modelled background concentrations within the English Onshore Scheme Scoping Boundary and the 2 km buffer has been carried out using predicted (modelled) annual mean background concentrations provided in 1 km x 1 km grid squares. **Table 14-6** summarises the minimum, maximum and average background concentrations for NO_2, PM_{10} and $PM_{2.5}$ across the English Onshore Scheme Scoping Boundary and 2 km buffer for the current year (2025).

Table 14-6: Summary of Defra 2025 modelled background pollutant concentrations within the English Onshore Scheme Scoping Boundary and within 2 km of the English Onshore Scheme Scoping Boundary

	Predicted background concentration for 2025 (µg/m^3)		
	NO_2	**PM_{10}**	**$PM_{2.5}$**
Annual Mean AQS Objective	40	40	20 (10 for Annual Mean Concentration Target to be achieved by 2040)
Minimum	5.3	10.4	5.2
Maximum	6.0	13.0	5.9
Average	5.5	12.2	5.5

14.4.13. **Table 14-6** shows that modelled background pollutant concentrations within the English Onshore Scheme Scoping Boundary and 2 km buffer are low for each of the three relevant pollutants. There is very little variation between the maximum, minimum and average concentrations which reflects the rural nature of the English Onshore Scheme Scoping Boundary and the lack of pollution sources.

14.4.14. Defra's modelled background concentrations are well below both the annual mean AQS objectives for the relevant pollutants and the $PM_{2.5}$ annual mean concentration target.

Compliance with UK Limit Values

14.4.15. Defra assesses and reports to the SoS on the status of air quality in the UK, by reference to the Government's LVs.

14.4.16. The assessment of compliance with the government's LVs is undertaken using both monitoring (Defra's Automatic Urban and Rural [monitoring] Network (AURN)) and modelling from Defra's PCM (Pollution Climate Model) model. PCM is a collection of models designed to fulfil part of the UK's statutory reporting requirements. PCM consists of one model per pollutant and models background concentrations on a 1 km^2 scale plus around 9,000 representative roadside values.

14.4.17. For the purposes of Defra's compliance assessment and reporting, the UK is divided into 43 zones and agglomerations; there are 28 agglomeration zones (large urban areas) and 15 non-agglomeration zones. A zone can only become compliant when monitoring and modelling locations throughout that zone meet the relevant LVs.

14.4.18. The English Onshore Scheme intersects the East Midlands non-agglomeration zone.

14.4.19. Within the East Midlands non-agglomeration zone the maximum predicted 2023 annual mean NO_2 concentration is 35.1 µg/m^3 (PCM Census ID: 802028528), which is below the annual mean LV for NO_2. This PCM link is located on the A38 in South Normanton, which is located approximately 95 km west of the English Onshore Scheme Scoping Boundary. This zone is therefore currently compliant for NO_2 as per the most recent Defra Air Pollution in the UK 2023 - Compliance Assessment Summary (2024) (Ref 14.28).

14.4.20. No PCM links in the East Midlands non-agglomeration zone falls within the 2 km English Onshore Scheme Scoping Boundary buffer. The nearest PCM link is located in Sutton on Sea, approximately 1 km north beyond the 2 km English Onshore Scheme Scoping Boundary buffer. This link is presented on **Volume 3, Figure 14.1** and is described as;

- 'A52 (High Street) (Census ID: 802028418)'.

14.4.21. The predicted 2023 annual mean NO_2 concentrations for this link is 8.4 µg/m^3 and is well below the LV of 40 µg/m^3. The predicted 2023 annual PM_{10} concentration of 12.9 µg/m^3 and $PM_{2.5}$ concentration of 6.7 µg/m^3 are also well below the respective LVs of 40 µg/m^3 and 20 µg/m^3. These low concentrations indicate that it is extremely unlikely that any potential increases in pollutant emissions associated with the English Onshore Scheme on this PCM link would cause non-compliance with the LVs.

Future Baseline

14.4.22. Background pollutant concentrations are predicted to decrease in future years, as evidenced by national trends and predicted Defra background map concentrations; however, the rate of decrease has slowed in recent years and is generally slower in rural areas where non-traffic sources are more prominent.

14.4.23. Nevertheless, traffic emissions from roads in the vicinity of the English Onshore Scheme will contribute to baseline air pollutant concentrations now and in any future year assessment. While traffic flows on the local road network are likely to increase, per vehicle emissions are predicted to decrease over time due to new technology, increasingly stringent emission regulations and cleaner fuel formulations.

14.4.24. Consented and proposed developments (if realised) in the surrounding area may increase traffic flows in the vicinity of the English Onshore Scheme. Therefore, this may result in localised increases in air pollutant concentrations as compared to the existing baseline.

14.4.25. In addition, construction of any consented developments may result in a temporary increase in localised particulate concentrations as a result of fugitive dust emissions during construction works, however, experience demonstrates that cumulative dust impacts can be minimised or eliminated if sufficient dust management strategies and controls are implemented by each development.

14.4.26. The potential for cumulative effects will be considered according to the approach outlined within **Part 4, Chapter 30: Cumulative Effects**, and **Section 14.7**. A cumulative effects assessment (CEA) to consider consented developments will be undertaken at ES stage when cumulative traffic data is available, and the number and extent of consented developments are frozen for the purposes of assessment.

14.4.27. Future year background pollutant data for the grid squares within the English Onshore Scheme Scoping Boundary and 2 km buffer were downloaded from the Defra website. **Table 14-7** summarises the minimum, maximum and average background concentrations for NO_2, PM_{10} and $PM_{2.5}$ across the English Onshore Scheme Scoping Boundary and 2 km buffer for 2030 during the construction phase.

Table 14-7: Summary of Defra 2030 modelled background pollutant concentrations within the English Onshore Scheme Scoping Boundary and within 2 km of the English Onshore Scheme Scoping Boundary

	Predicted background concentration for 2030 (µg/m^3)		
	NO_2	**PM_{10}**	**$PM_{2.5}$**
Annual Mean AQS Objective	40	40	20 (10 for Annual Mean Concentration Target to be achieved by 2040)
Minimum	4.5	10.0	4.9
Maximum	5.0	12.6	5.5
Average	4.8	12.1	5.2

14.4.28. **Table 14-7** indicates that future background pollutant concentrations in 2030 within the English Onshore Scheme Scoping Boundary and surrounding 2 km buffer are low, which is consistent with the rural nature of the location. The background pollutant concentrations are very low demonstrating the extent of the headroom towards the AQS Objectives.

14.4.29. The slow expected rate of decrease in background concentrations between 2025 and 2030 is apparent with reference to the average concentrations in **Table 14-6** and **Table 14-7**.

14.5 Design and Control Measures

14.5.1. A high-level optioneering study (the Corridor Preliminary Routeing and Siting Study (CPRSS), as described in **Part 1, Chapter 3: Consideration of Alternatives**), was undertaken to identify the preferred routeing and siting of the proposed infrastructure to ensure that environmental effects would be avoided. As part of the English Onshore Scheme's design process, a number of embedded environmental measures will be proposed to reduce the potential for impacts on human and ecological receptors sensitive to air quality, where possible.

14.5.2. These measures will evolve over the development process as the EIA progresses and in response to consultation and will be fed iteratively into the assessment process. These measures typically include those that have been identified as good or standard practice and include actions that would be undertaken to meet existing legislation requirements.

14.5.3. As there is a commitment to implementing these design and control measures these have been considered in the scoping assessment.

Construction Phase

14.5.4. A range of standard measures for the English Onshore Scheme are likely to be adopted throughout the duration of the construction phase. Design and Control measures relevant to air quality and proportionate to risk will be set out in the Outline Construction Environmental Management Plan (CEMP), prepared to accompany the ES. A summary of these measures is detailed below (which is not an exhaustive list):

- The Construction Contractor(s) shall undertake regular site inspections, where appropriate, to check conformance to the CEMP (developed in accordance with the Outline CEMP) and other Management Plans.
- Any activity carried out or equipment located within a construction compound that may produce a noticeable nuisance, including but not limited to dust, noise, vibration and lighting, will be located away from sensitive receptors such as residential properties or ecological sites, where practicable.
- Vehicles will be correctly maintained and operated in accordance with manufacturer's recommendations and in a responsible manner. All plant and vehicles will be required to switch off their engines when not in use and when it is safe to do so.
- Materials and equipment will not be moved or handled unnecessarily. When loading and unloading materials from vehicles, including cable drums and excavated materials, drop heights will be limited.
- Wheel washing will be provided at each main compound access point on to the highway, where practicable. An adequate supply of water will always be available at these locations. Road sweepers will be deployed on public roads where necessary to prevent excessive dust or mud deposits.
- Earthworks and stockpiled soil will be protected by covering, seeding or using water suppression where appropriate.
- Site management measures such as the logging of incidents and complaints.

- Monitoring measures such as carrying out site inspections, soiling checks, and checking compliance with Outline Dust Management Plan, etc.
- Preparing and maintaining the site (for example, locate dust causing activities away from receptors, barriers, cleaning, enclosed specific operations with high potential for dust production, cover stockpiles, etc).
- Operating vehicle/machinery and sustainable travel: for example, ensure compliance with Non-Road Mobile Machinery (NRMM) standards, do not allow unnecessary idling, use mains electricity where practicable to avoid use of generators, create a travel plan and impose a maximum speed limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas.
- Operations-based measures to reduce or eliminate ambient dust such as employing dust suppressants, use enclosed chutes, reduce drop heights, etc.
- If relevant, apply measures to demolition activities such as damping down, avoid use of explosive blasting, soft strip interiors before demolition.
- Measures should be applied where earthworks are being undertaken such as prompt revegetation. Where it is not possible to revegetate use hessian, mulches or tackifiers or cover with topsoil as soon as practicable.
- Measures to be applied to general construction activities include the avoidance of scabbling, keeping aggregates damp, ensure fine powder materials are delivered enclosed and stored in silos, ensuring bags are sealed after use etc.
- Trackout (the transportation and release of dust originating from the construction site along the road network from the action/movement of construction vehicles) measures to reduce emissions from the action and movement of vehicles include wheel washes, cleaning of access and local roads, avoid dry sweeping of large areas, ensure that vehicle-borne materials are covered, install hard surfaces are laid for longer haul routes, etc.

Operational Phase

14.5.5. No operational phase design and control measures to address emissions from operational phase vehicle emissions are anticipated.

14.5.6. Whether or not the operational phase back-up diesel generator(s) require further mitigation will be determined when the type, number and location of generator sets to be deployed at the new converter station is known. This would be revisited at ES stage.

14.6 Scope of the Assessment

14.6.1. The air quality assessment will consider the construction and operation phases of the English Onshore Scheme.

Potential sensitive receptors

14.6.2. **Table 14-8** provides a summary of the impact pathways and sensitive receptors during each of the phases of the English Onshore Scheme.

Table 14-8: Receptors and impact pathways for each phase of the English Onshore Scheme

Development Phase	Impact	Receptor
Construction	Dust deposition and health impacts from elevated PM concentrations.	Sensitive ecological and human receptors within 250 m of the construction boundary or within 50 m of roads up to 250 m from the Site entrance(s).
	Increase in pollutant concentrations from vehicle emissions.	Sensitive human and/or ecological receptors within 200 m of roads that may be affected[10] (i.e. meet the relevant traffic screening criteria) by the English Onshore Scheme.
	Increased likelihood of non-compliance with LVs through increases in pollutant concentrations.	Public Access and sensitive human receptors within 15 m of affected PCM link.
	Increase in pollutant concentrations from NRMM (including generator) emissions.	Sensitive human and/or ecological receptors within 200 m of construction compounds.
Operation	Increase in pollutant concentrations from vehicle emissions.	Sensitive human and/or ecological receptors within 200 m of roads that may be affected by the English Onshore Scheme.
	Increased likelihood of non-compliance with LVs through increases in pollutant concentrations.	Public Access and sensitive human receptors within 15 m of affected PCM link
	Increase in pollutant concentrations from emergency backup diesel generators.	Sensitive human and/or ecological receptors within 200 m of generators at the new converter station.

14.6.3. As the Order Limits have not been defined, a definitive understanding of the receptors likely to be affected is not yet known. Additionally, as a number of the study areas are predicated on distance from roads which meet guidance-specific traffic screening criteria, there is uncertainty as to which roads may require assessment, and their location.

[10] I.e. a road or collection of roads which exceed the relevant traffic screening criteria. For impacts on human receptors this is the criteria the IAQM (2017) Development Control guidance (Ref 14.19). For impacts on ecological receptors and compliance risk assessment this is the criteria presented in National Highways (2024) DMRB LA 105 (Ref 14.22)

14.6.4. However, based on the English Onshore Scheme Scoping Boundary and the 2 km English Onshore Scheme Scoping Boundary buffer, the geographic locations of human receptors to be considered are likely to include:

- Residential settlements in Alford, Huttoft, Anderby, Bilsby.
- Residential properties along (currently unfinalised) designated haul routes, and roads within the English Onshore Scheme Scoping Boundary.

14.6.5. In terms of ecological receptors, there are no local, national or internationally designated sites located within the English Onshore Scheme Scoping Boundary which are considered sensitive to air pollution.

14.6.6. The Greater Wash SPA overlaps the Project (presented on **Volume 3, Figure 14.1**) between the northern and southern extents of the English Onshore Scheme Scoping Boundary, in the area covering the intertidal range at the landfall. The Greater Wash SPA is a primarily marine-based site covering the majority of the Lincolnshire coast and parts of the Holderness coast and East Anglian coast. This SPA is designated for the protection of bird species (for further information on which species, please refer to **Part 3, Chapter 21: Intertidal and Offshore Ornithology**). The breeding habitats of the bird species are sensitive to nitrogen deposition. These are listed as shifting coastal dunes and coastal dune grasslands. However, the extent of the Greater Wash SPA overlapping with the English Onshore Scheme does not contain any of these features.

14.6.7. The Greater Wash SPA boundary follows the MHWS mark and as such this area of the SPA is subject to' tidal flushing by the North Sea twice a day, therefore any air pollutants deposited (e.g., construction dust or nutrient nitrogen) would be carried away and diluted.

14.6.8. The Chartered Institute of Ecology and Environmental Management (CIEEM) (2021): Advisory Note: Ecological Assessment of Air Quality Impacts (Ref 14.29) provides justification for this position (p18-19): "*marine and inter-tidal systems will be subject to tidal flushing. Depending on the extent and frequency of inundation, this is likely both to have a much greater influence on botanical composition than atmospheric nitrogen inputs and to remove a large proportion of any nitrogen that does deposit from atmosphere, thus preventing it from accumulating to the same extent as in terrestrial habitats. This could reduce the effect of an exceedance of nitrogen deposition rate in a manner that cannot be taken into account via the critical load system and standard approaches to air quality modelling*."

14.6.9. For these reasons it has been considered that the Greater Wash SPA would not require further assessment in terms of air quality effects and that no further consideration of air quality is required for this site in terms of the Habitats Regulations.

14.6.10. There are a number of ecological sites that are sensitive to air pollution which are located outside of the English Onshore Scheme Scoping Boundary but within the 2 km English Onshore Scheme Scoping Boundary buffer. These are presented on **Volume 3, Figure 14.1** and are:

- Sea Bank Clay Pits SSSI – located 140 m north of the English Onshore Scheme Scoping Boundary and contains features which are sensitive to dust and nitrogen deposition.
- Fordington Wood Ancient Woodland – located 1.9 km to south of English Onshore Scheme Scoping Boundary.

- Rigsby Wood Ancient Woodland – 1.4 km to northwest of English Onshore Scheme Scoping Boundary.
- Hornby/Mother Woods Ancient Woodland – 1.7 km to north of English Onshore Scheme Scoping Boundary.

14.6.11. A decision will be made at ES stage as to whether these ecological sites require assessment with consideration of the final design, Order Limits and whether they fall within the ES stage air quality study area (or areas) for the various elements which have not been scoped out at scoping stage.

Likely Significant Effects

14.6.12. **Table 14-9** outlines the elements associated with the impact pathways and sensitive receptors which have been scoped into and out of the air quality assessment.

Table 14-9: Effects scoped in for further assessment

Project Phase	Impact	Receptor	Potential for significant effects	Proposed to be scoped in / out
Construction	Dust deposition and health impacts from elevated PM concentrations caused by construction activities.	Sensitive human receptors within 250 m of the construction boundary, sensitive ecological receptors within 50 m of the construction boundary or any receptors within 50 m of roads up to 250 m from the Site entrance(s).	**Yes** – There is the potential for significant effects if standard measures are not adopted or if the measures suggested are not stringent enough to the risk level that is established.	**Scoped in**
	Increase in pollutant concentrations from vehicle emissions.	Sensitive human receptors within 200 m of roads that may be affected by the English Onshore Scheme.	**Yes** – There is the potential for significant effects should screening of construction traffic flows show vehicle trips exceed the IAQM Development Control criteria within 200 m of a human receptor.	**Scoped in**
	Increase in pollutant concentrations from vehicle emissions.	Sensitive ecological receptors within 200 m of roads that may be	**Yes** – There is the potential for significant effects should screening of construction traffic flows	**Scoped in**

Project Phase	Impact	Receptor	Potential for significant effects	Proposed to be scoped in / out
		affected by the English Onshore Scheme.	show vehicle trips exceed the National Highways DMRB LA105 criteria within 200 m of an ecological receptor.	
	Increase in pollutant concentrations from NRMM (including generator) emissions.	Sensitive human and/or ecological receptors within 200 m of construction compounds (areas where NRMM is likely to be most frequently utilised).	**Yes** – There is potential for significant effects although the likelihood is thought to be small due to the temporary and transient nature, and incorporation of best practice measures (Outline CEMP) and compliance with NRMM standards. Design information regarding NRMM which is more detailed and mature than that available at present will be reviewed at ES stage.	**Scoped in**
Operation	Increase in pollutant concentrations from emergency backup diesel generators	Sensitive human receptors within 200 m of proposed generators at the new converter station.	**Yes** – there are a number of human receptors within 200 m of the two emerging preferred siting zones identified for the siting of the new converter station.	**Scoped in**
Construction & Operation	Increased likelihood of non-compliance with LVs through increases in pollutant concentrations near Defra PCM links.	Public Access and sensitive receptors within 15 m of affected PCM link.	**No** – Existing concentrations on nearest PCM link in English Onshore Scheme Scoping Boundary and surrounding 2km buffer are very low and highly unlikely to cause exceedances of LVs for NO_2, PM_{10} and $PM_{2.5}$, or to cause East Midlands non-agglomeration zone to become non-compliant.	**Scoped out**

Project Phase	Impact	Receptor	Potential for significant effects	Proposed to be scoped in / out
Operation	Increase in pollutant concentrations from vehicle emissions.	Sensitive human and/or ecological receptors within 200 m of roads that may be affected by the English Onshore Scheme.	**No** – Experience for projects of this nature show that operational phase vehicle flows are very low and screen out. The ES will confirm the operational vehicle types and numbers (with reference to thresholds within the guidance) to justify this position.	**Scoped out**
	Increase in pollutant concentrations from emergency backup diesel generators	Sensitive ecological receptors within 200 m of proposed generators at the new converter station.	**No** – there are no international or nationally designated ecological sites within 200 m of the two emerging preferred siting zones identified for the siting of the new converter station.	**Scoped out**

14.6.13. Owing to the limited extent of the English Onshore Scheme, it is anticipated that a number of the elements scoped in at this stage will be scoped out at ES stage when requisite project data is available and definitive screening against relevant guidance can be undertaken.

14.6.14. Regarding the proposed scoping out of operational phase vehicle movements, annual average traffic movements associated with the English Onshore Scheme are expected to be well below the IAQM (2017) Development Control screening criteria. Environmental reporting published by larger scale NGET Projects such as Sea Link's ES (Ref 14.30) and EGL 3 and EGL 4's PEIR (Red 14.27) have concluded that operational phase vehicle flows are sufficiently low that any detailed assessment has been scoped out.

14.6.15. As the proposed English Onshore Scheme consists of one converter station during the operational phase, traffic associated with the staffing and maintenance of this is expected to result in a negligible increase in traffic movements, well below the thresholds set in the respective IAQM Development Control and National Highways DMRB LA105 traffic screening criteria (these are detailed in **Section 14.7**). **Table 14-10** summarises the operational phase traffic increases on Sea Link and EGL 3 and EGL 4:

Table 14-10: Quantification of operational phase traffic on similar NGET Projects

Project	Project Phase	Assumptions	Effect on traffic
Sea Link (Part 2 Suffolk)	Operation and maintenance	Permanent staffing at converter stations for two staff members, monthly substation inspections, annual maintenance for substation and converter station.	Four movements per day to each converter station for staffing.
EGL 3 and EGL 4	Operation and maintenance	Walpole B substation and two converter stations.	Approx 32 movements per day as Annual Average Daily Traffic (AADT).

14.6.16. Regarding the proposed scoping out of compliance risk, National Highways DMRB LA 105 (which provides the compliance risk methodology) guides the user to answer the following of a project's impact on a PCM link or links:

- Would the Project result in a compliant zone becoming non-compliant?
- Would it delay the anticipated Defra date of compliance for the zone?
- Would it result in an overall increase in pollutant concentration on PCM links that exceed the relevant LV?

14.6.17. If the answer to all of these questions is no, then it can be concluded that the English Onshore Scheme does not represent a risk to the UK's reported compliance with the LV. It is considered that the English Onshore Scheme does not represent a risk to the UK's reported compliance with the LVs for the following reasons:

- **Section 14.4** indicates that there is one Defra PCM link (road) near to the English Onshore Scheme Scoping Boundary in Sutton-on-Sea. However, the Defra modelled projected concentration for 2023 at this road is 8.4 µg/m^3 for NO_2 (21% of the LV for annual mean NO_2), 12.9 µg/m^3 for PM_{10} (32% of the LV for annual mean PM_{10}) and 6.7 µg/m^3 for $PM_{2.5}$ (34% of the LV for annual mean $PM_{2.5}$).
- An extremely large increase in pollutant concentrations would be required to cause exceedance of the LVs and for the currently compliant East Midlands non-agglomeration zone to become non-compliant. Experience on other NSIPs with much larger scope and intensive construction periods show that increases of such magnitude have not been predicted to occur. For example, the Lower Thames Crossing Environmental Statement (Ref 14.31) provided a detailed assessment of a six-year intensive construction phase. The largest increase in annual mean NO_2 during the peak construction year from vehicle emissions was 1.8µg/m^3 (4.5% of the relevant LV), caused by an increase in annual average daily traffic of 2275 AADT (2176 LDVs and 99 HDVs). It is expected that the construction phase flows for the English Onshore Scheme will be well below this number.
- Additionally, construction phase traffic impacts will be temporary and therefore revert to baseline following the conclusion of the construction phase.

14.6.18. Regarding the scoping out of significant effects on ecological receptors from operational phase emergency generator emissions, there are no internationally or nationally ecologically designated sites within 200 m of the two emerging preferred siting zones identified for the siting of the new converter station. Therefore, further assessment of

emissions on ecological receptors from any emergency backup generators proposed as part of the English Onshore Scheme is scoped out. It should be noted that effects from generators are scoped in for human receptors.

14.7 Assessment Methodology

Further Data to be Gathered / Processed

Desk-Based Assessments

14.7.1. In addition to the data sources listed in **Section 14.4**, assessment within the ES would be supported by the following additional information:

- Extent and nature of construction phase activities potentially leading to dust emissions;
- Traffic data for English Onshore Scheme related movements associated with the construction phase:
  - AADT with % HDV split;
- Extent and nature of NRMM during construction phase. Including detail on:
  - Duration of works and associated phasing plans;
  - Type and number of NRMM to be used on site;
  - Operating hours; and
- Location and specification of operational phase emergency back-up generators at finalised location of the new converter station.

Surveys

14.7.2. It is considered that no surveys relating to air quality are required for the English Onshore Scheme.

14.7.3. The EGL 3 and EGL 4 Project have undertaken a project specific monitoring survey during 2025, covering nine monitoring locations across the EGL 3 and EGL 4 Study Area The nearest site is located on the A1104 in Alford approximately 0.5 km south of the English Onshore Scheme Scoping Boundary. It is envisaged that this monitoring data could be utilised when it is published by the EGL 3 and EGL4 Projects during 2026, should there be a need to carry out detailed dispersion modelling.

Construction Phase Dust Risk Assessment

Study Area

14.7.4. A construction dust risk assessment would be undertaken to establish the requisite level of mitigation required in order to control dust during construction. The IAQM construction dust guidance provides the relevant assessment methodology for undertaking the dust risk assessment.

14.7.5. In accordance with the IAQM construction dust guidance, the study area for the construction phase dust risk assessment will be:

- Up to 250 m from the locations of demolition, construction and earthworks activities for human receptors and up to 50 m for ecological receptors.
- Up to 50 m from the route(s) used by construction vehicles on the public highway, up to 250 m from the English Onshore Scheme entrance(s).

14.7.6. The precise location of the components of the English Onshore Scheme includes temporary working areas which are not known at this stage. The English Onshore Scheme Scoping Boundary has therefore been designed to represent the area within which the English Onshore Scheme would potentially be located. At this stage, as the Order Limits for the English Onshore Scheme have not yet been finalised, the construction dust study area would be revisited once this information becomes available, however, it will include up to 250 m from the edge of the final Order Limits. The construction phase study area also includes the first 50 m of any road within 250 m from the main site entrance(s) used by the construction vehicles to account for trackout.

Method

14.7.7. The method for defining the unmitigated level of dust risk (and corresponding control measures) is qualitative and depends largely on the practitioner collating construction related information and applying professional judgement.

Sensitivity

14.7.8. The sensitivity of the area to dust impacts, can be defined as low, medium, or high sensitivity, in accordance with IAQM construction dust guidance.

14.7.9. The influencing factors to define receptor sensitivity to dust impacts are as follows:

- High – where human receptors are expected to be present continuously for extended periods of time e.g. residential properties, hospitals, schools and care homes. Internationally or nationally designated ecological sites.
- Medium – where users would expect to enjoy a reasonable level of amenity and value could be diminished by dust soiling e.g., parks and places of work. Nationally designated ecological sites.
- Low – where enjoyment of amenity would not reasonably be expected and exposure would be for limited periods e.g., footpaths, shopping streets and car parks. Locally designated ecological sites.

Magnitude

14.7.10. The scale and nature of the works determines the magnitude of dust arising as small, medium or large.

14.7.11. The relevant criteria to define the potential magnitude of dust emissions includes the following factors:

- Small – demolition volume under 12,000 m^3, demolition activities less than 6 m above ground level, total site area less than 18,000 m^2, soil type with large grain size, total building volume less than 12,000 m^3, construction material with low potential for dust release, less than 20 HDV trips per day, unpaved road length less than 50 m etc.
- Medium – demolition volume 12,000 m^3 – 75,000 m^3, demolition activities between 6 m – 12 m above ground level, total site area 18,000 m^2 – 110,000 m^2, moderately

dusty soil type, potentially dusty construction material, total building volume 12,000 m^3 – 75,000 m^3, 20 to 50 HDV trips per day, unpaved road length 50 – 100 m etc.

- Large – on-site crushing and screening, demolition volume greater than 75,000 m^3, demolition activities greater than 12 m above ground level, total site area greater than 110,000 m^2, more than 10 heavy earth moving vehicles active at any one-time, total building volume greater than 75,000 m^3, on site concrete batching, sandblasting, more than 50 HDV trips per day, unpaved road length greater than 100 m etc.

Significance

14.7.12. The IAQM construction dust guidance categorises the unmitigated risk of dust impacts on human health and amenity (rather than ascribe a significance of effect) as a means of identifying the level of dust emissions mitigation required to ensure that residual effects are 'not significant'. A higher dust risk rating requires more stringent mitigation measures to limit or eliminate residual effects.

14.7.13. The application of mitigation measures within the Outline CEMP, to be submitted in support of the DCO application, would be applied in a proportionate manner based on the risk criteria set out in the IAQM guidance. For example, in areas where there are no receptors within 250 m of works there would be a much lower risk from dust impacts and as such the mitigation would be applied in a suitable manner based on risk.

Construction Phase Vehicle Emissions Assessment: Human Receptors

Study Area

14.7.14. The number of vehicles associated with the construction, and operation/maintenance phases of the English Onshore Scheme is not yet known and will be quantified for ES stage.

14.7.15. The IAQM development control guidance details its own indicative traffic flow change criteria that, if met, may highlight the need for an assessment. It is provisionally anticipated that detailed assessment of vehicle emissions associated with the construction phase of the English Onshore Scheme would be scoped in. This would be confirmed upon receipt and screening of the construction phase traffic data. The screening criteria for vehicle emissions assessment is as follows:

- A change in Light Duty Vehicle (LDV) flows of >100 Annual Average Daily Traffic (AADT) within or adjacent to an Air Quality Management Area (AQMA), or >500 AADT elsewhere.
- A change in Heavy Duty Vehicle (HDV) flows of >25 AADT within or adjacent to an AQMA, or >100 AADT elsewhere.
- Where a road is realigned by 5 m or more and is within an AQMA.
- Where a junction is added or removed close to existing receptors.

14.7.16. Any human sensitive receptors (e.g., residential properties, hospitals, schools and care homes) within 200 m of any traffic links that meet the above traffic screening criteria, would be part of the study area. These would be assessed in a proportionate manner; those receptors closest to the roads comprising the study area.

14.7.17. If these criteria are not exceeded, then the guidance considers air quality impacts associated with a project in terms of traffic emissions to be negligible and no further assessment is required.

14.7.18. It should be noted that the baseline review demonstrates there are no AQMAs in the vicinity of the English Onshore Scheme which are likely to be affected; therefore, the less stringent traffic change criteria detailed in paragraph 14.7.15 are those which would apply.

Receptor Sensitivity

14.7.19. Should screening of the relevant data indicate that any of the IAQM Development Control criteria are met, then potential impacts at sensitive receptors would be assessed by calculating the impact in NO_2 and $PM_{2.5/10}$ concentrations resulting from the use of vehicles associated with the construction phase on the English Onshore Scheme.

14.7.20. Defra LAQM (TG.22) defines a sensitive receptor as a location representative of human exposure to a pollutant, over a time period relevant to the objective that is being assessed against, where the AQS objectives (previously presented **Table 14-5**) are considered to apply, as detailed in **Table 14-11**.

Table 14-11: Receptors and impact pathways for each phase of the English Onshore Scheme

Averaging Period	Objectives should apply at	Objectives should not apply at
Annual Mean	All locations where members of the public might be regularly exposed. Building façades of residential properties, schools, hospitals, care homes etc.	Building façades of offices or other places of work where members of the public do not have regular access. Hotels, unless people live there as their permanent residence. Gardens of residential properties. Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term.
24-Hour Mean	All locations where the annual mean objective would apply, together with hotels and gardens of residential properties.	Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term.
1-Hour Mean	All locations where the annual mean and 24-hour mean objectives apply. Kerbside sites (for example, pavements of busy shopping streets). Those parts of car parks, bus stations and railway stations etc. which are not fully enclosed, where	Kerbside sites where the public would not be expected to have regular access.

Averaging Period	Objectives should apply at	Objectives should not apply at
	reasonably be expected to spend one hour or more. Any outdoor locations where members of the public might reasonably be expected to spend one hour or longer.	

14.7.21. It should be noted that the definition of the human receptors summarised above would also be applied when identifying receptors for use in the assessment of any vehicle emissions or point source (generator) emissions.

Magnitude and Assessment of significance

14.7.22. Any detailed dispersion modelling would be undertaken using Cambridge Environmental Research Consultant's (CERC) Atmospheric Dispersion Modelling System software (ADMS) to predict pollutant concentrations at selected receptors within 200 m of those roads which exceeded the traffic change criteria as detailed in the IAQM development control guidance. The magnitude of change would be calculated, and total concentrations compared against relevant AQS objectives as outlined in **Table 14-12**.

Table 14-12: IAQM impact descriptors for individual receptors

Long Term Average Concentration at Receptor in Assessment Year	% Change in Concentration Relative to Air Quality Assessment Level (AQAL)			
	1	2-5	6-10	>10
75% or less of AQAL	Negligible	Negligible	Slight	Moderate
76 – 94% of AQAL	Negligible	Slight	Moderate	Moderate
95 – 102% of AQAL	Slight	Moderate	Moderate	Substantial
103 – 109% of AQAL	Moderate	Moderate	Substantial	Substantial
110% or more of AQAL	Moderate	Substantial	Substantial	Substantial

14.7.23. The IAQM (2017) development control guidance notes that the impact descriptors in **Table 14-12** are for individual receptors only and the overall significance of effect should be determined using professional judgement, taking into the degree of impact and factors such as:

- The existing and future air quality in the absence of the project;
- The extent of current and future populations exposure to the impact; and
- The influence and validity of any assumptions adopted when undertaking the prediction of impacts.

14.7.24. The IAQM guidance notes that hypothetically, an individual property exposed to a moderately adverse impact might not be considered a significant effect, but many hundreds of properties exposed to a slight adverse impact could be. This indicates that the IAQM guidance avoids the use of prescriptive approaches and places an emphasis on professional judgement amended with consideration of the magnitude of impact, and consideration of the themes discussed above.

Construction Phase Vehicle Emissions Assessment: Ecological Impacts

Study Area

14.7.25. Assessment of ecological impacts from vehicle emissions would be undertaken should the below flow change criteria set out in National Highways' DMRB LA 105 be met; it states relevant international, national, and locally designed sites of ecological importance sensitive to air pollutants within 200 m of roads meeting any of the following criteria should be assessed:

- A change in traffic flows (LDV + HDV) ≥1,000 vehicles/day as AADT;
- A change in HDV only flows ≥200 vehicles/day as AADT;
- A change in speed band; and
- A change in carriageway alignment by ≥5 m.

14.7.26. The ecological assessment would be carried out in accordance with the assessment principles detailed in the IAQM guidance on the assessment of ecological sites.

Receptors

14.7.27. Ecological receptors within 2 km of the English Onshore Scheme Scoping Boundary, and within the English Onshore Scheme Scoping Boundary itself have been reported in **Section 14.6**.

Magnitude and Assessment of significance

14.7.28. Quantitative estimates of change in nitrogen oxides (NO_x) and nitrogen deposition would be calculated at those sites which screen in against the above criteria.

14.7.29. The assessment of change in NO_x and nitrogen deposition in designated sites of ecological importance includes the following:

- Identification of designated sites within 200 m of the DMRB LA 105 of the Affected Road Network (ARN), which have designated features sensitive to air pollutants. If the site is found to not be specifically affected by the source, then no further assessment is required.

- Calculation of annual mean NO_x concentrations and nitrogen deposition at the designated sites with and without the English Onshore Scheme. This would be determined by modelling the dispersion of the emissions and estimating dry deposition of nitrogen at the designated site with and without the English Onshore Scheme. This would be done by modelling a series of receptors in a transect (spaced at 10 m intervals) extending into the site from the closest point between the designated site and the nearest affected road (out to a distance of 200 m from the road).
- Where related changes in nitrogen deposition (as a result of the English Onshore Scheme) are expected to be less than or equal to 1 % of the site relevant lower critical load (LCL) then impacts are expected to be Not Significant. Where the change is greater than 1 %, the impact is sufficiently large that it cannot be screened out and therefore it could have a potential significant effect and warrants further interpretation by the ecologist.

14.7.30. It should be noted that road traffic can contribute to nitrogen deposition as a result of emissions of NO_x and ammonia (NH_3). Vehicles generate NH_3 due to the technologies used to control emissions of other pollutants such as NO_x. An increase in nitrogen deposition can then lead to adverse effects on ecological receptors depending on the nitrogen deposition in relation to the LCL of the habitat in question. Therefore, the assessment of ecological impacts will account for emissions of NH_3.

Emissions from Construction Phase NRMM

Study Area

14.7.31. No specific guidance exists on the definition for a study area for NRMM point sources due to the large variation in the extent of potential impact from different types of sources. For the purposes of this assessment, identification of any receptors within 200 m of the construction compounds is considered appropriate given the size and temporary nature of the operations, based on professional judgement. Beyond this distance, it is judged that the effect of any emissions on local air quality would have no potential to be significant.

14.7.32. Whilst NRMM would be used anywhere within the Order Limits, it has been assumed that the majority of NRMM would be used within the construction compounds and the new converter station; generators in other areas are considered to be of a size and their use appropriately infrequent that they do not need to be included in the assessment. As such, the study area for NRMM emissions is an area within 200 m of the construction compounds, and finalised location of the new converter station.

Receptors

14.7.33. Human receptors would be screened based on the Order Limits, locations of construction compounds and the new converter station based on the types identified in **Table 14-11**. The locations of the ecological receptors in the vicinity of the English Onshore Scheme Scoping Boundary are presented in **Section 14.6** and on **Volume 3, Figure 14.1**. The only ecological receptors which may require consideration in terms of NRMM emissions is Sea Bank Clay Pits SSSI is located 140 m north of the English Onshore Scheme Scoping Boundary, if a construction compound was to be located within 200 m of the SSSI once the Order Limits are finalised.

Magnitude

14.7.34. If required, detailed dispersion modelling is undertaken using ADMS to predict pollutant concentrations at worst case receptor locations. The magnitude of change is calculated and total concentrations compared against the relevant AQS objectives for human receptors and critical levels and loads for any ecological receptors.

Significance of effects

14.7.35. The significance of NRMM emissions effects would be assessed in accordance with the IAQM (2017) Development Control guidance where the overall significance of the project in terms of NRMM emissions is then determined using professional judgement, taking into account factors such as the baseline and future air quality in the absence of the proposed project, the number of receptors affected (which is determined using the IAQM Impact Descriptors matrix presented in **Table 14-12**) and the influence and validity of any assumptions adopted when undertaking the assessment.

14.7.36. Significance of NRMM emissions effects for ecological receptors is assessed in accordance with the IAQM (2020) guidance on the assessment of ecological sites. The guidance states that "*the 1% threshold has become widely used throughout the air quality assessment profession to define a reasonable quantum of long-term pollution which is not likely to be discernible from fluctuations in background/measurements*".

14.7.37. As such, if the long-term NO_x Process Contribution (PC) is less than 1% of the critical level (30 µg/m³) and less than 1% of the critical load for nitrogen deposition, then the effect of NRMM emissions is considered not significant. Where the 1% threshold is exceeded, this does not necessarily mean that a significant effect is caused, it requires further assessment work to evidence a conclusion as to whether the change in air quality is likely to cause a significant effect on the ecological receptor.

Emissions from Operational Phase Converter Station Back-Up Generators

14.7.38. Back-up generators may be required to provide emergency power to the new converter station. This would be assessed following the methodology outlined for the assessment of NRMM emissions. It is envisaged that a maximum of two generators would be required, with one hour of operation for maintenance testing per month for each generator. The configuration and design specification will be subject to further work before the outline proposal is frozen for inclusion and potential assessment at ES stage.

14.7.39. Based on the two emerging preferred siting zones for the new converter station, impacts on ecological receptors have been screened out as per the justification provided in **Section 14.6** and **Section 14.7**. Therefore, any assessment at ES stage would cover the assessment of generator emissions on human receptors.

Assessment of Significance

14.7.40. The assessment of significance for each of the potential air quality impacts are detailed in the specific methodology sections above, as follows:

- As stated in paragraphs 14.7.12 and 14.7.13, the dust risk assessment will identify appropriate mitigation measures to ensure that residual effects are 'not significant'.

- The construction phase vehicle emissions assessment on human receptors will assess significance in accordance with the IAQM development control guidance as detailed in paragraphs 14.7.22 to 14.7.24.
- The construction phase vehicle emissions assessment on ecological sites will assess significance in accordance with the IAQM (2017) Development Control guidance and the IAQM (2020) guidance on the assessment of ecological sites, as described in paragraphs 14.7.35 to 14.7.37.
- The significance of NRMM emissions and back-up generator emissions would be assessed following the same approach as vehicle emissions.

Assessment of Cumulative Impacts and Effects

14.7.41. Cumulative effects have been scoped and are reported within **Part 4, Chapter 30: Cumulative Effects**. Cumulative effects (sometimes called inter-project effects) are environmental effects that result from two of more planned developments together, generally due to their proximity in location and timing.

14.7.42. Construction dust from the English Onshore Scheme and other nearby projects could potentially affect receptors cumulatively during the construction phase where there are other projects/developments which are expected to generate construction dust located within 250 m of the receptors affected by the English Onshore Scheme, or where there are multiple construction sites contributing to trackout onto the same section of a public highway.

14.7.43. Inter-project effects from construction phase vehicle emissions associated with the English Onshore Scheme would be considered as part of the ES through the inclusion of growth factors and committed development vehicle flows in the traffic data used for the ES.

14.7.44. It is assumed that there are no material operational phase cumulative effects given that operational air quality effects from vehicle emissions have been scoped out. For more detail on this refer to **Part 2, Chapter 12, Traffic and Transport**.

14.7.45. Intra-project cumulative effects would be considered in the construction dust assessment based on the cumulative construction activities associated with both the cabling works and the construction of the new converter station. This is considered worst case as it assumes all construction activities are undertaken at the same time across the whole of the English Onshore Scheme.

14.7.46. The NGET's Grimsby to Walpole Project, Ossian Offshore Wind Farm Onshore Transmission Infrastructure Project and the EGL 3 and EGL 4 Projects are very likely to intersect the Order Limits for EGL 5. The existing road network in and around the English Onshore Scheme Scoping Boundary is likely to experience an increase in traffic from each of the projects. Therefore, cumulative construction phase vehicle traffic flows will require assessment.

14.7.47. Additionally, the construction phase dust risk assessment will need to account for cumulative effects from the four projects.

14.8 Assessment Limitations and Assumptions

14.8.1. The following limitations and assumptions have been identified:

- There is limited detail available for NRMM during the construction and maintenance phases and regarding the potential use of diesel generators at this stage. It is assumed that emissions would be temporary and transient in nature and therefore negligible in terms of air quality impacts and significance, however this will be confirmed in the ES once further information which has been requested becomes available.
- It is unlikely that the effect of the English Onshore Scheme on average daily speeds during the construction phase or operational phase would be quantified. Advice will be taken from the Traffic and Transport specialists on the speeds to set on each road in order to calculate an emission rate, should road vehicles require assessment in either phase. Best practice guidance regarding the manual adjustment of speeds as detailed in Defra LAQM TG.22 would be applied alongside professional judgement to reflect any potential congestion.
- The decision to screen in or screen out certain assessment elements has been informed by existing information, or where there is an absence of information the decision has been informed by experience and professional judgement. It should be noted that additional elements may be scoped in, or conversely scoped out over the course of the pre-application phase should information or data arise which justifies such a decision.

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Ref 14-18 Institute of Air Quality Management (IAQM) Guidance on the Assessment of Dust from Demolition and Construction Version 2.2 (2024). [Accessed: June 2025]

Ref 14-19 IAQM Guidance on land-use planning and development control: Planning for air quality v1.2 (2017). [Accessed: June 2025]

Ref 14-20 IAQM Guidance to the assessment of air quality impacts on designated nature conservation sites (2020). [Accessed: June 2025]

Ref 14-21 Department of Agriculture and Rural Affairs. (2022). Local Air Quality Management Technical Guidance (LAQGM.TG (22)). [Accessed: June 2025]

Ref 14-22 National Highways (2019). Design Manual for Road and Bridges (DMRB) (LA 105). [Accessed: June 2025]

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Ref 14-24 Department of Agriculture and Rural Affairs Magic Map (2024). [Online] Available at: https://magic.defra.gov.uk/magicmap.aspx [Accessed June 2025].

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Ref 14-26 East Lindsey District Council (2024). 2024 Annual Status Report. [Accessed: June 2025]

Ref 14-27 National Grid (2025) Eastern Green Link 3 and Eastern Green Link 4, Preliminary environmental information report (PEIR), Volume 1, Part 2, Chapter 14: Air Quality. [Accessed: June 2025]

Ref 14-28 Department of Agriculture and Rural Affairs Air Pollution in the UK 2023 – Compliance Assessment Summary (2024). [Accessed: June 2025]

Ref 14-29 The Chartered Institute of Ecology and Environmental Management (CIEEM) (2021) Advisory Note: Ecological Assessment of Air Quality Impacts. [Accessed: June 2025]

Ref 14-30 National Grid (2025) Sea Link, Volume 6: Environmental Statement, Document 6.2.2.8, Part 2 Suffolk, Chapter 8, Air Quality. [Accessed: June 2025]

Ref 14-31 National Highways (2022) Lower Thames Crossing, 6.1 Environmental Statement, Chapter 5 Air Quality. [Accessed: June 2025]

15. Socio-economics, Recreation and Tourism

15.1 Introduction

15.1.1. The socio-economics, recreation and tourism assessment will consider the potentially significant effects on sensitive human and economic receptors that may arise from the construction and operation of the English Onshore Scheme.

15.1.2. This chapter of the Scoping Report sets out the relevant legislation, planning policy context and technical guidance used to inform the scope of the assessment and summarises any consultation and engagement in relation to socio-economics, recreation and tourism undertaken to date. It provides an overview of the baseline conditions relevant to socio-economics, recreation and tourism within and surrounding the English Onshore Scheme Scoping Boundary, the measures which will be incorporated into the English Onshore Scheme to mitigate socio-economics, recreation and tourism effects, the likely significant effects to be considered within the assessment, and how these likely significant effects will be assessed for the purpose of an Environmental Impact Assessment (EIA).

15.1.3. This chapter should be read in conjunction and considered alongside the following chapters within **Volume 1**:

- **Part 2, Chapter 8: Landscape and Visual Amenity:** Visual receptors are a key component of tourism and recreational enjoyment and impacts to these may impact on receptors considered within this chapter. The landscape and visual assessment will help inform the outcomes of this chapter.
- **Part 2, Chapter 12: Traffic and Transport:** Increased traffic as a result of additional construction vehicles on the roads will complicate access to tourist attractions and assets for all users. There will also be some crossover in assessment of impact on users of Public Rights of Way (PRoW).
- **Part 2, Chapter 13: Noise and Vibration:** Changes in local noise levels may affect various land uses and the recreational value of particular areas.
- **Part 2, Chapter 14: Air Quality:** Changes in local pollutant concentrations may affect various land uses and the recreational value of particular areas. Exhausts from construction traffic may reduce the attractiveness of local attractions for use by residents and tourists.
- **Part 2, Chapter 16: Health and Wellbeing:** There will be some crossover in terms of receptors considered by both the health and wellbeing and the socio-economics, recreation and tourism assessments.

15.1.4. This chapter is supported by the following figures found in **Volume 3**:

- **Figure 15-1 Socio-economic 500 m Study Area**
- **Figure 15-2 Socio-economic 5 km Study Area – Tourism**

15.1.5. The scope of this socio-economics, recreation and tourism chapter considers those receptors which have the potential to experience changes to accessibility, severance, provision of facilities and restriction of use. This scope differs from the assessment of human health and wellbeing (as outlined in **Part 2, Chapter 16: Health and Wellbeing**) as it focuses on the inconvenience or disadvantage to a population or user group and how the construction or operation of the English Onshore Scheme affects their ability to undertake certain activities or facilitates or provides opportunity for them to undertake certain activities. It does not consider this from the perspective of how this may impact population health and wellbeing; this is assessed separately in **Part 2, Chapter 16: Health and Wellbeing** and means that some receptors e.g. pedestrian routes, may be discussed in both chapters but applying different metrics and assessment methodologies.

15.2 Relevant Legislation, Planning Policy and Technical Guidance

15.2.1. This section identifies the relevant legislation, national and local policy and guidance which has informed the scope of the socio-economics, recreation and tourism assessment.

Legislation

15.2.2. There is no legislation that is directly relevant to the assessment of socio-economics in terms of scope specification, or that provides appropriate standards and thresholds for determining significance of effects. For recreation and tourism, relevant legislation is outlined in **Table 15-1** below.

Table 15-1: Legislation relevant to recreation and tourism

Legislation	Legislative Context
Environment Act, (2021) (Ref 15.1)	The Environment Act outlines targets, plans and policies for improving the natural environment. Part 1 (Environmental Targets) Regulation 1 (1) states: *"The Secretary of State may by regulations set long-term targets in respect of any matter which relates to (a) the natural environment, or (b) people's enjoyment of the natural environment"*. This is relevant to **Section 15.4** Baseline Conditions and **Section 15.7** Assessment Methodology.
Countryside and Rights of Way (CROW) Act, (2000) (Ref 15.2)	The CROW Act makes provision for and aims to protect public access to the countryside. It extends the right of public access, including to woodlands, the Green Belt, waters and grasslands, and for connectivity purposes. This is relevant to **Section 15.4** Baseline Conditions and **Section 15.7** Assessment Methodology.
Equality Act, (2010) (Ref 15.3)	The Equality Act outlines legislation to protect people from discrimination in the workplace and in wider society, addressing the key protected characteristics of: age; disability;

Legislation	Legislative Context
	gender reassignment; marriage and civil partnership; pregnancy and maternity; race; religion or belief; sex; and sexual orientation. This is relevant to **Section 15.4** Baseline Conditions and **Section 15.7** Assessment Methodology.
Localism Act, (2011) (Ref 15.4)	The Localism Act gives rights and powers to both communities and individuals. It is relevant in the context of the Project due to its proximity to recreational facilities. This is relevant to **Section 15.4** Baseline Conditions.

Planning Policy

15.2.3. A summary of the planning policies at both a national and local level relevant to the scope of socio-economics, recreation and tourism effects is outlined in **Table 15-2** and **Table 15-3**. The legislation presented in **Table 15-2** has influenced all sections of this scoping chapter, with relevant local planning policy matters in **Table 15-3** considered throughout the assessment.

Table 15-2: National Planning Policy relevant to socio-economics, recreation and tourism

Policy reference	Policy context
Overarching National Policy Statement (NPS) for Energy (EN-1) (2024) (Ref 15.5)	
Section 5.13	Details how potential socio-economic impacts for development of energy infrastructure should be considered in any application for development consent.
Section 5.13.4	Details some of the likely economic impacts that should be considered as part of any assessment.
Section 5.13.10	States that it may be concluded *"that limited weight is to be given to assertions of socio-economic impacts that are not supported by evidence (particularly in view of the need for energy infrastructure as set out in the NPS)"*.
Overarching Draft National Policy Statement (NPS) for Energy (EN-1) (2025) (Ref 15.6)	
Section 5.13.1, Section 5.13.4, Section 5.13.10	The Government has published a draft update to the Overarching National Policy Statement for Energy. For socio-economics, the 2025 Draft NPS EN-1 is largely the same as in the 2024 document, with relevant section numbers remaining the same.
NPS for Electricity Networks Infrastructure (EN-5) (2024) (Ref 15.7)	
N/A	Supports EN-1 by providing guidance on new electricity networks infrastructure to ensure it is well designed. It includes advice on landscape and visual and noise and

Policy reference	Policy context
	vibration matters which may have a bearing on the socio-economic, recreation and tourism assessment.
Draft NPS for Electricity Networks Infrastructure (EN-5) (2025) (Ref 15.8)	
N/A	The Government has published a draft update to the Overarching National Policy Statement for Energy. For cultural heritage, the 2025 Draft NPS EN-5 is largely the same as in the 2024 document
National Planning Policy Framework (NPPF) (2024) (Ref 15.9)	
Paragraph 86a. Paragraph 97c.	The NPPF sets out national planning policies in accordance with the relevant NPS. Chapter 6 includes policies aimed at building a strong, competitive economy and Chapter 8 includes policies aimed at promoting healthy and safe communities.

Table 15-3: Local Planning Policy relevant to socio-economics, recreation and tourism

Policy reference	Policy context
Lincolnshire County Council: Lincolnshire Minerals and Waste Local Plan Core Strategy and Development Management Policies, (2016) (Ref 15.10)	
Policy DM1: Presumption in favour of sustainable development	When considering development proposals, the County Council will take a positive approach that reflects the presumption in favour of sustainable development contained in the NPPF.
East Lindsey District Council: East Lindsey Local Plan Core Strategy, (2018) (Ref 15.11)	
Strategic Policy 2 (SP2): Sustainable Development	When considering development proposals, the Council will take a positive approach that reflects the presumption in favour of sustainable development contained in the NPPF.
Strategic Policy 13 (SP13): Inland Employment	The Council will support growth and diversification of the local economy by identifying and protecting employment land, and by supporting proposals that strengthen the rural economy.
Strategic Policy 17 (SP17): Coastal East Lindsey	The Council will give a high priority to development that extends and diversifies all-year round employment opportunities, contributes directly to the local economy, infrastructure or extends and diversifies the tourism market.

Technical Guidance

15.2.4. A summary of the relevant technical guidance, specific to the socio-economics, recreation and tourism assessment, that has informed this Scoping Report and will inform the assessment within the Preliminary Environmental Information Report (PEIR) and Environmental Statement (ES), is given in **Table 15-4**.

Table 15-4: Technical Guidance relevant to socio-economics, recreation and tourism

Technical guidance document	Context	Section considered
National Planning Practice Guidance (NPPG), (2021) (Ref 15.12)	This accompanies the NPPF and sets out guidance on how NPPF policy should be interpreted and implemented.	Has influenced this technical aspect chapter as a whole.
NPPG - Open Space, Sports and Recreation Facilities, Public Rights of Way (PRoW) and Local Green Space, (2014) (Ref 15.13)	This sets out guidance on how new planning proposals should consider potential impacts on open space, sports and recreation facilities and PRoW.	Has influenced this technical aspect chapter as a whole for sections relating to recreation.
Design Manual for Roads and Bridges (DMRB) LA 112, (2020) (Ref 15.14)	Whilst it is acknowledged that the DMRB is the standard for assessment of road schemes in Great Britain and Northern Ireland, this guidance provides a useful reference point for assessing recreational, land use and community.	Volume 11, Section 3, Part 6: Land Use and Part 8: Pedestrians, Cyclists, Equestrians and Community Effects has influenced this technical aspect chapter as a whole for sections relating to recreation.
DMRB LA 104, (2020) (Ref 15.15)	DMRB LA 104 provides context for assigning value to receptors in terms of magnitude of impact and significance. This provides a useful reference for the assessment methodology for recreation and tourism related effects.	Section 3, Environmental assessment methodology has influenced this technical aspect chapter as a whole for sections relating to recreation and tourism.
Homes and Community Agency (HCA) (now known as Homes England): Employment Density Guide 3rd Edition, (2015) (Ref 15.16)	The document provides guidance on the assessment of employment generation. and associated densities for socio-economic assessments.	Has influenced this technical aspect chapter as a whole for sections relating to employment and the economy.
Homes and Community Agency (HCA): Additionality Guide 4th Edition, (2014) (Ref 15.17)	The document provides guidance on the assessment of indirect and induced effects associated with employment generation and relevant metrics which can be applied to the assessment of employment generation for socio-economic assessments.	Has influenced this technical aspect chapter as a whole for sections relating to employment and the economy.

15.3 Consultation and Engagement

15.3.1. Feedback in relation to this topic and the scope of works has been received as part of Non-Statutory Consultation, with Lincolnshire County Council emphasising the need to consider the potential effects of temporary construction workers accessing tourist accommodation, and the associated impact on settlements and facilities. Further feedback will be gained following consultation on this Scoping Report, both for the socio-economics, recreation and tourism chapter, and those related chapters identified in Paragraph 15.1.3.

15.3.2. It is anticipated that engagement with the Lincolnshire County Council Public Rights of Way officer will be undertaken, in addition to local or specialist groups who will be contacted (based on usage of local routes) should the assessment process identify a need to engage further detailed local knowledge, or if requested during the statutory consultation process.

15.4 Baseline Conditions

Study Area

15.4.1. The study area for socio-economics, recreation and tourism is detailed below for each element of the assessment and varies according to the receptor. In the absence of statutory guidance for socio-economics, recreation and tourism, reference has been made to planning policy, best practice guidance, and professional judgement and experience.

15.4.2. As outlined in **Table 15-4**, DMRB LA 112 Guidance (Ref 15.14) provides the best methodology for assessing many of the tourism and recreation receptors in the context of the English Onshore Scheme. For these receptors, the edge of the English Onshore Scheme Scoping Boundary has been used to define the study area boundary for the purposes of Scoping, incorporating a catchment around the centre point. The identified receptors will be revised as part of the PEIR and ES.

Socio-economics

- **Employment Generation:** The study area for employment generation follows guidance set out within the Employment Density Guide 3rd Edition (Ref 15.16) and Additionality Guide 4th Edition (Ref 15.17)[11]. A ‘local’ (Lincolnshire County Council) and ‘regional’ (East Midlands) study area will be used for construction employment generation, as this represents the principal labour market catchment area. The English Onshore Scheme Scoping Boundary is likely to be highly accessible from most areas of the East Midlands, and this labour market incorporates the population that may reasonably be expected to travel to and benefit from employment associated with construction of the English Onshore Scheme.

[11] Whilst both of the guidance documents were withdrawn in 2022 due to the Homes and Communities Agency being replaced by Homes England, no statement on replacement guides published by the United Kingdom Government has been made, where both guidance documents are still available for reference. It is considered that in the absence of any further guidance on employment density and additionality, these documents remain relevant and appropriate guidance documents.

- **Businesses and Development Land:** Those businesses and any parcels of allocated land located within the 500 metre (m) study area (500 m from the English Onshore Scheme Scoping Boundary[12]) (**Volume 3, Figure 15-1**), or those which have a direct means of access within the study area.
- **Private Property and Housing:** Private properties and dwellings that lie within the 500 m study area (**Volume 3, Figure 15-1**), or those which have a direct means of access within the study area.

Recreation

- **Public Access for Walkers, Cyclists, and Horse Riders (WCH):** A 500 m study area (**Volume 3, Figure 15-1**) will be used for the assessment of change in accessibility and amenity value of recreational routes used by WCH.
- **Community Land and Recreational Facilities:** Community land and recreational facilities located within the 500 m study area (**Volume 3, Figure 15-1**), or those which have a direct means of access within the study area.

Tourism

- **Tourist Attractions and Tourist Accommodation:** A 5 km study area (**Volume 3, Figure 15-2**) will be used in order to capture those attractions or accommodation providers most likely to be affected by the English Onshore Scheme.

15.4.3. The various geographical areas referred to within this chapter are as follows:

- National: England;
- Regional: East Midlands;
- County: Lincolnshire; and
- District: East Lindsey.

Data Gathering Methodology

15.4.4. The following data sources have been used to inform the baseline for socio-economics, recreation and tourism:

- Official Census and Labour Market Statistics (NOMIS) (Ref 15.18);
- English Indices of Multiple Deprivation (Ref 15.19);
- Ordnance Survey Mapping (Ref 15.20);
- Lincolnshire County Council Public Right of Way Map (Ref 15.21); and
- Any relevant websites for recreational groups, facilities and activities.

15.4.5. A short summary of the baseline conditions relevant to this scoping chapter are outlined below.

[12] The 500 m study area follows the whole route from the edge of the English Onshore Scheme Scoping Boundary. Relevant receptors that are located just beyond the study area boundary will also be considered.

Current Baseline

Socio-economics

Population

15.4.6. The 2021 population estimates for the local authority district, county and national levels are presented in **Table 15-5**.

Table 15-5: Resident Population 2021 (Ref 15.21)

Geographical Area	Total Population
England	56.5 million
East Midlands	4.8 million
Lincolnshire	768,364
East Lindsey	142,900

15.4.7. The estimated working age population (residents aged 16-64 years) as a percentage of the total resident population is shown for these geographies in **Table 15-6**.

Table 15-6: Population aged 16-64 (% of the resident population) (Ref 15.18)

Geographical Area	%
England	63.0
East Midlands	62.5
Lincolnshire	59.8
East Lindsey	54.9

15.4.8. As shown above, the proportion of individuals aged 16-64 (working age) in East Lindsey is slightly lower than that of Lincolnshire. At the regional and national levels, the working age population in the East Midlands (62.5%) and England (63%) are broadly similar, but both are slightly higher than the proportions observed at the county and district levels.

15.4.9. Further baseline conditions relating to Population are outlined in **Part 2, Chapter 16: Health and Wellbeing**.

Economy and Employment

15.4.10. According to NOMIS data (Ref 15.18), the proportion of individuals aged 16-64 estimated to be economically active between January 2024 and December 2024 (the most recently published data at the time of writing) is outlined in **Table 15-7**. At the district level, economic activity in East Lindsey stands at 66.6%, which is lower than the county average of 74.3%. While there is some variation between district and county levels, both figures are below the regional and national averages of 79.1% and 78.9%, respectively.

Table 15-7: Proportion of individuals aged 16-64 estimated to be economically active between January 2024 and December 2024 (Ref 15.18)

Region	%
England	78.9
East Midlands	79.1
Lincolnshire	74.3
East Lindsey	66.6

15.4.11. Earnings of weekly wages for full-time workers at the local authority district, county and England levels are presented in **Table 15-8**. The gross weekly pay of full-time workers in East Lindsey (£609.00) is slightly lower than at the county and regional levels and significantly lower than the national average (£732.00).

Table 15-8: Earnings by place of residence (2024) (Ref 15.18)

Region	Gross weekly pay of full-time workers (£)
England	732.0
East Midlands	684.1
Lincolnshire	664.7
East Lindsey	609.0

15.4.12. The NOMIS Job Densities Report (Ref 15.18) is available on a local authority-wide and sub-regional level and indicates the availability of employment and labour demand. As of 2023 (the most recent data available at the time of writing), job density in East Lindsey was 0.74; slightly lower than in Lincolnshire (0.76) and the East Midlands (0.79). Job density rates across all these areas remain below 1.0, indicating that there is fewer than one job per person aged 16-64, and suggesting limited employment opportunities. However, this trend is broadly consistent with the national job density rate in England, which stood at 0.87.

15.4.13. **Table 15-9** shows the proportion of total employees working in each industry sector in 2023 (the most recently published data at the time of writing). In East Lindsey, the largest employment sector is accommodation and food service activities, accounting for 20.5% of total employment. This likely reflects the district's coastal location, with tourism-related services and accommodation playing a significant role in the local job market. In contrast, this sector represents a much smaller share of employment in Lincolnshire (8.9%), and even lower proportions at the regional (7.0%) and national (7.8%) levels.

15.4.14. All geographical areas have lower rates of employment in higher wage service sectors such as Information and communication, and Financial and insurance activities when compared with the regional and national rates.

Table 15-9: Overview of employee jobs by industry sector in 2023 (%) (Ref 15.18)

Industry	East Lindsey	Lincolnshire	East Midlands	England
Agriculture, forestry & fishing	5.0	3.4	1.1	0.8
Mining and Quarrying	0.2	0.2	0.2	0.2
Manufacturing	7.8	10.2	10.6	7.3
Electricity, gas, steam and air conditioning supply	0.5	0.6	0.8	0.6
Water supply; Sewerage, Waste management and Remediation activities	1.0	1.1	0.8	0.7
Construction	8.8	8.8	8.8	8.7
Wholesale and Repair Trade; Repair of Motor Vehicles and Motorcycles	16.8	17.1	17.6	15.0
Transport & storage	3.9	4.6	5.8	5.0
Accommodation and Food service Activities	8.1	5.0	4.4	4.9
Information & communication	1.5	2.4	3.1	4.7
Financial and insurance activities	0.8	1.5	2.2	3.8
Real estate activities	1.4	1.2	1.2	1.6
Professional, scientific and technical activities	3.7	4.1	4.8	6.7
Administrative and support service activities	5.1	5.3	4.8	5.3
Public administration and defence; compulsory social security	6.7	7.1	5.5	5.8
Education	8.8	9.2	9.8	9.9
Human Health and social work activities	14.4	14.2	14.5	14.6
Other	5.6	4.1	4.0	4.6

Index of Multiple Deprivation

15.4.15. The English Indices of Multiple Deprivation (IMD) (Ref 15.19) uses a combination of information relating to seven ‘domains’: income; employment; health deprivation and disability; education, skills and training; barriers to housing and services; crime; and living environment to create an overall score of deprivation. Deprivation is scored between 1 and 317 (representing the 317 local authority districts within England), with a score of 1 being most deprived and 317 being least deprived.

15.4.16. The IMD 2019 data (the most recently published at the time of writing) suggests a moderate to high level of deprivation within the local study area as a whole, with East Lindsey falling within the 10% most deprived in England. This corresponds with East

Lindsey being over-represented in lower wage sectors, as outlined in Paragraph 15.4.13.

Businesses and Development Land

15.4.17. There are a range of businesses located within the English Onshore Scheme Scoping Boundary and 500 m study area, with an overview of the types of businesses provided below. The most prominent industries include agriculture, accommodation and light manufacturing. These have been identified through OS Deskbase software, Google maps, and public records. An overview of the types of businesses13 located within the English Onshore Scheme Scoping Boundary and surrounding 500 m study area is outlined below (there is no land allocated for development within the study area):

- The Beach Café at Anderby Creek.
- A number of small businesses and commercial premises of varying sizes within Huttoft, predominantly situated along Hutton Road and Mumby Road. These include (but are not limited to) a dog exercise park (Huttoft Hounds), a pub restaurant (The Axe and Cleaver), a petrol station (Huttoft Service Station), and a vehicle sales centre (Park View Vehicles).
- A petrol station and Spar shop on Alford Road, Bilsby.
- A number of small industrial businesses and commercial premises in Alford, predominantly situated along West Street and at the Beechings Way Industrial Estate off Station Road. These include (but are not limited to) takeaways, pubs and cafés (Pizza King; The George Inn, The Willow Restaurant & Tea Rooms), a fire equipment manufacturer (Safelincs Ltd), supermarket (Co-op Alford), and a number of materials and manufacturing suppliers, light industrial premises, and warehouses within the Beechings Way Industrial Estate.

15.4.18. Potential impacts on agricultural land holdings are outlined in **Part 2, Chapter 11: Agriculture and Soils**, and therefore have not been included in this chapter. This includes the likely significant effects associated with temporary acquisition and permanent loss of agricultural land holdings, including farm businesses.

Private Property and Housing

15.4.19. The English Onshore Scheme Scoping Boundary and 500 m study area encompasses several rural settlements, although the cable corridor has been identified to avoid routeing in proximity to residential dwellings where practicable, also incorporating measures such as avoiding routeing of transport and HGVs in proximity to residential dwellings where possible (and undertaking junction improvements where this would ease traffic flow, in order to reduce delays to residents accessing their dwellings). Private properties located within the English Onshore Scheme Scoping Boundary and 500 m study area are outlined below (there is no land allocated for residential development within the study area):

- Approximately 10 properties in Anderby Creek on Sandy Lane;
- Approximately 60 properties in Anderby on Sea Road;

13 There is one animal sanctuary which has been identified, and this is included within the baseline for Tourist attractions (as it does not operate as an income for profit business, and is frequented by tourist visitors).

- The entirety of Huttoft, amounting to approximately 100 properties on surrounding Sutton Road and Alford Road;
- Scattered properties in Asserby;
- Scattered properties in Saleby on Mill Lane and Rose Lane;
- Scattered properties in Thurlby on the B1449;
- Approximately 60 residential properties in Bilsby along the A111, Sutton Road, and Thurby Road; and
- Approximately 250 properties in Alford, centred around Station Road, West Street, and the A52. These also include several assisted living facilities and care homes[14].

Recreation

Public Access for Walkers, Cyclists, and Horse Riders

15.4.20. There are 49 (publicly accessible) PRoW and Local Routes in the English Onshore Scheme Scoping Boundary and a further 18 within the 500 m study area Many of these routes provide essential, daily connections for WCH navigating within their local area. These are predominantly located within and providing access between settlements in the locality. In addition, of national importance, one National Trail (long distance footpaths and bridleways in England and Wales) also intersects the English Onshore Scheme Scoping Boundary; the King Charles III England Coast Path National Trail will be the longest continuous national trail in Britain once completed. The Skegness to Mablethorpe stretch (Section 50) passes within the English Onshore Scheme Scoping Boundary, close to the Anderby Creek Landfall area.

15.4.21. A summary of these 68 PRoW and one National Trail within the English Onshore Scheme Scoping Boundary and 500m study area is outlined in **Table 15-10** below. Further detail is outlined in **Part 2, Chapter 12: Traffic and Transport**.

Table 15-10: PRoW within the English Onshore Scheme Scoping Boundary and 500m study area

Name / Reference	Type
PRoW within the English Onshore Scheme Scoping Boundary	
Alfo/281/1	Footpath
Alfo/281/2	Footpath
Alfo/282/2	Footpath
Alfo/282/3	Footpath
Alfo/282/4	Footpath

[14] Whilst these are technically classed as ‘businesses’ as they are operated to generate income, for the purposes of this assessment and the consideration of effects on the local population, care homes and similar facilities have been classed as ‘residential’ given that residents are likely to experience similar effects to people in residential dwellings.

Name / Reference	Type
Alfo/283/2	Footpath
Alfo/283/3	Footpath
Alfo/283/4	Footpath
Alfo/289/1	Footpath
Alfo/290/1	Footpath
Ande/1/1	Footpath
Ande/16/1	Footpath
Ande/964/1	Footpath
Bils/11/1	Footpath
Bils/13/1	Footpath
Bils/69/1	Footpath
Hutt/1/1	Footpath
Hutt/10/1	Footpath
Hutt/10/2	Footpath
Hutt/10/3	Footpath
Hutt/10/4	Footpath
Hutt/10/5	Footpath
Hutt/11/1	Footpath
Hutt/11/2	Footpath
Hutt/1139/1	Footpath
Hutt/12/1	Footpath
Hutt/12/2	Footpath
Hutt/14/1	Footpath
Hutt/14/2	Footpath
Hutt/15/1	Footpath
Hutt/16/1	Footpath
Hutt/2/1	Footpath
Hutt/2/2	Footpath
Hutt/2/3	Footpath
Hutt/2/4	Footpath

Name / Reference	Type
Hutt/4/1	Footpath
Hutt/4/2	Footpath
Hutt/4/3	Footpath
Hutt/4/4	Footpath
Hutt/6/1	Footpath
Hutt/6/2	Footpath
Hutt/854/1	Footpath
Hutt/9/1	Footpath
Hutt/965/1	Footpath
Mumb/69/1	Footpath
Sale/281/3	Footpath
Sale/284/2	Footpath
Sale/284/3	Footpath
Sale/284/4	Footpath
King Charles III England Coast Path	National Trail
PRoW within the 500m Study Area	
Ande/17/1	Footpath
Ande/17/2	Footpath
Ande/22/1	Footpath
Ande/22/2	Footpath
Ande/61/1	Footpath
Alfo/283/5	Footpath
Bils/75/1	Footpath
Bils/74/2	Footpath
Bils/73/1	Footpath
Mumb/63/2	Footpath
Mumb/67/1	Footpath
Rigs/84/4	Footpath
Rigs/87/1	Footpath
Rigs/86/1	Footpath

Name / Reference	Type
Sale/281/1	Footpath
Sale/281/2	Footpath
Sale/280/1	Footpath
SuOS/854/3	Footpath

Community Land, Assets, and Recreational Facilities

15.4.22. Community land and assets typically comprise facilities to serve local residents, including education and healthcare, places of worship, and recreational facilities such as parks, sports facilities, and open spaces. There are a number of community facilities located within the English Onshore Scheme Scoping Boundary and 500 m study area, including (but not limited to):

- A few education facilities, predominantly located within and surrounding Huttoft (Huttoft Primary School) and Alford (Alford Primary School, Queen Elizabeth's Grammar School, John Spendluffe Sixth Form College, Mon Ami Day Nursery, and Quackers Day Nursery).
- Places of worship including Holy Trinity Church (Bilsby), St Margaret's Church (Huttoft), and three churches in Alford.
- Several sports clubs and parks including Alford town football club, Alford Spots Hall (associated with the Sixth Form College), Alford Park and playground, and Huttoft playing field and play park.
- Other community buildings, including a community centre and library in Alford (Alford Focal Point) and several meeting rooms and village halls.

Tourism

Tourist Attractions

15.4.23. Tourist attractions typically comprise facilities such as museums, zoos and farm parks, heritage assets, theme parks, and points of interest. For the purposes of this assessment, beaches and nature reserves (which offer areas for bird watching, education, and outdoor activities) have also been included within the scope for tourist attractions, given the high volume of tourist visits within the region, and the likelihood of these types of assets being frequented by tourist visitors from outside of the region, as well as local residents. A range of tourist attractions are located within a 5 kilometre (km) study area, which are outlined below:

- A number of beaches including Anderby Creek Beach, Sutton-on-Sea Beach, Wolla Bank Beach, Miami Beach.
- Historical buildings and houses including National Trust Sandilands and Alford Manor House Museum, West Street.
- Several Nature Reserves including Sandilands Pit Nature Reserve, Willoughby Branch Line Nature Reserve, Wolla Bank Pit Nature Reserve, Rigsby Wood -

Lincolnshire Wildlife Trust (LWT) Nature Reserve, Hoplands Wood - LWT Nature Reserve.

- Lincolnshire Aquapark, near Mablethorpe.
- Diana Princess of Wales Memorial Garden, Cleethorpes.
- North Sea Observatory, Chapel St Leonards.
- Radcliffe Donkey Sanctuary, near Huttoft.
- East Lindsey National Landscape.

Tourist Accommodation

15.4.24. Tourist accommodation typically comprises temporary, short term accommodation. There are a number of hotels, guesthouses, campsites and holiday parks located within close proximity to the study area, most notably in the coastal settlements of Anderby and Sandilands, the town of Alford, and areas in Bilsby and Huttoft. Examples of the accommodation providers located within a 5 km study area are outlined below:

- A number of holiday parks and caravan parks including Orchard Leaze Holiday Park, Jolly Common Caravan Park, Sunny Ridge Caravan Park, Manor Park Cravan Park.
- Several hotels, guesthouses and cottages including The Windmill Hotel, Sunflower Holiday Cottage, The Anchor House and Bumblebee Cottage.
- A number of campsites including Simon Field Farm Campsite, The Shambles Motorhome Parking – Campground, Sutton-on-Sea Caravan and Motorhome Club Campsite, Deers Leap Campground and Creekside Family Camping Anderby.

Future Baseline

15.4.25. The future baseline relates to known or anticipated changes to the current baseline in the future which should be assessed as part of the English Onshore Scheme in the PEIR and ES.

15.4.26. Natural changes in the distribution and structure of the population are expected to occur over time. Based on the ONS 2018-based sub-national population projections (Ref 15.22) (the most recent available at the time of writing) the population of East Lindsey is forecast to grow by 14.9% between 2018 and 2043. In comparison, Lincolnshire's population is projected to increase by 11.7% over the same period. This anticipated growth is likely to place additional pressure on existing services and create increased demand for housing, facilities, and infrastructure.

15.4.27. Whilst it is anticipated that there would be changes to the baseline over time, this is unlikely to change significantly should the English Onshore Scheme not proceed. If there is a significant change in the future baseline whilst the PEIR and ES are being progressed, the assessment will be updated.

15.4.28. It is recognised that there are a number of other proposed and committed developments within the surrounding area that could alter the future baseline in the absence of the English Onshore Scheme. These committed developments, along with the potential for cumulative effects will be considered as part of the future EIA documents in accordance with the approach and guidance outlined within **Part 4, Chapter 30: Cumulative Effects**.

15.5 Design and Control Measures

15.5.1. Whilst there are no specific design and control measures identified for socio-economics, recreation and tourism, a range of proposed mitigation measures for the English Onshore Scheme which are relevant to this assessment are outlined in **Part 2, Chapter 8: Landscape and Visual Amenity, Chapter 12: Traffic** and **Transport and Chapter 13: Noise and Vibration**. There is a commitment to implementing these design and control measures and therefore they have been considered in the scoping assessment.

15.5.2. A high-level optioneering study (the CPRSS as described in **Part 2, Chapter 3: Consideration of Alternatives**) has been undertaken to identify the preferred routeing and siting of the proposed infrastructure to ensure that environmental effects would be avoided. As part of the English Onshore Scheme design process, design and control measures will be proposed to reduce the potential for impacts on socio-economic, *recreation and tourism receptors. These measures will evolve as part of design development and in response to consultation. These measures will be fed iteratively into the assessment process. These measures typically include those that have been identified as good or standard practice and include actions that would be undertaken to meet existing legislation requirements.

Construction Phase

15.5.3. A range of standard mitigation measures for the English Onshore Scheme are likely to be adopted throughout the duration of the construction phase. Design and Control measures relevant to socio-economics, recreation and tourism would be outlined in the Outline Construction Environmental Management Plan (CEMP), prepared to accompany the ES; these will include but are not limited to:

- Construction Contractor(s) will be committed to promoting the use of local workforce and suppliers, wherever practicable.
- Construction Contractor(s) will liaise with residents, businesses, and other recreational and tourist users or community groups, prior to the commencement of construction works to ensure they are aware of the programme and nature of the works, in particular, any works which are planned to take place at night. Any out of hours construction work to be agreed with the local authority in advance.
- Good practice measures outlined within the Outline CEMP will be implemented in order to avoid conflict with WCHs, local residents, nearby businesses, and other community or tourist users.
- Access to residential properties, commercial premises, and community facilities and assets will be maintained throughout the construction period, in agreement with occupants and operators.
- Appropriate diversions implemented for any PRoW or footway obstructed during construction in order to minimise effects on accessibility and severance for WCHs. Where appropriate temporary diversions are not available, temporary closures may be required.
- Any PRoW, footway or carriageway diversions or closures undertaken during construction to be clearly advertised and signed prior to commencement of works. Signage will clearly display the temporary diversion routes in place (or provide confirmation of any permanent route diversions once operational).

- Design of any diverted routes for WCH will consider vulnerable user groups and ensure accessibility is maintained for users with limited mobility where practicable.

Operational Phase

15.5.4. There are no specific operational phase measures which have been identified in relation to the assessment of socio-economics, recreation and tourism. As the design of the English Onshore Scheme evolves, these measures will also evolve as part of design development and in response to consultation.

15.6 Scope of the Assessment

Potential Sensitive Receptors

15.6.1. These socio-economic, recreation and tourism receptors have the potential to experience effects as a result of the direct interaction with English Onshore Scheme elements, such as land take from existing businesses or the disruption of recreational routes where they cross working areas during construction. Receptors located away from the English Onshore Scheme and working area also have the potential to be affected by indirect effects such as visual or noise effects on properties, tourism resources, businesses, or recreational users.

Table 15-11: Receptors and Impact Pathways for the English Onshore Scheme

Development Phase	Impact	Receptor
Construction	Creation of new direct, indirect, and induced employee jobs during construction of the English Onshore Scheme.	Working age residents in the local and regional employment market (the local and regional economy) that may access new jobs as a result of the English Onshore Scheme.
	Businesses (and development land) may experience temporary or permanent disruption to access and / or land take. This may affect customers' or employees' ability to access business premises, and for the business to remain open and trading during construction as a result. Amenity effects on business employees and customers which may arise as a result of construction works or construction traffic routes.	Business operators, employees and customers within 500 m of the English Onshore Scheme Scoping Boundary that may be affected by the English Onshore Scheme.
	Residents at their properties (allocated housing land) may experience temporary or permanent disruption to access and / or land take. This may affect their ability to access or remain in their homes during construction.	Residents of private properties within 500 m of the English Onshore Scheme Scoping Boundary that may be affected by the English Onshore Scheme.

Development Phase	Impact	Receptor
	Amenity effects on residents which may arise as a result of construction works or construction traffic routes.	
	WCH using PRoW and designated routes may experience temporary or permanent disruption to access due to a diversion or stopping up of routes. This may affect WCH users from accessing PRoW for recreation and travel. Amenity effects on WCH which may arise as a result of construction works or construction traffic routes.	WCH using PRoW and other designated routes within 500 m of the English Onshore Scheme Scoping Boundary that may be affected by the English Onshore Scheme.
	Users of community land, community assets, and recreational facilities may experience temporary or permanent disruption to access and / or land take. This may affect users' ability to access community and recreational facilities, and for these facilities to remain open and accessible to users as a result. Amenity effects on the users of community and recreational facilities, which may arise as a result of construction works or construction traffic routes.	Users of community land, assets and recreational facilities within 500 m of the English Onshore Scheme Scoping Boundary that may be affected by the English Onshore Scheme.
	Tourist attractions may experience temporary or permanent disruption to access and / or land take. This may affect users' or employees' ability to access attractions, and for these to remain open and accessible to users as a result. Amenity effects on the users of tourist attractions, which may arise as a result of construction works or construction traffic routes.	Visitors and users of tourist attractions within 5 km of the English Onshore Scheme Scoping Boundary that may be affected by the English Onshore Scheme.
	Users of tourist accommodation may experience temporary or permanent disruption to access and / or land take. This may affect the ability of tourist accommodation providers to continue trading during construction and / or amenity effects on users which may arise as a result of construction works or construction traffic routes. Increased demand for tourist accommodation from construction workers who require access to temporary / short term accommodation during the construction phase.	Users of tourist accommodation within 5 km of the English Onshore Scheme Scoping Boundary that may be affected by the English Onshore Scheme.

Development Phase	Impact	Receptor
Operation / Maintenance	Creation of new direct, indirect and induced employee jobs once the English Onshore Scheme is operational.	Working age residents in the local and regional employment market (the local and regional economy) that may access new jobs as a result of the English Onshore Scheme.

Likely Significant Effects

15.6.2. The nature and scale of likely effects on socio-economics, recreation and tourism have been identified for each of the proposed elements, and whether they are proposed to be scoped in or out of further assessment. Further detail including justification for the inclusion or exclusion of these receptors is provided in **Table 15-12** below.

Table 15-12: Socio-economics, recreation and tourism: Scope for further assessment

Development Phase	Impact	Receptor	Potential for Significant Effects	Proposed to be Scoped In / Out
Construction	Employment Generation (direct, indirect and induced)	Working age residents	There is the potential for direct and indirect beneficial impacts on the local and regional economy through the creation of jobs. Construction of the English Onshore Scheme is anticipated to generate direct, temporary employment opportunities from construction workers on site throughout the construction period; and indirectly through manufacturing services and suppliers of the construction process; and by construction workers spending part of their income in the area local to the site.	**Scoped In**
	WCH - temporary or permanent disruption to access and / or land take and / or amenity effects	WCH using PRoW and other designated routes	During construction there is potential for WCH using PRoW and other designated routes, to be adversely affected by the English Onshore Scheme. This could arise through potential temporary disruption or severance to access. The English Onshore Scheme Scoping Boundary has been determined based on the emerging preferred cable corridors which will minimise impacts and disruption to PRoW and designated routes where practicable, however there are a number which fall within the study area and may be disrupted by the English Onshore Scheme. Specific routes which may experience disruption or severance will be identified as the Project design is progressed and refined. There is therefore the potential for significant construction phase effects on PRoW and their users as a result of temporary (or permanent) disruption or severance. As such, there is the potential for significant construction phase effects on PRoW and their users.	**Scoped In**

Development Phase	Impact	Receptor	Potential for Significant Effects	Proposed to be Scoped In / Out
			Whilst there is the potential for amenity effects on WCH and as a result of other environmental impacts (e.g., air quality, noise and vibration, landscape and visual amenity) this is assessed by other topic chapters and will not be considered as part of the assessment of WCH.	
	Tourist attractions - temporary or permanent disruption to access and / or land take and / or amenity effects	Visitors and users of tourist attractions	During construction there is potential for tourist attractions to be adversely affected by the English Onshore Scheme, through potential disruption to access caused by delays. The English Onshore Scheme Scoping Boundary has been determined based on the emerging preferred cable corridors which will minimise impacts to tourist attractions, however there are a number which fall within the study area and may be disrupted by the English Onshore Scheme. Specific attractions which may experience disruption to access may experience resultant impacts on their ability to operate due to construction activities. These attractions will be identified as the design of the English Onshore Scheme is progressed. There is therefore the potential for significant construction phase effects on tourist attractions and their users as a result of temporary disruption. Whilst there is the potential for amenity effects on tourist attractions and their users as a result of other environmental impacts (e.g., air quality, noise and vibration, landscape and visual amenity) this is assessed by other topics chapters and will not be considered as part of the assessment of tourist attractions.	**Scoped In**
	Tourist accommodation - temporary or permanent disruption to	Users of tourist accommodation	During construction there is potential for tourist accommodation to be adversely affected by the English Onshore Scheme, through potential disruption to access.	**Scoped In**

Development Phase	Impact	Receptor	Potential for Significant Effects	Proposed to be Scoped In / Out
	access and / or land take and / or amenity effects and / or increased demand from temporary construction		The English Onshore Scheme Scoping Boundary has been determined based on the emerging preferred cable corridors which seek to minimise impacts and disruption to tourist accommodation receptors where possible, however there are a number which fall within the study area and may be disrupted by the English Onshore Scheme. Specific accommodation providers which may experience disruption to access may experience resultant impacts on their ability to operate due to construction activities. These accommodation providers will be identified as the design of the English Onshore Scheme is progressed. There is therefore the potential for significant construction phase effects on tourist accommodation providers and their users as a result of temporary disruption. Whilst there is the potential for amenity effects on tourist accommodation providers and their users as a result of other environmental impacts (e.g., air quality, noise and vibration, landscape and visual amenity) this is assessed by other topics chapters and will not be considered as part of the assessment of tourist attractions. The construction of the English Onshore Scheme also has the potential to affect the availability of tourist accommodation in the locality due to the influx of construction workers who are required to reside close to the English Onshore Scheme construction routes on a temporary basis and may require access to short term accommodation. As the number of construction workers is not known at the time of writing, this has the potential to give rise to significant construction phase effects on the availability of tourist accommodation.	

Development Phase	Impact	Receptor	Potential for Significant Effects	Proposed to be Scoped In / Out
Operation	Employment Generation (direct, indirect and induced)	Working age residents	Operational phase employment associated with the English Onshore Scheme is limited; whilst the converter station would be staffed with approximately 10 full time staff on site during weekdays. As such, whilst employment would be generated by the English Onshore Scheme, this would not be significant. Any maintenance activities are assumed to be undertaken by NGET, by existing maintenance and facilities staff. As such, no significant operational employment effects are anticipated.	**Scoped Out**
Construction and Operation	Businesses and Development Land - temporary or permanent disruption to access and / or land take and / or amenity effects	Business operators, employees and customers	There is potential for temporary adverse effects on businesses located within the study area throughout the construction phase due to potential access restrictions via roads, and associated construction traffic, as well as amenity effects associated with construction (such as potential noise and dust). The English Onshore Scheme Scoping Boundary has been determined based on the emerging preferred cable corridors which will minimise impacts and disruption to business receptors, where possible. Where construction vehicle routes and construction compounds are located close to businesses, access will be maintained throughout the construction period; this will be presented in the Outline CEMP. As such, this will reduce the potential for disruption to business operations and ensure that access for employees and customers is maintained. Amenity effects which may be experienced by employees or customers as a result of other environmental impacts (e.g., air quality, noise and vibration, landscape and visual amenity) are assessed by other topics chapters. As such, no	**Scoped Out**

Development Phase	Impact	Receptor	Potential for Significant Effects	Proposed to be Scoped In / Out
			significant construction phase effects on businesses are anticipated. Once operational, the English Onshore Scheme would include permanent above ground structures at the converter station. Taking account of design and control measures (see **Part 2, Chapter 8: Landscape and Visual Amenity**) potential impacts are unlikely to give rise to any significant visual or other amenity effects on businesses. It is unlikely that any significant effects would be experienced by businesses, their employees and users, once the English Onshore Scheme are operational. As such, no significant operational phase effects on businesses are anticipated.	
	Private Property and Housing - temporary or permanent disruption to access and / or land take and / or amenity effects	Residents of private properties	During construction there is potential for temporary adverse effects on private property and housing located within the study area due to potential access restrictions via roads, and associated construction traffic, as well as amenity effects associated with construction (such as potential noise and dust). The English Onshore Scheme Scoping Boundary has been determined based on emerging preferred cable corridors which seek to minimise impacts and disruption to residential receptors, where practicable. Where construction vehicle routes and construction compounds are located close to dwellings, access would be maintained throughout the construction period. As such, this would reduce the potential for disruption to residents and avoid significant disruption. Amenity effects which may be experienced by residents of private property and housing as a result of other environmental effects (e.g., air quality, noise and vibration,	**Scoped Out**

Development Phase	Impact	Receptor	Potential for Significant Effects	Proposed to be Scoped In / Out
			landscape and visual amenity) are assessed by other topics chapters. As such, no significant construction phase effects on residents are anticipated. Once operational, the English Onshore Scheme would include permanent above ground structures at the converter station. Taking account of design and control measures (see **Part 2, Chapter 8: Landscape and Visual Amenity**) potential impacts are unlikely to give rise to any significant visual or other amenity effects on residents. It is unlikely that any significant effects would be experienced by residents within properties once the English Onshore Scheme is operational. As such, no significant operational phase effects on private property and housing are anticipated.	
	Community land, assets and recreational facilities – temporary or permanent disruption to access and / or land take and / or amenity effects	Users of community land, assets and recreational facilities	During construction there is potential for temporary adverse effects on community land, assets and recreational facilities located within the study area due to potential access restrictions via roads, and associated construction traffic, as well as amenity effects associated with construction (such as potential noise and dust). The English Onshore Scheme Scoping Boundary has been determined based on emerging preferred cable corridors which seek to minimise impacts and disruption to community land, assets and recreational receptors, where practicable. Where construction vehicle routes and construction compounds are located close to assets, access would be maintained throughout the construction period. As such, this would reduce the potential for disruption to users and avoid significant disruption. Amenity effects which may be experienced by users of community land, assets and recreational facilities as a result	**Scoped Out**

Development Phase	Impact	Receptor	Potential for Significant Effects	Proposed to be Scoped In / Out
			of other environmental effects (e.g., air quality, noise and vibration, landscape and visual amenity) are assessed by other topics chapters. As such, no significant construction phase effects on residents are anticipated. Once operational, the English Onshore Scheme would include permanent above ground structures at the converter station. Taking account of design and control measures (see **Part 2, Chapter 8: Landscape and Visual Amenity**) potential impacts are unlikely to give rise to any significant visual or other amenity effects on users of community land, assets and recreational facilities. It is unlikely that any significant effects would be experienced by users once the English Onshore Scheme is operational. As such, no significant operational phase effects on community land, assets and recreational facilities are anticipated.	
Operation	WCH	WCH using PRoW and other designated routes	Once operational, the English Onshore Scheme would include permanent above ground structures at the converter station. Taking account of design and control measures (see **Part 2, Chapter 8: Landscape and Visual Amenity**) potential impacts are unlikely to give rise to any significant visual or other amenity effects for WCH. Once operational it is anticipated that any affected PRoW would be reinstated and returned to their previous state or permanently diverted. Therefore, it is unlikely that any significant effects would be experienced by users once the English Onshore Scheme is operational.	**Scoped Out**
	Tourist attractions	Visitors and users of tourist attractions	Once operational, the English Onshore Scheme would include permanent above ground structures at the converter station. Taking account of design and control measures (see	**Scoped Out**

Development Phase	Impact	Receptor	Potential for Significant Effects	Proposed to be Scoped In / Out
			Part 2, Chapter 8: Landscape and Visual Amenity) potential impacts are unlikely to give rise to any significant visual or other amenity effects for visitors and users of tourist attractions. Once operational it is anticipated that any affected tourist attractions and facilities would reinstated and returned to their previous state. Therefore, it is unlikely that any significant effects would be experienced by users of tourist attractions once the English Onshore Scheme is operational.	
	Tourist accommodation	Users of tourist accommodation	Once operational, the English Onshore Scheme would include permanent above ground structures at the converter station. Taking account of design and control measures (see **Part 2, Chapter 8: Landscape and Visual Amenity**) potential impacts are unlikely to give rise to any significant visual or other amenity effects for users of tourist accommodation. Once operational there is anticipated to be limited permanent employment associated with the English Onshore Scheme; whilst the converter station would be staffed, associated employment numbers are small and employees are likely to be sourced from the local or regional employment market with no requirement for temporary accommodation. As such, no significant operational effects are anticipated on tourist accommodation.	**Scoped Out**

15.7 Assessment Methodology

Further Data to be Gathered / Processed

Desk-Based Assessments

15.7.1. In addition to the data sources listed previously in Section 15.4, assessment within the PEIR and ES would be supported by the following additional information:

- Extent and nature of construction phase activities potentially leading to dust emissions.
- Extent and nature of Non-Road Mobile Machinery (NRMM) during construction phase.
- Construction employment procurement methodology, including the potential for specialist workers or employees from outside the region who may require access to temporary accommodation.
- Traffic data for the construction, operation and maintenance phases.

Assessment of Significance

Construction Phase – Employment Generation

Approach to Assessment

15.7.2. The assessment of likely significant effects relating to employment generation during the construction phase will be undertaken using Excel based analysis. Employment will be based on the construction duration and cost and will be estimated by applying an average gross output per construction industry employee to the estimated total construction cost. Leakage, displacement, and multiplier effects are then taken into account to determine the total net employment. Discussions with the Construction Contractor(s) and Applicant will also inform the approach to assessment, drawing on previous experience of delivering similar developments.

Leakage

15.7.3. Leakage effects are the *"proportion of outputs that benefit those outside of the intervention's target area or group"* (Ref 15.17). Leakage rates will be applied to construction employment calculations. On the basis of travel to work data, past experience and expert judgement, a medium leakage rate (as set out in the HCA Additionality Guidance (Ref 15.17) of 25% has been applied.

Displacement

15.7.4. Displacement measures the extent to which the benefits of a given development are offset by reduction of output or employment elsewhere. Additional demand for labour as a result of the construction phase of the English Onshore Scheme cannot simply be treated as a net benefit as it has the potential to remove workers from other positions, and the net benefit is therefore reduced by the extent that this occurs.

15.7.5. Overall, it is assumed that due to the flexibility of the labour market and the fact that construction workers delivering the English Onshore Scheme are likely to represent a small proportion of the regional construction labour force, displacement of the direct construction employment will be low. In the context of the East Midlands region, a low level of displacement of 25% is considered appropriate, where *"there are expected to be some displacement effects, although only to a limited extent"* (Ref 15.17).

Multiplier Effects

15.7.6. In addition to the direct construction employment generated by the English Onshore Scheme, there will be an increase in local employment arising from *"further economic activity (jobs, expenditure or income) associated with additional local income and local supplier purchases"*; the indirect and induced effects of the construction activity (Ref 15.17).

15.7.7. Employment growth will arise locally through manufacturing services and suppliers to the construction process (indirect or supply linkage multipliers). Additionally, part of the income of the construction workers and suppliers will be spent in the region, generating further employment (induced or income multipliers).

15.7.8. The applicable multiplier is dependent on the size of the geographical area that is being considered, the local supply linkages and income leakage from the area. The HCA Additionality Guidance (Ref 15.17) provides a guide to the composite multipliers (the combined effect of indirect and induced multiplier effects) which should be applied. A medium multiplier of 1.5 will be applied on the basis that there are likely to be average supply linkages associated with the English Onshore Scheme, based on its location within the East Midlands.

Significance of Effect Criteria

15.7.9. The methodology for assessing employment generation will consider the likely direct, indirect and induced impacts associated with the English Onshore Scheme during construction. For socio-economics there is no accepted definition of what constitutes a significant (or not significant) socio-economic effect. It is however recognised that classification of an effect reflects the relationship between the scale of an impact (magnitude) and the sensitivity (or value) of the affected resource or receptor. As such socio-economic effects will be assessed on the basis of:

- Consideration of sensitivity to effects: Specific values in terms of sensitivity are not attributed to socio-economic resources / receptors due to their diverse nature and scale. However, the assessment takes account of the qualitative (rather than quantitative) 'sensitivity' of the receptor (employment and the economy).
- Magnitude of the impact: This entails consideration of the size of the effect on people (employees) in the context of the area in which effects will be experienced (the local and regional economy).

15.7.10. Effects are defined as follows:

- Beneficial classifications of significance indicate an advantageous or beneficial effect on an effect area, which may be minor, moderate, or major in effect.
- Negligible classifications of significance indicate imperceptible effects on an effect area.

- Adverse classifications of significance indicate a disadvantageous or adverse effect on an effect area, which may be minor, moderate or major in effect.

15.7.11. Based on consideration of the above, where an effect is assessed as being beneficial or adverse, significance has been assigned using the scale below based on professional judgement:

- **Negligible:** no receptors (or very few) are beneficially or adversely affected. The effect is unlikely to make a measurable difference on the receptors in the relevant areas of effect.
- **Minor:** a small number of receptors are beneficially or adversely affected. The effect is likely to make a small measurable positive or negative difference on receptors in the relevant area(s) of effect.
- **Moderate:** a moderate number of receptors are beneficially or adversely affected. The effect is likely to make a measurable positive or negative difference on receptors in the relevant area(s) of effect.
- **Major:** all or a large number of receptors are beneficially or adversely affected. The effect is likely to make a substantial positive or negative difference on receptors in the relevant area(s) of effect.

15.7.12. The duration of effect is also considered, with more weight given to permanent changes than to temporary ones. Temporary effects are considered to be those associated with the construction phase, and may be short, medium or long term.

15.7.13. Effects that are deemed to be significant for the purpose of this assessment are those that are described as being moderate or major beneficial or adverse.

Construction Phase – Public Access for Walkers, Cyclists and Horse Riders

Approach to Assessment

15.7.14. The assessment of PRoW and designated routes, and potential disruption to WCH during construction will be qualitative and informed by desk based study.

15.7.15. The following methodology for the assessment of likely significant is proposed in accordance with DMRB LA 104 (Ref 15.15) and DMRB LA 112 (Ref 15.14). Despite the DMRB being the standard for the assessment of road schemes, this guidance provides an appropriate methodology for assessing the effects on WCH in the context of the English Onshore Scheme.

15.7.16. PRoW and other designated routes which are subject to disruption or diversion (on a temporary or permanent basis) will be identified. An assessment of sensitivity and magnitude will be undertaken, applying professional judgement and past experience on similar developments.

Significance of Effect Criteria

15.7.17. The sensitivity criteria and magnitude of impact will be assigned in line with DMRB LA 112 (Ref 15.14) as shown in **Table 15-13** and **Table 15-14** below.

Table 15-13: Walkers, Cyclists and Horse Riders: Sensitivity Criteria

Sensitivity	Description
Very High	National trails and routes likely to be used for both commuting and recreation that record frequent (daily) use. Such routes connect communities with employment land uses and other services with a direct and convenient WCH route. Little / no potential for substitution.
High	PRoW frequently used by WCH for commuting, recreational and leisure purposes (e.g., National Trails). Also, for use by vulnerable travellers (e.g., elderly, school children and people with disabilities).
Medium	PRoW moderately used by WCH for commuting, recreational and leisure purposes (e.g., regional trails).
Low	Locally designated PRoW and other routes close to communities which are used by WCH mainly for recreational purposes (for example dog walking), but for which alternative routes can be taken.
Negligible	PRoW not / infrequently used by WCH for recreational purposes.

Table 15-14: Walkers, Cyclists and Horse Riders: Magnitude of Impact

Sensitivity	Description
Major	Major effect: where the English Onshore Scheme could be expected to have a considerable effect (either beneficial or adverse) on receptors. Permanent loss / severance of an existing recreational or commuting route / resource used by WCH.
Moderate	Moderate effect: where the English Onshore Scheme could be expected to have a perceptible effect (either beneficial or adverse) on receptors. Disruption of a recreational or commuting route / resource used by WCH with significant increase / decrease in journey length / time.
Minor	Minor effect: where the English Onshore Scheme could be expected to result in a small, barely perceptible effect (either beneficial or adverse) on receptors. Alteration of a recreational or commuting route / resource used by WCH but with no significant increase in journey length / time.
Negligible	Negligible: Where no discernible effect is expected as a result of the English Onshore Scheme on receptors. No change to recreational or commuting route / resource used by WCH.
No Change	No loss or alteration of characteristics, features, elements or accessibility; no observable impact.

15.7.18. The level of significance will be assigned in line with Table 3.8.1 in DMRB LA 104 (Ref 15.15) and as outline in **Table 15-15**. Significant effects for the assessment of PRoW and designated routes comprise those which are assigned as moderate, large or very large. The remaining effects will be categorised as non-significant, as outlined below:

- Very High: Very high importance and rarity, international scale and very limited potential for substitution.
- High: High importance and rarity, national scale, and limited potential for substitution.
- Medium: High importance and rarity, national scale, and limited potential for substitution.
- Low: Low or medium importance and rarity, local scale.
- Negligible: Very low importance and rarity, local scale.

Table 15-15: Walkers, Cyclists and Horse Riders: Level of Significance

		Magnitude				
		Major	***Moderate***	***Minor***	***Negligible***	***No Change***
Sensitivity	**Very High**	Very Large	Large or Very Large	Moderate or Large	Slight	Neutral
	High	Large or Very Large	Moderate or Large	Slight or Moderate	Slight	Neutral
	Medium	Moderate or Large	Moderate	Slight	Neutral or Slight	Neutral
	Low	Slight or Moderate	Slight	Neutral or Slight	Neutral or Slight	Neutral
	Negligible	Slight	Neutral or Slight	Neutral or Slight	Neutral or Slight	Neutral

Construction Phase – Tourist Attractions

15.7.19. No quantitative impact assessment on tourism will be undertaken, with the assessment utilising available tourism data and published studies and applying professional judgement to reach conclusions. The assessment will provide a qualitative assessment of the effects on tourism, focussing on tourist assets and attractions that could be affected by the English Onshore Scheme during construction.

Construction Phase – Tourist Accommodation

15.7.20. An evaluation of the likely number of construction employees who may reside in the locality on a temporary basis will be undertaken; based on the total number of construction employees combined with assumptions made by the Applicant associated with travel planning, construction methodologies, and the construction programme. A percentage of the overall construction employment workforce will be determined based on these factors. Consideration will be given to the types of tourist accommodation in

the locality, including number of bedrooms, to determine whether additional pressure may arise on local accommodation facilities, in the context of existing availability and demand from tourists visiting the local area.

15.8 Assessment Limitations and Assumptions

15.8.1. The following limitations and assumptions have been identified that will form the basis of the PEIR and EIA:

- This assessment has relied, in part, on data provided by third parties (e.g., Ordnance Survey Mapping, Office for National Statistics (ONS)) which are the most up-to-date data available at the time of writing. No significant changes or limitations in these datasets have been identified that would affect the robustness of the assessment. Baseline data will be kept under review throughout the production of the PEIR and EIA in order to ensure that (where practicable) the most recently published data is utilised.
- No site survey has been undertaken for the purpose of this chapter. However, this is not considered to affect the robustness of the assessment for EIA purposes due to baseline information being publicly available.
- The assessment of human health has been included within **Part 2, Chapter 16: Health and Wellbeing**. The assessment of agricultural businesses has been assessed in **Part 2, Chapter 11: Agriculture and Soils**.

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16. Health and Wellbeing

16.1 Introduction

16.1.1. The Health and Wellbeing assessment will consider the potentially significant effects on health and wellbeing that may arise from the construction and operation of the English Onshore Scheme.

16.1.2. This chapter of the Scoping Report sets out the relevant legislation, planning policy context and technical guidance used to inform the scope of the assessment and summarises any consultation and engagement in relation to health and wellbeing undertaken to date. It provides an overview of the baseline conditions relevant to health and wellbeing, the measures which will be incorporated into the English Onshore Scheme to mitigate health and wellbeing effects, the likely significant effects to be considered within the assessment, and how these likely significant effects will be assessed for the purpose of an EIA.

16.1.3. This chapter should be read in conjunction and considered alongside the following chapters found within **Volume 1**:

- **Part 2, Chapter 7: Cultural Heritage** which details impacts on cultural heritage assets which may be referenced by the health and wellbeing assessment**.**
- **Part 2, Chapter 8: Landscape and Visual Amenity** which details impacts on landscape and visual amenity which may be referenced by the health and wellbeing assessment**.**
- **Part 2, Chapter 9: Water Environment** which details impacts on flood risk and impacts to the water environment which may be referenced by the health and wellbeing assessment**.**
- **Part 2, Chapter 12: Traffic and Transport** which details impacts from construction traffic, which may be referenced by the health and wellbeing assessment**.**
- **Part 2, Chapter 13: Noise and Vibration** which details impacts on residential receptors from changes in noise and vibration levels which may be referenced by the health and wellbeing assessment**.**
- **Part 2, Chapter 14: Air Quality** which details impacts on air quality which may be referenced by the health and wellbeing assessment**.**
- **Part 2, Chapter 15: Socio-economics, Recreation and Tourism** which details impacts on employment, recreation and tourism, which may be referenced by the health and wellbeing assessment.

16.1.4. This chapter is supported by the following figures found within **Volume 3**:

- **Figure 16-1 Health and Wellbeing Study Area.**

16.2 Relevant Legislation, Planning Policy and Technical Guidance

16.2.1. This section identifies the relevant legislation, national and local policy and guidance which has informed the scope of the health and wellbeing assessment.

Legislation

16.2.2. A summary of the key legislation considered in, but not limited to, the scope of the health and wellbeing effects is outlined in **Table 16-1**. The legislation presented in **Table 16-1** underpins and / or is considered throughout this chapter.

Table 16-1: Legislation relevant to health and wellbeing

Legislation	Legislative context
The Environment Act (2021) (Ref 16.1)	The Environment Act 2021 sets out a series of long-term targets which relate to the natural environment and people's enjoyment of the natural environment, under Part 1 Regulation 1. Targets for improving air quality, water quality, biodiversity and resource efficiency are required to be met.
Equality Act (2010) (Ref 16.2)	The Equality Act 2010 protects people from discrimination in the workplace and in wider society. Protected characteristics comprise: • Age; • Disability; • Gender reassignment; • Marriage and civil partnership; • Race, including colour, nationality, ethnic or national origin; • Religion or belief; • Sex; • Sexual orientation; and • Pregnancy and maternity.
Infrastructure Planning (Environmental Impact Assessment) Regulations (2017) (Ref 16.3).	Under the Infrastructure Planning (EIA) Regulations, a number of topics are required to be assessed. This includes human health, with a description of the factors likely to be significantly affected by the development and a description of the likely significant effects.

16.2.3. In addition to the legislation noted in the **Table 16-1**, legislation specific to environmental factors are discussed within the individual technical aspect chapters of this Scoping Report and have not been repeated.

Planning Policy

16.2.4. A summary of the planning policies at both a national and local level relevant to the scope of health and wellbeing effects is outlined in **Table 16-2** and **Table 16-3**. The legislation and planning policy presented in **Table 16-2** and **Table 16-3** underpins and / or is considered in the following sections of this scoping chapter:

- Consultation and Engagement (**Section 16.3**);
- Scope of Assessment (**Section 16.6**); and
- Assessment Methodology (**Section 16.7**).

Table 16-2: National planning policy relevant to health and wellbeing

Policy reference	Policy context
Overarching National Policy Statement for Energy (EN-1) (2024) Paragraph 4.3.1 – 4.3.5 (Ref 16.4).	The National Policy Statement details that an ES should assess effects for each element of the Project, identifying measures to avoid, reduce or compensate for health impacts. The policy highlights that effects resulting from other environmental topics should be assessed, but that regulation of these topics is considered effective mitigation.
Overarching National Policy Statement for Energy (EN-1) (2024) Section 4.4 (Ref 16.4).	The National Policy Statement details that an ES should assess effects on health and wellbeing, including from related topics and indirect impacts. The NPS particularly highlights potential impacts on vulnerable groups within society and those with protected characteristics under the Equality Act 2010.
Draft Overarching National Policy Statement for Energy (EN-1) (April 2025) Paragraph 4.3.1 – 4.3.5, Section 4.4 (Ref 16.5).	The Government has published a draft update to the Overarching National Policy Statement for Energy. For Health and Wellbeing, the 2025 Draft NPS EN-1 is largely the same as in the 2024 document, with relevant section and paragraph numbers remaining the same.
National Policy Statement for Electricity Networks Infrastructure (EN-5) (2024) Paragraph 2.9.44 – 2.8.58 (Ref 16.6).	The Policy Statement states that the applicant must consider a series of factors in relation to Electric and magnetic Fields (EMFs), requiring compliance with International Commission on Non-Ionizing Radiation Protection (ICNIRP) limits, and mitigation such as re-routeing, undergrounding or increased clearances to ensure this. It is noted that it is not the government's policy for power lines to be undergrounded solely for the purpose of EMF mitigation. The Policy Statement additionally supports the scoping out of physical health impacts from EMFs at Paragraph 2.9.56, citing the scientific evidence over several decades.

Policy reference	Policy context
Draft National Policy Statement for Electricity Networks Infrastructure (EN-5) (April 2025) Paragraph 2.9.45 – 2.8.59 (Ref 16.7).	The Government has published a draft update to the National Policy Statement for Electricity Networks Infrastructure For Health and Wellbeing, the 2025 Draft NPS EN-5 is largely the same as in the 2024 document, with change in some paragraph numbers.
National Planning Policy Framework (NPPF) (2024) Paragraph 96 – 102 (Ref 16.8).	The NPPF sets out a series of objectives and priorities for planning in England and how they should be applied. The overarching aim includes a social objective to support strong and healthy communities, with accessible services and open spaces. Section 8 specifies the objectives for promoting healthy and safe communities.

Table 16-3: Local planning policy relevant to health and wellbeing

Policy reference	Policy context
East Lindsey District Council: East Lindsey Local Plan Core Strategy, (2018) (Adopted 2018) (Ref 16.9).	Chapter 4, Strategic Policy 10 (SP10) Strategic Policy 22 (SP22) Transport and Accessibility Developers are encouraged to carry out a Health Impact Assessment (HIA) commensurate with the size and nature of the development to show how they have factored this into their proposal. The Plan sets out how landscape, green infrastructure, open space and access to facilities can create an attractive and healthy working and living environment.
East Lindsey District Council: East Lindsey District Council Health and Wellbeing Strategy (2023) (Ref 16.10).	The East Lindsey District Council Health and Wellbeing Strategy sets out five key aims for the successful delivery of the plan, including themes of improving the supply of homes, to address inactivity, to deliver on environment and health improvements together, to reduce economic inequality and alleviate poverty, and support local communities.
Lincolnshire District Councils' Health and Wellbeing Strategy (Ref 16.11).	04 Strategic Framework Activity Outputs 4.2 06 Key data, indictors and 'levelling up' 6.1 The Lincolnshire District Councils' Strategy covers East Lindsey District Council, South Holland District Council

Policy reference	Policy context
	and Boston Borough Council, aiming to alleviate poverty as a driver for improving mental and physical health. The plan further sets out goals to work with communities to support engagement and collaboration, develop programmes for improving quality of accommodation and improve access to safe places and spaces, in which to take part in regular physical activity. The Health and Wellbeing Strategy additionally sets out a number of key indicators for measuring success.

Technical Guidance

16.2.5. A summary of the relevant technical guidance, specific to the health and wellbeing assessment, that has informed this Scoping Report and will inform the assessment within the PEIR and ES, is given in **Table 16-4**.

Table 16-4: Technical guidance relevant to health and wellbeing

Technical guidance document	Context	Section considered
Healthy Lives, Healthy People: Our Strategy for Public Health in England, HM Government (2011) (Ref 16.12).	This white paper sets out the approach to reduce inequalities in health and address the root causes of poor health and wellbeing.	Future Baseline (**Section 16.4**)
A Green Future: Our 25 Year Plan to Improve the Environment, Department for Environment, Food and Rural Affairs (2018) (Ref 16.13).	The Plan sets out the proposals to open up the mental and physical health benefits of the natural world through the 25-year plan for improving the environment.	Future Baseline (**Section 16.4**)
Planning Practice Guidance (PPG) – Healthy and Safe Communities, Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local Government (2014) (2022 update) (Ref 16.14).	The guidance sets out the importance of considering planning and health together by creating healthy environments that support and encourage healthy lifestyles and by identifying and securing facilities for primary, secondary and tertiary care.	All Sections

Technical guidance document	Context	Section considered
Putting Health into Place, Public Health England (2018) (Ref 16.15).	The guidance explains the relationship between health and development, including key actions for developers to align approaches to address the root causes of preventable health conditions and poor wellbeing.	Baseline Data (**Section 16.4**)
Health Impact Assessment in spatial planning A guide for local authority public health and planning teams, Public Health England (PHE) (2020) (Ref 16.16).	This guide illustrates the process for conducting Health Impact Assessments to address local health and wellbeing needs and tackle inequalities.	Scope of the Assessment (**Section 16.6**) Assessment Methodology (**Section 16.7**)
Advice on the content of Environmental Statements accompanying an application under the NSIP Regime, PHE (2021) (Ref 16.17).	PHE explains the required methodology for assessing impacts within this advice note, alongside defining potential significant effects and vulnerable groups.	All Sections
Health in Environmental Impact Assessment A Primer for a Proportionate Approach, Institute of Environmental Management and Assessment (IEMA) (2017) (Ref 16.18).	The IEMA guidance aims to guide EIA coverage of population and human health, focusing on proportionality and the opportunities and challenges presented.	Scope of the Assessment (**Section 16.6**)
Effective Scoping of Human Heath in Environmental Impact Assessment, IEMA (2022) (Ref 16.19).	This scoping guidance explains when an EIA Chapter should be prepared and when a standalone Health Impact Assessment would be required. The expectation is that the EIA Report will include a chapter on human health where: • Wider determinants of health not covered by other EIA technical topics have been scoped in; or • Other EIA technical topics have been scoped in to assess likely and potentially significant effects to human receptors, community amenities or services; and there are likely potentially significant population health implications from such assessments.	Baseline Data (**Section 16.4**) Scope of the Assessment (**Section 16.6**) Assessment Methodology (**Section 16.7**)

Technical guidance document	Context	Section considered
	"*If the implications of other EIA technical topics for population health are not clear at the scoping stage, then an EIA Report health chapter should be included, and once the further assessment detail for those topics is available, explain whether or not there are likely any significant population health effects.*" Additionally, the guidance outlines the relationship of HIA and EIA where there is a policy or validation requirement to undertake HIA. The guidance explains that "*EIA projects should normally meet this through the EIA Report health chapter where significant health effects are likely to occur. Where the EIA follows IEMA guidance the health chapter will align to HIA principles, including considering wider determinants of health and health inequalities.*"	
Determining Significance for Human Health in Environmental Impact Assessment, IEMA, (2022) (Ref 16.20).	This guidance promotes greater consistency in the assessment process, including how EIA health conclusions are reached, interpreted and used by all parties. This guidance explains how the magnitude of effect and sensitivity of receptors is applied to human health. Methodologies are set out and significance criteria established.	Scope of the Assessment (**Section 16.6**) Assessment Methodology (**Section 16.7**)
Mental Wellbeing Impact Assessment (MWIA) – a toolkit for wellbeing, National MWIA Collaborative (England), (2011) (Ref 16.21).	This MWIA toolkit for wellbeing provides an evidence-based framework for improving wellbeing. The MWIA screening toolkit has been designed to assist policies, services, programmes or projects, to begin to find out how they might make a difference through using MWIA.	Scope of the Assessment (**Section 16.6**) Assessment Methodology (**Section 16.7**)
Guidelines For Limiting Exposure to Time-Varying Electric, Magnetic And Electromagnetic Fields (Up To 300 GHz), International Commission on Non-Ionizing	The ICNIRP establishes guidelines for limiting EMF exposure that will provide protection against known adverse health effects. The guidance presents basic restrictions on	Scope of the Assessment (**Section 16.6**)

Technical guidance document	Context	Section considered
Radiation Protection (ICNIRP), (1998) (Ref 16.22).	exposure and reference levels for compliance.	Assessment Methodology (**Section 16.7**)
Fair Society, Healthy Lives The Marmot Review, Institute of Health Equity (2010) (Ref 16.23).	The Marmot Review was commissioned to undertake a review into inequality and its relation to health. The Review concludes with policy recommendations to address the findings, including creating healthy and sustainable communities, giving children the best start in life and ensuring a healthy standard of living for all. These each include a number of policy objectives.	Baseline Data (**Section 16.4**) Scope of the Assessment (**Section 16.6**) Assessment Methodology (**Section 16.7**)
Health Equity In England: The Marmot Review 10 Years On, Institute of Health Equity, (2020) (Ref 16.24).	Building on the work of the 2010 Marmot review, the 2020 review examines why life expectancy has stalled in England and how health inequalities have grown in the previous decade. The policy objectives from the 2010 report are developed further to clarify objectives.	Baseline data (**Section 16.4**) Scope of the Assessment (**Section 16.6**) Assessment Methodology (**Section 16.7**)

16.3 Consultation and Engagement

16.3.1. In respect of health and wellbeing, key consultees have been identified and focussed engagement (through both informal and formal consultation) will be undertaken and recorded throughout the pre-application stage of the Project. Key consultees identified to date are:

- East Lindsey District Council;
- Lincolnshire County Council;
- The Office for Health Improvement and Disparities; and
- The Health and Safety Executive.

16.3.2. Key areas of consultation are intended to include the assessment of mental and physical health, and the identification of vulnerable groups within the study area.

16.3.3. Local or specialist groups will be contacted should the assessment process identify a need to engage further detailed local knowledge, or if requested during the statutory consultation process.

16.4 Baseline Conditions

Study Area

16.4.1. The study area for the health and wellbeing assessment has been defined using professional judgement and experience of similar linear projects. The study area comprises all wards located within the English Onshore Scoping Boundary. Health data has been collected for Lower Layer Super Output Areas (LSOA) within the study area, where available. These wards and LSOAs are outlined in **Table 16-5.**

Table 16-5: Ward and LSOA alignment

Local planning authority	Ward	LSOA
East Lindsey	Alford (E05009873)	East Lindsey 008C
		East Lindsey 008B
	Chapel St. Leonards (E05009876)	East Lindsey 010B
	Willoughby with Sloothby (E05009905)	East Lindsey 008D
		East Lindsey 009B
	Withern & Theddlethorpe (E05009907)	East Lindsey 008E
	Legbourne (E05009887)	East Lindsey 008A

16.4.2. The study area for health and wellbeing is presented on **Volume 3, Figure 16-1**.

16.4.3. Where the assessment of health-related environmental change relies on data from other technical aspect chapters, the study area for that chapter will be referred to in the assessment. The identification of social, health and recreational infrastructure will utilise a 500 m study area from the English Onshore Scoping Boundary.

16.4.4. A 200 m study area has been assumed around the English Onshore Scoping Boundary for consideration of EMF. Previous studies and calculations (Ref 16.25) have shown that equipment operating at the proposed voltage and rating do not produce EMF greater than typical background levels at distances of more than 200 m.

Data Gathering Methodology

16.4.5. The baseline has been informed by a desk study which has drawn on the following information sources:

- Office for National Statistics Census 2021 data (Ref 16.26);
- Office for Health Improvement and Disparities online data (Ref 16.27);
- Department of Health and Social Care Fingertips Public Health (Ref 16.28);
- Baseline information from related technical aspect chapters of this Scoping Report; and
- Lincolnshire Joint Strategic Needs Assessment (Ref 16.29).

Current Baseline

16.4.6. The World Health Organisation defines health as a '*state of complete physical, mental and social well-being and not merely the absence of disease or infirmity'* (Ref 16.30). The range of personal, social, economic, and environmental factors that influence health status are known as health determinants and include the physical environment, income levels, employment, education, social support, and housing. Data has been collected to provide the baseline data for each of these health determinants, or to act as a proxy for assessment. The data collected is presented in **Volume 2, Appendix 16.A: Health and Wellbeing Data**.

Health-related Environmental Change

16.4.7. Population, recreation and deprivation data are presented in **Part 2, Chapter 15: Socio-economics, Recreation and Tourism**. Baseline information relating to health-related environmental change is set out in the following chapters of **Volume 1**:

- **Part 2, Chapter 8: Landscape and Visual Amenity;**
- **Part 2, Chapter 9: Water Environment;**
- **Part 2, Chapter 10: Geology and Hydrogeology;**
- **Part 2, Chapter 12: Traffic and Transport;**
- **Part 2, Chapter 13: Noise and Vibration; and**
- **Part 2, Chapter 14: Air Quality.**

Local Health

16.4.8. The health and wellbeing study area has been gathered and shows varying characteristics and challenges. The baseline sets out the wider health context required to inform the assessment, covering both physical and mental health. This information has been used as a basis for determining the sensitivity of receptors to changes in health determinants arising from the English Onshore Scheme.

Demographic and Socio-economic

Age and Sex

16.4.9. Overall, the study area has an older population when compared to England as a whole and has a smaller percentage of the population aged 0 – 4 years old. Chapel St Leonards has the lowest proportion of children under four years old, each with 2%. This trend continues through to adolescence, where every ward in the study area has a lower proportion of those aged 5 – 18 when compared to England. England has on average, 15% of the population aged over 68 years; the study area has an average of 31%. The ward with the lowest proportion of those aged over 68 is Alford (25%), and the ward with the highest proportion is Chapel St Leonards (36%). This may be indicative of people moving to the area to retire, or conversely, younger people and families moving out of the area for educational and employment opportunities.

16.4.10. The study area performs similarly when compared to England for the proportion of men and women. England has 51% women and 41% men; Chapel St Leonards has the same proportion. Each of the other wards is within 1%, with Alford having 52% women, and

Willoughby with Sloothby, Withern & Theddlethorpe and Legbourne with 50% (Ref 16.26).

Race and Ethnicity

16.4.11. In terms of ethnic diversity, the whole of the study area has a less diverse population than England as a whole. Each of the wards are 98 – 99% white, whereas England as a whole is, in contrast, 81% white. Similarly, the study area overwhelmingly has English as its first language, with 99% of each ward reporting that English is the main language (Ref 16.26).

Education

16.4.12. The study area shows a similar level of education across each ward and LSOA, but worse when compared to England. Within Willoughby with Sloothby, there are two LSOAs within the study area. One of these (East Lindsey 008D) has a population where 55% have 5 GCSEs at A*-C as their highest qualification, where the other LSOA (East Lindsey 009B) has 46% with qualifications at GCSE or less. East Lindsey 009B has the highest proportion of people with qualifications higher than GCSE within the study area. The East Lindsey 008E LSOA within Withern & Theddlethorpe has the next highest education level, with 49% attaining GCSEs or less. England as a whole on the other hand has 41% of the population with GCSEs or less, reflecting greater educational attainment (Ref 16.26, Ref 16.27).

Employment

16.4.13. England as a whole is 57% economically active, including those in full and part-time employment, self-employed, and seeking work. Each ward within the study area is less economically active than England, with the highest proportion of economically active people in Legbourne (51%) and Alford (49%). Chapel St Leonards (35%) and is the least economically active ward within the study area (Ref 16.26).

Deprivation

16.4.14. Indices of Multiple Deprivation (IMD) rank all of the LSOAs in England, allowing for a comparison between neighbourhoods, where one is the most deprived neighbourhood out of the 32,844 LSOAs. The IMD rank scores have been collated for each of the LSOAs within the study area. The most recent IMD data available is from 2019, with data gathering expected for an update to be undertaken in 2025. All of the wards that make up the study area fall within the 40% most deprived LSOAs in England, with East Lindsey 010B in Chapel St Leonards the most deprived and within the 20% most deprived neighbourhoods, with a ranking of 5,204. East Lindsey 008D in Willoughby by Sloothby also falls in the 20% most deprived, having a ranking of 6,265. The two LSOAs in Alford (East Lindsey 008B and 008C) are the two least deprived in the study area, with rankings of 9,852 and 10,348 respectively (Ref 16.27).

Health and Wellbeing Status

Life Expectancy and General Health

16.4.15. Life expectancy rates within the study area are slightly lower than the England average (79.5 years for men, and 83.2 years for women). For male life expectancy, the East Lindsey average is 2.5 years lower than for England. For female life expectancy, the East

Lindsey average is 1.1 years lower than for England, showing an inequality between men and women in East Lindsey, and between East Lindsey and England (Ref 16.28).

16.4.16. Across childhood weight indicators, where there is data available, the wards perform worse for Year six scores than England as a whole. Lincolnshire has a similar percentage of overweight (including obese) Year six pupils to England (38% to England's 37%), whereas the two wards with available data have a higher percentage. These wards are Alford (50%) and Chapel St Leonards (42%). This indicates that opportunities for exercise, active travel and outdoor recreation, as well as accessing healthy foods is a challenge for this area (Ref 16.28).

Disability

16.4.17. The number of people across the study area living with a disability (as defined under the Equality Act) is higher than the England average. 17.7% of the population in England identify themselves as disabled, whereas each of the LSOAs within the study area are higher by at least 12 percentage points. The LSOA with the lowest proportion of disabled people is East Lindsey 009B in Willoughby with Sloothby (29%), and the LSOA with the highest is East Lindsey 010B in Chapel St Leonards (37%). This is likely to be as a result of the populations being older than average (Ref 16.27).

Happiness and Life Satisfaction

16.4.18. The study area generally performs better than England as a whole with regards to self-reported happiness and life satisfaction. For happiness scores, East Lindsey as a whole has a score of 7.7 compared to England's 7.38, and for life satisfaction East Lindsey scores 7.5 compared to England's 7.44. This suggests a resilient community within the wider local authority area (Ref 16.28).

Natural and Built Environment

Population Density and Green Space

16.4.19. The study area has a mixed picture for population density. East Lindsey 008B in Alford has the highest population density of the study area, with 1,037.5 people per square kilometre, while the two wards in Willoughby with Sloothby (East Lindsey 008D and East Lindsey 009B) and East Lindsey 008E in Withern and Theddlethorpe have the lowest population densities of 28.3, 21.5 and 24.7 people per kilometre respectively. East Lindsey 008A in Legbourne is the most similar to the England average, with 267.6 compared to England's 279 (Ref 16.26).

16.4.20. Access to green and blue infrastructure can be a key indicator for mental health and increasing resilience. Across England, the average area of green space per person is 30m^2; in East Lindsey this figure falls to 18.2 m^2 (Ref 16.31).

Crime Rates

16.4.21. The IMD crime domain rankings place each of the wards in the 50% least deprived LSOAs. East Lindsey 008A in Legbourne is the most deprived within the study area with a ranking of 17,962. The least deprived LSOA is East Lindsey 008E in Withern and Theddlethorpe with a ranking of 31,692, making it in the 10% least deprived LSOAs in England (Ref 16.32).

Future Baseline

16.4.22. The future baseline relates to known or anticipated changes to the current baseline in the future which should be assessed as part of the English Onshore Scheme in the PEIR and ES.

16.4.23. Following the COVID-19 pandemic, public spending cuts have reduced the access to healthcare across England. The pandemic and subsequent cost of living crisis has further impacted people's lives by reducing the access to recreational spaces and opportunities for adequate income. The pandemic has additionally increased the number of people living with limiting illnesses or disabilities, and while these impacts have been witnessed nationwide, the study area is no exception. An aging population will similarly create new challenges for the existing health services within Lincolnshire and East Lindsey throughout the life of the English Onshore Scheme (Ref 16.26 and Ref 16.29).

16.4.24. A number of policies and strategies are in place across the study area, aiming to address health and wellbeing inequalities and ensure the provision of health services, access to outdoor recreational facilities and improve the mental health and resilience of the population. Opportunities for improving skills and qualifications feature as aims across the Local Plan, highlighting the focus on creating resilient and economically active populations, reducing unemployment levels. Similarly, the Lincolnshire Joint Strategic Needs Assessment identifies five key areas for targeted support. Mental health, healthy weight and physical activity are each recognised as priorities for improvement, with aims including reducing inequalities in access, experience and outcome, developing a 'whole system approach' to address factors that make it easy to gain weight and address barriers to enabling activity, and supporting excellence in welfare, safeguarding, safety, and inclusivity.

16.4.25. It is recognised that there are a number of other proposed and committed developments within the surrounding area that could alter the future baseline in the absence of the English Onshore Scheme. The potential for cumulative effects will be considered as part of the future EIA documents in accordance with the approach and guidance outlined within **Part 4, Chapter 30: Cumulative Effects.**

16.5 Design and Control Measures

16.5.1. As part of the Project design process, a number of design and control measures will be proposed to reduce the potential for impacts on health and wellbeing receptors. These measures will evolve over the development process as the EIA progresses and in response to consultation and will be fed iteratively into the assessment process. These measures typically include those that have been identified as good or standard practice and include actions that would be undertaken to meet existing legislation requirements.

Construction Phase

16.5.2. Additional mitigation measures for health and wellbeing include the ongoing engagement and consultation that is an integral part of the English Onshore Scheme. Public consultation, and ongoing consultation with local authorities, will identify key concerns and address any occurring challenges.

16.5.3. Similarly, a range of standard and bespoke measures relevant to the minimisation of effects to environmental change will be set out within other technical chapters. Good practice mitigation measures relevant to health and wellbeing resulting from environmental change are set out in the other technical aspect chapters as below:

- **Part 2, Chapter 8: Landscape and Visual Amenity;**
- **Part 2, Chapter 9: Water Environment;**
- **Part 2, Chapter 10: Geology and Hydrogeology;**
- **Part 2, Chapter 12: Traffic and Transport;**
- **Part 2, Chapter 13: Noise and Vibration;**
- **Part 2, Chapter 14: Air Quality; and**
- **Part 2, Chapter 15: Socio-economics, Recreation and Tourism.**

Operational Phase

16.5.4. The English Onshore Scheme design will be developed to be compliant with existing legal requirements and standards for EMFs, including:

- Technical Specification 1 – Ratings and General requirements for plant, equipment and apparatus for the National Grid system (Ref 16.33).
- National Grid SHES Standard - Non-ionising radiation standard – UK/T1/8.7.4/S (Ref 16.34).

16.5.5. These technical specifications and policies ensure that the proposed design would be compliant with the requirements of NPS EN-5.

16.6 Scope of the Assessment

Potential Sensitive Receptors

16.6.1. Sensitive receptors for the purposes of health and wellbeing assessment are the mental health and physical health of both the general population and of vulnerable populations within the study area.

16.6.2. Physical health can be affected by a number of factors resulting from the design of the Project or resulting from environmental change. Similarly, the mental health of the general population may be worsened through the perceived loss of control over their environment and loss of opportunity for recreation and access to community facilities. Affects to mental or physical health can result in a reduction of quality of life for residents, workers and visitors to the study area.

16.6.3. Vulnerable populations may experience disproportionate or differential adverse effects when compared to the population as a whole. The National MWIA Collective (Ref 16.21) identifies that vulnerable groups can be more susceptible to distress through differences in perception, interpretation or presentation of effects, and may also develop differing responses for coping with stressors. Vulnerable groups include:

- Age – Early years, adolescence and old age. Social capital, isolation, physical health and participation each contribute to mental health in each of these categories.
- Sex – Women are much more vulnerable to poverty, unemployment and abuse, and mental health conditions such as depression and anxiety are more prevalent in women.

- Race and ethnicity – Racial and ethnic differences in levels of mental well-being and prevalence of mental disorders are due to a complex combination of socio-economic factors, racism, diagnostic bias, and cultural and ethnic differences.
- Socio-economic position and class – Socio-economic position shapes access to material resources, to every aspect of experience in the home, neighbourhood, and workplace and is a major determinant of health inequalities.
- Disability – Life chances, inclusion and support are often key factors in influencing mental health of disabled people.
- Sexuality and transgender – LGBTQ+ people are more vulnerable to risk factors (e.g., bullying and discrimination) and are at increased risk for some mental health problems.
- Physical health – Poor physical health is a significant risk factor for poor mental health; conversely, mental well-being protects physical health and improves health outcomes and recovery rates, notably for coronary heart disease, stroke and diabetes.

Likely Significant Effects

16.6.4. **Table 16-6** outlines the likely significant effects which have been scoped into the geology and hydrogeology assessment. The proposed scope of the assessment has been determined using the approach described in **Part 2, Chapter 5: EIA Approach and Methodology**.

16.6.5. The potential for the English Onshore Scheme to result in likely significant effects takes into account the mitigation measures described in each of the technical chapters.

16.6.6. Enhancing control, increasing resilience, facilitating participation and promoting inclusion have a significant influence on the mental well-being of individuals and communities. These four factors are important pathways through which wider social determinants – for example financial security, housing, education, employment – influence outcomes. The wider determinants are the factors that are determined at a structural level and impact on a population or the whole of society. Where the English Onshore Scheme may impact some of the wider determinants of health and thereby have an effect on mental and/or physical health of the general population and vulnerable population, these have been scoped into the assessment.

16.6.7. Similarly, changes to the environment can have an adverse or beneficial effect on mental and physical health, where residents feel more or less attached to their environment. These changes in feelings can influence how much time residents spend outdoors, which can further affect physical and mental health. Changes to noise levels, air quality, water quality, traffic levels, ground contamination and feelings of safety can each influence use of the environment. The assessment will draw on the conclusions of each of the relevant chapters and assess the potential health and wellbeing effects.

Table 16-6: Health and wellbeing scoping table

Impact	Receptor	Potential for significant effects	Proposed to be scoped in / out
Environmental Change			
Construction Phase			
Changes to the mental and physical health of the general population resulting from environmental change.	General population	**Yes** - Mental and physical health impacts can result from changes to the environment during construction, such as: • Increased noise; • Emissions of dust; • Temporary or permanent visual changes; • Ground contamination; • Pollution of water resources; • Increased journey times; • Changes to flood risk; • Changes to employment; • Temporary or permanent severance of PRoW; and • Increases in pollution or contamination. The assessment will draw on the conclusions from the relevant technical aspect chapters.	**Scoped in**
Changes to the mental and physical health of vulnerable populations resulting from environmental change.	Vulnerable populations	**Yes** - Mental and physical health impacts can result from changes to the environment, which can affect vulnerable groups more acutely than the general population, during construction, such as:	**Scoped in**

Impact	Receptor	Potential for significant effects	Proposed to be scoped in / out
		• Increased noise; • Emissions of dust; • Temporary or permanent visual changes; • Ground contamination; • Pollution of water resources; • Increased journey times; • Changes to flood risk; • Changes to employment; and • Temporary or permanent severance of PRoW. The assessment will draw on the conclusions from the relevant technical aspect chapters.	
Operational Phase			
Changes to the mental and physical health of the general population resulting from environmental change.	General population	**Yes** - The English Onshore Scheme will be predominantly underground cable, with the addition of above ground infrastructure at the new converter station. While the new infrastructure is unlikely to contribute significant new sources of impact following the construction of the English Onshore Scheme, operational noise and visual impacts cannot yet be scoped out, and therefore, operational effects are scoped into the health and wellbeing assessment. The assessment will draw on the conclusions from the relevant technical aspect chapters.	**Scoped in**
Changes to the mental and physical health of vulnerable	Vulnerable populations	**Yes** - The English Onshore Scheme will be predominantly underground cable, with the addition of above ground infrastructure at the new converter station. While the new infrastructure is unlikely to contribute significant new sources of	**Scoped in**

Impact	Receptor	Potential for significant effects	Proposed to be scoped in / out
populations resulting from environmental change.		impact following the construction of the English Onshore Scheme, operational noise and visual impacts cannot yet be scoped out, and therefore, operational effects are scoped into the health and wellbeing assessment. The assessment will draw on the conclusions from the relevant technical aspect chapters.	
Health Determinants			
Construction and Operational Phase			
Changes to socio-economic protective factors.	Mental health of the general population and vulnerable groups.	Access to services and to social infrastructure, including workplaces, green space, and public space, as well as health and educational facilities is an important aspect for influencing community and individual resilience. Social inclusion is both a cause and consequence of mental health problems, and therefore assessing the possible impact of the English Onshore Scheme on access to social infrastructure and existing services will help to ensure there will be no adverse effects on mental health as a result of the English Onshore Scheme. Similarly, establishing any changes in access to employment and training opportunities will identify how the English Onshore Scheme affects the mental and physical health of the study area. The assessment will include changes to journey times, road closures, PRoW diversions and closures, potential loss of community resources, facilities and services, and changes to employment.	**Scoped in**
Changes to socio-economic protective factors.	Physical health of the general population and vulnerable groups.	Opportunities and uptake of regular exercise can be influenced by socio-economic factors and inequalities. This has further effect on the physical health of the general population and vulnerable groups through reductions in stress and improving fitness, with resulting improvements in cardiovascular health. Changes in access to PRoW or the loss of health and wellbeing facilities will be assessed within the ES.	**Scoped in**

Impact	Receptor	Potential for significant effects	Proposed to be scoped in / out
Operational Phase			
Physical health effects resulting from EMFs.	Physical health of the general population and vulnerable groups.	The English Onshore Scheme will ensure that policies and procedures are in place at the design phase to ensure that all equipment will comply with public EMF exposure limits. **Part 4, Chapter 29: Scoped Out Aspects** provides further details. However, evidence of compliance of the Project with EMF exposure requirements will be provided for context and to aid understanding with regards the lack of physical health impacts. This will be summarised within the health and wellbeing PEIR and ES chapter, when available. Regardless, it is acknowledged that there remains the potential for impacts to mental health associated with the perceived risk from EMF on receptors and the health and wellbeing chapter of the ES will therefore present an assessment of this. The English Onshore Scheme will ensure that policies and procedures are in place at the design phase to ensure that all equipment will comply with public EMF exposure limits. **Part 4, Chapter 29: Scoped Out Aspects** provides further details. However, evidence of compliance of the Project with EMF exposure requirements will be provided for context and to aid understanding with regards the lack of physical health impacts. This will be summarised within the health and wellbeing PEIR and ES chapter, when available.	**Scoped out**
Mental health effects resulting from fear and anxiety around EMFs.	Mental health of the general population and vulnerable groups.	Although the English Onshore Scheme will be designed to comply with EMF exposure limits, it is acknowledged that there remains the potential for impacts to mental health associated with the perceived risk from EMF on receptors and the health and wellbeing chapter of the ES will therefore present an assessment of this.	**Scoped in**

Health Determinants Scoped Out of the Assessment

16.6.8. While the mental and physical health of either the general population or vulnerable populations cannot be scoped out, it is proposed that potential physical health effects of EMF generation are scoped out.

16.7 Assessment Methodology

Further Data to be Gathered / Processed

Desk-Based Assessments

16.7.1. The English Onshore Scheme has the potential to give rise to changes in health status by influencing health determinants. Changes can affect the health of receptors, identified as the 'general population' and 'vulnerable groups'. The latter relates to groups who may have a higher sensitivity to these changes in health determinants, by virtue of factors such as age (for example older people or children), ethnicity, economic factors, disability, sex, or gender.

16.7.2. The baseline sets out the wider health context required to inform the assessment, covering both physical and mental health. This information will be used as a basis for determining the sensitivity of receptors to changes in health determinants arising from the English Onshore Scheme.

Surveys

16.7.3. No surveys are proposed as part of the health and wellbeing assessment; the assessment will however draw on the survey results of other technical aspect chapters and from stakeholder engagement outcomes.

Assessment of Significance

16.7.4. The assessment will be based on published IEMA guidance on Determining Significance for Human Health in EIA (Ref 16.20) and Effective Scoping of Human Health in EIA (Ref 16.19). The assessment will identify and assess the change in environmental conditions, along with physical and mental health, because of the English Onshore Scheme. The significance of the effect on a receptor will be presented for construction and operation, when considered in relation to the sensitivity or value of the receptor and the magnitude of the potential impact.

16.7.5. Where impacts are identified, additional information will be incorporated to understand population receptors in more detail, particularly vulnerable groups, how they will be impacted and to identify disproportionate / differential effects and inequalities. This would include information at Ward level.

16.7.6. The approach to assessing mental health will be informed by the Mental Wellbeing Impact Assessment Toolkit (Ref 16.21), which provides a framework within which mental health is assessed, in the context of the wider determinants of mental well-being, based on four core protective factors of mental health:

- Enhancing control, or the extent to which individuals and communities have control over their lives: this element of the assessment will consider the potential for mental health impacts relating to the perceived risk associated with EMFs; the assessment

will identify approaches to improve awareness and understanding of the risks associated with EMF.

- Increasing resilience, or the ability to cope with life's challenges and to recover from, or adapt to, adversity: the English Onshore Scheme is most likely to affect this in the form of changes to the environment. The assessment will therefore incorporate a 'neighbourhood quality' approach. This refers to the physical environment in which people live their day to day lives, which is influenced by visual amenity, air quality, traffic (including HGV movements) and noise. The assessment will identify where there is likely to be qualitative change in the access within, and amenity and character of neighbourhoods, including combinations of impacts arising from environmental change which may alter people's levels of satisfaction and potential engagement with their living environment.
- Facilitating participation, or the extent to which people are involved and engaged in activities outside their immediate household: this would relate to the positive and negative aspects of participation in the consenting process itself.
- Promoting social inclusion, or the extent to which people are able to access a variety of opportunities, for example employment, education or leisure: in relation to the English Onshore Scheme, this would comprise the potential for disproportional impacts on vulnerable groups and inequalities.

16.7.7. As set out in the IEMA guide to 'Effective Scoping of Human Heath in Environmental Impact Assessment' (Ref 16.19), the requirement to undertake a HIA will be met through the EIA and reported in the Health and wellbeing ES chapter, by aligning the chapter to the HIA principles, including the consideration of wider determinants of health and health inequalities. Therefore, a separate HIA is not proposed. Where the EIA follows IEMA guidance the health and wellbeing chapter will align to HIA principles, including considering wider determinants of health and health inequalities.

16.7.8. The ES will include a qualitative assessment determining the magnitude of potential change and sensitivity of receptors to change (both general population and vulnerable groups). The assessment will include:

- How the health determinant might change because of the English Onshore Scheme and whether this would be beneficial or adverse;
- Duration of change – temporary or permanent;
- Exposure to change (including identification of vulnerable groups); and
- Intensity (magnitude or severity of the change in the health determinant).

16.7.9. **Table 16-7** to **Table 16-10** summarises the methodology for determining the significance of effect in relation to health and wellbeing. For the general population, the sensitivity is assigned to the Ward level, in order to qualify the significance level. Where significance spans two outcomes, judgement will be applied based on context and criteria.

Table 16-7: Sensitivity criteria for health and wellbeing from IEMA guidance (Ref 16.20)

Category / level	Indicative criteria (judgement based on most relevant criteria, it is likely in any given analysis that some criteria will span categories) The narrative explains that the population or sub-population's sensitivity is driven by:
High	High levels of deprivation (including pockets of deprivation); reliance on resources shared (between the population and the English Onshore Scheme); existing wide inequalities between the most and least healthy; a community whose outlook is predominantly anxiety or concern; people who are prevented from undertaking daily activities; dependants; people with very poor health status; and / or people with a very low capacity to adapt.
Medium	Moderate levels of deprivation; few alternatives to shared resources; existing widening inequalities between the most and least healthy; a community whose outlook is predominantly uncertainty with some concern; people who are highly limited from undertaking daily activities; people providing or requiring a lot of care; people with poor health status; and / or people with a limited capacity to adapt.
Low	Low levels of deprivation; many alternatives to shared resources; existing narrowing inequalities between the most and least healthy; a community whose outlook is predominantly ambivalence with some concern; people who are slightly limited from undertaking daily activities; people providing or requiring some care; people with fair health status; and / or people with a high capacity to adapt.
Very Low	Very low levels of deprivation; no shared resources; existing narrow inequalities between the most and least healthy; a community whose outlook is predominantly support with some concern; people who are not limited from undertaking daily activities; people who are independent (not a carer or dependant); people with good health status; and / or people with a very high capacity to adapt.

Table 16-8: Magnitude criteria for health and wellbeing

Category / Level	Indicative criteria (judgement based on most relevant criteria, it is likely in any given analysis that some criteria will span categories) The narrative explains that the population or sub-population's magnitude of change due to the English Onshore Scheme is driven by:
High	High exposure or scale; long-term duration; continuous frequency; severity predominantly related to mortality or changes in morbidity (physical or mental health) for very severe illness / injury outcomes; majority of population affected; permanent change; substantial service quality implications.
Medium	Low exposure or medium scale; medium-term duration; frequent events; severity predominantly related to moderate changes in morbidity or major

Category / Level	Indicative criteria (judgement based on most relevant criteria, it is likely in any given analysis that some criteria will span categories) The narrative explains that the population or sub-population's magnitude of change due to the English Onshore Scheme is driven by:
	change in quality-of-life; large minority of population affected; gradual reversal; small service quality implications.
Low	Very low exposure or small scale; short-term duration; occasional events; severity predominantly related to minor change in morbidity or moderate change in quality-of-life; small minority of population affected; rapid reversal; slight service quality implications.
Negligible	Negligible exposure or scale; very short-term duration; one-off frequency; severity predominantly relates to a minor change in quality-of-life; very few people affected; immediate reversal once activity complete; no service quality implication.

Table 16-9: Significance criteria

		Sensitivity			
		High	**Medium**	**Low**	**Very Low**
Magnitude	**High**	Major	Major/ moderate	Moderate/ minor	Minor/ negligible
	Medium	Major/ moderate	Moderate	Minor	Minor/ negligible
	Low	Moderate/ minor	Minor	Minor	Negligible
	Negligible	Minor/ negligible	Minor/ negligible	Negligible	Negligible

Table 16-10: Significance justification

Category / Level	Indicative criteria (judgement based on most relevant criteria, it is likely in any given analysis that some criteria will span categories)
Major (significant)	The narrative explains that this is significant for public health because (select as appropriate): • Changes, due to the English Onshore Scheme, have a substantial effect on the ability to deliver current health policy and / or the ability to narrow health inequalities, including as evidenced by referencing relevant policy and effect size (magnitude and sensitivity levels), and as informed by consultation themes among stakeholders, particularly public health stakeholders, that show consensus on the importance of the effect.

Category / Level	Indicative criteria (judgement based on most relevant criteria, it is likely in any given analysis that some criteria will span categories)
	• Change, due to the English Onshore Scheme, could result in a regulatory threshold or statutory standard being crossed (if applicable). • There is likely to be a substantial change in the health baseline of the population, including as evidenced by the effect size and scientific literature showing there is a causal relationship between changes that would result from the English Onshore Scheme and changes to health outcomes. • In addition, health priorities for the relevant study area are of specific relevance to the determinant of health or population group affected by the English Onshore Scheme.
Moderate (significant)	The narrative explains that this is significant for public health because (select as appropriate): • Changes, due to the English Onshore Scheme, have an influential effect on the ability to deliver current health policy and / or the ability to narrow health inequalities, including as evidenced by referencing relevant policy and effect size, and as informed by consultation themes among stakeholders, which may show mixed views. • Change, due to the English Onshore Scheme, could result in a regulatory threshold or statutory standard being approached (if applicable). • There is likely to be a small change in the health baseline of the population, including as evidenced by the effect size and scientific literature showing there is a clear relationship between changes that would result from the English Onshore Scheme and changes to health outcomes. • In addition, health priorities for the relevant study area are of general relevance to the determinant of health or population group affected by the English Onshore Scheme.
Minor (not significant)	The narrative explains that this is not significant for public health because (select as appropriate): • Changes, due to the English Onshore Scheme, have a marginal effect on the ability to deliver current health policy and / or the ability to narrow health inequalities, including as evidenced by effect size of limited policy influence and / or that no relevant consultation themes emerge among stakeholders. • Change, due to the English Onshore Scheme, would be well within a regulatory threshold or statutory standard (if applicable); but could result in a guideline being crossed (if applicable). • There is likely to be a slight change in the health baseline of the population, including as evidenced by the effect size and / or scientific literature showing there is only a suggestive relationship between changes that would result from the English Onshore Scheme and changes to health outcomes.

Category / Level	Indicative criteria (judgement based on most relevant criteria, it is likely in any given analysis that some criteria will span categories)
	• In addition, health priorities for the relevant study area are of low relevance to the determinant of health or population group affected by the English Onshore Scheme.
Negligible (not significant)	The narrative explains that this is not significant for public health because (select as appropriate): • Changes, due to the English Onshore Scheme, are not related to the ability to deliver current health policy and / or the ability to narrow health inequalities, including as evidenced by effect size or lack of relevant policy, and as informed by the English Onshore Scheme having no responses on this issue among stakeholders. • Change, due to the English Onshore Scheme, would not affect a regulatory threshold, statutory standard or guideline (if applicable). • There is likely to be a very limited change in the health baseline of the population, including as evidenced by the effect size and / or scientific literature showing there is an unsupported relationship between changes that would result from the English Onshore Scheme and changes to health outcomes. • In addition, health priorities for the relevant study area are not relevant to the determinant of health or population group affected by the English Onshore Scheme.

Assessment of Cumulative Impacts and Effects

16.7.10. The assessment of health and wellbeing is inherently cumulative with respect to intra-project effects, with the health and wellbeing assessment drawing on the assessment of the other technical aspect chapters. This ensures that the combination of effects, for instance as a result of environmental change, is identified and the appropriate level of significance is assigned to each ward and vulnerable population.

16.7.11. Inter-project health and wellbeing effects will be appropriately assessed throughout the PEIR and ES, identifying where the combination of the English Onshore Scheme and any other projects within the region would cumulatively cause a worsening of mental and physical effects.

16.8 Assessment Limitations and Assumptions

16.8.1. The following assumptions and limitations have been identified:

- The baseline data has been undertaken as a desk-based study, using publicly available information. No site surveys have been undertaken for the purpose of this Scoping Report chapter.
- Data collected from third parties (e.g., Ordnance Survey Mapping, Office for National Statistics (ONS) data) are the most up-to-date data available at the time of writing. No significant limitations in these datasets have been identified. Baseline data will be

kept under review throughout the production of the EIA in order to ensure that (where practicable) the most recently published data is utilised.

- Any assumptions and limitations related to the assessment and data collection for other technical aspect chapters and utilised in this chapter are also applicable.

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17. English Onshore Scheme Scoping Summary

17.1.1. The scope of assessment described within the technical aspect chapters (**Part 2, Chapters 6 to 16**) is summarised in **Table 17-1**.

Table 17-1: Summary Scope of the Assessment

Technical Aspect	Scope of Assessment
Chapter 6: Biodiversity	**Construction** • Permanent habitat loss and / or degradation (any areas which will not be reinstated e.g., the converter station. • Temporary habitat loss and / or degradation (if land not reinstated to same or better condition habitats). • Temporary habitat loss (land which will be reinstated to the same or better condition, post-construction). • Vegetation clearance during construction. • Terrestrial and aquatic habitat (e.g., watercourse or ditch network) severance. • Noise, vibration, dust, pollutants, vehicle collisions and artificial lighting during site clearance and construction. • Increased nitrogen deposition and / or ammonia concentrations from vehicular traffic. **Operation** • Artificial lighting and noise associated with permanent infrastructure e.g., the converter station.
Chapter 7: Cultural Heritage	**Construction** • Potential effects from permanent loss of archaeological remains from land preparation (earthworks, excavation) on non-designated heritage assets within the English Onshore Scheme Scoping Boundary (and those outside that may have sub-surface elements) and Historic Landscape Character. • Potential effects on preservation of heritage assets from construction effects to heritage assets beyond the footprint of the English Onshore Scheme caused by changes to drainage patterns on designated and non-designated heritage assets.

Technical Aspect	Scope of Assessment
	Operation • Potential for effects through change to setting caused during operation from all above-ground infrastructure on designated and non-designated heritage assets. This will be confined only to heritage assets where setting contributes to their cultural significance. • Potential for effects from perceptual change to historic landscape from all above-ground infrastructure on Historic Landscape Character.
Chapter 8: Landscape and Visual Amenity	**Construction** • Short-term change in the appearance of construction plant and activity, including construction compounds, horizontal drilling machinery, cranes, and vehicle movement, as well as open trenches, along with the removal of mature trees and hedgerows throughout the cable route corridor. **Operation** • Permanent alteration to the landscape character as a result of the Project.
Chapter 9: Water Environment	**Construction** • Potential for temporary physical disturbance and impacts on flow regimes. • Pollution risks (e.g., bentonite breakout) for main rivers, intertidal zone, existing water interests and nature conservation sites. • Potential to impact water resources through water use during construction (e.g., for cable testing and welfare facilities). • Increased flood risk and detriment to land drainage for people, existing land drainage regime, property and infrastructure. • Temporary works in the floodplain / in proximity to flood defences. **Operation** • Above ground infrastructure has the potential to be situated in the floodplain and new permanent areas of impermeable land cover will be introduced. • Water supply to the converter station has the potential for impacts on water resources.
Chapter 10: Geology and Hydrogeology	**Construction** • Degradation of geological sites of regional and local importance. • There is the potential for localised contamination within the study area to be disturbed and mobilised.

Technical Aspect	Scope of Assessment
	• Reduction in groundwater quality from turbidity and sediment runoff due to earthwork activities. • Creation of preferential contaminant pathways to groundwater resources through the installation of foundations to support above ground infrastructure and trenchless crossings. • Disruption of groundwater flows due to earthwork operations including soil stripping, excavation and back filling of the cable route and installation of foundations. **Operation** • Potential for localised Made Ground / Contamination to be encountered during the works which are potential sources of ground gas or vapour. • Potential to change groundwater levels, flows and quality due to permanent below ground features such as the cable route and foundations.
Chapter 11: Agriculture and Soils	**Construction** • Temporary and permanent loss of agricultural land (including Best and Most Versatile (BMV) land) during construction. • Impacts upon soil ecosystem services during construction. • Temporary acquisition and permanent loss of agricultural land holdings during construction. **Operation** There are not expected to be any significant operational effects taken forward for assessment.
Chapter 12: Traffic and Transport	**Construction** • Severance, driver delay, pedestrian delay (incorporating delay to all non-motorised users), non-motorised user amenity, fear and intimidation, and road safety for non-motorised users, public right of way (PRoW) users, motorists and freight vehicles, public transport users, and emergency services from traffic generated by the construction of the English Onshore Scheme and Abnormal Indivisible Loads (AILs). **Operation** • There are not expected to be any significant operational effects taken forward for assessment.

Technical Aspect	Scope of Assessment
Chapter 13: Noise and Vibration	**Construction** • Construction noise from the installation of the High Voltage Alternating Current (HVAC) / High Voltage Direct Current (HVDC) cables and trenchless crossings. • Construction noise from the installation of the Static Plant Facilities. • Construction noise from on-site haul roads including the bypass to the north of Alford. • Road traffic noise changes as a result of construction traffic on the existing road network. • Construction vibration from piling and ground stabilisation. **Operation** • Noise associated with the operation of the Converter Station.
Chapter 14: Air Quality	**Construction** • Dust deposition and health impacts from elevated particulate matter (PM) concentrations caused by construction activities. • Increase in pollutant concentrations from vehicle emissions. • Increase in pollutant concentrations from Non-Road Mobile Machinery (NRMM) (including generator) emissions. **Operation** • Increase in pollutant concentrations from emergency backup diesel generators.
Chapter 15: Socio-economics, Recreation and Tourism	**Construction** • Assessment of direct and indirect beneficial impacts on the local and regional economy through the creation of jobs. • There is potential for walkers, cyclists and horse riders using PRoW and other designated routes, to be adversely affected by the English Onshore Scheme. • There is potential for tourist attractions to be adversely affected by the English Onshore Scheme, through potential disruption to access caused by delays. • There is potential for tourist accommodation to be adversely affected by the English Onshore Scheme, through potential disruption to access. **Operation** There are not expected to be any significant operational effects taken forward for assessment.

Technical Aspect	Scope of Assessment
Chapter 16: Health and Wellbeing	**Construction** • Changes to the mental and physical health of the general and vulnerable populations resulting from environmental change and changes to socio-economic protective factors. • Changes to journey times, road closures, PRoW diversions and closures, potential loss of community resources, facilities and services, and changes to employment. • Changes in access to PRoW or the loss of health and wellbeing facilities. • Changes to noise levels, air quality, water quality, traffic levels, ground contamination and feelings of safety. **Operation** • Changes to the mental and physical health of the general and vulnerable populations resulting from environmental change and changes to socio-economic protective factors. • Mental health effects on the general and vulnerable populations resulting from fear and anxiety around electromagnetic forces (EMFs)

PART THREE ENGLISH OFFSHORE SCHEME

18. Coastal and Marine Physical Processes

18.1 Introduction

18.1.1. This chapter of the Scoping Report describes the potential impacts on marine physical processes arising from the construction, operation and maintenance and decommissioning activities of the English Offshore Scheme on marine physical processes (including water levels and currents, winds and waves, geology and seabed sediments, intertidal, coastal and seabed geomorphology, sediment transport, water quality and sediment quality).

18.1.2. There may be interrelationships between the potential effects on marine physical processes and other disciplines. Therefore, please also refer to the following technical aspect chapters found in Volume 1:

- **Part 3, Chapter 19: Intertidal and Subtidal Benthic Ecology**: outputs from the marine physical processes assessment will inform the intertidal and subtidal benthic ecology chapter on assessment of impacts from temporary increases in suspended sediments and subsequent deposition.
- **Part 3, Chapter 20: Fish and Shellfish**: outputs from the marine physical processes assessments will inform the assessment of significance of effect from impacts such as temporary increase in suspended sediments and subsequent deposition and identification of prey species.
- **Part 3, Chapter 21: Intertidal and Offshore Ornithology**: outputs from the marine physical processes assessments will inform the assessment of significance of effect from impacts such as changes in water clarity effecting identification of prey species.
- **Part 3, Chapter 22: Marine Mammals and Marine Reptiles**: outputs from the marine physical processes assessments will inform the assessment of significance of effect from impacts such as changes in water clarity effecting identification of prey species.
- **Part 3, Chapter 24: Commercial Fisheries**: outputs from the marine physical processes assessments will inform the assessment of significance of effects in relation to indirect impacts on target species.
- **Part 3, Chapter 26: Marine Archaeology**: outputs from the marine physical processes assessments will inform the assessment of significance of effects from impacts such as temporary increase in suspended sediments and subsequent deposition which can affect heritage assets.

18.1.3. This chapter is supported by the following figures found in Volume 3:

- **Figure 18-1 Study Area**
- **Figure 18-2 Bathymetry**
- **Figure 18-3 Peak Flow for a Mean Spring Tide**
- **Figure 18-4 Seabed Sediments**
- **Figure 18-5 Annual Mean Suspended Particulate Matter**

- **Figure 18-6 Designated Sites and Bathing Waters within the Study Area**

18.1.4. At this early stage in the development of the English Offshore Scheme, only desk-based information has been used for this technical aspect chapter. No data is yet available from the 2025 marine characterisation surveys to inform the Scoping Report.

18.2 Relevant Legislation, Planning Policy and Technical Guidance

18.2.1. This section identifies the relevant legislation, national and local policy and guidance which has informed the scope of the marine physical processes assessment.

Legislation

18.2.2. A summary of the key legislation considered in, but not limited to, the scope of the marine physical processes assessment is outlined in **Table 18-1**.

Table 18-1: Legislation relevant to the coastal and marine physical processes assessment

Legislation	Legislative context
Marine Strategy Regulations 2010 (Ref 18.1)	These regulations require the UK to achieve or maintain Good Environmental Status in its marine waters by 2020. The high-level descriptors of Good Environmental Status relevant to marine processes include: • Descriptor 6: Sea floor integrity: Seafloor integrity is at a level that ensures that the structure and functions of the ecosystems are safeguarded and benthic ecosystems are not adversely affected; and • Descriptor 7: Permanent alteration of hydrographical conditions does not adversely affect marine ecosystems.
The Planning Act 2008 (Ref 18.2)	An Act to establish the Infrastructure Planning Commission and make provision about its functions; to make provision about, and about matters ancillary to, the authorisation of projects for the development of Nationally Significant Infrastructure Projects (NSIPs).
The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (Ref 18.3)	This Act transposes EU Directive 2011/92/EU (the EIA Directive) into UK law for NSIPs, ensuring environmental safeguards while potentially streamlining the process.
The Marine Works (Environmental Impact Assessment) Regulations 2007 (Ref 18.4)	The Marine Works (Environmental Impact Assessment) Regulations 2007 require certain types of projects that have the potential to significantly affect the environment to submit an Environmental Impact Assessment before a marine licence decision is made.

Legislation	Legislative context
Marine and Coastal Access Act (MCAA) 2009 (Ref 18.5)	The MCAA provides a framework for managing and protecting marine and coastal areas, promoting sustainable development, enhancing public access to the coast, and conserving marine biodiversity and habitats, including establishing Marine Protected Areas (MPAs) and coastal access routes.

Planning Policy

18.2.3. A summary of the planning policies at both a national and local level relevant to the scope of the marine physical processes assessment is outlined in **Table 18-2** and **Table 18-3**.

Table 18-2: National planning policy relevant to the coastal and marine physical processes assessment

Policy reference	Policy context
Overarching National Policy Statement for Energy (NPS EN-1) (Ref 18.6) Paragraphs 5.6.10, 5.6.11 and 5.6.13	"*Where relevant, coastal geomorphological and sediment transfer modelling should be undertaken to predict, understand and mitigate impacts*". "*Potential impacts from climate change should be considered and where a project will have an impact on coastal processes, the applicant must demonstrate how impacts will be managed and minimised and consider the implications of any proposed project on strategies for managing the coast (i.e. Shoreline Management Plans), relevant Marine Plans, River Basin Management Plans and capital programmes for maintain flood and coastal defences and coastal change management areas*". "*Applicants should be particularly careful to identify any effects of physical changes on the integrity and special features of Marine Protection Areas (MPAs) including MCZ's, habitat sites including SAC, SPA, Ramsar sites, Sites of Community Importance and SSSI's. Applicant should identify any effects on the special character of Heritage Coasts*".
Overarching National Policy Statement for Energy (NPS EN-1) Consultation Draft (April 2025) (Ref 18.7) Paragraphs 5.6.9, 5.6.10 and paragraph 5.6.12	The Government has published a draft update to NPS EN-1. The 2025 Draft NPS EN-1 is largely the same as the 2023 document, however relevant section numbers will remain the same, however paragraph numbers will be updated.

Policy reference	Policy context
National Policy Statement for Renewable Energy Infrastructure (NPS EN-3) (Ref 18.8) Paragraphs 3.8.126 - 3.8.128 and 3.8.327	"*Requires assessments to include predictions of physical effects arising from modifications to hydrodynamics, sediments, sediment transport and seabed morphology resulting from any project and should consider the effects such as scour on sensitive habitats and species. Assessments should be informed by geotechnical investigations to design appropriate construction techniques and minimise any adverse effects*". Identifies a requirement to "*satisfy the Secretary of State that the design of (the wind farm) and methods of construction, including use of materials, are such as to reasonably minimise the potential for impact on the physical environment. This could involve, for instance, minimising quantities of rock that are used to protect cables whilst taking into account other relevant considerations such as safety*".
National Policy Statement for Renewable Energy Infrastructure (NPS EN-3) Consultation Draft (April 2025) (Ref 18.9) Paragraphs 2.8.104 - 2.8.107 and 2.8.276.	The Government has published a draft update to NPS EN-3. The 2025 Draft NPS EN-3 is largely the same as the 2023 document, however relevant section numbers will remain the same, however paragraph numbers will be updated.
UK Marine Policy Statement 2011 (Ref 18.10)	States that "*marine plan authorities should seek to minimise and mitigate any geomorphological changes that an activity or development will have on coastal processes including sediment movement. It also provides an overview of potential adverse impacts which can include changes to the hydrodynamic regime that may alter coastal processes, loss of seabed habitat and heritage assets, impacts on fisheries and secondary impacts to marine life and habitat associated with sediment plumes, disturbance of fish spawning, migration routes, nursery and overwintering areas, overspills from dredging vessels and impacts on geodiversity*".

Table 18-3: Local planning policy relevant to the coastal and marine physical processes assessment

Policy reference	Policy context
East Inshore and East Offshore Marine Plan 2014 (Ref 18.11) and Northeast Offshore Marine Plans 2021 (Ref 18.12)	Marine plans set out the priorities and direction for future planning within the plan area and provide guidance on activities to avoid or promote. A Marine Plan Assessment would be provided with the Preliminary Environmental Information Report (PEIR) and Environmental Statement (ES) that outlines how the English Offshore Scheme complies with the policies and objectives of the relevant marine plans.

Technical Guidance

18.2.4. A summary of the relevant technical guidance, specific to the marine physical processes assessment, that has informed this Scoping Report and will inform the assessment within the PEIR and ES, is given in **Table 18-4**.

Table 18-4: Technical guidance relevant to the coastal and marine physical processes assessment

Technical guidance document	Context
Natural England Offshore wind cabling: ten years' experience and recommendations (Ref 18.13)	Provides evidence for Natural England's (NEs) advice on impact assessments for cable projects and their advice for routeing and mitigation.
NE, Joint Nature Conservation Committee (JNCC) and European Subsea Cables Association (ESCA), Nature conservation considerations and environmental best practise for subsea cables for English Inshore and UK offshore waters (Ref 18.14)	Jointly developed between NE, Joint Nature Conservation Committee (JNCC) and European Subsea Cables Association (ESCA), this report identifies the main pressures, sensitive habitats, and best practice during development of subsea cables.
Department for Business, Enterprise and Regulatory Reform (BERR) Review of Cabling Techniques and Environmental Effects applicable to the Offshore Wind farm Industry (Ref 18.15)	Provides technical details on subsea cable installation techniques and associated potential environmental effects relating to the offshore wind farm industry. It aims to inform developers and consultants, stakeholders and regulators during the environmental impact assessment stage and consents process.
JNCC and NE General advice on assessing potential impacts of and mitigation for human activities on Marine Conservation Zone (MCZ)	Identifies potential impacts of human activities on MCZ features, whether

Technical guidance document	Context
features, using existing regulation and legislation (Ref 18.16)	mitigation is currently provided and what mitigation might be appropriate for MCZs.
Cefas Guidelines for data acquisition to support marine environmental assessments of offshore renewable energy projects (Ref 18.17)	Guidelines for designing, reviewing and implementing environmental data collection and analytical activities associated with offshore renewable energy developments including physical and sedimentary processes studies.
Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR) Assessment of the Environmental Impacts of Cables (Ref 18.18)	Aims to prevent and eliminate pollution from offshore activities.
OSPAR Guidelines on Best Environmental Practice (BEP) in cable laying and operation (Ref 18.19)	Provides a framework for minimising environmental impacts during the installation and maintenance of subsea cables including sediment disturbance and contamination.
Natural Resources Wales Guidance Note. Marine Physical Processes Guidance to inform Environmental Impact Assessment (EIA). GN041 (Ref 18.20)	While principally relevant to projects in Welsh waters, this guidance note provides best practice guidance for environmental impact assessments where a physical processes assessment is required.
COWRIE Coastal Process Modelling for Offshore Wind Farm Environmental Impact Assessment: Best Practice Guidance (Ref 18.21)	Provides guidance on the application and use of numerical models to predict potential impacts from offshore wind farms on coastal processes.
Planning Inspectorate (PINS) Nationally Significant Infrastructure Projects: Advice on the Water Framework Directive (Ref 18.22)	Provides guidance in relation to the Water Framework Directive (WFD) in respect of NSIPs.
EA Flood Risk Assessments: Climate change allowances (Ref 18.23)	Guidance for ensuring allowances for climate change are made within flood risk assessments (FRAs) to minimise vulnerability and resilience to flooding and coastal change.
UK Climate Projections (UKCP) 2018, UKCP18 Science Overview Report, November 2018. UK Met Office (Ref 18.24)	Provides guidance and information on marine climate projections such as mean sea level projections and storm surge and extreme water levels.

18.3 Consultation and Engagement

18.3.1. In respect of the marine physical processes assessment, key consultees have been identified and focussed engagement (through both informal and formal consultation) will be undertaken and recorded throughout the pre-application stage of the Project. Key consultees identified to date are:

- NE;
- JNCC;
- Marine Management Organisation (MMO).
- Centre for Environment, Fisheries and Aquaculture Science (Cefas).
- The Crown Estate; and
- The Environment Agency (EA).

18.3.2. Key areas of consultation are intended to include engagement on coordination with the EA regarding the ongoing beach nourishment scheme at Anderby Creek, the assessment process for effects related to cumulative cable protection in shallow waters, marine physical process methods, impact assessment conclusions and proposed mitigation.

18.3.3. Local or specialist groups will be contacted should the assessment process identify a need to engage further detailed local knowledge, or if requested during the statutory consultation process.

18.4 Baseline Conditions

Study Area

18.4.1. The Study Area for marine physical processes includes the English Offshore Scheme Scoping Boundary plus an additional 15 km each side. This buffer is informed by the tidal excursion, which varies both along the English Offshore Scheme and over time in response to lunar variations in tidal forcing. The tidal excursion was calculated defined using the Atlas of UK Marine Renewable Energy Resources (Ref 18.25) tidal excursion ellipse data. Tidal excursions at the Landfall are approximately 10 km on a mean tide (equivalent to around 14 km on a spring tide). Elsewhere within the English Offshore Scheme Scoping Boundary tidal excursions are generally smaller with some local variations likely due to changes in seabed topography.

18.4.2. The Study Area identified acts a precautionary maximum zone of influence and incorporates the area within which there is the potential for direct impacts associated with the deposition of suspended sediments. It has been validated through reference to fine sediment modelling calculations presented in the Eastern Green Link (EGL) 3 and EGL 4 PEIR which indicates suspended sediment concentrations of more than 10 mg/l are constrained to less than 10 km from the English Offshore Scheme Scoping Boundary (Ref 18.26).

18.4.3. The Study Area would likely be refined once particle size analysis following survey has been completed for the English Offshore Scheme to ensure similar suspended sediment concentrations and predicted distances are anticipated.

18.4.4. The Study Area for the marine physical processes assessment is presented in **Volume 3, Figure 18-1.**

Data Gathering Methodology

18.4.5. A desk-based review of publicly available data sources (literature and GIS mapping files) will be used to supplement site-specific geophysical / geotechnical surveys (discussed further below in **Section 18.7** Surveys) and to describe the wider baseline marine physical environment.

18.4.6. **Table 18-5** lists the key data sources which will be used in the EIA.

Table 18-5: Key publicly available data sources for marine physical processes

Data source	Description
The European Marine Observation and Data Network (Ref 18.27)	Digital Terrain Model (DTM).
UK Hydrographic Office (UKHO) (Ref 18.28)	Admiralty bathymetric survey data used to generate navigational charts and a major data source in the European Marine Observation and Data Network (EMODnet) Digital Terrain Model (DTM).
Admiralty Total Tide (ATT) software package (Ref 18.29)	Tidal planes and tidal diamonds informing water levels and tidal flows.
EA Coastal Design Sea Levels for the UK (Ref 18.30)	Coastal flood boundary conditions around the coast.
UK climate change projections (Ref 18.31)	Sea level rise predictions along the coast.
Atlas of UK Marine Renewable Energy Resources (Ref 18.25)	Maps of tidal range (spring and neap), peak tidal flows (spring and neap) and mean tidal ellipses, annual wave heights and wind speeds.
SEASTATES (Ref 18.[32])	Modelled hindcast wind and wave data.
Climate System Forecast Reanalysis (CFSR) (Ref 18.33)	Hourly hindcast wind data at 0.2 degree resolution, spanning 44 years (1979 to 2023), used to drive SEASTATES.
British Geological Society (BGS) (Ref 18.34)	Maps of seabed sediments, quaternary deposit thickness and structural geology offshore.
Shoreline Management Plan – Flamborough Head to Gibraltar Point SMP3 (Ref 18.35)	Local annual surveys of coastline.
Shoreline Management Plan – Lincolnshire Coastline 5 – Viking Gas	Shoreline Management Plan and management approach.

Data source	Description
Terminal (Mablethorpe) to southern end of Skegness O (Ref 18.36)	
JNCC Coasts and seas of the UK (Ref 18.37)	Region 6 Eastern England: Flamborough Head to Great Yarmouth – description of coastal landform, sediment transport and geology.
Sandbanks, sand transport and offshore wind farms (Ref 18.38)	Detail on offshore and littoral sediment transport, including morphological form and behaviour of offshore sandbanks.
Monthly average non-algal suspended particulate matter concentrations (Ref 18.39)	Non-algal Suspended Particulate Matter (SPM) – monthly, seasonal and annual maps (Cefas).
Database on the Marine Environment (Ref 18.40)	Sediment quality data.
Environment Agency Bathing Waters map and monitoring data (Ref 18.41)	Water quality.
UK Marine Protected Area Datasets (Ref 18.42)	Marine Designated Sites shapefile layer, including features like Special Areas of Conservation (SACs), Special Protection Areas (SPAs), and Marine Conservation Zones (MCZs).
The Crown Estate Marine Data Exchange (Ref 18.43)	Environmental Impact Assessment Report (EIAR) for English offshore wind farm (OWF) projects including Triton Knoll (RWE Npower, 2012), Lincs, Lynn and Inner Dowsing (Offshore wind power, 2003), Hornsea 1 and 2.
Cefas OneBenthic Dataset (Ref 18.44)	The OneBenthic collates seabed macrofauna and sediment particle size datasets in a cloud-based PostgreSQL platform.
Physical processes ES and technical reports for existing OWF and associated extensions that are within the public domain: Dogger Bank Hornsea projects; Triton Knoll; Race Bank; Dudgeon Shoal (and Extension); Sheringham Shoal (and Extension); Lynn and Inner Dowsing; Humber Gateway, Westermost Rough (Ref 18.45, Ref 18.46, Ref 18.47, Ref 18.48, Ref 18.49, Ref 18.50)	Baseline physical process (hydrodynamic; morphological; coastal) conditions of relevance to the respective OWFs. Physical processes assessments for each of the OWFs.

Data source	Description
Cefas' WaveNet (Ref 18.51)	Wave monitoring network for the UK.
EGL 3 and EGL 4 Marine Characterisation Surveys (Ref 18.52, Ref 18.53, Ref 18.54)	Results of the environmental baseline assessment and habitat assessment survey for EGL 3 and EGL 4. Results of the integrated geophysical and geotechnical survey report for EGL 3.

Current Baseline

18.4.7. This section provides a characterisation of the current baseline environment and describes the marine physical processes within the English Offshore Scheme Scoping Boundary and Study Area.

18.4.8. Kilometre points (KPs) have been used where relevant to provide reference points along the English Offshore Scheme Scoping Boundary. KP 0 is defined as the Landfall at Anderby Creek, with KP 412 the border between English and Scottish adjacent waters – the northern most extent of the English Offshore Scheme Scoping Boundary.

Bathymetry and seabed features

18.4.9. The EMODnet DTM has been used to inform the baseline understanding of bathymetry across the Study Area. The DTM is based on bathymetric data from various sources including UKHO survey data.

18.4.10. Water depths across the Study Area generally increase with distance along the English Offshore Scheme Scoping Boundary, being 25 m below mean sea level (MSL) offshore of Spurn Head, 55-60 m below MSL offshore of Flamborough Head and 75 m below MSL at the northern end of the Study Area as illustrated in **Volume 3, Figure 18-2.**

18.4.11. Other than the gradual deepening from south to north along the English Offshore Scheme Scoping Boundary, significant bathymetric features in the Study Area are constrained to within approximately 50 km of the Lincolnshire coast. The most prominent of these being Silver Pit, a naturally deep, glacially carved channel with steep-sided topography, reaching depths of -96 m LAT. The English Offshore Scheme Scoping Boundary crosses Silver Pit for 2.8km between KP 65 – KP 68. The English Offshore Scheme Scoping Boundary is approximately 2 km wide in this location and therefore occupies an area of approximately 5.6 km^2 of Silver Pit. The maximum depth at this location is -54 m LAT.

18.4.12. The southern North Sea contains several regions of shoals and sandbanks including the Triton Knoll sand bank, Inner Dowsing Falls and Outer Dowsing Shoal, however none of these intersect with the English Offshore Scheme Scoping Boundary.

Water Levels

Tidal

18.4.13. Water levels in the Study Area are predominantly driven by tidal processes. Tides in the Study Area are semi-diurnal, with two high and two low tides per day. The southern North Sea tidal regime is under the influence of an amphidromic point located close to the Danish coast, such that the tides rotate anticlockwise around this point. Both the

spring and neap tidal ranges increase in a shoreward direction with distance from the amphidrome.

18.4.14. Tidal planes have been extracted from the Admiralty Total Tide (ATT) software package at Skegness (at the southern extent of the Study Area on the coast) and at T022B (approximately 31 km west of KP 375) and are given in **Table 18-6**. The tide varies across the Study Area, with largest spring tidal ranges of approximately 6 m close to the proposed Landfall, reducing offshore and northwards to 2.5 m at the northern extent of the Study Area. Neap tidal ranges are approximately half the spring tidal range. The tide arrives from the north so that high water at the northern extent of the Study Area occurs approximately three hours before high water at the proposed Landfall.

Table 18-6: Tidal levels extracted from ATT

	Tide level (m relative to LAT)	
	Skegness	**T022B – approx. 31 km west of KP 375**
Highest Astronomical Tide (HAT)	7.4	4.0
Mean High Water Spring (MHWS)	6.7	-
Mean High Water Neap (MHWN)	5.1	-
Mean Low Water Neap (MLWN)	2.3	-
Mean Low Water Spring (MLWS)	0.7	-
Lowest Astronomical Tide (LAT)	0	0

Non-Tidal

18.4.15. Non-tidal or meteorological effects can also influence the water level. Data from the EA's coastal flood boundary conditions (Ref 18.30) and from the UK climate change projections (UKCP18) have been used to inform the baseline understanding of non-tidal influences on water levels. The height of a 1 in 200-year return period storm surge near the proposed Landfall is 4.8 m above MSL (Ref 18.28).

Currents

18.4.16. Data from the UK renewables atlas (Ref 18.25) have been used to inform the baseline understanding on tidal flows across the Study Area. Peak spring tidal flows across the Study Area are shown in **Volume 3, Figure 18-3**.

18.4.17. As **Volume 3, Figure 18-3** shows, tidal currents in the Study Area are generally orientated southwards on the flood tide and northwards on the ebb tide. The currents close to the proposed Landfall are bi-directional in nature, aligned with the coast, while currents become slightly more orbital in nature offshore. Fastest currents occur offshore of Spurn Head where peak spring tide current speeds are up to approximately 1.4 m/s. Close to the proposed Landfall peak spring tide current speeds are lower at approximately 1 m/s, and at the northern end of the Study Area are range between approximately 0.42 and 0.48 m/s.

18.4.18. Peak neap current speeds are approximately half the quoted peak spring tide current speeds. There is a slight dominance in the southward flowing flood currents, particularly in the southern part of the Study Area. Superimposed on the regional scale flow pattern, local flow variations can be expected to occur in response to bathymetric features (for example to realign with channel features, or around banks).

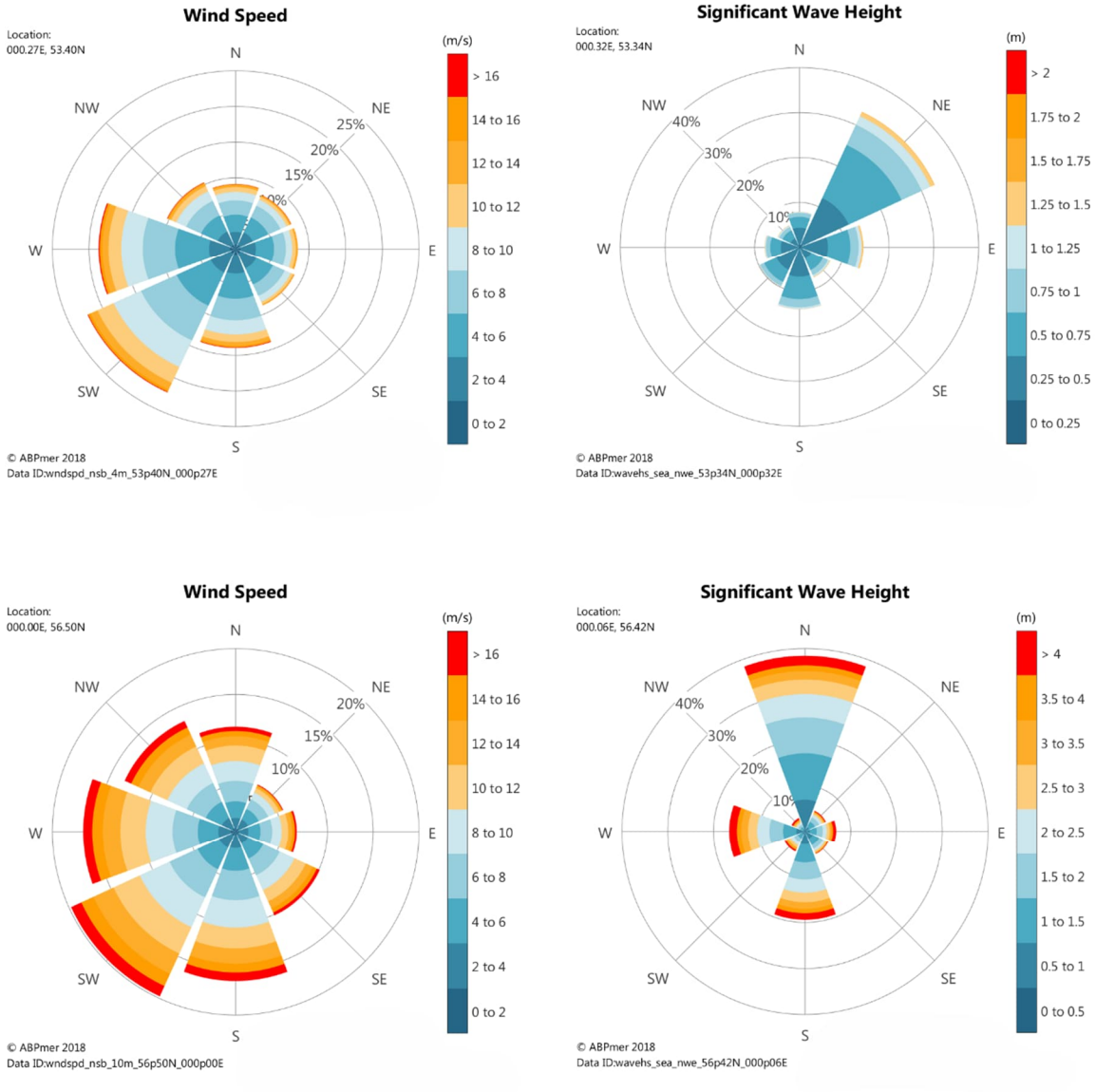
Winds and Waves

18.4.19. Climatological wind and wave data from SEASTATES (Ref 18.32) have been used to inform the baseline understanding of the wind and wave climate across the Study Area. SEASTATES is driven by the CFSR wind dataset (Ref 18.33).

18.4.20. As Atlantic depressions pass by the UK the wind typically starts to blow from the south or south-west but later comes from the west or north-west as the depression moves away. Directions between south and north-west account for the majority of occasions and the strongest winds nearly always blow from this range of directions. Springtime also tends to have a maximum of winds from the north east.

18.4.21. Wind roses (see top two panels in **Plate 18-1** below) from the coast close to the proposed Landfall confirm this showing mean southern-westerly wind direction with speeds of 6.1 m/s. The lower two panels in **Plate 18-1**. show data located close to the northern end of the Study Area, where wind speeds increase to 8.6 m/s. The strength of the winds increases with distance offshore (because of coastal sheltering to the dominant wind directions inshore).

Plate 18-1 Wind and wave roses close to the proposed Landfall (upper panels) and at northern extent of Study Area (lower panels) (Ref 18.32)



Significant wave height (Hs) is influenced by wind speed, fetch (the distance over which wind blows), and water depth. The wave climate across the Study Area is controlled by a combination of locally generated wind waves and swell waves generated elsewhere in the North Sea. The primary wave direction across the Study Area changes, with waves most frequently from the northeast close to the proposed Landfall and from the north further offshore. This change reflects the varying fetch lengths for different wind directions with distance along the English Offshore Scheme Scoping Boundary.

18.4.22. Wave roses shown in **Plate 18-1** indicate the most frequent wave direction close to the proposed Landfall is from the northeast and mean significant wave heights are 0.6 m. At the northern extent of the Study Area mean significant wave height increases to 1.7 m and most frequent wave direction is from the north.

Geology and Seabed Sediments

18.4.23. The bedrock geology across the Study Area is characterised by sand and clay based superficial sediments, overlaying glacial tills, comprised of gravels and stiff clays. Several similar formations consisting of middle to Late Pleistocene deposits of firm clays

with interbedded sands, fine to medium sands and gravels and poorly sorted sands are present across the Study Area. Bedrock is pre-quaternary in origin and consists of sedimentary bedrock in the south, and crystalline bedrock in the north (Ref 18.52).

18.4.24. Quaternary deposits are between 5 m - 20 m thickness typically near the Lincolnshire coast. Localised areas of thicker deposits to the east - southeast of Spurn Head of greater than 50 m contrast with some areas of thinner deposits (less than 5 m) offshore to the north of Flamborough Head.

18.4.25. Surficial seabed sediments near the proposed Landfall consist of Holocene gravelly Sand moving offshore into sandy Gravel, as shown in **Volume 3, Figure 18-4**. Moving northwards the sediments transition through gravelly Sand to become mostly Sand, with isolated pockets of slightly gravelly Sand and muddy Sand at the northern extent of the Study Area (Ref 18.34).

Geomorphology and Sediment Transport

18.4.26. The Lincolnshire coast is a diverse mixture of dune fronted flood plains, shingle barrier beaches, saltmarsh and soft cliffs. There are no significant geological ‘hard rock’ coastal areas and thus large proportions of the coast are vulnerable to marine flooding and erosion.

18.4.27. Net southward residual tidal flows transport sand eroded from the Holderness cliffs and offshore sources southwards close to the coast. A northerly directed net transport is separated from the southerly directed net transport along the coast by a bedload parting zone (Ref 18.38). Further north the sediment transport is driven by wave action and little sediment transport is expected (with wave driven transport restricted to shoals and / or storm events).

18.4.28. The River Humber is a source of sediment to the northern Lincolnshire coast. However, the Holderness coast does not primarily transfer this sediment to the northern Lincolnshire coast near Grimsby. Most of this sediment circulates in clockwise motion within the Humber being deposited on the inter-tidal flats behind Spurn Head, or sediment is transported to The Binks bank just offshore of Spurn Head. Sediment that crosses the mouth of the Humber is believed to settle on the foreshore of Donna Nook (Ref 18.55).

18.4.29. Megaripples and sandwaves are the dominant seabed morphology in the southern Study Area with smaller, less contiguous sections of megaripples in the northern part of the Study Area. Survey data for the EGL 3 Project identified low density boulder fields along the cable corridor with the density of boulder fields increasing in the southern portion of the route and the highest density around the Holderness Offshore MCZ.

18.4.30. Surge driven flows in the Study Area are not expected to contribute significantly to sediment transport (Ref 18.38).

Coastal Geomorphology

18.4.31. The coastline within the Study Area extends along the Lincolnshire coast from Sand Haile Flats in the north to just north of Gibraltar Point in the south. The coastline includes wide inter-tidal sand flats between Grimsby and Donna Nook in the Humber, decreasing in width towards Mablethorpe. The sand flats are currently accreting, fed by sediment from the eroding Holderness cliffs and the foreshore is steepening. Erosion of the Holderness cliffs and shore platform are a major source of coarse and fine sediment

(i.e. gravel, sand and muds) feeding Spurn Head and offshore sand banks noted within the Flamborough Head to Gibraltar Point Shoreline Management Plan (Ref 18.35).

18.4.32. At Donna Nook and Gibraltar Point there is extensive and well-developed saltmarsh. In some locations (including Donna Nook, Saltfleetby and Gibraltar Point) sand dunes have formed.

18.4.33. The beaches between Saltfleetby and Gibraltar Point are formed of a thin layer of sand, overlying clay. Historically during storms, the thin layer of sand has been eroded exposing the underlying clay. To counter this erosion the EA undertakes annual beach nourishment along the entire coast between Mablethorpe and Skegness. The beach nourishment has been undertaken over the past 30 years, and the current management strategy is for continued beach nourishment. Each year between Easter and mid-July, a dredger is used to transport approximately 400,000 m^3 of sand from licenced offshore sites and pump it onto the beach (Ref 18.56). Much of this coastline also has a variety of 'hard' defences and dunes behind the beaches which, along with the ongoing beach nourishment, provide protection against flooding.

18.4.34. The ongoing beach nourishment offsets the natural tendency for erosion along the coastline, but it does not prevent the net southward longshore drift.

18.4.35. The Lincolnshire shoreline management plan along the coastline within the Study Area is to hold the line for the epoch 2025 to 2055. The strategy for 2055 to 2105 is pending agreement (Ref 18.35).

Suspended Sediment and Water Quality

18.4.36. Sea temperatures off the coast of eastern England vary from 5-6 °C in February and early March to 15-16 °C in August. The temperature is governed by the influx of warm water associated with the Gulf Stream (Ref 18.57).

18.4.37. Data from the Cefas Suspended Sediment Climatology model (Ref 18.58) provides long term average (1998 to 2015) annual and monthly readings of non-algal suspended particulate matter (SPM) (note that Cefas use the term non-algal SPM rather than Suspended Sediment Concentration (SSC), but these terms are analogous, and further discussion adopts the term SSC). An updated climatology considering data collected over a longer duration is believed to be under development but as of July 2025 has not yet been made publicly available. The availability of an updated climatology will be checked for the PEIR and ES.

18.4.38. Data from the Cefas Suspended Sediment Climatology model (Ref 18.58), show that over the period between 1998 – 2015, average SSCs were approximately 30 mg/l close to the proposed Landfall. The SSCs are influenced by terrestrial sediment sources from the Humber Estuary and eroding Holderness Cliffs. As distance from the coast increases, average SSCs reduce to 5 mg/l or less, as shown in **Volume 3, Figure 18-5**.

18.4.39. It should be noted that these measurements of SSC are representative of near-surface conditions under non-storm / cloud free conditions and as such are likely to provide an underestimate of average conditions, particularly near the seabed. Other studies have shown that there are likely to be frequent short-term increases in background SSC in the near-bottom waters because of natural events, with much higher values during storm events (Ref 18.59).

18.4.40. The English Offshore Scheme Scoping Boundary traverses the WFD coastal Lincolnshire Water Body (ID GB640402492000) as it approaches the proposed Landfall. This waterbody is 'heavily modified' due to flood protection works and is currently (2022

classification) at moderate overall status, based on moderate ecological potential and a chemical status which 'does not require assessment' (noting, this waterbody was failing to achieve good chemical status in the previous (2019) classification) (Ref 18.60).

18.4.41. There are seven designated bathing waters within 15 km of the proposed Landfall as illustrated in **Volume 3, Figure 18-6**. These sites include Mablethorpe Town, Sutton-on-Sea, Huttoft and Marsh Yard (previously referred to as Moggs Eye), Anderby, Chapel St Leonards, Ingoldmells and Skegness. All of which achieved excellent classification based on samples taken from 2021 to 2024 (Ref 18.61).

18.4.42. Sediment samples from the marine characterisation survey collected from 54 locations along the EGL 4 Project (EGL 4 runs parallel to the English Offshore Scheme Scoping Boundary until approximately KP 220) were analysed for trace and heavy metals, specifically aluminium, arsenic, barium, cadmium, chromium, copper, lead, lithium, mercury, nickel, tin and zinc. In addition, samples were analysed for total organic carbon and presence of hydrocarbons.

18.4.43. Analysis of the samples corroborated the expected spatial pattern for lower concentrations at offshore relative to nearshore sites. Concentrations of total organic carbon and total hydrocarbon content were relatively low in the offshore sampling stations, and higher in the nearshore. In the case of total organic carbon, this is attributed to the higher proportion of fines in the sediment, and influence of runoff from the Humber Estuary catchment. Both total organic carbon and presence of hydrocarbons showed a negative correlation with increased distance from the Humber Estuary. It is suggested the source of hydrocarbons are both diffuse (from the Humber Estuary), and petrogenic material from industrial activities (e.g. shipping). The presence of heavy metals was low in offshore sample stations, negatively correlating with distance from the Humber Estuary, but positively correlating with locations for which total hydrocarbon content is high.

18.4.44. There are numerous closed disposal sites within the Study Area, many of which are associated with OWF developments. These closed disposal sites include Spurn Head (HU100), Hornsea disposal area (HU209), Triton Knoll (HU204), West of Inner Dowsing Bank (HU200) and Sheringham Shoal drillings (HU123). One active dredge disposal site exists within the Study Area, the Hornsea OWF disposal area (HU205).

18.4.45. The English Offshore Scheme Scoping Boundary passes through an area of gas fields, some of which remain in production. Gas fields could be a potential source of sediment contamination, however, analysis of sediment samples from the EGL 4 Project's benthic survey and from the ICES DOME Portal indicates no elevated contaminants above Action Level 1, including at a sampling site within 3 km of the Wollaston gas field (Ref 18.40).

Designated Sites

18.4.46. Designated sites in the Study Area which are of relevance to the coastal and marine physical processes topic are shown in **Volume 3, Figure 18-6**.

18.4.47. The English Offshore Scheme Scoping Boundary passes through the following designated sites:

- Greater Wash SPA: which supports breeding and foraging areas for many bird species. Specific marine habitats that provide supporting habitat to the designated features include intertidal mudflats and sandflats, subtidal sandbanks and biogenic reef.

- Holderness Offshore MCZ: an area of mixed coarse sediment and sand, supporting habitats for a wide variety of species, such as, ocean quahog (*Arctica islandica*), crustaceans (crabs and shrimp), starfish and sponges. The site is also a spawning and nursing ground for a range of fish species; and includes the northern tip of the Silver Pit North Sea glacial tunnel valley.
- Southern North Sea SAC: an area of importance for harbour porpoise (*Phocoena phocoena*). The mixed seabed of coarse and sandy sediments found here are an important physical characteristic, as these are preferred by harbour porpoise, due to availability of prey.

18.4.48. In addition, the designated sites presented in **Table 18-7** lie within the Study Area but are avoided by the English Offshore Scheme Scoping Boundary.

Table 18-7: Designated Sites within the Study Area

Designated site	Summary	Distance from English Offshore Scoping Boundary
Chapel Point to Wolla Bank Site of Special Scientific Interest (SSSI)	Designated for important tidal sand and mudflats, marshes, and sand dunes.	2.03 km
Inner Dowsing, Race Bank and North Ridge SAC	A site characterised by sandbanks and biogenic reefs, protecting benthic communities & ecology.	6.75 km
Saltfleetby to Theddlethorpe Dunes SSSI	Designated for important tidal sand and mudflats, marshes, and sand dunes.	7.31 km
Humber Estuary SPA, SAC, and SSSI	Features several Annex I habitats including salt-meadows, coastal lagoons, dunes, mudflats and sandflats and sandbanks	7.31 km, 7.68 km and 10.06 km respectively
Saltfleetby-Theddlethorpe Dunes and Gibraltar Point SAC	An extensive and complex area which exhibits a range of dune types including shifting dunes, fixed dunes with herbaceous vegetation and dunes which supports sea-buckthorn (*Hippophae rhamnoides*). The dune slacks at this site are part of a successional transition between a range of dune features, and some have developed from saltmarsh to freshwater habitats. Advice from Natural England states that the protected features of this SAC rely on sediment transport along the coast.	7.83 km
Swallow Sand MCZ	Supports a diverse range of marine flora and fauna due to the low energy	8.7 km

Designated site	Summary	Distance from English Offshore Scoping Boundary
	environment. Subtidal sand is the most abundant feature, with evidence of patches of coarse and mixed sediments as well as mud.	
North East of Farnes Deep Highly Protected Marine Area (HPMA)	Designated for the protection of the entire marine ecosystem of the area. The boundary overlaps with that of the North East of Farnes Deep MCZ.	12.29 km
North East of Farnes Deep MCZ	Characterised by predominantly sandy sediment, with patches of gravelly sand and mud. The seabed is important for its 'mosaic of habitats' supporting a diverse range of marine flora and fauna.	12.29 km

Future Baseline

18.4.49. Due to climate change and natural cycles, some aspects of the baseline environment are expected to undergo change over time. For the purposes of this assessment, the future baseline is defined for 2075 (assuming a design life of 40 years and construction start year of 2030, to be operational from 2035.

18.4.50. UKCP18 provides the most up to date assessment of climate change projections. The future change in climate over the UK will depend strongly on future emissions of greenhouse gases. UKCP18 uses scenarios for future greenhouse gases called the representative concentration pathways (RCPs) which were designed to cover a range of assumptions around future population, economic development and to explicitly include the possibility of mitigation of greenhouse gas emissions towards international targets. The RCPs led to a broad range of climate outcomes but are neither forecasts nor policy recommendations (Ref 18.24). They are as follows:

- RCP2.6 represents a future in which the world aims for and can implement sizeable reductions in emissions of greenhouse gases, giving a sizeable chance of limiting global average warming to 2°C.
- RCP8.5 represents a world in which global greenhouse gas emissions continue to rise.
- RCP4.5 and RCP6.0 consider some emission reductions based on pledges to reduce emissions as per the Paris climate agreement, which extends to the year 2030. If, after 2030, no further emission reductions are achieved but emissions do not rise then several studies suggest the temperature outcome of RCP4.5 may be the most likely. However, RCP6.0 allows for some further increase in emissions.

18.4.51. The four RCPs considered in UKCP18 attempt to capture a range of potential alternative futures, spanning a range of outcomes. The adoption of the climate response to a RCP8.5 future provides a precautionary view. The projected extreme sea levels at all UK tide gauge locations, released as part of UKCP18, were uplifted using the exploratory extended time-mean sea-level projections and available from 2020-2300.

UKCP18 suggests an increase in MSL from 0.5 m (RCP2.6) to more than 0.7 m at 2100 along the Lincolnshire coastline (RCP8.5). For RCP8.5 the sea level rise between 2028 and 2068 is 0.44 m at the 95th percentile at Anderby.

18.4.52. Future changes in storm surges have been predicted to be indistinguishable from background variation (Ref 18.31), although extreme surge level event frequency is likely to increase (Ref 18.62).

18.4.53. In addition to sea level rise, extreme water levels in response to surge are also expected to be increased in 2068, compared to the present day. The extreme levels for the future baseline are provided for a range of return periods in **Table 18-8**.

Table 18-8: 95th percentile extreme water levels for 2070

Return period (years)	Level (m relative to ordnance datum)
1	4.36
10	4.73
50	5.06
100	5.20
200	5.37
500	5.61

18.4.54. UKCP18 conclude that there are no compelling trends in storminess (as determined by maximum gust speeds) from the UK wind network over the last four decades. Further, global projections do not show a trend in winds in the first half of the 21st Century. However, changes in future wind and wave conditions provided in EA guidance (Ref 18.63) states that FRAs should allow for an increase in wind speeds and wave heights by 10% for the planned lifetime of the Project (2056 to 2115 epoch).

18.4.55. A rise in sea level and increased storminess may allow larger waves, and therefore more wave energy, to reach the coast resulting in increases in local erosion rates. Increases to water temperature is expected to continue throughout the next century, with thermal expansion contributing to sea level rise (Ref 18.24). The Southern North Sea has experienced the greatest rate of sea surface temperature warming, and this is expected to continue over the coming century, with a rise of 3.11°C expected by the end of the century (Ref 18.64).

18.4.56. There is evidence of an increasing trend in the annual average SSC concentrations in some regions, which may result from increased wind and wave energy or changes to land use and river management (Ref 18.39).

18.4.57. Future developments which may impact the future baseline for coastal and marine physical processes in the area include several offshore wind farm sites in the North Sea. This includes Ossian, Morven, Hornsea 3, Dogger Bank A, B, C, D and South, Outer Dowsing and Sofia offshore windfarms. In addition, other infrastructure such as Viking Link, NU Link, Aminth and Continental Link interconnector projects and Viking and Endurance Carbon Capture and Storage (CCS) pipelines. Of note are the Ossian wind farm export cables and the EGL 3 and EGL 4 transmission reinforcement projects

which are planned to make landfall at Anderby Creek, Lincolnshire. The potential for cumulative effects will be considered as part of the future EIA documents in accordance with the approach and guidance outlined within **Part 4, Chapter 30: Cumulative Effects.**

18.5 Design and Control Measures

18.5.1. As set out in **Part 1, Chapter 5: EIA Approach and Methodology,** the environmental measures are characterised as design measures or control and management measures. A range of environmental measures would be implemented as part of the English Offshore Scheme and will be secured through the Deemed Marine Licence (DML) and in the Development Consent Order (DCO) as relevant.

18.5.2. Several Outline Management Plans will be provided with the application for development consent to support the DML. These will include an Outline Construction Environmental Management Plan (CEMP) and Outline Marine Pollution Contingency Plan. These documents will outline measures to be implemented to comply with legislation (e.g. in relation to the prevention of oil and chemical spills) during all phases of the English Offshore Scheme. Final management plans will be submitted in accordance with the DML to discharge the licence conditions. An Outline CEMP would be provided with the PEIR and ES.

18.5.3. To date the following design measures have been applied to avoid or reduce potential significant effects. Design measures that are relevant to coastal and marine physical processes are included below and would also be included in an Commitments Register to be provided with the PEIR and ES. Compliance with these measures will be secured by way of the DCO or DML.

18.5.4. The following measures are relevant to the coastal and marine physical processes assessment:

- Intertidal zone would be crossed by horizontal directional drill to avoid disturbance to surface sediments and habitats.
- The Applicant would liaise with the EA to communicate and agree timings of works at the Landfall.
- The intention is to bury the cables in the seabed, except in areas where trenching is not possible, e.g. where ground conditions do not allow burial or at infrastructure crossings.
- Micro-routeing within the English Offshore Scheme Scoping Boundary to avoid environmental features and sensitive seabed features where possible.
- Sediment displaced for exit pits and cable installation (sandwave clearance and trenching) will be side cast / locally placed.
- The profile of rock berms used for cable protection would be designed to minimise the potential for scour to occur as much as possible (including alignment with flow and profiling).
- Cable protection features would only be installed where considered necessary for the safe operation of the English Offshore Scheme. This includes the repair of cables due to accidental damage, where depth of lowering is not achieved and at infrastructure crossings.

- In sites designated for benthic features, cable protection materials would be selected to match the environment (e.g. when cables are installed in areas of cobbles or other natural rock features, rock of similar diameter as the receiving environment should be used as an alternative to the current normal approach of using terrestrially sourced granite, where feasible).
- All project vessels must comply with the International Regulations for Preventing Collisions at Sea (1972) (Ref 18.65), regulations relating to International Convention for the Prevention of Pollution from Ships (the MARPOL Convention 73/78) (Ref 18.66) with the aim of preventing and minimising pollution from ships and the International Convention for the Safety of Life at Sea (Ref 18.67).
- An offshore Outline CEMP including an Emergency Spill Response Plan and Waste Management Plan, Marine Pollution Contingency Plan (MPCP), Shipboard Oil Pollution Emergency Plan (SOPEP) and a dropped objects procedure would be produced prior to installation.
- All oil, fuel and chemical spills will be reported to the Marine Management Organisation Marine Pollution response team.
- Drilling fluids required for trenchless operations would be carefully managed to minimise the risk of breakouts into the marine environment. Specific avoidance measures would include:
  - the use of biodegradable drilling fluids (pose little or no risk (PLONOR) substances) where practicable;
  - drilling fluids will be tested for contamination to determine possible reuse or disposal; and
  - if disposal is required drilling fluids would be transported by a licensed courier to a licensed waste disposal site.
- Chemicals will be chosen from the list of chemicals approved under the Offshore Chemical Notification Scheme (OCNS) (Ref 18.68). A chemical risk assessment will be provided as part of the Outline CEMP.
- Designated (and as minimal as possible) anchoring areas and protocols shall be employed during marine operations to minimise physical disturbance of the seabed.

18.6 Scope of the Assessment

Potential Sensitive Receptors

18.6.1. The principal coastal and marine physical processes receptors that have been identified as being potentially impacted by the English Offshore Scheme are:

- Intertidal, coastal and seabed geomorphology.
- Currents, water levels, waves, bathymetry and seabed features.
- Water quality (including bathing waters).
- Sediment quality.

Likely Significant Effects

18.6.2. A range of potential impacts on coastal and marine physical processes have been identified which may occur during the construction, operation and maintenance, and decommissioning phases of the Project. **Table 18-9** describes the potential impacts identified and provides justification as to whether they will be scoped in or out of the EIA.

18.6.3. A precautionary approach has been taken and where there is no strong evidence base, or the significance is uncertain at this stage the impact has been scoped ‘in’ to the EIA. Where there is clear evidence that the effect from the impact will not be significant, either alone or in combination with other plans and projects, the impact has been scoped ‘out’ of the EIA.

18.6.4. For clarity, where seabed preparation is mentioned in the project activity column this includes the following activities: boulder clearance, sandwave clearance (pre-sweeping), unexploded ordnance (UXO) identification, and pre-lay grapnel run (PLGR).

Table 18-9: Scoping assessment for potential impacts on coastal and marine physical processes

Potential impacts	Project activities	Sensitive receptors	Scoping justification		
			Construction	Operation (including repair and maintenance)	Decommissioning
Disturbance of sub-tidal seabed morphology	Seabed preparation Horizontal directional drilling (HDD) duct excavation. Cable burial and trenching. Anchoring / jack-up legs Cable removal	Seabed geomorphology	**IN** --Seabed preparation and subsea cable installation activities have the potential to directly disturb the seabed morphology. However, the proposed subsea cable corridor has been routed to avoid seabed features such as sandbanks, sandwaves and notable bathymetric depressions. There remains the potential for some pre-sweeping and deposits of external cable protection in some areas.	**OUT** – During operation, the likelihood of the Project requiring maintenance and repair is low. However, there remains the potential that localised repair works, or remedial external cable protection may be required. In these circumstances pre-sweeping may be required to expose the section of cable in need of repair. The significance of the effect will be of lower magnitude than during installation, being constrained to a smaller area.	**IN** – Once the Project has reached the end of its life, it is anticipated that the cables and cable protection would be removed unless it is demonstrated that it is preferable for them to remain in situ or it is not technically or environmentally feasible for them to be removed. The seabed would be returned where reasonably possible and practical to baseline conditions. Potential impacts of decommissioning are likely to be of a lower magnitude than construction.
Disturbance of intertidal seabed morphology	Seabed preparation HDD duct excavation Cable burial and trenching Deposit of external cable protection	Intertidal and coastal geomorphology	**OUT** - The Project will utilise HDD with the punch out within the subtidal, seaward of 0 m LAT water depth contour. Therefore, there will be no disturbance to the intertidal morphology.	**OUT** - If the cable and HDD ducts are installed correctly the potential for cable exposure due to any natural coastal retreat is non-existent. The proposed Landfall is sited in areas where coastal management practices are to hold the line.	**OUT** - Based on the assumption that the ducts from the HDD would remain in place, there would be no impacts in the intertidal zone. Should the decommissioning method change, this would be assessed at the time of decommissioning.

Potential impacts	Project activities	Sensitive receptors	Scoping justification		
			Construction	Operation (including repair and maintenance)	Decommissioning
Temporary increase and deposition of suspended sediments (Changes in suspended solids and water clarity)	Seabed preparation HDD duct excavation Cable burial and trenching Deposit of external cable protection	Water quality Seabed geomorphology	**IN** - Seabed preparation and subsea cable installation activities have the potential to raise SSC through the mobilisation of sediment into suspension within the water column, just above the seabed and subsequent deposition once material re-settles to the bed.	**IN** - If the cable is installed correctly the likelihood of it requiring maintenance and repair is significantly reduced. However, there remains the potential that localised repair works, or remedial external cable protection may be required. In these circumstances pre-sweeping may be required to expose the section of cable in need of repair. The significance of the effect will be of lower magnitude than during installation, being constrained to a smaller area.	**IN** - There is the potential for temporary increases in deposition of suspended sediments. Although the significance of the effect of removing the cable during decommissioning is expected to be of lower magnitude than construction.
Modifications to tidal and wave regimes and associated impacts to morphological features	Presence of external cable protection	Currents, water levels, waves bathymetry and seabed features	**OUT** - Potential impacts from external cable protection would be assessed in operation as the continued presence during operation causes the impact.	**IN** - Although the Applicant would design crossings with the recommendation that water depth is not reduced by more than 5%, it is unclear whether this recommendation can be met in all places. There is a concern that infrastructure crossings in shallow water could in combination with other projects effect wave regimes.	**IN** - There is the potential that should external cable protection be left in-situ that this may have potential impacts to tidal and wave regimes after the Project has been decommissioned.

Potential impacts	Project activities	Sensitive receptors	Scoping justification		
			Construction	Operation (including repair and maintenance)	Decommissioning
Release of contaminated sediments	Seabed preparation HDD duct excavation Cable burial and trenching Cable removal	Water quality	**OUT** - The temporary resuspension of contaminants in sediments from activities during construction, operation and maintenance and decommissioning that disturb the seabed has the potential to result in adverse effects on water quality. However, contaminant testing of the seabed for the EGL 4 Project showed the presence of contaminated sediment is minimal with all samples below Action Level 1, Action Level 2 and NOAA ERL thresholds except for arsenic in eight out of 54 locations, nickel at four and lead and mercury at one site each (Ref 18.26). Contaminant testing for the EGL 3 Project was not available at the time of writing, however the proximity, similarity in sediment types and generally low contaminants from other samples in the region, contaminant levels are expected to be similar for EGL 3. The English Offshore Scheme is located between EGL 3 and EGL 4 and the sediment samples collected are in proximity either side of the English Offshore Scheme Scoping Boundary providing confidence that the release of contaminated sediment is not likely to result in a significant effect. Project specific sediment sampling will be undertaken to validate this.		
Accidental releases or spills of materials or chemicals (Hydrocarbon and PAH contamination)	Presence of project vessels and equipment	Water quality and sediment quality	**OUT** - Project vessels and contractors will comply with the International Convention for the Prevention of Pollution from Ships (MARPOL) 73/78 (Ref 18.66) which relate to pollution from oil from equipment, fuel tanks etc and release of sewage (black and grey water). It is a legal requirement that all vessels have a SOPEP. Compliance with Regulations will be sufficient to minimise the risk to the environment. Several management plans will be provided as outline management plans with the application for development consent, to be secured as a condition of the DML. These will include an Outline Construction Environmental Management Plan and Outline Marine Pollution Contingency Plan. These documents will outline measures to be implemented to comply with legislation (e.g. in relation to the prevention of oil and chemical spills) during all phases of the English Offshore Scheme.		

Potential impacts	Project activities	Sensitive receptors	Scoping justification		
			Construction	Operation (including repair and maintenance)	Decommissioning
Temperature Increase	Operation of an HVDC cable	Sediment quality	No impact pathway	**OUT** - During the operation of an HVDC cable heat losses occur because of the resistance in the cable / conductor. This can cause localised heating of the surrounding environment (i.e., sediment for buried cables, or water in the interstitial spaces of external cable protection). There are no specific regulatory limits applied to temperature changes in the seabed, although a 2 °C change between seabed surface and 0.2 m depth is used as a guideline in Germany. Heat calculations were undertaken for the EGL 3 and EGL 4 Projects and are reported in Chapter 19 of the PEIR (Ref 18.69). It is reported that, assuming an ambient seabed temperature of 12 °C, seabed temperatures at 0.2 m immediately above the cables are estimated to be 13 - 14	No impact pathway

Potential impacts	Project activities	Sensitive receptors	Scoping justification		
			Construction	Operation (including repair and maintenance)	Decommissioning
				°C, with the cables operating at maximum operating temperatures. The actual system is unlikely to reach these temperatures as the system would have to operate at full load continuously for an extended period to meet these temperatures. The magnitude of impact was concluded to be low, with no significant effects predicted. Given a similar cable system is proposed for this Project, and that the English Offshore Scheme Scoping Boundary runs between the two projects and parallel to EGL 3 significant effects are not anticipated and are proposed to be scoped out of the assessment.	

18.7 Assessment Methodology

Further Data to be Gathered / Processed

Desk-Based Assessments

18.7.1. A more detailed literature review will be developed for the EIA to expand on the high-level overview provided within this technical aspect chapter of the Scoping Report. The assessment approach includes a range of desktop analyses and spreadsheet-based models, and this will be supplemented by evidence from analogous assessments and monitoring data.

18.7.2. Spreadsheet based models will be applied to assess the potential SSC and sedimentation associated with installation activities for a range of hydrodynamic conditions, sediment types and release rates to capture the impact (in terms of plume extent, concentration, duration of increases and extent and thickness of deposits on the seabed). The assessment will focus on the realistic worst case installation scenario. The available baseline information and planned geophysical, geomorphological and benthic surveys will provide the data inputs for this assessment. The effects will be assessed in terms of the difference caused relative to the normal range of natural occurrence and variability.

18.7.3. Particle Size Distribution (PSD) analysis was undertaken for samples taken along the EGL 3 and EGL 4 subsea cable corridors. The average percentage of fines within samples was 8.3% and 10.7% respectively for EGL 3 and EGL 4 from a total of 314 samples (Ref 18.26). Given the proximity of the Project to the EGL 3 and EGL 4 Projects and the low percentage of fines identified, no new hydrodynamic modelling is presently considered required for the Project. However, this will be reviewed upon receiving project-specific PSD data.

18.7.4. The assessment of operational impacts associated with changes to the substrate and water depths associated with external cable protection measures will quantify the areas of impact and relative changes in water depth. This will be considered alongside baseline information, results from the benthic survey and expert judgement to determine the likely impact on receptors.

18.7.5. The proposed approach would be:

1) Identify where cable protection is required and determine if the change in depth is more or less than 5%.

2) Where changes are expected to be more than 5%, the next step would be to draw on results from the evidence base. In particular wave impact modelling undertaken for EGL 3 and EGL 4.

18.7.6. A WFD assessment will be undertaken to assess the potential impacts of the English Offshore Scheme on water and sediment quality. It is proposed that the WFD assessment will be presented as a technical appendix to the PEIR and ES, and the results of the assessment will be presented within the Coastal and Marine Physical Processes chapter of the PEIR and ES The assessment of water quality impacts will focus on the impact on turbidity using spreadsheet-based models, with release of contaminated sediments having been scoped out of the assessment.

Surveys

18.7.7. Data from site specific geophysical, geotechnical and benthic surveys of the Study Area will provide a more detailed site characterisation and fill key data gaps such as positions of seabed features, particle size distributions and levels of sediment contamination. The additional data will be used to inform the Applicant's Cable Burial Risk Assessment (CBRA). Existing studies from comparable projects will be used to further inform the likely scale of any potential impacts.

18.7.8. The Applicant has commenced a marine characterisation survey within the English Offshore Scheme Scoping Boundary. To date geophysical and benthic surveys have been completed (April to June 2025), with geotechnical surveys schedule for late 2025 / early 2026.

18.7.9. The objective of the survey campaigns is to obtain baseline data that will contribute to determining the physical and ecological conditions, the location and design of the final cable route and inform the environmental assessments necessary to obtain consent for the English Offshore Scheme.

18.7.10. The geophysical survey campaign sought to provide detailed mapping of nearshore shallow geological and seabed character; mapping of seabed relief (bathymetry) and features along offshore sections and environmental characterisation mapping across the English Offshore Scheme Scoping Boundary.

18.7.11. The scope of the geophysical and geotechnical campaign is outlined in **Table 18-10**. Data shall be acquired across a 300 m wide corridor in water depths < 70 m and a 500 m wide corridor in water depths > 70 m. Further details on the benthic surveys are provided in **Part 3, Chapter 19: Intertidal and Subtidal Benthic Ecology**.

Table 18-10: Summary of site investigation methodologies

Survey type	Methods	Description
Geophysical Survey	Multi Beam Echo Sounder (MBES) Sub-Bottom Profiling (SBP) Remotely Operated Vehicle (ROV) Ultra-short Baseline (USBL)	The geophysical survey undertook the following tasks: • Measured intertidal topography and seabed bathymetry, surface morphology and identified the nature of the seabed sediments - in particular, the height, length, and slopes of bedforms (MBES). • Identified the distribution and thickness of superficial sediments and rock head where possible (SBP). • Identified the distribution of subsea geological features such as areas of exposed bedrock (MBES). • Identified the location, extent, and nature of any impediments to laying or burial of the cables such as wrecks, debris on seafloor, rock outcrop, other cables, pipelines etc. (MBES).
Geotechnical Survey	Vibrocore (VC) Cone Penetrometer Tests (CPT)	The techniques to be used include: • Vibrocores (VC) - core samples of sediments down to 3-6 m depth, acquired to allow ground truthing of the geophysical interpretation.

Survey type	Methods	Description
		• Cone Penetrometer Tests (CPT) - measure the resistance of sediments, allowing determination of the types of sediments present and their structure. VCs and CPTs are typically acquired at the same sample station and will be positioned along the proposed centreline of the cable. It is expected that geotechnical sampling locations will be spaced every 2 km and therefore shall comprise nominally of the following, including a 10% contingency buffer: • 320 VCs • 320 CPTs If the seabed is found to be broadly similar, then distance between sampling stations will increase, and conversely if the seabed is found to be more varied spacing will decrease.

Assessment of Significance

18.7.12. The coastal and marine physical processes assessment will follow the assessment approach set out in **Part 1, Chapter 5: EIA Approach and Methodology** of this Scoping Report, using the project-wide assessment matrix. However, whilst this has informed the approach that would be used in the assessment, it is necessary to set out how this methodology would be applied, and adapted as appropriate, to address the specific needs of the coastal and marine physical processes assessment.

18.7.13. The criteria for characterising the value and sensitivity and magnitude for the coastal and marine physical processes are outlined in **Table 18-11** and **Table 18-12,** respectively.

18.7.14. The significance of an effect, either adverse or beneficial, will be determined using a combination of the magnitude of the impact and the sensitivity of the receptor. A matrix approach is used throughout all topic areas to ensure a consistent approach within the assessment. This is described further in **Part 1, Chapter 5: EIA Approach and Methodology,** Table 5-3.

Table 18-11: Criteria for characterising the sensitivity of receptors

Receptor sensitivity	Definition
High	Receptor has low / no capacity to return to pre-impact conditions, e.g. low tolerance to change and low recoverability such as loss of access with no alternatives. Receptor is very high value or critical importance to local, regional or national economy or environment.
Medium	Receptor is generally vulnerable to the impacts and recoverability is slow or costly. Receptor is high value with reasonable contribution to local, regional or national economy or environment.

Receptor sensitivity	Definition
Low	Receptor has moderate levels of recoverability. Receptor is medium value with small contributions to local, regional or national economy or environment.
Negligible	Receptor is tolerant to change with no effect on its character. Receptor is of low value with little contributions to local, regional or national economy or environment.

Table 18-12: Criteria for characterising the magnitude of impact

Impact magnitude	Definition
High	Impacts are of long-term (>15 years) through to long-term / permanent duration and / or on a regional level or major alteration to key elements / features of the baseline condition such that post-impact baseline character will be fundamentally changed.
Medium	Impacts are of medium term (7-15 years) duration and / or on a local level (wider than Project footprint) or alter an element of the baseline conditions such as that post-impact the damage to the baseline is above that experienced under natural conditions
Low	Impacts are temporary (<1 year) or short term (1-7 years) in duration, site specific and / or a minor shift away from the baseline condition such as that experienced under natural conditions. Impacts limited to within the Project footprint.
Negligible	Very little or no detectable change from baseline conditions. Disturbance is within the range of natural variability. Impacts predicted to be brief (one to two days) or for a short period (up to 3 months).

Assessment of Cumulative Impacts and Effects

18.7.15. **Part 4, Chapter 30: Cumulative Effects** defines the methodology for the assessment of cumulative effects. The coastal and marine physical processes assessment of intra- and inter-project cumulative effects will be carried out and reported within the PEIR and ES to be submitted with the application for development consent.

18.7.16. The zone of influence for the inter-project cumulative effects assessment of coastal and marine physical processes would comprise the Draft Order Limits, plus an additional 15 km buffer each side informed by the tidal excursion. This is a precautionary maximum zone of influence that encompasses the worst-case scenario of potential impact pathways from increased suspended sediment concentrations.

18.7.17. **Part 4, Chapter 30: Cumulative Effects** of the PEIR will present the long and short lists of ‘other developments’ which will be considered at the ES stage, and the methodology which allowed for the identification of these other developments, to allow consultation bodies to form a view and provide comment on the other developments

included. The long list will be reviewed and if necessary, updated, in the lead up to the ES, as the English Offshore Scheme design further evolves and in response to any comments raised at statutory consultation.

18.8 Assessment Assumptions and Limitations

18.8.1. The baseline description collated in this technical aspect chapter has been based on a range of publicly available data and information. It is assumed that the data collated is accurate. The data would be supplemented with additional information acquired as part of the stakeholder engagement process and through the marine characterisation surveys identified in this chapter to inform the PEIR and ES.

18.8.2. In the absence of data, a precautionary approach has been taken and professional judgement, based on experience of similar linear projects, have been used where required to inform the scope of the assessment.

18.8.3. No project specific metocean data have been collected. The analysis to be presented within the ES chapter relies upon readily available metocean data, which is considered sufficient for giving a high-level understanding of the baseline metocean processes (notably waves and currents) across the Study Area.

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19. Intertidal and Subtidal Benthic Ecology

19.1 Introduction

19.1.1. This chapter of the Scoping Report describes the potential impacts arising from the construction, operation and maintenance and decommissioning of the English Offshore Scheme on intertidal and subtidal benthic ecology receptors. Benthic receptors include the organisms living in (infauna) or on (epifauna) the seabed (excluding shellfish which are covered in **Part 3, Chapter 20: Fish and Shellfish**), as well as their supporting habitats.

19.1.2. There may be interrelationships related to the potential effects on intertidal and subtidal benthic ecology and other disciplines. Therefore, please also refer to the following chapters of this Scoping Report found in Volume 1:

- **Part 2, Chapter 6: Biodiversity** which identifies the potential impacts on onshore ecology and receptors which might be using the intertidal area;
- **Part 3, Chapter 18: Coastal and Marine Physical Processes** outputs from the coastal and marine physical environment assessment will inform the consideration of impacts such as temporary increases in suspended sediments and subsequent deposition; and
- **Part 3, Chapter 20: Fish and Shellfish** which identifies the potential impacts on fish and shellfish species, many of which rely on specific benthic ecological habitats for prey or breeding habitat.

19.1.3. This chapter is supported by the following figures found in Volume 3:

- **Figure 19-1: Intertidal and Subtidal Benthic Habitat Types**; and
- **Figure 19-2: Relevant Sensitive Sites and Features within the Benthic Study Area**.

19.1.4. At this early stage in the development of the English Offshore Scheme, only desk-based information has been used for this technical aspect chapter. No data is yet available from the 2025 marine characterisation surveys to inform the Scoping Report.

19.2 Relevant Legislation, Planning Policy and Technical Guidance

19.2.1. This section identifies the relevant legislation, national and local policy and guidance which has informed the scope of the intertidal and subtidal benthic ecology assessment.

Legislation

19.2.2. A summary of the key legislation considered in, but not limited to, the scope of effects on intertidal and subtidal benthic habitats and species is outlined in **Table 19-1.**

Table 19-1: Legislation relevant to intertidal and subtidal benthic ecology assessment

Legislation	Legislative context
The Planning Act 2008 (Ref 19.1)	An Act to establish the Infrastructure Planning Commission and make provision about its functions; to make provision about, and about matters ancillary to, the authorisation of projects for the development of nationally significant infrastructure.
The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (Ref 19.2)	This Act transposes EU Directive 2011/92/EU (the EIA Directive) into UK law for nationally significant infrastructure projects, ensuring environmental safeguards while potentially streamlining the process.
Marine and Coastal Access Act (MCAA) 2009 (Ref 19.3)	The MCAA provides a framework for managing and protecting marine and coastal areas, promoting sustainable development, enhancing public access to the coast, and conserving marine biodiversity and habitats, including establishing marine protected areas (MPAs) and coastal access routes.
Marine Works (Environmental Impact Assessment) Regulations 2007 (as amended) (Ref 19.4)	The Marine Works (Environmental Impact Assessment (EIA)) Regulations 2007 require certain types of projects that have the potential to significantly affect the environment to submit an EIA before a marine licence decision is made.
The Conservation of Habitats and Species Regulations 2017 (as amended) (Ref 19.5)	The Conservation of Habitats and Species Regulations 2017 transposes the Habitats Directive (92/43/EEC) into UK legislation. These Regulations are collectively referred to as the Habitats Regulations. The Conservation of Habitats and Species Regulations applies out to 12 nautical miles (NM) from the coastline; the Conservation of Offshore Marine Habitats and Species Regulations applies from 12NM to the boundary of the UK Exclusive Economic Zone (EEZ). The Habitats Regulations provide a framework for the protection of European Sites, which include Special Areas of Conservation (SACs), designated to protect sensitive benthic habitats and species. Under the Regulations, Applicants must demonstrate that a proposed development will not adversely affect the integrity of a European site either alone or in combination with other plans or projects. This is done through the Habitats Regulations Assessment (HRA) process. The process requires ‘competent authorities’ to carry out an appropriate assessment of any proposal likely to affect an SAC, to seek advice from Natural England and / or the Joint Nature Conservation Committee (JNCC), to consider whether an application would have an adverse effect on the integrity of an SAC.
The Conservation of Offshore Marine Habitats and Species Regulations 2017 (Ref 19.6)	

Legislation	Legislative context
The Wildlife and Countryside Act 1981 (Ref 19.7)	The Wildlife and Countryside Act 1981 (as amended) provides legal protection for marine habitats and species within the UK within 12NM of the coast.
The Marine Strategy Regulations 2010 (Ref 19.8)	The Marine Strategy Regulations 2010 require action to be taken to achieve or maintain Good Environmental Status (GES) in seas.
The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (Ref 19.9)	The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (the 'WFD') protects surface waters including rivers, lakes, transitional waters (referred to in this advice as estuarine waters), coastal waters and groundwater. The WFD protects surface waters including rivers, lakes, transitional waters (referred to in this advice as estuarine waters), coastal waters and groundwater. These waters directly influence sensitive benthic habitats and species where they occur within coastal waters.
Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 (Ref 19.10)	The Act requires competent authorities to have due regard for protecting and enhancing species and habitats when making public decisions. In particular, Section 41 refers to a published list of habitats and species which are of principal importance for the conservation of biodiversity in England. There are eleven sensitive subtidal habitats listed under this act; five of which are found within the wider region the English Offshore Scheme occurs within and could potentially be encountered.
Environment Act 2021 (Ref 19.11)	The Environment Act 2021 sets clear statutory targets for the recovery of the natural world in four priority areas: air quality, biodiversity, water and waste.
Convention for the Protection of the Marine Environment of the North East Atlantic (the 'OSPAR' convention) adopted in 1992 (Ref 19.12)	The OSPAR convention provides a binding framework of environmental protection and sustainable development management to ensure marine development is conducted in an environmental responsible manner.

Planning Policy

19.2.3. A summary of the planning policies at both a national and local level relevant to the scope of effects on intertidal and subtidal benthic habitats and species is outlined in **Table 19-2** and **Table 19-3**.

Table 19-2: National planning policy relevant to the intertidal and subtidal benthic ecology assessment

Policy reference	Policy context
Overarching National Policy Statement for Energy (NPS EN-1) (Ref 19.13) Sections 4.5 and 5.4	Applicants for a development consent must take account of any relevant 'Marine Plans'. Details steps Applicants should take to conserve and enhance biodiversity including the adoption of appropriate avoidance, mitigation, compensation and enhancement measures.
Overarching National Policy Statement for Energy (NPS EN-1) Consultation Draft (April 2025) (Ref 19.14)	The Government has published a draft update to NPS EN-1. The 2025 Draft NPS EN-1 is largely the same as the 2023 document, relevant section numbers will remain the same.
National Policy Statement for Renewable Energy Infrastructure (NPS EN-3)(Ref 19.15) Paragraphs 2.8.120 – 2.8.126, 2.8.233 – 2.8.236 and 2.8.317	Sets out impact pathways that could affect subtidal habitats and species and describes mitigation measures which applicants are expected to have considered as well as coordination with other developers to ensure disturbance is reasonably minimised.
National Policy Statement for Renewable Energy Infrastructure (NPS EN-3) (Ref 19.16) Paragraphs 2.8.113 – 2.8.116, 2.8.204 – 2.8.207 and 2.8.284	The Government has published a draft update to NPS EN-3. The 2025 Draft NPS EN-3 is largely the same as the 2023 document, relevant section numbers will remain the same, however, paragraph numbers will be updated.
National Planning Policy Framework (NPPF)(Ref 19.17) Section 15	Sets out measures to be taken to protect and enhance biodiversity when developing plans and proposals.
UK Marine Policy Statement (Ref 19.18)	The UK Marine Policy Statement (MPS) was adopted in 2011 and provides a policy framework for the preparation of marine plans and establishes how decisions affecting the marine area should be made.

Table 19-3: Local planning policy relevant to the intertidal and subtidal benthic ecology assessment

Policy reference	Policy context
East Inshore and East Offshore Marine Plan 2014 (Ref 19.19) and Northeast Offshore Marine Plan 2021 (Ref 19.20)	Marine plans set out the priorities and direction for future planning within the plan area and provide guidance on activities to avoid or promote. A Marine Plan Assessment would be provided with the Preliminary Environmental Information Report (PEIR) and Environmental Statement (ES) that outlines how

Policy reference	Policy context
	the English Offshore Scheme complies with the policies and objectives of the relevant marine plans.

Technical Guidance

19.2.4. A summary of the relevant technical guidance, specific to the intertidal and subtidal benthic ecology assessment, that has informed this Scoping Report and will inform the assessment within the PEIR and ES, is given in **Table 19-4**.

Table 19-4: Technical guidance relevant to the intertidal and subtidal benthic ecology assessment

Technical guidance document	Context
Chartered Institute for Ecology and Environmental Management (CIEEM) Guidelines for Ecological Impact Assessment in Britain and Ireland - Terrestrial, Freshwater, Coastal and Marine (Ref 19.21)	Provides guidelines to promote good practice in Ecological Impact Assessment (EcIA) relating to terrestrial, freshwater, coastal and marine environments in the UK and Ireland.
Nature conservation considerations and environmental best practice for subsea cables for English Inshore and UK Offshore Waters (Ref 19.22)	Which makes recommendations to help avoid cabling in sensitive / protected habitats.
Offshore Wind Marine Environmental Assessments: Best Practice Advice for Evidence and Data Standards (Ref 19.23)	Best practice advice for the use of environmental data and evidence standards for offshore wind development in English inshore and offshore waters.
Where possible, the sensitivity of features based on the Marine Evidence-based Sensitivity Assessment (MarESA) framework, and the approach used by the Marine Life Information Network (MarLIN) (Ref 19.24)	The evidence base hosted on MarLIN, which is based on the MarESA framework, provides the ultimate source of information for the application of sensitivity assessments to management and planning decisions.
Refining the criteria for defining areas with a 'low resemblance' to Annex I Stony Reef (Ref 19.25)	Provides a definition for Annex 1 habitats. Provides a definition for habitats that are of ‘low resemblance’ to Stony Reefs and provides examples of areas with a ‘low resemblance’ to Annex 1 Stony Reefs in UK waters.
Defining and managing *Sabellaria spinulosa* reefs (Ref 19.26)	Provides a definition for *Sabellaria spinulosa* reefs.
Natural England Conservation Advice for Marine Protected Areas (Ref 19.27)	Provides advice on operations and advice on seasonality of designated features for marine protected areas.

19.3 Consultation and Engagement

19.3.1. In respect of the intertidal and subtidal benthic ecology assessment, key consultees have been identified and focussed engagement (through both informal and formal consultation) will be undertaken and recorded throughout the pre-application stage of the Project. Key consultees identified to date are:

- Centre for Environment, Food and Aquaculture Studies (Cefas);
- Natural England;
- Joint Nature Conservation Committee (JNCC);
- Marine Management Organisation (MMO);
- Lincolnshire Wildlife Trust;
- Inshore Fisheries and Conservation Authorities (IFCAs) (Eastern, North-Eastern and Northumberland); and
- National Federation of Fishermen's Organisations (NFFO).

19.3.2. Key areas of consultation are intended to include a walk-through of the results of the marine characterisation surveys, mitigation for impacts on sensitive habitats (if identified during benthic survey), impact assessment conclusions and proposed mitigation.

19.3.3. Local or specialist groups will be contacted should the assessment process identify a need to engage further detailed local knowledge, or if requested during the statutory consultation process.

19.3.4. The Applicant has engaged with several stakeholders within intertidal and benthic ecology interests as summarised in **Table 19-5**.

Table 19-5: Summary of Consultation to Date

Stakeholder	Date	Summary of meeting
JNCC	28th January 2025	Introduction to the Project including discussions around the benthic survey plan and routing in relation to the Holderness Offshore MCZ and preference to avoid Annex 1 reef habitat
	29th July 2025	Update on the Project including discussions on the benthic and geophysical surveys and potential interactions with the Holderness Offshore MCZ
MMO	31st July 2025	Update on the Project including presenting the two route options in relation to the Holderness Offshore MCZ and providing an update on environmental surveys
Natural England	3rd March 2025	Introduction to the Project, confirming the project description, proposed Landfall location and the consenting strategy. Natural England expressed concerns with regards to the level of resourcing required given the number of projects intending to make landfall within Lincolnshire, including both offshore wind, transmission reinforcement and interconnector projects, and also with regards to

Stakeholder	Date	Summary of meeting
		potential congestion at the Anderby Creek Landfall and impacts to the Holderness Offshore MCZ.
	8th July 2025	Discussed the terrestrial and marine aspects of the Project, including Silver Pit and the Holderness Offshore MCZ and the intention of the Applicant to follow the mitigation hierarchy during route development to minimise potential adverse effects.

19.4 Baseline Conditions

Study Area

19.4.1. The Study Area for this receptor includes the English Offshore Scheme Scoping Boundary plus an additional 15 km buffer to either side. This 15 km buffer is informed by the tidal excursion, which varies along the English Offshore Scheme. It acts a precautionary maximum zone of influence and incorporates the area within which there is the potential for direct impacts associated with the deposition of suspended sediments. It is consistent with **Part 3, Chapter 18: Coastal and Marine Physical Processes** and has been validated through reference to fine sediment modelling calculations presented in the Eastern Green Link 3 (EGL 3) and Eastern Green Link 4 (EGL 4) PEIR (Ref 19.28). The zone of influence will be influenced by the conclusions of **Part 3, Chapter 18: Coastal and Marine Physical Processes**, which should be read in conjunction with this technical aspect chapter.

19.4.2. The Study Area for the intertidal and subtidal benthic assessment and its relation to the English Offshore Scheme is presented in **Volume 3, Figure 19-1**.

Data Gathering Methodology

19.4.3. Data sourced for the baseline characterisation will be presented in accordance with relevant guidance for the topic. Desk-based review of publicly available data sources (peer-reviewed and grey literature as well as GIS mapping files) will be used to supplement site-specific ecology surveys (described in 'Further Data to be Gathered / Processed') and describe the wider baseline environment. **Table 19-6** lists the key data sources which will be used in the assessment.

Table 19-6: Key publicly available data sources for intertidal and subtidal benthic ecology

Data source	Description
European Marine Observation and Data Network (EMODnet) GIS layers (Ref 19.29)	Broadscale predictive habitat map (EUSeaMap) based on EUNIS 2019 habitat types. Habitat suitability model for *Sabellaria spinulosa* reefs in the UK.
National Biodiversity Network (NBN) Atlas (Ref 19.30)	Records for benthic species and habitats.

Data source	Description
British Geological Survey (BGS) GeoIndex Offshore portal for marine habitats data (Ref 19.31)	A range of marine geoscience data held within the National Geoscience Data Centre.
The Humber Regional Environmental Characterisation (REC) Study (Ref 19.32)	A multidisciplinary study of the geology, biology, and archaeology of an 11,000 km² area off the east coast of England. https://nora.nerc.ac.uk/id/eprint/15037/1/OR10054.pdf
Magic Maps (Ref 19.33)	An interactive mapping system developed by Defra that holds spatially referenced data on the natural environment for England.
JNCC	Marine Habitat data product: Habitats Directive Annex I marine habitats. JNCC Conservation Advice for Marine Protected Areas.
Natural England	Natural England Conservation Advice for Marine Protected Areas.
IFCAs	Website with Information about fishing and the species in the different regional Eastern and Northeastern Inshore Fishing and Conservation Authorities.
BGS Marine Sediment Particle Size dataset sourced from the BGS GeoIndex Offshore portal	This is a national dataset providing full coverage of the benthic, subtidal and intertidal aspects of the Study Area.
UKSeaMap 2018	Broad-scale overview of the coverage of different physical seabed habitats in the UK.
OneBenthic portal run by OpenScience Cefas (Ref 19.34)	Compilation of 33,198 macrofaunal samples from 2014-2016, 83% of which contain associated data on sediment particle size composition. Dataset covers large areas of the UK continental shelf and was funded by the aggregates industry.
Offshore Wind Farm (OWF) and Interconnector Environmental Statements	EIA documents for OWF developments Ossian OWF (expected to be available for PEIR / ES) Outer Dowsing OWF Viking Link EGL 3 and EGL 4
Department for Environment, Food and Rural Affairs Habitat Information (Ref 19.35)	Intertidal substrate foreshore data.
Environment Agency	Dataset on the intertidal invertebrate assemblages, size epifauna and the size distribution of intertidal sediments, collected to assess the impacts of beach nourishment within the Saltfleet to Gibraltar Point beach management scheme.

Current Baseline

19.4.4. This section provides a characterisation of the current baseline environment and describes the key intertidal and subtidal benthic ecology within the English Offshore Scheme Scoping Boundary and Study Area. It also includes the designated sites and protected species known to be present within the Study Area.

19.4.5. The baseline environment within the Study Area has been described in the following sub-sections using publicly available information and reference to EGL 3 and EGL 4 site specific survey data where relevant. Habitats have been reported according to EUNIS for classifying benthic habitats and using the EUNIS codes established in 2019 (Ref 19.36).

19.4.6. Kilometre points (KPs) have been used throughout the description to provide reference points along the English Offshore Scheme Scoping Boundary. KP 0 is defined as the Landfall at Anderby Creek, with KP 412 the border between English and Scottish adjacent waters – the northern most extent of the English Offshore Scheme Scoping Boundary.

Intertidal Zone

19.4.7. The definition of the intertidal zone is the area of seashore that is exposed at low tide and inundated at high tide. The Landfall lies at Anderby Creek; foreshore sediments are largely composed of high energy infralittoral coarse sand (A5.13) (Ref 19.29).

19.4.8. The intertidal surveys conducted for the EGL 3 and EGL 4 projects identified that foreshore sediments are composed of a diverse range of habitats, including sand dunes with marram grass (N1) in the supralittoral zone, coarse sediment, and a strand line of shell debris and washed-up fauna (A2.21). The upper eulittoral consists of coarse sand (A2.221) with finer mobile sand patches (A2.22). A tidal stream marks the transition to the lower eulittoral, which contains finer sand and occasional puddles. Sand mason (*Lanice conchilega*) habitats were observed at low tide, along with crabs, large whelks, bivalves, and polychaetes.

Subtidal Zone

19.4.9. The definition of the subtidal zone is the area where the seabed is below the reach of the lowest spring tide. The following paragraphs describe the nature of the sediments across the KPs. Two route options are currently being appraised; Option 1 – ENG Route A which routes from Landfall at Anderby Creek (KP 0) to the English Scottish border (KP 412) routeing largely around the Holderness Offshore Marine Conservation Zone (MCZ) (to the east but intersecting with the designated site in the bottom eastern corner); and Option 2 – ENG Route B which diverges from Option 1 – ENG Route A at approximately KP 58 and routes directly though the Holderness Offshore MCZ to rejoin Option 1 – ENG Route A at KP 111.

Option 1 - ENG Route A - KP 0 – KP 412 (South – North)

19.4.10. As the subsea cable corridor moves away from Anderby Creek, the sediment changes from A5.13 Infralittoral Coarse Sediment to A5.14 Circalittoral coarse sediment after approximately 3 km (KP 3). This habitat type remains the dominant sediment type for 54 km where there is a brief transition to A5.44 Circalittoral mixed sediment (KP 57 – KP 63). This habitat transition occurs where Option 1 – ENG Route A subsea cable corridor diverges into two options just before the Holderness MCZ boundary. Option 1 – ENG Route A extends east and the habitat briefly transitions back to A5.14 Circalittoral

coarse sediment for 2 km (KP 63 – KP 64) before transitioning to A5.14 Deep circalittoral coarse sediment (KP 65) and A5.45 Deep circalittoral mixed sediment (KP 65 – 67). The habitat then transitions between A5.14 and A5.15 for 36 km (KP 68 – KP 104). Coarse sediment habitats which are a combination of coarse sands, gravel and shingle are widespread across the southern North Sea (Ref 19.37). The heterogeneous substrates and high energy conditions associated with A5.14 Circalittoral coarse sediment tend to be characterised by robust polychaete worms such as *Lanice conchilega* and the calcareous tube-building *Spirobranchus triqueter*, mobile crustaceans (particularly amphipods such as *Ampelisca spinipes*) and the sea cucumber *Neopentadactyla mixta*. The lancelet (*Branchiostoma lanceolatum*) may also occur in this habitat.

19.4.11. At KP 105, the habitat transitions again to A5.27 Deep circalittoral sand. This is the predominant habitat for the remaining 305 km of the Option 1 – ENG Route A subsea cable corridor in English waters with a brief transition back to A5.15 between KP 151 and KP 164 (13 km). Again, sandy substrates are widespread in this area. Whilst very little data is available on these habitats they are likely to be characterised by a diverse range of polychaetes, amphipods, bivalves and echinoderms (Ref 19.38).

19.4.12. The English Offshore Scheme Scoping Boundary does include areas of A4.27 Faunal communities on deep moderate energy circalittoral rock near KP 145 and A4.33 Faunal communities on deep low energy circalittoral rock near KP 160. Near the boundary of the Study Area (closest KP 249), there is a small area of A5.37 Deep circalittoral mud.

19.4.13. Within the English Offshore Scheme Scoping Boundary, there is estimated 1.06 km² of Bedrock and / or Stony reef (assessed as ‘potential’ confidence). Within the Study Area, there is 119.13 km² of Bedrock and / or Stony reef, of which 98.03 km² is ‘high’ confidence and 21.10 km² is ‘moderate’ confidence. Stony reef, classified as A4.3 Atlantic and Mediterranean low energy circalittoral rock and A4.33 Faunal communities on deep low energy circalittoral rock, occurs on wave-sheltered circalittoral bedrock and boulders subject to mainly weak / very weak tidal streams. Communities identified within this habitat type are often dominated by encrusting red algae, brachiopods (*Neocrania anomala*), the ascidian *Ciona intestinalis* and the sea squirt *Ascidia mentula*.

19.4.14. There is 1.22 km² of Biogenic reef (high confidence) within the Study Area (none within the English Offshore Scheme Scoping Boundary), all of which is A5.611 *Sabellaria spinulosa* on stable circalittoral mixed sediment. This area of habitat is located nearest the Landfall at Anderby Creek, ~10 km south of KP 3. EMODnet data suggests that there is an area of A5.6 Sublittoral biogenic reef, A5.61 Sublittoral polychaete worm reefs on sediment and A5.611 *Sabellaria spinulosa* on stable circalittoral mixed sediment in this area. This habitat is estimated to extend up to 4.8 km from KP 6.

Option 2 - ENG Route B - KPA 0 – KPA 39

19.4.15. Kilometre Points within this section are referred to as Kilometre Points Alternative (KPA) to avoid confusion between Option 1 – ENG Route A. Option 2 – ENG Route A which diverges from Option 1 – ENG Route A at approximately KP 58.

19.4.16. This section of the English Offshore Scheme Scoping Boundary begins as A5.44 Circalittoral mixed sediment (KPA 0), before transitioning to A5.14 Circalittoral coarse sediment after 5 km. The habitat continues as A5.14 for 16 km before transitioning to A5.15 Deep circalittoral coarse sediment. A5.15 continues from approximately KPA 24 to KPA 37, at which point the habitat transitions again to A5.27 Deep circalittoral sand. Between KPA 6 and KPA 7 there is a small area that is classified as A5.25 or A5.26 Circalittoral fine sand or Circalittoral muddy sand.

19.4.17. There is no Annex I Reef within the English Offshore Scheme Scoping Boundary along the Option 2 – ENG Route B, although as discussed above there is an area of 'Bedrock and / or Stony reef' within the Study Area between the Option 1 – ENG Route A subsea cable corridor and the Option 2 – ENG Route B route section.

Adjacent Habitats

19.4.18. The Level 5 Biotope 'piddocks with a sparse associated fauna in Atlantic circalittoral very soft chalk or clay' (MC1251 / A4.231) were found at five sampling stations along the cable corridor for the EGL 3 project between KP 25 and KP 40. This section of the EGL 3 cable corridor runs near to the proposed cable corridor for the English Offshore Scheme, and there is therefore the potential for this biotope to be present. This will be confirmed / denied with the site-specific data gathered during benthic surveys (see Surveys for more detail).

Summary

19.4.19. The list below summarises the habitat types present within the English Offshore Scheme Scoping Boundary with reference to both Option 1 – ENG Route A and Option 2 – ENG Route B subsea cable corridors:

- A4.27 Faunal communities on deep moderate energy circalittoral rock
- A4.33 Faunal communities on deep low energy circalittoral rock
- A5.13 Infralittoral coarse sediment
- A5.14 Circalittoral coarse sediment
- A5.15 Deep circalittoral coarse sediment
- A5.25 or A5.26 Circalittoral fine sand or Circalittoral muddy sand
- A5.27 Deep circalittoral sand
- A5.44 Circalittoral mixed sediment
- A5.45 Deep circalittoral mixed sediments

19.4.20. **Table 19-7** provides descriptions for the broadscale habitats noted above as present within the English Offshore Scheme Scoping Boundary. **Volume 3, Figure 19.1**. illustrates the predicted intertidal and subtidal benthic ecology habitat types identified within the Study Area.

Table 19-7: Broadscale habitat descriptions within the English Offshore Scheme Scoping Boundary

Broadscale habitat type	EUNIS habitat description
A4.27 Faunal communities on deep moderate energy circalittoral rock	These communities populate hard substrata with low hydrodynamics and strong sedimentation.
A4.33 Faunal communities on deep low energy circalittoral rock	Not available.

Broadscale habitat type	EUNIS habitat description
A5.13 Infralittoral coarse sediment	Moderately exposed habitats with coarse sand, gravelly sand, shingle and gravel in the infralittoral, are subject to disturbance by tidal steams and wave action. Such habitats found on the open coast or in tide-swept marine inlets are characterised by a robust fauna of infaunal polychaetes such as *Chaetozone setosa* and *Lanice conchilega*, cumacean crustacea such as *Iphinoe trispinosa* and *Diastylis bradyi*, and venerid bivalves. Habitats with the lancelet *Branchiostoma lanceolatum* may also occur.
A5.14 Circalittoral coarse sediment	Tide-swept circalittoral coarse sands, gravel and shingle generally in depths of over 15-20 m. This habitat may be found in tidal channels of marine inlets, along exposed coasts and offshore. This habitat, as with shallower coarse sediments, may be characterised by robust infaunal polychaetes, mobile crustacea and bivalves. Certain species of sea cucumber (e.g., Neopentadactyla) may also be prevalent in these areas along with the lancelet *Branchiostoma lanceolatum*.
A5.15 Deep circalittoral coarse sediment	Offshore (deep) circalittoral habitats with coarse sands and gravel or shell. This habitat may cover large areas of the offshore continental shelf although there is relatively little quantitative data available. Such habitats are quite diverse compared to shallower versions of this habitat and generally characterised by robust infaunal polychaete and bivalve species. Animal communities in this habitat are closely related to offshore mixed sediments and in some areas settlement of *Modiolus modiolus* larvae may occur and consequently these habitats may occasionally have large numbers of juvenile *M. modiolus*. In areas where the mussels reach maturity their byssus threads bind the sediment together, increasing stability and allowing an increased deposition of silt leading to the development of the biotope A5.622.
A5.25 or A5.26 Circalittoral fine sand or Circalittoral muddy sand	Clean fine sands with less than 5% silt / clay in deeper water, either on the open coast or in tide-swept channels of marine inlets in depths of over 15-20 m. The habitat may also extend offshore and is characterised by a wide range of echinoderms (in some areas including the pea urchin *Echinocyamus pusillus*), polychaetes and bivalves. This habitat is generally more stable than shallower, infralittoral sands and consequently supports a more diverse community. Circalittoral non-cohesive muddy sands with the silt content of the substratum typically ranging from 5% to 20%. This habitat is generally found in water depths of over 15-20 m and supports animal-dominated communities characterised by a wide variety of polychaetes, bivalves such as *Abra alba* and *Nucula nitidosa,* and echinoderms such as *Amphiura spp* and *Ophiura spp*., and *Astropecten irregularis*. These

Broadscale habitat type	EUNIS habitat description
	circalittoral habitats tend to be more stable than their infralittoral counterparts and as such support a richer infaunal community.
A5.27 Deep circalittoral sand	Offshore (deep) circalittoral habitats with fine sands or non-cohesive muddy sands. Very little data is available on these habitats however they are likely to be more stable than their shallower counterparts and characterised by a diverse range of polychaetes, amphipods, bivalves and echinoderms.
A5.44 Circalittoral mixed sediment	Mixed (heterogeneous) sediment habitats in the circalittoral zone (generally below 15-20 m) including well mixed muddy gravelly sands or very poorly sorted mosaics of shell, cobbles and pebbles embedded in or lying upon mud, sand or gravel. Due to the variable nature of the seabed a variety of communities can develop which are often very diverse. A wide range of infaunal polychaetes, bivalves, echinoderms and burrowing anemones such as *Cerianthus lloydii* are often present in such habitat and the presence of hard substrata (shells and stones) on the surface enables epifaunal species to become established, particularly hydroids such as *Nemertesia spp* and *Hydrallmania falcata*. The combination of epifauna and infauna can lead to species rich communities. Coarser mixed sediment communities may show a strong resemblance, in terms of infauna, to biotopes within the A5.1. However, infaunal data for this habitat type is limited to that described under the biotope A5.443 and so are not representative of the infaunal component of this habitat type.
A5.45 Deep circalittoral mixed sediments	Offshore (deep) circalittoral habitats with slightly muddy mixed gravelly sand and stones or shell. This habitat may cover large areas of the offshore continental shelf although there is relatively little data available. Such habitats are often highly diverse with a high number of infaunal polychaete and bivalve species. Animal communities in this habitat are closely related to offshore gravels and coarse sands and in some areas, populations of the horse mussel *Modiolus modiolus* may develop in these habitats (see A5.622).

Designated Sites within the Study Area

19.4.21. **Table 19-8** presents the sites designated for benthic habitats and / or species within the Study Area, along with their protected features and conservation objectives. Distances to the English Offshore Scheme Scoping Boundary at the nearest point are given where appropriate. Designated sites are also illustrated in **Volume 3, Figure 19-2**.

Table 19-8: Sites designated for benthic habitats and species within the Study Area

Site name & code	Distance to English Offshore Scheme Scoping Boundary (km)	Relevant annex I protected features
Holderness Offshore MCZ UKMCZ0078 (Ref 19.39)	Within the English Offshore Scheme Scoping Boundary for: 20.4 km along Option 2 – ENG Route B 4.7 km along Option 1 – ENG Route A Subsea Cable Corridor	• Overarching objective • Subtidal coarse sediment • Subtidal mixed sediments • Subtidal sand • North Sea glacial tunnel valleys (Silver Pit) • Ocean quahog (*Arctica islandica*) ***Species of Conservation Importance**
Inner Dowsing, Race Bank and North Ridge SAC (UK0030370) (Ref 19.40)	6.7 km	• 1170 Reefs • 1110 Sandbanks which are slightly covered by sea water all the time
Humber Estuary SAC (UK0030170) (Ref 19.41)	7.5 km	• 1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) • 1150 Coastal lagoons **Priority Feature** • 2160 Dunes with Hippophae rhamnoides • 2110 Embryonic shifting dunes • 1130 Estuaries • 1140 Mudflats and sandflats not covered by seawater at low tide • 2130 Fixed dunes with herbaceous vegetation (`grey dunes`) ***Habitat of Conservation importance** • 1310 Salicornia and other annuals colonising mud and sand • 1110 Sandbanks which are slightly covered by sea water all the time • 2120 Shifting dunes along the shoreline with *Ammophila arenaria* (`white dunes')

Site name & code	Distance to English Offshore Scheme Scoping Boundary (km)	Relevant annex I protected features
Swallow Sand MCZ UKMCZ0026	8.6 km	• Subtidal coarse sediment • Subtidal sand
		• North Sea glacial tunnel valleys (Swallow Hole)
Saltfleetby – Theddlethorpe Dunes and Gibraltar SAC (UK0030270) (Ref 19.42)	9.7 km	• 2110. Embryonic shifting dunes • 2120. Shifting dunes along the shoreline with Ammophila arenaria (“white dunes”); Shifting dunes with marram • 2130. Fixed dunes with herbaceous vegetation (“grey dunes”); Dune grassland ***Species of Conservation Importance** • 2160. Dunes with *Hippophae rhamnoides;* Dunes with sea-buckthorn • 2190. Humid dune slacks
North East of Farnes Deep MCZ UKMCZ0024 (Ref 19.43)	12 km	• Subtidal coarse sediment • Subtidal sand • Subtidal mixed sediments • Subtidal mud
		• Ocean quahog (*Arctica islandica*) ***Species of Conservation Importance**

Protected Species and Priority Features within the Study Area

Sea-pen and burrowing megafauna communities

19.4.22. Sea-pen and burrowing megafauna communities are a protected feature of the Farnes East MCZ.

19.4.23. Sea-pen and burrowing megafauna communities are associated with plains of fine mud and are found at water depths ranging from 15–200 m or more. Sediments are often heavily bioturbated by burrowing megafauna and as such, burrows and mounds may form a prominent feature of the sediment surface with conspicuous populations of sea-pens, typically the slender sea pen (*Virgularia mirabilis)* and phosphorescent sea pen (*Pennatula phosphorea*). Burrowing crustaceans present in this community may include Nephrops (*Norvegicus* spp.), shrimp (*Calocaris macandreae)* or ghost shrimp (*Palaemon paludosus*) (Ref 19.44).

Ocean quahog *Arctica islandica*

19.4.24. The ocean quahog is found inshore around all British and Irish coasts, as well as offshore. The growth rate of quahog is rapid in juveniles but very slow and indeterminate in adults. Individual growth rates are highly variable between different regions in the North Atlantic, within sites, between seasons and daily, depending on temperature, salinity, hydrography and food supply. They are the longest-unitary species with the oldest recorded specimen found being 507 years old (Ref 19.45).

19.4.25. The ocean quahog is a burrowing species which has been found in a range of sediments, from coarse clean sand to muddy sand, in a range of depths typically from 4 m-482 m deep. Ocean quahogs are thought to have a high sensitivity to physical loss of habitat, it is therefore important to conserve the extent and distribution of supporting habitats to provide the best chance of any potential settlement for new recruits and to retain existing individuals (Ref 19.46).

19.4.26. The ocean quahog is a protected feature of the following designated sites within the Study Area:

- Holderness Offshore MCZ; and
- North-East of Farnes Deep Highly Protected Marine Area (HPMA) and MCZ.

19.4.27. No *A. islandica* were identified in Drop Down Video surveys along the cable corridor for EGL 3 (Ref 19.47). Along the EGL 4 corridor, four camera transects demonstrated an 'Occasional' (as defined by the SACFOR scale) presence of ocean quahog in mud and sand habitats between KP 142 to KP 395 of the EGL 4 project, outside any of the designated sites.

Annex I Reefs

19.4.28. Annex I reef habitats are protected under the Habitats Regulations. The definition of an Annex I reef, based on the Interpretation Manual of European Union Habitats, is as follows:

19.4.29. 'Reefs can be either biogenic concretions or of geogenic origin. They are hard compact substrata on solid and soft bottoms, which arise from the sea floor in the sublittoral and littoral zone. Reefs may support a zonation of benthic communities of algae and animal species as well as concretions and corallogenic concretions'.

19.4.30. Within UK waters, three types of Annex I reef have been identified: stony, bedrock and biogenic. The JNCC Annex I Reefs in UK waters dataset (Version 8.3, 2022) was used to identify Annex I reef habitat within the Study Area. This data is illustrated in **Volume 3, Figure 19-2**.

19.4.31. There is a small area of Bedrock and / or Stony Reef at the southern end of the cable route, near KP 64. This is not within the English Offshore Scheme Scoping Boundary but is within the Study Area. There is a further area of Bedrock and / or Stony Reef between KP 141 and KP 170. Small areas of this are within the English Offshore Scheme Scoping Boundary (near KP 160) but the majority is within the wider Study Area. There is a final area of Bedrock and / or Stony Reef within the Study Area, between KP 220 and KP 278, although this is not within the English Offshore Scheme Scoping Boundary. Areas of Stony Reef habitats were identified in the EGL 3 survey but none that met the criteria for Annex I reef (Ref 19.47).

19.4.32. Annex I *S. spinulosa* reef is present at the southern end of the Study Area, with the closest reef situated 4 km from the English Offshore Scheme. This reef is 12 km in length and is the largest reef within the Study Area. Smaller patches of Annex I *S. spinulosa* reefs are present to the east of the forementioned reef and are situated along the edge of the 15 km Study Area.

Subtidal sands and gravels

19.4.33. Subtidal sands and gravels are a broad habitat type listed as a Habitat of Principal Importance under Section 41 of the 2006 NERC Act.

19.4.34. Habitats associated with subtidal sands and gravels, such as circalittoral coarse sediment, circalittoral muddy sand and circalittoral sand, dominate the Study Area. This suggests the presence of subtidal sands and gravels throughout large proportions of the Study Area.

2130 Fixed dunes with herbaceous vegetation ('grey dunes') (Habitat of Conservation Importance)

19.4.35. Fixed dunes with herbaceous vegetation ('grey dunes') are a protected feature of the following designated sites within the Study Area:

- Humber Estuary SAC; and
- Saltfleetby – Theddlethorpe Dunes and Gibraltar Point SAC.

19.4.36. However, this habitat type is not present at the proposed Landfall at Anderby Creek and is therefore not sensitive to the activities carried out as part of this Project.

19.4.37. **Volume 3, Figure 19-2** illustrates the ecologically sensitive sites and features within the Study Area.

Future Baseline

19.4.38. This section will set out how the current baseline is predicted to change in the absence of the English Offshore Scheme by the time the English Offshore Scheme is in operation.

19.4.39. The existing baseline conditions for intertidal and subtidal benthic ecology within the Study Area are relatively stable. The existing habitats within the English Offshore Scheme are dominated by sand, with mixed and coarse sediment habitats interspersed throughout the route. The existing macrofauna is dominated by polychaetes, with the occasional presence of *S.spinulosa* and ocean quahog *A. islandica*. It is important to note that, while stable, the existing baseline conditions for intertidal and subtidal benthic ecology is fluid and is influenced by a combination of physical processes that occur within the North Sea, anthropogenic activities, such as fishing, in particular beam trawling and the development of man-made structures within the North Sea.

19.4.40. Rising sea temperatures, as a result of anthropogenic climate change, can cause northerly migration of benthic species. At a large scale, this can change the biodiversity within a given area, consequently changing habitat composition. This was supported by the findings of Hiddink et al. (Ref 19.48), who evaluated changes in the distribution of 65 common benthic invertebrate species between 1986 and 2000. These species demonstrated a north-westerly migration toward deeper, cooler waters which positively correlated with increases in seabed temperatures. Thus, as sea temperatures continue to rise, changes in the habitats and biodiversity of benthic communities within the Study Area could occur without installation of the English Offshore Scheme.

19.4.41. Future developments which may impact the future baseline for intertidal and benthic ecology in the area include several offshore wind farm sites in the North Sea. This includes Ossian, Morven, Hornsea 3, Dogger Bank A, B, C, D and South, Outer Dowsing and Sofia offshore windfarms. In addition, other infrastructure such as Viking Link, NU Link, Aminth and Continental Link interconnector projects and Viking and Endurance Carbon Capture and Storage (CCS) pipelines. Of note are the Ossian wind farm export cables and the EGL 3 and EGL 4 transmission reinforcement projects which are planned to make landfall at Anderby Creek, Lincolnshire. The potential for cumulative effects will be considered as part of the future EIA documents in accordance with the approach and guidance outlined within **Part 4, Chapter 30: Cumulative Effects**.

19.5 Design and Control Measures

19.5.1. As set out in **Part 1, Chapter 5: EIA Approach and Methodology**, the environmental measures are characterised as design measures or control and management measures. A range of environmental measures would be implemented as part of the English Offshore Scheme and will be secured through the Deemed Marine Licence (DML) and in the Development Consent Order (DCO) as relevant.

19.5.2. Several Outline Management Plans will be provided with the application for development consent to support the DML. These will include an Outline Construction Environmental Management Plan (CEMP) and Outline Marine Pollution Contingency Plan. These documents will outline measures to be implemented to comply with legislation (e.g., in relation to the prevention of oil and chemical spills) during all phases of the English Offshore Scheme. Final management plans will be submitted in accordance with the DML to discharge the licence conditions. An Outline CEMP would be provided with the PEIR and ES.

19.5.3. In addition, design measures identified through the EIA process would be applied to avoid or reduce potential significant effects. Design measures included that are relevant to intertidal and benthic receptors are included below and would also be included in a Commitments Register to be provided with the PEIR and ES. Compliance with these measures will be secured by way of the DCO or DML.

19.5.4. The following measures are relevant to the intertidal and subtidal benthic ecology assessment:

- Intertidal zone would be crossed by Horizontal Directional Drill (HDD) to avoid disturbance to surface sediments and habitats.
- The intention is to bury the cables in the seabed, except in areas where burial is not possible e.g. where ground conditions do not allow or at infrastructure crossings.

- Designated (and as minimal as possible) anchoring areas for the Project and protocols shall be employed during marine operations to minimise physical disturbance of the seabed.
- Cable protection would only be installed where considered necessary for the safe operation of the English Offshore Scheme. This includes the repair of cables due to accidental damage, where depth of lowering is not achieved and at infrastructure crossings.
- In sites designated for benthic features, cable protection materials will be selected to match the environment (e.g., when cables are installed in areas of cobbles or other natural rock features, rock of similar grade as the receiving environment should be used as an alternative to the current normal approach of using terrestrially sourced granite) where feasible.
- Any material introduced into the marine environment, such as rock protection material, would be from a suitable source or cleaned to ensure no Invasive Non-Native Species (INNS) can be introduced.
- Drilling fluids required for trenchless operations would be carefully managed to minimise the risk of breakouts into the marine environment. Specific avoidance measures would include:
  - The use of biodegradable drilling fluids (pose little or no risk (PLONOR) substances) where practicable.
  - Drilling fluids would be tested for contamination to determine possible reuse or disposal.
  - If disposal is required drilling fluids would be transported by a licensed courier to a licensed waste disposal site.
  - Chemicals would be chosen from the list of chemicals approved under the Offshore Chemical Notification Scheme and a chemical risk assessment will be provided as part of the Outline CEMP.
- High Voltage Direct Current (HVDC) poles would be bundled to minimise the effects of electromagnetic fields (EMFs) for electrosensitive receptors.

19.6 Scope of the Assessment

Potential Sensitive Receptors

19.6.1. The principal intertidal and subtidal benthic receptors that have been identified as being potentially impacted by the English Offshore Scheme are:

- National sites designated with benthic features;
- Intertidal habitats;
- Subtidal broadscale habitats;
- Subtidal sands and gravels;
- Subtidal Annex I geogenic reefs (stony and rocky reefs);
- Annex I *Sabellaria spinulosa* reefs;

- Sea-pen and burrowing megafauna communities;
- Subtidal species; and
- Ocean quahog (*Arctica islandica*).

Likely Significant Effects

19.6.2. A range of potential impacts on intertidal and benthic ecology receptors have been identified which may occur during the construction, operation and maintenance, and decommissioning phases of the English Offshore Scheme. **Table 19-9** describes the potential impacts identified and provides justification as to whether they will be scoped 'in' or 'out' of the EIA.

19.6.3. A precautionary approach has been taken and where there is no strong evidence base, or the significance is uncertain at this stage, the impact has been scoped 'in' to the EIA. Where there is a clear evidence base that the effect from the impact will not be significant, either alone or in combination with other plans and projects, the impact has been scoped 'out' of the EIA.

19.6.4. Potential impacts have been established based on industry experience and where applicable reference to the list of marine pressures established by the JNCC Marine Pressures-Activities Database v1.5 (2022) and Natural England's advice on operations for relevant European protected sites. The relevant JNCC pressures that would be covered by the impact pathways identified are provided in italics in the potential impact column.

19.6.5. For clarity, where seabed preparation is mentioned in the project activity column this includes the following activities: boulder clearance, sandwave clearance (pre-sweeping), unexploded ordnance (UXO) identification, and pre-lay grapnel run (PLGR).

Table 19-9: Scoping assessment of impacts on intertidal and subtidal benthic ecology

Potential impacts	Project activities	Sensitive receptors	Scoping justification		
			Construction	**Operation (including repair and maintenance**	**Decommissioning**
Temporary habitat loss / seabed disturbance *(Abrasion / disturbance of the substrate on the surface of the seabed* *Penetration and / or disturbance of the substratum below the surface of the seabed, including abrasion)*	Horizontal Directional Drilling (HDD) duct excavation Cable burial and trenching Cable removal	Intertidal habitats	**OUT** - The Intertidal zone would be crossed by HDD to avoid disturbance to surface sediments and habitats. There is therefore no impact pathway and it is scoped out of the assessment.	**OUT** – During operation, the likelihood of the Project requiring maintenance and repair is low. If the cables were to fail within the trenchless solution, there is no means of repairing them and a new duct would need to be drilled. This would be the subject of a separate Marine Licence. Therefore, impacts during operation and maintenance have been scoped out for the intertidal area.	**OUT** - It is likely that the cables duct would be left in situ with no further impacts on the environment.
	Seabed preparation HDD duct excavation Cable burial and trenching Anchoring / jack-up legs Deposit of external cable protection Cable removal	Subtidal – broadscale habitats and species	**IN** - The significance of the effect will vary according to the techniques used during cable burial (e.g., jet or plough trenching) and the sensitivity of the habitat. The Study Area contains commonly occurring infralittoral and circalittoral habitats (e.g., A5.15, A5.27 and A5.45) that are widely distributed within the North Sea region. MarLIN sensitivity assessments for these habitats indicate that due to the burrowing life habitat of the dominant species the habitat has a low sensitivity to abrasion and penetration. This impact has been scoped in due to the area of potential impact over the length of the	**IN** - During operation, the likelihood of the Project requiring maintenance and repair is low. However, there remains the potential that localised repair works or remedial external cable protection may be required. If these circumstances arise the significance of the effect will be of lower magnitude that during construction. Data from site-specific surveys will feed into the EIA.	**IN** - The significance of the effect during decommissioning is expected to be of similar or of lower magnitude than construction. However, this aspect remains scoped in due to current uncertainty over methods likely to be used for decommissioning. A high-level assessment would be provided based on clear assumptions.

Potential impacts	Project activities	Sensitive receptors	Scoping justification		
			Construction	Operation (including repair and maintenance	Decommissioning
			cable. Data from site-specific surveys will feed into the EIA.		
		Subtidal sand and gravels	**IN -** The significance of the effect will vary according to the techniques used during cable burial (e.g., jet or plough trenching) and the sensitivity of the habitat. Subtidal sand and gravels are widely distributed throughout the Study Area but are also common throughout the North Sea area. MarLIN sensitivity assessments for these habitats indicate that due to the burrowing life habitat of the dominant species the habitat has a low sensitivity to abrasion and penetration. This impact has been scoped in due to the area of potential impact over the length of the cable. Data from site-specific surveys will feed into the EIA.	**IN -** During operation, the likelihood of the Project requiring maintenance and repair is low. However, there remains the potential that localised repair works or remedial external cable protection may be required. If these circumstances arise the significance of the effect will be of lower magnitude that during construction. Data from site-specific surveys will feed into the EIA.	**IN** - The significance of the effect during decommissioning is expected to be of similar or of lower magnitude than construction. However, this aspect remains scoped in due to current uncertainty over methods likely to be used for decommissioning. A high-level assessment would be provided based on clear assumptions.
		Subtidal Annex I geogenic stony (stony and rocky)	**IN** - The significance of the effect will vary according to the techniques used during cable burial (e.g., jet or plough trenching) and the sensitivity of the habitat. Publicly available data suggests that there are several areas of Bedrock and / or Stony Reef within the Study Area. Benthic surveys will confirm / rule out the presence of Annex Reef within the English Offshore Scheme Scoping Boundary, and the results used to inform the EIA.	**IN -** During operation, the likelihood of the Project requiring maintenance and repair is low. However, there remains the potential that localised repair works or remedial external cable protection may be required. If these circumstances arise the significance of the effect will be of lower magnitude that during construction. Data from site-specific surveys will feed into the EIA.	**IN** - The significance of the effect during decommissioning is expected to be of similar or of lower magnitude than construction. However, this aspect remains scoped in due to current uncertainty over methods likely to be used for decommissioning. A high-level assessment would be provided based on clear assumptions.

Potential impacts	Project activities	Sensitive receptors	Scoping justification		
			Construction	Operation (including repair and maintenance	Decommissioning
		National sites designed with benthic features	**IN -** The significance of the effect will vary according to the techniques used during cable burial (e.g., jet or plough trenching) and the sensitivity of the habitat. This impact has been scoped in due to the area of potential impact over the length of the cable. Data from site-specific surveys will feed into the EIA.	**IN -** During operation, the likelihood of the Project requiring maintenance and repair is low. However, there remains the potential that localised repair works or remedial external cable protection may be required. If these circumstances arise the significance of the effect will be of lower magnitude that during construction. Data from site-specific surveys will feed into the EIA.	**IN** - The significance of the effect during decommissioning is expected to be of similar or of lower magnitude than construction. However, this aspect remains scoped in due to current uncertainty over methods likely to be used for decommissioning. A high-level assessment would be provided based on clear assumptions.
		Ocean quahog	**IN -** The significance of the effect will vary according to the techniques used during cable burial (e.g., jet or plough trenching) and the sensitivity of the habitat. This species is very long lived and MarLIN assesses it to have Very Low Resilience and High Sensitivity to seabed abrasion / disturbance. Benthic surveys will confirm / rule out the presence of this receptor within the English Offshore Scheme Scoping Boundary, and the results used to inform the EIA.	**IN -** During operation, the likelihood of the Project requiring maintenance and repair is low. However, there remains the potential that localised repair works or remedial external cable protection may be required. If these circumstances arise the significance of the effect will be of lower magnitude that during construction. Data from site-specific surveys will feed into the EIA.	**IN** - The significance of the effect during decommissioning is expected to be of similar or of lower magnitude than construction. However, this aspect remains scoped in due to current uncertainty over methods likely to be used for decommissioning. A high-level assessment would be provided based on clear assumptions.
		Subtidal Annex I biogenic reef	**IN** - The results of the benthic and environmental surveys will determine if any Annex I biogenic reef are present within the area of the English Offshore Scheme. Biogenic reef typically have a	**IN** - During operation, the likelihood of the Project requiring maintenance and repair is low. However, there remains the potential that localised repair works may be	**IN** - The significance of the effect during decommissioning is similar or of lower magnitude than construction. However, effects could potentially be

Potential impacts	Project activities	Sensitive receptors	Scoping justification		
			Construction	Operation (including repair and maintenance	Decommissioning
			higher sensitivity to abrasion and penetration and a lower resilience.	required. In these circumstances the significance of the effect will be of lower magnitude that during construction. However, the effect could still potentially be significant if within an Annex I habitat.	significant if within an Annex I habitat.
Permanent habitat loss *(Physical change to another seabed type or sediment type* *Water flow (tidal current) changes including sediment transport considerations)*	Deposit of external cable protection	Subtidal – Broadscale Habitats	**IN** - The presence of the deposit of external cable protection has the potential to change the seabed type. They also have the potential to very locally alter sediment transport, creating scour pits or causing accretion. This may alter the benthic habitats either directly through a change in the substrate (e.g., sand to rock) or indirectly because of changes to local hydrodynamic conditions (e.g., increased risk of scour). The significance of the effect will vary according to the sensitivity of the habitat and the spatial extent of the deposits. The Study Area contains commonly occurring infralittoral and circalittoral habitats (e.g., A5.15, A5.27 and A5.45) that are widely distributed within the North Sea region. Although MarLIN sensitivity assessments identify that the habitats have high sensitivity to this pressure, the deposits will be extremely localised in relation to the wide extent of the habitat. Using the benthic and environmental survey data and engineering studies, the environmental assessment will identify the habitats that will be affected by deposits. This aspect	**IN** - During operation, the likelihood of the Project requiring maintenance and repair is low. However, there remains the potential that remedial external cable protection may be required. Although MarLIN sensitivity assessments identify that the habitats have high sensitivity to this pressure, the deposits will be extremely localised in relation to the wide extent of the habitat. Where the habitats are not protected and are not This aspect has been scoped into the assessment to enable the comparison of site-specific data to the baseline benthic environment.	**IN** - During decommissioning no new seabed deposits will be made. There will therefore be no further permanent changes to the seabed. This aspect has been scoped into the assessment to enable the comparison of site-specific data to the baseline benthic environment.

Potential impacts	Project activities	Sensitive receptors	Scoping justification		
			Construction	Operation (including repair and maintenance	Decommissioning
			has been scoped in to the assessment to enable the comparison of site-specific data to the baseline benthic environment.		
		Subtidal sand and gravels	**IN** - The presence of the deposit of external cable protection has the potential to change the seabed type. They also have the potential to very locally alter sediment transport, creating scour pits or causing accretion. Subtidal sand and gravels are widely distributed throughout the Study Area but are also common throughout the North Sea area. MarLIN sensitivity assessments for these habitats indicate that due to the burrowing life habitat of the dominant species the habitat has a low sensitivity to abrasion and penetration. This impact has been scoped in due to the area of potential impact over the length of the cable. Data from site-specific surveys will feed into the EIA.	**IN** - During operation, the likelihood of the Project requiring maintenance and repair is low. However, there remains the potential that remedial external cable protection may be required. Although MarLIN sensitivity assessments identify that the habitats have high sensitivity to this pressure, the deposits will be extremely localised in relation to the wide extent of the habitat. Where the habitats are not protected and are not This aspect has been scoped into the assessment to enable the comparison of site-specific data to the baseline benthic environment.	**IN** - During decommissioning no new seabed deposits will be made. There will therefore be no further permanent changes to the seabed. This aspect has been scoped into the assessment to enable the comparison of site-specific data to the baseline benthic environment.
		Subtidal Annex I geogenic stony (stony and rocky)	**IN** - The presence of the deposit of external cable protection has the potential to change the seabed type. They also have the potential to very locally alter sediment transport, creating scour pits or causing accretion. Data from site-specific surveys will feed into the EIA in terms of the presence / absence of Annex I reef and the significance of any impact. .	**IN** - During operation, the likelihood of the Project requiring maintenance and repair is low. However, there remains the potential that remedial external cable protection may be required. Although MarLIN sensitivity assessments identify that the habitats have high sensitivity to this pressure, the deposits will	**IN** - During decommissioning no new seabed deposits will be made. There will therefore be no further permanent changes to the seabed. This aspect has been scoped into the assessment to enable the comparison of site-specific data to the baseline benthic environment.

Potential impacts	Project activities	Sensitive receptors	Scoping justification		
			Construction	Operation (including repair and maintenance	Decommissioning
				be extremely localised in relation to the wide extent of the habitat. Where the habitats are not protected and are not This aspect has been scoped into the assessment to enable the comparison of site-specific data to the baseline benthic environment.	
		National sites designed with benthic features	**IN** - The presence of the deposit of external cable protection has the potential to change the seabed type. They also have the potential to very locally alter sediment transport, creating scour pits or causing accretion. Data from site-specific surveys will feed into the EIA.	**IN** - During operation, the likelihood of the Project requiring maintenance and repair is low. However, there remains the potential that remedial external cable protection may be required. Although MarLIN sensitivity assessments identify that the habitats have high sensitivity to this pressure, the deposits will be extremely localised in relation to the wide extent of the habitat. Where the habitats are not protected and are not This aspect has been scoped into the assessment to enable the comparison of site-specific data to the baseline benthic environment.	**IN** - During decommissioning no new seabed deposits will be made. There will therefore be no further permanent changes to the seabed. This aspect has been scoped into the assessment to enable the comparison of site-specific data to the baseline benthic environment.
		Ocean quahog	**IN** - The presence of the deposit of external cable protection has the potential to change the seabed type. They also have the potential to very locally alter sediment transport, creating scour pits or causing accretion. This	**IN** - During operation, the likelihood of the Project requiring maintenance and repair is low. However, there remains the potential that remedial external cable	**IN** - During decommissioning no new seabed deposits will be made. There will therefore be no further permanent changes to the seabed. This aspect has been scoped into the

Potential impacts	Project activities	Sensitive receptors	Scoping justification		
			Construction	Operation (including repair and maintenance	Decommissioning
			species is very long lived and MarLIN assesses it to have Very Low Resilience and High Sensitivity to seabed abrasion / disturbance. Benthic surveys will confirm / rule out the presence of this receptor within the English Offshore Scheme Scoping Boundary, and the results used to inform the EIA.	protection may be required. Although MarLIN sensitivity assessments identify that the habitats have high sensitivity to this pressure, the deposits will be extremely localised in relation to the wide extent of the habitat. Where the habitats are not protected and are not This aspect has been scoped into the assessment to enable the comparison of site-specific data to the baseline benthic environment.	assessment to enable the comparison of site-specific data to the baseline benthic environment.
		Subtidal – Annex I habitats	**IN** - The extent of Annex I habitat within the North Sea is limited in relation to the wider broadscale habitats. Annex I habitats will have a high sensitivity to the impact pathway due to the potential for reclassification of the habitat type. Given the limited extent of such habitats the change in seabed type can have significant effects with regards the function of a designated site, or the extent of habitat within UK waters. The results of the benthic and environmental surveys will determine if any Annex I habitats are present within the area of the Project and the assessment will focus on these habitats if they are found to be present.	**IN** - During operation, the likelihood of the Project requiring maintenance and repair is low. However, there remains the potential that localised remedial external cable protection may be required. In these circumstances the significance of the effect will be of lower magnitude that during construction. However, the effect could still potentially be significant if within an Annex I habitat.	**IN** - Scoped in due to current uncertainty over methods likely to be used for decommissioning and their potential impacts.
Temporary increase and deposition of	HDD Duct Excavation	Intertidal habitats	**OUT -** The Proposed Development installation will use a trenchless technique such as HDD at the Landfall, avoiding intrusive works in the intertidal	**OUT** – During operation, the likelihood of the Project requiring maintenance and repair is low. If the cables were	**OUT** - It is likely that the cables duct would be left in situ with no

Potential impacts	Project activities	Sensitive receptors	Scoping justification		
			Construction	Operation (including repair and maintenance	Decommissioning
suspended sediments *(Changes in suspended solids (water clarity)* *Smothering and siltation rate changes* *Hydrocarbon and Polycyclic Aromatic Hydrocarbons (PAH) contamination*			area. In the event of drilling fluid breakout (frac-out), where clean-up activities may be required. A frac-out can occur if drilling occurs within unconsolidated sediment. In this situation a pathway can form between the drilling bore and the surface (e.g., the ground or seabed). Drilling fluids used within the bore can travel through this pathway to the surface, causing a temporary increase of suspended sediment. The drilling fluids that would be used for the HDD are likely to be a modified bentonite which is classified by Cefas as posing little or no risk to the marine environment as it is biodegradable, does not bio-accumulate and is non-toxic). The bentonite used within the bore can travel through this pathway to the surface, causing a temporary increase of suspended sediment. Due to its clay-like nature, bentonite consists of very fine particulates that will remain within the water column. Thus, limited smothering can occur. If a frac-out occurs, a bentonite plume will be visible within the marine environment for the length of one to two tidal cycles until it has been diluted. Measures to manage any such spills or frac-out will be detailed in a Marine Pollution Contingency Plan.	to fail within the trenchless solution, there is no means of repairing them and a new duct would need to be drilled. This would be the subject of a separate Marine Licence. Therefore, impacts during operation and maintenance have been scoped out for the intertidal area.	further impacts on the environment.
Temporary increase and	Seabed preparation	Broadscale habitats	**IN** - Sediment suspended by interactions with the seabed will temporarily increase	**IN** - During operation, the likelihood of the Project	**IN** - The significance of the effect during decommissioning is

Potential impacts	Project activities	Sensitive receptors	Scoping justification		
			Construction	Operation (including repair and maintenance	Decommissioning
deposition of suspended sediments *(Changes in suspended solids (water clarity)* *Smothering and siltation rate changes* *Hydrocarbon and Polycyclic Aromatic Hydrocarbons (PAH) contamination*	HDD duct excavation Cable burial and trenching Anchoring / jack -up legs Deposit of external cable protection Cable removal	Subtidal sands and gravels Annex I geogenic reef National sites designated with benthic features Ocean quahog	turbidity before being rapidly dispersed through natural hydrodynamic processes. Analysis of sediments undertaken as part of the EGL 4 Project showed that the presence of contaminated sediment was minimal (Ref 19.28), with concentrations below Cefas Action Level 1 for all contaminants except for Arsenic (which exceeded AL1 at 8 out of 54 sites). Indirect effects from the mobilisation of contaminants entering the food chain are not predicted to be significant. The broadscale habitats identified in the Study Area are dominated by burrowing infauna which would not be affected by a change in water clarity. The benchmark used by NE for the pressure is a change in one rank e.g., from clear to intermediate, on the Water Framework Directive scale for one year. While trenching is undertaken a sediment plume will be generated continuously, but it will move with the location of the cable spread. Sands and gravels do not form part of the sediment load and will settle out of suspension quickly. MarLIN categorise light smothering as the deposition of up to 5 cm of sediment in a discrete event. Light smothering will occur from several of the proposed activities. The most significant contributor (relatively) will be from the sediment plume generated by cable trenching and sandwave clearance.	requiring maintenance and repair is low. However, there remains the potential that localised repair works or remedial external cable protection may be required. In these circumstances the significance of the effect will be of lower magnitude that during construction, however due to the potential for smothering of sensitive habitats during such activities, this aspect has been scoped in.	similar or of lower magnitude than construction, however due to the potential for smothering of sensitive habitats during such activities, this aspect has been scoped in.

Potential impacts	Project activities	Sensitive receptors	Scoping justification		
			Construction	**Operation (including repair and maintenance**	**Decommissioning**
			Sediment transport modelling undertaken for the EGL 3 and EGL 4 Projects (Ref 19.28) found that he maximum distance the suspended sediment concentrations (SSC) exceed 10 mg/l is 4 km from the source. As such, any impact from SSC is expected to be small and localised, and any measurable change in SSC will be temporary and localised. No significant effects are predicted from light smothering on most benthic habitat types, however this aspect has been scoped in for the construction phase to enable the inclusion of information on sediment quality and potential for any effects on water quality through suspension of contaminated sediments, with impacts assessed against the complete benthic ecology baseline for the area.		
		Annex I Biogenic reef	**IN** - Benthic communities most sensitive to light smothering will be Annex I reef habitat (e.g., *Sabellaria spinulosa* reef, horse and blue mussel beds). *Sabellaria spinulosa* are not sensitive to the impact pathway (Ref 19.49) requiring some degree of sediment transport for tube-building and feeding. Mussel beds are discussed separately below. *Modiolus modiolus* (horse mussel) are unable to actively emerge from sediments if buried. If the deposition of fine sediment is not removed by currents / tidal flow, then mortality can occur.	**IN** - During operation, the likelihood of the Project requiring maintenance and repair is low. However, there remains the potential that localised repair works may be required. This impact pathway cannot be scoped out of the assessment for this habitat type until the ecological surveys have confirmed the absence of blue / horse mussel beds in or within proximity of the Project.	**IN** - The significance of the effect during decommissioning is similar or of lower magnitude than construction. This pressure cannot be scoped out of the assessment for this habitat type until the ecological surveys have confirmed the absence of blue / horse mussel beds in or within proximity of the Project.

Potential impacts	Project activities	Sensitive receptors	Scoping justification		
			Construction	Operation (including repair and maintenance	Decommissioning
			Experiments have shown that light smothering for longer than 8 days can lead to significant mortality(Ref 19.50). *Mytilus edulis* (blue mussel) are more resistant to high levels of suspended material and are able to move up through deposited sediments. However, mortality will depend on the duration of smothering. This impact pathway pressure cannot be scoped out of the assessment for this habitat type until the benthic and environmental surveys have confirmed the absence of blue / horse mussel beds within or in proximity to the Project.		
	Sandwave clearance (pre-sweeping)	Subtidal habitats	**IN** - Pre-sweeping of sand waves involves the re-positioning of large quantities of sediment from the cable route to either immediately alongside the cable route, or to a separate disposal location. Depending on the technique used and the size of sand waves requiring pre-sweeping, the redeposition of sediment can cause smothering >10 cm deep over relatively wide areas of seabed (in the order of tens of thousands square metres). Effects could also potentially be significant if the disposal site contains sensitive habitats. The impact pathway cannot be scoped out until further information is available on the habitats present and the areas that will require pre-sweeping.	**OUT** - Pre-sweeping is used during construction to ensure that the cables are buried below the base of mobile sediments. Generally during operation, remedial works are focused on protecting sections of cable that have become exposed due to sediment mobility, or to repair cables that have been damaged by a third party (e.g., fishing damage). Pre-sweeping would not be required during a cable repair for third-party damage as the cable would already be exposed on the seabed. Therefore, the only scenario pre-sweeping might be required is where the cable	**IN** - Controlled flow excavation could be used during decommissioning to expose the buried cable. The significance of the effect during decommissioning is similar or of lower magnitude than construction. However, effects could potentially be significant if within a sensitive habitat.

Potential impacts	Project activities	Sensitive receptors	Scoping justification		
			Construction	Operation (including repair and maintenance	Decommissioning
				has been damaged during construction and develops a fault in an area where pre-sweeping was used during construction. In this scenario the significance of the effect will be of lower magnitude than during construction and has therefore been scoped out of the assessment.	
Underwater noise changes	Geophysical survey Presence of project vessels and equipment	Subtidal species	**OUT** - Most research into the effects of underwater sound has focused on mortality, acute physiological effects or species interactions in species such as fish and marine mammals. There is relatively little evidence on the effects on sediment-dwelling invertebrates although it is thought that chronic exposure could lead to changes in the way in which a species contributes to ecosystem processes such as carbon storage or nutrient cycling (Ref 19.51). At present, there are no published sensitivity thresholds for benthic species. MarESA classify ocean quahog sensitivity to underwater noise changes as 'not relevant', citing evidence by Morton (Ref 19.52) that although sensitive to vibration, no evidence has been found to suggest that underwater noise and sound from passing vessels or construction have an effect (Ref 19.45). A further review of MarESA sensitivity assessments for habitats and marine invertebrates identified within the English Offshore Scheme identified that bivalves	**OUT** - During operation, the likelihood of the Project requiring maintenance and repair is low. However, there remains the potential that localised repair works or remedial external cable protection may be required. In these circumstances the significance of the effect will be of lower magnitude that during construction and has therefore been scoped out of the assessment for the same reasons.	**OUT** - The significance of the effect during decommissioning is similar or of lower magnitude than construction and has therefore been scoped out of the assessment for the same reasons.

Potential impacts	Project activities	Sensitive receptors	Scoping justification		
			Construction	Operation (including repair and maintenance	Decommissioning
			and polychaetes are considered likely to be able to detect vibrations and probably withdraw siphons and palps as a predator avoidance mechanism. However, for most species they are not expected to be sensitive or are considered tolerant at the benchmark level; considered by MarESA to be the regular passing of a 30 m trawler at 100 m or a working cutter-suction transfer dredge at 100 m for one month during important feeding or breeding periods. As the benchmark is analogous to the activities that would take place during construction, maintenance and decommissioning i.e., vessel movements, seabed disturbance, the impact of anthropogenic noise on benthic features is scoped out of the assessment.		
Introduction or spread of invasive non-native species (INNS)	Presence of project vessels and equipment Deposit of external cable protection	Subtidal Species	**IN** - Although the introduction of the Project's vessels, equipment, and external cable protection have the potential to bring in and spread INNS all relevant guidelines will be followed (Ref 19.53) including vessel cleaning facilities and the use of anti-fouling paint. The Project's vessels' and Contractor(s) will comply with the International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM Convention). All seabed deposits will be inert with no biologically active material. Project vessels will complete a biosecurity risk assessment prior to arriving on site which will include factors such as origins of the vessels and ensuring that relevant equipment is cleaned before use. Compliance with Regulations should be sufficient to minimise the risk to the environment, however there is still the potential for external cable protection to provide hard substrates that could act as 'stepping stones' to facilitate the spread of INNS in the region. Therefore, this aspect has been scoped in at this stage.		
Electromagnetic changes / barrier to species movement	Presence of cables	Subtidal species	**No Impact Pathway**	**OUT** - EMF calculations were undertaken in support of the EGL 3 and EGL 4 Projects, and are reported in Chapter 19 of the PEIR (Ref 19.47),	**No Impact Pathway**

Potential impacts	Project activities	Sensitive receptors	Scoping justification		
			Construction	Operation (including repair and maintenance	Decommissioning
				showing that the magnetic field directly above the cables at the seabed is 123.8µT (or 76.4 µT without the earth's magnetic field). Benthic communities are typified by sessile or low mobility species, which are unlikely to navigate using magnetic fields or have electroreceptors. A review of available literature by Albert et al. (Ref 19.54) reported that 50% of papers provided support for an attraction towards magnetic fields in three crustacean species; 30% of papers found no effects of magnetic field while studying more taxonomic groups (crustaceans, echinoderms, molluscs and polychaetes); one paper found repulsive behaviour in spiny lobster; and another reported orientation disruption is sand hoppers (amphipods). However, it was noted that 75% of the papers reviewed related to controlled experiments made on individuals, and effects at a population or community level could not necessarily be inferred from the results. Ocean quahog are not known to exhibit sensitivity to EMF,	

Potential impacts	Project activities	Sensitive receptors	Scoping justification		
			Construction	Operation (including repair and maintenance	Decommissioning
				and given its lack of magneto receptive capabilities, any potential effects from EMF exposure are considered negligible. This impact pathway is scoped out of further assessment. An EMF Study will be undertaken for the Project to validate this.	
Temperature increase	Presence of cables	Subtidal habitats and species	**No Impact Pathway**	**OUT** - During the operation of an HVDC cable heat losses occur because of the resistance in the cable / conductor. This can cause localised heating of the surrounding environment (i.e., sediment for buried cables, or water in the interstitial spaces of external cable protection). There are no specific regulatory limits applied to temperature changes in the seabed, although a 2°C change between seabed surface and 0.2 m depth is used as a guideline in Germany. Heat calculations were undertaken for the EGL 3 and EGL 4 Projects and are reported on in Chapter 19 of the PEIR (Ref 19.47). It is reported that, assuming an ambient seabed temperature of 12 °C, seabed temperatures at 0.2 m immediately above the cables are estimated to be	**No Impact Pathway**

Potential impacts	Project activities	Sensitive receptors	Scoping justification		
			Construction	Operation (including repair and maintenance	Decommissioning
				13 - 14 °C, with the cables operating at maximum operating temperatures. The actual system is unlikely to reach these temperatures as the system would have to operate at full load continuously for an extended period of time to meet these temperatures. The magnitude of impact was concluded to be low, with no significant effects predicted. Given a similar cable system is proposed for this Project, significant effects are not anticipated and are scoped out of the assessment.	
Accidental spills *(Hydrocarbon and PAH contamination)*	Presence of project vessels and equipment	Intertidal and subtidal habitats	**OUT** - The Project's vessels and Contractor(s) will comply with the International Convention for the Prevention of Pollution from Ships (MARPOL) 73/78 which relate to pollution from oil from equipment, fuel tanks etc and release of sewage (black and grey water). It is a legal requirement that all vessels have a Shipboard Oil Pollution Emergency Plan (SOPEP). Compliance with Regulations will be sufficient to minimise the risk to the environment. Several management plans will be provided as outline management plans with the application for development consent, to be secured as a condition of the DML. These will include an Outline CoCP and Outline Marine Pollution Contingency Plan. These documents will outline measures to be implemented to comply with legislation (e.g., in relation to the prevention of oil and chemical spills) during all phases of the English Offshore Scheme.		

19.7 Assessment Methodology

Further Data to be Gathered / Processed

Desk-Based Assessments

19.7.1. No additional studies are proposed to inform the intertidal and subtidal benthic ecology assessment.

Surveys

19.7.2. Site specific intertidal and subtidal benthic surveys have been carried out to supplement the publicly available data sources to characterise the baseline environment and determine the presence of any features that may have conservation significance. A geophysical survey (multibeam bathymetry, backscatter and sub-bottom profiling) was undertaken (April to June 2025), along the length of the English Offshore Scheme Scoping Boundary (including the Landfall at Anderby Creek). Where water depths were <70 m a 300 m corridor was surveyed and where water depths were >70 m a 500 m corridor was surveyed. Preliminary interpretation of the geophysical data informed the environmental sampling station position discussed below.

19.7.3. Benthic survey methods took into consideration guidance such as Davies (Ref 19.55) Wyn & Brazier (Ref 19.56), Saunders (Ref 19.57) Noble-James *et al.*(Ref 19.58) and Natural Resources Wales (Ref 19.59).

19.7.4. The positioning of environmental grab sampling stations was based on a flexible design, with the spacing interval informed by geophysical survey outputs as well as a review of publicly available data. Sampling stations were positioned every 4 km (total of 206 stations). In areas which have been identified as potential herring or sandeel habitat, additional grab sample locations were identified to ensure sediment samples for particle size analysis are acquired every 2 km within these areas. This spacing improves on the spacing previously agreed with the MMO and Cefas as part of discussions relating to the EGL 3 and EGL 4 Projects, which used a 2.5 km spacing.

19.7.5. Sample acquisition consisted of:

- 207 particle size distribution: two samples at each station with a third sample collected at selected stations;
- 102 faunal samples: two samples at each station with a third sample collected at selected stations;
- 111 chemical analysis samples: two x heavy metal and 2 x hydrocarbon samples with additional heavy metal and hydrocarbon samples at selected stations;
- 23 sediment eDNA samples;
- 23 water column eDNA samples; and
- 102 stations with approximately 200 m transects, and 158 stations with approximately 50 m transects completed by camera operations.

19.7.6. Sampling was unsuccessful at 18 stations due to sediment type and was abandoned after at least three failed attempts.

19.7.7. Seafloor samples were acquired using either a 0.1 m^2 dual van Veen (DVV) grab or a 0.1 m^2 mini Hamon grab in areas of coarser sediment. Within areas identified as potentially requiring sandwave clearance, a day grab was used in place of a Hamon grab to comply with MMO sampling procedures.

19.7.8. The footage review will include observations such as substrate characterisation, evidence of benthic activity by organisms, identification of habitats and organisms, characterisation of aquatic vegetation and evidence of fishing activity.

19.7.9. Data will be used to produce intertidal and subtidal habitat maps. Faunal identification and quantification will be carried out on grab samples and still photographs to obtain species density data and percentage cover for colonial species.

19.7.10. Habitats will be identified to the lowest European Nature Information System (EUNIS) habitat classification possible. If a sensitive Annex I listed habitat e.g., biogenic, stony or bedrock reef, etc., is identified the extent of the habitat within the survey area will be determined and consideration will be given to whether additional survey is required to avoid the habitat or further classify it.

19.7.11. A sample plan to ensure that sufficient data is acquired to inform the assessment of the impacts from pre-sweeping was developed in line with the principle followed for the EGL 3 and EGL 4 projects. The requirements stipulated in the sampling plan have been incorporated into the benthic sampling procedure.

19.7.12. A Phase 1 habitat walkover survey will be completed on the beach at the Anderby Creek Landfall. Surveys will be conducted in accordance with JNCC's Handbook for Phase 1 Habitat Survey. Habitat boundaries will be located and recorded using a hand-held GPS accurate to 3 m. Digital photographs will be taken to illustrate each habitat type identified. Ecological and physical changes in characteristics will be noted to identify and delineate any features of conservation importance present.

19.7.13. A Phase 2 survey will also be completed, which will involve taking a small numbers of sediment samples from the foreshore. These will be sent for laboratory analysis to identify the benthic invertebrates present and characterise the sediment particle size distribution. These samples will be taken along three transects (nine samples in total), covering the low, mid and high shore over approximately a 500 m wide corridor.

19.7.14. It is likely that full survey results may be available in time to inform the PEIR but consultation will continue as survey results become available and full results will be provided within the ES.

19.7.15. In addition to the ecological survey work specific to the English Offshore Scheme, the findings of the benthic studies (both intertidal and subtidal) undertaken to inform the EGL 3 and EGL 4 projects (Ref 19.43) will be used where relevant. The English Offshore Scheme Scoping Boundary lies in between the draft order limits for EGL 3 and EGL 4, until a certain point offshore. At which point the English Offshore Scheme Scoping Boundary lies to the west of EGL 3. Data from the EGL 3 and EGL 4 projects would be relied upon to provide the wider local, more specific context.

Assessment of Significance

19.7.16. The intertidal and subtidal benthic ecology EIA will follow the assessment approach set out in **Part 1, Chapter 5: EIA Approach and Methodology,** using the project-wide assessment matrix. However, whilst this has informed the approach that would be used in the intertidal and subtidal benthic ecology assessment, it is necessary to set out how

this methodology would be applied, and adapted as appropriate, to address the specific needs of this intertidal and subtidal benthic ecology assessment.

19.7.17. The criteria for characterising the value and sensitivity and magnitude for intertidal and subtidal benthic ecology that would be used are outlined in **Table 19-10** and **Table 19-11,** respectively. The criteria are based on a combination of professional judgement and CIEEM guidance (Ref 19.21).

19.7.18. The assessment of sensitivity will be made with consideration of the vulnerability of the receptor to an impact and its ability to recover and adapt. Vulnerability can differ between different groups and species of benthic invertebrates and will also vary depending on the impact pathway. For example, sessile species are more sensitive to smothering than mobile species. Reference will be made to the MarESA published by MarLIN and the advice on operations from NE designated sites to aid in the categorisation of sensitivity.

19.7.19. A species may be of international importance (e.g., a designated feature of an MCZ) and initially categorised as 'highly' sensitive according to **Table 19-10.** However, if baseline studies and species characteristics show that the species is only rarely or occasionally present, or if it is not sensitive to the impact pathway, professional judgment may justify lowering its sensitivity category. Where such assessments are made, justification would be provided.

19.7.20. Where a species or habitat is a designated feature of a MCZ these features will also be assessed in the MCZ Assessment processes.

19.7.21. The assessment of magnitude will be made with consideration of the extent of the area impacted, the duration and frequency of the impact and the scale of the change i.e., whether it has an effect at an individual or population level. When determining the magnitude of impacts the life history and ecology of the receptors is important. Factors such as seasonality of presence or whether specific areas are required for a certain life stage which the species may be unwilling or unable to move away from are considered.

19.7.22. The ecological impact assessment will use available evidence, professional judgement and knowledge of benthic ecology and behaviour to determine the level of impact.

19.7.23. The significance of an effect, either adverse or beneficial, will be determined using a combination of the magnitude of the impact and the sensitivity of the receptor. A matrix approach is used throughout all topic areas (see **Table 5-3** of **Part 1, Chapter 5: EIA Approach and Methodology**) to ensure a consistent approach within the assessment.

19.7.24. Where significant effects are identified, consultation will be undertaken with Statutory Nature Conservation Bodies (SNCBs) to agree proportionate and effective mitigation, and residual effects will be presented.

Table 19-10: Criteria for characterising the sensitivity of receptors

Magnitude	Description of criteria
High	Value: The receptor is a designated feature of a protected site or is considered a protected feature outside of a site. Sensitivity: Equivalent to MarLIN MarESA sensitivity category High. Receptor has low tolerance to change i.e., recovery will take longer than 10 years following the cessation of activity or will not occur.

Magnitude	Description of criteria
Medium	Value: The receptor is valued or is considered rare or unique but not protected. Sensitivity: Equivalent to MarLIN MarESA sensitivity category Medium. Receptor has intermediate tolerance to change i.e., recovery to pre-impact conditions is possible between 5 and 10 years.
Low	Value: Common and widespread habitats / species of no specific conservation value. Sensitivity: Equivalent to MarLIN MarESA sensitivity category Low. Receptor has high tolerance to change with recovery to pre-impact conditions between 1 and 5 years.
Negligible	Value: Low importance and rarity, local scale. Artificial, highly modified, and / or degraded benthic habitats / species of low / no conservation interest. Sensitivity: Equivalent to MarLIN MarESA sensitivity category Not Sensitive. The receptor has some tolerance to change without detriment to its character. Recovery expected to be relatively rapid, i.e., less than approximately six months following cessation of activity.

Table 19-11: Criteria for characterising the magnitude of an impact

Magnitude	Description of criteria
High	Impacts last >15 years on a regional or population / habitat level or are a major alteration to key elements / features of the baseline condition such that post-impact baseline character will be fundamentally changed. Natural recruitment will not return the population / habitat to the baseline condition.
Medium	Impacts are of medium term (7-15 years) duration on a local level (wider than project footprint) or alter an element of the baseline conditions such as that post-impact the damage to the baseline is above that experienced under natural conditions but with no permanent effect on integrity.
Low	Impacts are temporary (<1 year) or short term (1-7 years) in duration on a site-specific level. Impacts limited to discrete areas within the Project footprint. Negligible contribution to cumulative effects.
Negligible	Very little or no detectable change from baseline conditions, for any length of time. Disturbance is within the range of natural variability or is a highly localised impact that the alteration to the key characteristics and features of the particular receptor does not affect ecological function. Negligible contribution to cumulative effects.

Assessment of Cumulative Impacts and Effects

19.7.25. **Part 4, Chapter 30: Cumulative Effects** defines the methodology for the assessment of cumulative effects. The intertidal and subtidal benthic ecology assessment of intra- and inter-project cumulative effects will be carried out and reported within the ES to be submitted with the application for development consent.

19.7.26. The zone of influence for the inter-project cumulative effects assessment of intertidal and subtidal benthic ecology would comprise Draft Order Limits, plus an additional 15 km buffer each side. This is a precautionary maximum zone of influence that encompasses the worst-case scenario of potential impact pathways from increased suspended sediment concentrations, as calculated in **Part 3, Chapter 18: Coastal and Marine Physical Environment**.

19.7.27. The PEIR will present the long and short lists of 'other developments' which will be considered at the ES stage, and the methodology which allowed for the identification of these other developments, to allow consultation bodies to form a view and provide comment on the other developments included. The long-list will be reviewed and if necessary, updated, in the lead up to the ES, as the English Offshore Scheme design further evolves and in response to any comments raised at statutory consultation.

19.8 Assessment Limitations and Assumptions

19.8.1. The baseline description collated in this technical aspect chapter has been based on a range of publicly available data and information. It is assumed that the data collated is accurate. The data would be supplemented with additional information acquired as part of the stakeholder engagement process and through the additional studies identified in this technical aspect chapter to inform the PEIR and ES.

19.8.2. Although the sampling design and collection process for the survey data analysis will provide robust data on the benthic communities, interpreting these data by classifying and grading biotopes has three main limitations:

- It can be difficult to interpolate data collected from discrete sample locations to cover the whole Study Area and to define the precise extent of each biotope, even with site-specific geophysical data.
- Benthic communities generally show a transition from one biotope to another and, therefore, boundaries of where one biotope ends and the next begins cannot be defined with absolute precision.
- The classification of the community data into biotopes is not always straightforward, as some communities do not readily fit the available descriptions in the biotope classification system and the classification for subtidal benthic communities is generally regarded as incomplete. In particular, there is still poor coverage of circalittoral rock and sediment habitats occurring in waters deeper than 50 m.

19.8.3. Along some of the length, the English Offshore Scheme runs parallel to the EGL 3 and EGL 4 projects (survey corridors were within 1 – 10 km). For these areas reference will be made to the marine characterisation survey data acquired for these projects to supplement the site-specific survey data and provide local context.

19.8.4. Various technical assessments were undertaken to inform the EGL 3 and EGL 4 EIA. Where relevant (i.e. where construction methodologies are essentially identical, or where an impact pathway would occur over a similar spatial / temporal scope) the conclusions of those assessments have been used to scope 'in' or 'out' various impact pathways. These are not necessarily proposed to be repeated to inform the PEIR for this Project.

19.8.5. In the absence of data, a precautionary approach has been taken and professional judgement, based on experience of similar linear projects, have been used where required to inform the scope of the assessment.

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20. Fish and Shellfish

20.1 Introduction

20.1.1. This chapter of the Scoping Report describes the potential impacts arising from the construction, operation and maintenance, and decommissioning of the English Offshore Scheme on fish and shellfish. Fish and shellfish receptors include marine species, diadromous species (species which migrate between freshwater and marine environments), elasmobranchs (sharks, rays and skates), and shellfish (crustaceans and molluscs).

20.1.2. There may be interrelationships related to the potential effects on fish and shellfish and other disciplines. Therefore, please also refer to the following technical aspect chapters of this Scoping Report found in Volume 1:

- **Part 3, Chapter 18: Coastal and Marine Physical Processes**: outputs from coastal and marine physical environment assessments will inform the consideration of impacts such as temporary increase in suspended sediments and subsequent deposition.
- **Part 3, Chapter 19: Intertidal and Subtidal Benthic Ecology**: which identifies the potential impacts on supporting habitats for fish and shellfish.
- **Part 3, Chapter 21: Intertidal and Offshore Ornithology**: due to the close association between fish and shellfish receptors as prey species for marine birds.
- **Part 3, Chapter 22: Marine Mammals and Marine Reptiles**: due to the close association between fish and shellfish receptors as prey species for marine mammals); and
- **Part 3, Chapter 24: Commercial Fisheries**: due to the close association between fish and shellfish species that are commercially caught).

20.1.3. This chapter is supported by the following figures found in Volume 3:

- **Figure 20-1: Fish Nursery and Spawning Grounds with Intensity of Activity within the Study Area – Map 1**
- **Figure 20-2: Fish Nursery and Spawning Grounds with Intensity of Activity within the Study Area – Map 2**
- **Figure 20-3: Herring Spawning and Nursery Grounds**
- **Figure 20-4: Sandeel Spawning and Nursery Grounds**

20.1.4. At this early stage in the development of the English Offshore Scheme, only desk-based information has been used for this scoping chapter. No data is yet available from the 2025 marine characterisation surveys to inform this Scoping Report.

20.2 Relevant Legislation, Planning Policy and Technical Guidance

20.2.1. This section identifies the relevant legislation, national and local policy and guidance which has informed the scope of the fish and shellfish assessment.

Legislation

20.2.2. A summary of the key legislation considered in, but not limited to, the scope of effects on fish and shellfish is outlined in **Table 20-1.**

Table 20-1: Legislation relevant to fish and shellfish assessment

Legislation	Legislative Context
Marine and Coastal Access Act (MCAA) 2009 (Ref 20.1)	The MCAA provides a framework for managing and protecting marine and coastal areas, promoting sustainable development, enhancing public access to the coast, and conserving marine biodiversity and habitats, including establishing Marine Protected Areas (MPAs) and coastal access routes.
Marine Works (Environmental Impact Assessment) Regulations 2007 (as amended) (Ref 20.2)	The Marine Works (Environmental Impact Assessment (EIA)) Regulations 2007 require certain types of projects that have the potential to significantly affect the environment to submit an EIA before a marine licence decision is made.
The Conservation of Habitats and Species Regulations 2017 (as amended) (Ref 20.3)	The Conservation of Habitats and Species Regulations 2017 and the Conservation of Offshore Marine Habitats and Species Regulations 2017 are the principal secondary legislation that transposed the European Union (EU) Habitats Directive into UK law, whereby the Regulatory Authority must consider any likely significant effects of a development on the qualifying features of European sites. The Conservation of Habitats and Species Regulations 2017 applies out to 12 nautical miles (NM) from the coastline; the Conservation of Offshore Marine Habitats and Species Regulations 2017 applies from 12 NM to the boundary of the UK Exclusive Economic Zone (EEZ). Schedule 4 of the Conservation of Habitats and Species Regulations 2017 prohibits the capture or killing of fish such as allis shad, twaite shad and Atlantic salmon (using certain methods). These are collectively referred to as ‘the Habitats Regulations.’
The Conservation of Offshore Marine Habitats and Species Regulations 2017 (Ref 20.4)	
The Wildlife and Countryside Act 1981(Ref 20.5)	The Wildlife and Countryside Act 1981 (as amended) provides legal protection for marine habitats and species within the UK within 12 NM of the coast. Schedule 5 provides a list of threatened fish / shellfish for which killing, injuring, or taking is prohibited.

Legislation	Legislative Context
The Marine Strategy Regulations 2010 (Ref 20.6)	The Marine Strategy Regulations 2010 require action to be taken to achieve or maintain Good Environmental Status (GES) in seas.
The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (Ref 20.7)	The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (the 'WFD') protects surface waters including rivers, lakes, transitional waters (referred to in this advice as estuarine waters), coastal waters and groundwater.
Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 (Ref 20.8)	Section 41 of the NERC Act 2006 refers to a published list of habitats and species which are of principal importance for the conservation of biodiversity in England, which includes certain fish and shellfish.
The Salmon and Freshwater Fisheries Act 1975 (Ref 20.9)	Aims to protect salmon and trout from commercial poaching, to protect migration routes, to prevent wilful vandalism and neglect of fisheries, ensure correct licensing and water authority approval.
Environment Act 2021 (Ref 20.10)	Aims to improve air and water quality, protect wildlife, increase recycling, and reduce plastic waste. The act is part of a new legal framework for environmental protection, following the UK's exit from the EU.
Prohibition of the fishing of sandeel within English waters of International Council for the Exploration of the Sea (ICES) Area IV (North Sea)	Prohibits the fishing of sandeel in the English part of the North Sea, due to their ecosystem importance.
Common Fisheries Policy 2013 reform	The reform aimed to make EU fisheries more sustainable, economically viable, and socially responsible. Key changes included a ban on discarding fish (where exemptions do not apply), and a focus on fishing at Maximum Sustainable Yield (MSY).

Planning Policy

20.2.3. A summary of the planning policies at both a national and local level relevant to the scope of effects on fish and shellfish is outlined in **Table 20-2** and **Table 20-3**.

Table 20-2: National Planning Policy relevant to the fish and shellfish assessment

Policy Reference	Policy Context
Overarching National Policy Statement for Energy (NPS EN-1) (Ref 20.11)	Looks at Marine Considerations establishing that Applicants for a development consent must take account of any relevant 'Marine Plans'.

Policy Reference	Policy Context
Section 4.5, paragraph 5.4.22	Requires the design of energy NSIP proposals to consider the movement of mobile / migratory fish species such as fish and their potential to interact with infrastructure
Overarching National Policy Statement for Energy (NPS EN-1) Consultation Draft (April 2025) (Ref 20.12) Section 4.5, paragraph 5.4.23	The Government has published a draft update to NPS EN-1. The 2025 Draft NPS EN-1 is largely the same as the 2023 document, relevant section numbers will remain the same, however paragraph numbers will be updated.
National Policy Statement for Renewable Energy Infrastructure (NPS EN-3) (Ref 20.13) Paragraphs 2.8.111, 2.8.150, 2.8.151 and 2.8.245 – 2.8.249	Looks at the physical environment and the knock-on effects on offshore habitats and biodiversity and in turn fish stocks effecting the commercial fishing industry. States the Applicant should identify fish species that are the most likely receptors of impacts with respect to spawning grounds, nursery grounds, feeding grounds, over-wintering areas for crustaceans, migration routes and protected sites. States Applicants assessments should identify potential implications of underwater noise, including, where possible, implications of predicted construction in relation to mortality, permanent threshold shift (PTS), temporary threshold shift (TTS) and disturbance, and addressing both sound pressure and particle motion and EMF of sensitive fish species. Outlines potential impacts to fish as a result of renewable energy infrastructure.
National Policy Statement for Renewable Energy Infrastructure (NPS EN-3) Consultation Draft (April 2025) (Ref 20.14) Paragraphs 2.8.104, 2.8.133, 2.8.134 and 2.8.215 – 2.8.219	The Government has published a draft update to NPS EN-3. The 2025 Draft NPS EN-3 is largely the same as the 2023 document, relevant section numbers will remain the same, however paragraph numbers will be updated.
UK Marine Policy Statement 2011 (Ref 20.15)	The policy acknowledges how sensitive fisheries are to changes resulting from the activities of other sea users and how marine developments have the potential to prevent, displace, or encourage fishing activities. There are also potential social, economic, and environmental impacts of displacement of fishing activity caused by other sea uses, particularly if from well-established fishing grounds. In addition to marine fish stocks associated with commercial sea fishing, the coastal environment is important as a corridor for migrating Atlantic salmon and European eel, and in providing the marine feeding ground for sea trout. These important species that

Policy Reference	Policy Context
	support coastal and inland commercial fishing and recreational angling could be vulnerable to a wide range of coastal activities.

Table 20-3: Local Planning Policy relevant to the fish and shellfish assessment

Policy Reference	Policy Context
East Inshore and East Offshore Marine Plan (Ref 20.16) and North East Offshore Marine Plan (Ref 20.17)	Marine plans set out the priorities and direction for future planning within the plan area and provide guidance on activities to avoid or promote. A Marine Plan Assessment would be provided with the Preliminary Environmental Information Report (PEIR) and Environmental Statement (ES) that outlines how the English Offshore Scheme complies with the policies and objectives of the relevant marine plans.

Technical Guidance

20.2.4. A summary of the relevant technical guidance, specific to the fish and shellfish assessment, that has informed this Scoping Report and will inform the assessment within the PEIR and ES, is given in **Table 20-4**.

Table 20-4: Technical Guidance relevant to the fish and shellfish assessment

Technical Guidance Document	Context
Nature conservation considerations and environmental best practice for subsea cables for English Inshore and UK Offshore Waters (Ref 20.18)	Which makes recommendations to help avoid cabling in sensitive / protected habitats.
Offshore Wind Marine Environmental Assessments: Best Practice Advice for Evidence and Data Standards (Ref 20.19)	Provides expectations for pre-application baseline data for designated nature conservation and landscape receptors to support offshore wind applications.
Where possible, the sensitivity of features based on the Marine Evidence-based Sensitivity Assessment (MarESA) framework, and the approach used by the Marine Life Information Network (MarLIN) (Ref 20.20).	The evidence base hosted on MarLIN, which is based on the MarESA framework, provides the ultimate source of information for the application of sensitivity assessments to management and planning decisions.
Sound Exposure Guidelines for fishes and sea turtles(Ref 20.21)	Provides sound exposure guidelines for fishes based on published data.

20.3 Consultation and Engagement

20.3.1. In respect of the fish and shellfish assessment, key consultees have been identified and focussed engagement (through both informal and formal consultation) will be undertaken and recorded throughout the pre-application stage of the English Offshore Scheme. Key consultees identified to date are:

- Centre for Environment Fisheries and Aquaculture Science (Cefas).
- Natural England (NE).
- Joint Nature Conservation Committee (JNCC).
- Marine Management Organisation (MMO);
- Inshore Fisheries and Conservation Authority (IFCA) (Eastern, North-Eastern and Northumberland); and
- National Federation of Fishermen's Organisations (NFFO).

20.3.2. Key areas of consultation are intended to include the results of the characterisation of habitats for sandeel and herring, impact assessment conclusions and proposed mitigation.

20.3.3. Local or specialist groups will be contacted should the assessment process identify a need to engage further detailed local knowledge, or if requested during the statutory consultation process.

20.3.4. Between May and June 2025, the Project held a non-statutory consultation to seek views of the public and stakeholders. As part of the non-statutory consultation, responses were received from the Eastern IFCA which are of relevance to the fish and shellfish assessment and are summarised in **Table 20-5** below.

Table 20-5: Non-Statutory Consultation Responses

Stakeholder	Non-Statutory Consultation Response	How Responses have been Considered
Eastern IFCA	The proposed installation has the potential to impact fish and shellfish populations due to abrasion and penetration of the seabed causing temporary smothering of shellfish populations and increased siltation, consequently having a detrimental effect on visual hunters such as bass. The applicant should consider these impacts and propose mitigation if necessary.	These impacts have been considered within **Table 20-14** and will be considered further within the PEIR and ES where relevant.
	Spawning and nursery grounds of the following species have been identified in UK waters and should therefore be considered in the assessment: tope (*Galeorhinus galeus*), thornback, ray (*Raja clavata*), herring (*Clupea harengus*), cod (*Gadus morhua*), whiting (Merlangius merlangus), plaice (*Pleuronectes*	Spawning and nursery grounds will be considered further within the PEIR and ES.

Stakeholder	Non-Statutory Consultation Response	How Responses have been Considered
	platessa), sole (*Solea solea*), mullet (*Chelon labrosus*), European smelt (*Osmerus eperlanus*), and bass (*Dicentrarchus labrax*). The planned construction may impact spawning and nursery grounds due to the cable interacting with the seabed. The applicant should ensure the proposed construction area avoids spawning and nursery grounds and that habitat disturbance is minimised.	
	To ensure the proposed construction does not result in significant impacts to the local environment and aquatic ecosystems, direct liaison with affected fishery stakeholders is vital to understanding the extent of impacts on local fisheries and ensuring appropriate mitigation measures are implemented.	The Applicant will continue to engage with the IFCA's and other stakeholders.

20.3.5. The Applicant also held a meeting with the NFFO, Eastern, North-Eastern and Northumberland IFCA's on the 29th of July 2025 to present a general overview of the project, project timelines and engagement approach.

20.4 Baseline Conditions

Study Area

20.4.1. The Study Area for this receptor includes the English Offshore Scheme Scoping Boundary plus an additional 15 km each side. This buffer is informed by the tidal excursion, which varies along the English Offshore Scheme. It acts a precautionary maximum zone of influence and incorporates the area within which there is the potential for direct impacts associated with the deposition of suspended sediments. It is consistent with **Part 3, Chapter 18: Coastal and Marine Physical Processes** and has been validated through reference to fine sediment modelling calculations presented in the Eastern Green Link 3 (EGL 3) and Eastern Green Link 4 (EGL 4) PEIR (Ref 20.22). The zone of influence will be influenced by the conclusions of **Part 3, Chapter 18: Coastal and Marine Physical Processes**, which should be read in conjunction with this technical aspect chapter.

20.4.2. The Study Area for the fish and shellfish assessment and its relation to the English Offshore Scheme is presented in **Volume 3, Figure 20-1**.

Data Gathering Methodology

20.4.3. Data sourced for the baseline characterisation will be presented in accordance with relevant guidance for the topic. Desk based review of publicly available data sources (peer reviewed and grey literature and GIS mapping files) will be used to describe the

baseline environment. **Table 20-6** lists the key data sources which will be used in the assessment.

Table 20-6: Key publicly available data sources for fish and shellfish

Data Source	Description
Environment Agency	Transitional and Coastal Waters (TraC) Fish Monitoring Programme
Department of Energy & Climate Change (Ref 20.23)	Offshore Energy Strategic Environmental Assessment 4 (OESEA4)
Cefas (Ref 20.7, Ref 20.8)	Fish Sensitivity Maps showing spawning and nursery grounds of selected fish species in UK waters
International Council for the Exploration of the Sea (ICES)	International Herring Larvae Surveys (IHLS), ICES Database of Trawl Surveys (DATRAS) online database, and international research reports and publications (Ref 20.24)
Marine Space, (2013)	Environmental Effect Pathways between Marine Aggregate Application Areas and Atlantic Herring Potential Spawning Habitat: Regional Cumulative Impact Assessments. Version 1.0. A report for the British Marine Aggregates Producers Association
Kyle-Henney *et al.* (2024)	MarineSpace report: Identifying and Mapping Atlantic Herring Potential Spawning Habitat: An Updated Method Statement
Reach *et al.* (2024)	MarineSpace report: Identifying and Mapping Sandeel Potential Supporting Habitat: An Updated Method Statement
IFCA	Website with information about fishing and the species in the different regional IFCA
FishBase	Species reference website www.fishbase.org
European Marine Observation and Data Network (EMODnet)Acr	Interactive reference website which shows fish abundance and distribution. https://www.emondnet.eu/biology
Marine Management Organisation (Ref 20.28)	UK Sea Fisheries annual statistics report 2021 and accompanying datasets which includes species catch list for the relevant ICES rectangles
International Convention for the Conservation of Nature (IUCN)	The IUCN Red List of Threatened Species https://www.iucnredlist.org/

Data Source	Description
Eastern Green Link (EGL) 3 and EGL 4 (Ref 20.22, Ref 20.29)	Preliminary Environmental Information Report (PEIR) chapters on Fish and Shellfish and Commercial Fisheries for the EGL 3 and EGL 4 Projects
Brown & May Marine Ltd. (2023)	EGL 3 and EGL 4: Fishing Activity Report. The study was undertaken in March 2023 and the data updated and reported on within the PEIR for those Projects (Ref 20.29). The data enables the understanding of the spatial and temporal distribution of fishing activity within the Study Area (which is near to the Study Area considered within this technical aspect chapter).
Environment Agency	Ecology and Fish Data Explorer. Freshwater fish survey data, used to check presence or absence of migratory fish in catchments and estuaries. https://environment.data.gov.uk/ecology/explorer/
JNCC	Species specific data of native species of conservation importance https://data.jncc.gov.uk/data/98fb6dab-13ae-470d-884b-7816afce42d4/UKBAP-priority-fish.pdf
British Geological Society (BGS)	Marine Sediment Particle Size dataset sourced from the BGS GeoIndex Offshore portal GeoIndex Offshore | BGS
Eaton *et al.*, (2003)	Article published in the journal Fisheries Research summarising results of edible crab *Cancer pagurus* larvae surveys undertaken along the English east coast to inform species distribution.
Tallack (2007)	Article published in the Journal of the Marine Biological Association of the United Kingdom assessing the seasonality of the reproductive cycle for edible crab in the Shetland Islands, Scotland.
FishSource (2025)	Summary of the distribution of the Norway lobster *Nephrops norvegicus* in the Farn Deeps fishery within the North Sea.
The Working Group on Nephrops Surveys (WGNEPS) (Ref 20.34)	International coordination group on Nephrops surveys both underwater and trawl surveys.

Current Baseline

20.4.4. This section provides a characterisation of the current baseline environment and describes the key fish and shellfish receptors including information on spawning and nursery grounds within the English Offshore Scheme Scoping Boundary and Study Area. It also includes the designated sites and protected species known to be present within the Study Area.

20.4.5. Over 330 species of fish have been recorded in UK waters, with the North Sea supporting a wide variety of both pelagic (species that live within the water column) and demersal (species that live or feed on the seabed) species (Ref 20.23). The species most likely to be affected by the English Offshore Scheme are those with demersal life stages, and those sensitive to underwater noise changes e.g., hearing specialists such as clupeoids (e.g., Atlantic herring, shad, sprat). The North Sea is home to important fishing grounds used not only by the local English and Scottish fleet but also by international vessels from Belgium, the Netherlands, Denmark, France, Ireland, Spain and Germany. To enable accurate monitoring the sea is divided into rectangles by the International Council for the Exploration of the Sea (ICES). Each ICES rectangle is approximately 30 NM squared and is 30 min latitude and 1° longitude in size (Ref 20.24). Analysis of the fishing data from these ICES rectangles has been used as an indication of the commercial fish species present in the Study Area, but it is recognised that it does not provide a definitive list of species present.

Spawning and Nursery Grounds within the Study Area

20.4.6. **Table 20-7** summarises the species which use the Study Area as spawning and / or nursery grounds and the months within which this occurs. Spawning grounds are described as the location(s) where eggs are laid, and nursery grounds are the location(s) where juveniles of a species are common. Information is taken from the Cefas fisheries sensitivities maps [Ref 20.7, Ref 20.8]. It also shows the intensity of 0 group aggregations, which are fish within the first year of their lives (Ref 20.37). Nursey periods have been assumed to be the same as spawning but continue for two further months.

20.4.7. Where information is available in the form of mapped data this has been presented in **Volume 3, Figures 20-1 to 20-4**.

Table 20-7: Spawning and Nursery grounds that overlap with the Study Area

Spawning Only | Nursery Only | Both

Species	Latin names	Spawning Zone	Intensity	Nursery Zone	Intensity	** Presence of Group 0 Aggregations	J	F	M	A	M	J	J	A	S	O	N	D
Anglerfish	*Lophius piscatorius*	n/a	n/a	Demersal	Low	Low												
Atlantic Cod	*Gadus morhua*	Pelagic	Low	Demersal	High	Low		*	*									
Atlantic Herring (Banks / Dogger Stock)	*Clupea harengus*	Demersal	High	Pelagic	High	Low / Medium												
Atlantic Mackerel	*Scomber scombrus*	Pelagic	Low	Pelagic	Low	Low					*	*	*					
Blue Whiting	*Micromesistius poutassou*	n/a	n/a	Pelagic	Low					*	*							
Edible Crab	*Cancer pagurus*	Demersal	Unknown	Demersal	Unknown	Unknown												
Common Sole	*Solea solea*	Pelagic / Demersal	Low	Demersal	Low	Low				*								
European Hake	*Merluccius merluccius*	n/a	n/a	Demersal	Low	Low		*	*									
European Plaice	*Pleuronectes platessa*	Pelagic / Demersal	High	Demersal	Low	Low	*	*										

Spawning Only | Nursery Only | Both

Species	Latin names	Spawning Zone	Intensity	Nursery Zone	Intensity	** Presence of Group 0 Aggregations	J	F	M	A	M	J	J	A	S	O	N	D
European Sprat	*Sprattus sprattus*	Pelagic	Low	Pelagic	Low	Low / Medium					*	*						
Haddock	*Melanogrammus aeglefinus*	n/a	n/a	Demersal	Low	Medium/High		*	*	*								
Lemon Sole	*Microstomus kitt*	Demersal	Low	Demersal	Low													
Ling	*Molva molva*	n/a	n/a	Demersal	Low													
Lobster	*Homarus gammarus*	Demersal	Unknown	Demersal	Unknown	Unknown												
Nephrops	*Nephrops norvegicus*	Demersal	Low	Demersal	Low					*	*	*						
Norway Pout***	*Trisopterus esmarkii*	Demersal	Low	n/a	n/a	Low		*	*									
Sandeels	*Ammodytidae* spp.	Demersal	Low	Demersal	Low													
Spurdog	*Squalus acanthias*	n/a	n/a	Viviparous	Low													
Thornback ray	*Raja clavata*	Demersal	Low	Demersal	Low					*	*	*	*	*				
Whiting	*Merlangius merlangus*	Pelagic	Low	Pelagic	High	Low												

Spawning Only | Nursery Only | Both

Species	Latin names	Spawning Zone	Intensity	Nursery Zone	Intensity	** Presence of Group 0 Aggregations	J	F	M	A	M	J	J	A	S	O	N	D
Whelk	*Buccinum undatum*	Demersal	Unknown	Demersal	Unknown	Unknown												

Sources: Coull, Johnstone and Rogers (1998); Ellis *et al.* (2012); Aires, González-Irusta and Watret (2014)

* Peak spawning. **0 Group fish defined as fish in the first year of their lives. ***Species only recorded as 0 Group fish within the Study Area.

eDNA Results

20.4.8. During the EGL 4 environmental survey (see (Ref 20.29) for more detail on this survey) environmental DNA (eDNA) samples were acquired. **Table 20-8** presents the top ten most populous species identified in the eDNA water samples. As the EGL 4 Project largely parallels the English Offshore Scheme its data is relevant to provide local / regional context.

Table 20-8: Top ten most populous species in eDNA water samples (sampled during EGL 4 environmental surveys)

Family / species	Common name
Scomber scombrus	Atlantic mackerel
Pleuronectidae	Righteye flounders
Gadidae	Cods and haddocks
Merlangius merlangus	Whiting
Ammodytes sp.	Sandeel sp.
Sprattus sprattus	European Sprat
Limanda limanda	Common dab
Clupea harengus	Herring
Chelidonichthys sp.	Gurnards
Echiichthys vipera	Lesser weaver

Landing Information

20.4.9. The English Offshore Scheme Scoping Boundary crosses twelve ICES Rectangles (South-North: 35F0, 36F0, 36F1, 37F0, 38E9, 38F0, 39E9, 39F0, 40E9, 40F0, 41E9, and 42E9). Analysis of the fishing data from the ICES rectangles has been used as an indication of the commercial fish species caught in these regions.

20.4.10. **Table 20-9** shows the top four pelagic species caught in 2023[15] by catch weight and catch value within the ICES Rectangles that are intersected by the English Offshore Scheme Scoping Boundary. **Table 20-10** shows the top five shellfish species caught in 2023 by catch weight and catch value within the ICEA Rectangles and **Table 20-11** shows the same for demersal species.

[15] Note – this is the most recently available data at the time of writing (July 2025) as the data is usually published in the September of the following year (i.e. 2024 data can be expected in September 2025).

Table 20-9: Top three pelagic species caught in 2023 within the Study Area by landed weight (tonnes) and value (£)

Most caught pelagic species by Landed Weight (t) and catch value (£)
Mackerel
Horse Mackerel
Herring

Source: MMO (2024)

Table 20-10: Top five shellfish species caught in 2023 within the Study Area by landed weight (tonnes) and value (£)

Most caught shellfish species by Landed Weight (t)	Most caught shellfish species by Value (£)
Crabs (C.P Mixed Sexes)	Crabs (C.P Mixed Sexes)
Cockles	Lobster
Whelks	Nephrops (Norway Lobster)
Scallops	Scallops
Lobster	Cockles

Source: MMO (2024)

Table 20-11: Top five demersal species caught in 2023 within the Study Area by landed weight (tonnes) and value (£)

Most caught demersal species by landed weight (t)	Most caught demersal species by value (£)
Haddock	Sole
Whiting	Haddock
Sole	Halibut
Monks or Anglers	Monks or Anglers
Dabs	Turbot

Source: MMO (2024)

General Species Information

Sensitive Demersal and Pelagic Species

Atlantic herring (*Clupea harengus*)

20.4.11. Atlantic herring is a pelagic species which spawns on the seabed. As benthic spawners, the species has a specific habitat preference of gravel and partly sandy gravel (Ref 20.26) which limits the spatial extent of their spawning grounds. As a result, they are

particularly sensitive to any seabed disturbance. A programme of annual International Herring Larvae Surveys (IHLS) has taken place since 1967 to monitor the abundance of herring larvae (Ref 20.24). Atlantic herring numbers fluctuate annually, with Atlantic herring often abandoning and then returning to suitable areas. As a result, availability of all suitable areas of spawning habitat are necessary to maintain a resilient population.

20.4.12. There are four main autumn / winter-spawning populations of herring located across the North Sea alongside several discrete spring-spawning stocks. The autumn-spawning grounds include the Orkney-Shetland population, the Buchan population, the Banks (or Dogger) population and the Downs / Southern Bight population (Ref 20.36) and are characterised by different growth rates, recruitment patterns and migration routes. The Study Area crosses the Banks (off North-eastern England) Atlantic herring spawning grounds identified by Coull, Johnstone and Rogers (1998). Typically, the Banks herring stocks spawn over summer and autumn, from August to October (Ref 20.36). This spawning ground is an important area for a large population of Atlantic herring stock in the North Sea.

20.4.13. The English Offshore Scheme Scoping Boundary crosses known herring spawning grounds which are illustrated in **Volume 3, Figure 20-3**.

Sandeel (*Ammodytes* spp.)

20.4.14. Sandeel have been recorded within the Study Area and are significant due to their importance as prey species for a number of bird, fish and marine mammal species. Sandeel hibernate in specific types of seabed during the autumn and winter, particularly coarse sand or fine gravel where they bury themselves in up to 50 cm of sediment (Ref 20.38). They briefly emerge from hibernation between December and January to spawn. During the spring and summer, they feed in the water column during the day and then bury themselves in the seabed at night. Their lifecycle makes them sensitive to seabed disturbance, especially during hibernation. Studies have found that sandeel are largely resident and do not disperse over distances greater than 30 km (Ref 20.39), and that they do not migrate between grounds, suggesting that they are not successful re-colonisers (Ref 20.40). Sandeel are not however considered to be sensitive to increased suspended sediment concentrations and deposition.

20.4.15. There are three predominant species of sandeel which inhabit the North Sea, Greater sandeel (*Hyperoplus lanceolatus*), Lesser sandeel (*Ammodytes tobianus*) and Raitt's sandeel (*Ammodytes marinus*). A further two species have also been identified as potentially present within the North Sea, although they are less abundant, Corbin's sandeel (*Hyperoplus immaculatus*) and smooth sandeel (*Gymnammodytes semisquamatus*).

20.4.16. The sandeel species Raitt's sandeel is listed as a principal species of importance in England under Section 41 of the Natural Environment and Rural Communities (NERC) Act (2006), meaning that they are of principal importance for the purpose of conserving or enhancing biodiversity (Ref 20.41). Sandeel are also noted in UK Biodiversity Action Plan (BAP) priority marine species of principal importance, requiring conservation due to their ecological importance as a prey species and their marked decline within the UK (a decline of 50% or more over the past 25 years or deterioration or loss of habitat) (Ref 20.42).

20.4.17. The English Offshore Scheme Scoping Boundary crosses several known sandeel spawning grounds which are illustrated in **Volume 3, Figure 20-4**.

Diadromous and Catadromous Fish

20.4.18. Diadromous fish migrate between saltwater and freshwater, normally at the time of spawning. Catadromous fish spend most of their life cycle in fresh water and migrate to saltwater to spawn. The Humber Estuary Special Area of Conservation (SAC) lies within the Study Area, close to the mouth of the Rivers Ouse, Hull and Trent and as such several species of diadromous and catadromous fish are found within the Study Area. Some of these fish are included on the protected species list presented in **Table 20-12**, including twaite shad (*Alosa fallax*), allis shad (*A. alosa*), sea lamprey (*Petromyzon marinus*) and river lamprey (*Lampetra fluviatilis*).

20.4.19. The sea and river lamprey are both qualifying features of the Humber Estuary SAC which is located 7.5 km from the English Offshore Scheme Scoping Boundary at its closest point. Allis and twaite shad are known to have spawning migrations between April and May and, although rare in the region, have been recorded in MMO annual catch statistics.

20.4.20. The Atlantic salmon (*Salmo salar*) is a diadromous species which is also found within the Study Area. Spawning takes place in shallow excavations called redds, found in shallow gravelly areas in clean rivers and streams where the water flows swiftly. The young that emerge spread out into other parts of the river. After a period of 1-6 years the young salmon migrate downstream to the sea as ‘smolts’. Salmon have a homing instinct that draws them back to spawn in the river of their birth after 1-3 years in the sea (Ref 20.43). Rivers in England considered important for salmon, which are in proximity to the English Offshore Scheme Scoping Boundary, include the River Tyne. These species may move through the Study Area during migrations.

20.4.21. Diadromous species including Atlantic salmon, sea lamprey and river lamprey are sensitive to noise and are electrosensitive. These species do not have specialised electroreceptors but are able to detect induced voltage gradients associated with water movement through the geomagnetic field (Ref 20.44).

20.4.22. European eel *(Anguilla anguilla)* are highly sensitive to noise and likely to be present within the English Offshore Scheme Scoping Boundary. The River Tweed has an important population of European eel, and it is possible that individuals will be present in the English Offshore Scheme Scoping Boundary during their migration through the North Sea.

Smelt (Osmerus eperlanus)

20.4.23. Once widespread in the UK, the species is now in decline and subject to protection at certain key locations. The Northeast of Farnes Deep Highly Protected Marine Area (HPMA) and Marine Conservation Zone (MCZ) provides a critical habitat for this species where it can complete some of its life cycle (Ref 20.45). The English Offshore Scheme Scoping Boundary passes to 12 km to the east of the HPMA and MCZ, at the closest point.

20.4.24. Smelt have been observed congregating in shoals in lower estuaries as they migrate into freshwater where they spawn in spring. The species lay their eggs onto the seabed where they adhere to coarse substrates and vegetation to prevent dispersal during incubation. Smelt are known to congregate near river mouths during winter and then ascend the river between February and April for spawning before returning to the sea (Ref 20.46). The disturbance of seabed substrates or changes in siltation rates will directly impact smelt populations by causing physical damage and mortality of embryos before hatching and reducing spawning habitat (Ref 20.47).

Elasmobranchs (Sharks, Rays and Skates)

20.4.25. Elasmobranchs are amongst the most vulnerable marine fish, due to their slow growth rates, late maturity and low fecundity which limits their ability for population recovery (should it decline). All sharks and rays are on the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR) list of threatened or declining species. There are several elasmobranchs which are regularly caught by commercial fisheries in the Study Area. These include thornback ray (*Raja clavata*), lesser spotted dogfish (*Scyliorhinus canicula*), spotted ray (*Raja montagui*), starry smooth-hound (*Mustelus asterias*), blue skate (*Dipturus flossada*) and flapper skate (*D. intermedia*), as well as the white skate (*Rostroraja alba*) which are on the IUCN Red List.

20.4.26. Elasmobranchs are the predominant electroreceptive species present within the Study Area. The species have specialist electroreceptive organs (Ref 20.48) which are sensitive to 5 – 20 nV/m (Ref 20.49), and are used to detect the bioelectric fields of prey and predators as well as being used for navigational purposes.

20.4.27. Skates and rays are amongst the most common bottom-dwelling fish. Thornback are known to use the Study Area as spawning and nursery grounds. The peak spawning activity for this species is between April and August (**Table 20-7**).

20.4.28. The basking shark (*Cetorhinus maximus*) is the largest fish to visit UK waters, measuring up to 12 m in length. Despite its size it feeds exclusively on plankton (Ref 20.50). There are regular sightings in summer months from southern Cornwall to the Scottish isles, however sightings of the basing shark within the Study Area are rare.

Sensitive Shellfish (Crustaceans and Molluscs)

20.4.29. Shellfish is a collective term for crustaceans (e.g., shrimp, lobsters, crabs) and molluscs e.g. cockles, mussels, oysters, whelk) – animals which have a shell or shell-like exterior. They generally live in or on the seabed. Shellfish waters are protected under The Water Environment (Water Framework Directive) (WFD) (England and Wales) Regulations 2017 (as amended). The Study Area does not intersect any protected shellfish areas (the nearest is The Wash, 5.7 km south of the Study Area.

20.4.30. A variety of shellfish species are targeted in the waters within the Study Area by commercial fisheries. The top five shellfish species by catch value in 2023 were Crabs (C.P Mixed Sexes), Lobster, Nephrops (Norway Lobster), Scallops and Cockles. A brief description of the most sensitive species (either due to commercial importance or protected / threatened status) is presented below.

Ocean Quahog (*Arctica islandica*)

20.4.31. Ocean quahog are listed on the OSPAR list of threatened and / or declining species and habitats (Ref 20.51). It is a protected species in several designated sites within the vicinity of or within the Study Area including the Holderness Offshore MCZ and North East of Farnes Deep MCZ and HPMA. As a protected benthic species, ocean quahog will be considered in detail in **Part 3, Chapter 19: Intertidal and Subtidal Benthic Ecology**.

Edible Crab (*Cancer pagurus)*

20.4.32. Edible crab fishing areas are distributed along the English and Scottish North Sea coast (Ref 20.52). Previous tagging studies undertaken identified a northward migration of adult female crabs along the east coast of England and Scotland. Mating activity peaks

in the summer once the females have moulted, with spawning occurring from July onwards (Ref 20.31, Ref 20.32). According to Eaton *et al.*, the English Offshore Scheme Scoping Boundary crosses areas of high density of zoeae[16] (July 1999 data) with lower densities recorded in July 1993.

Norway Lobster (*Nephrops norvegicus*)

20.4.33. Norway Lobster are present in muddy habitats, with high concentrations of silt and clay. The species are known to occur in the Farnes Deep area, which is an essential winter fishery running from September to March (Ref 20.33). The Study Area for the English Offshore Scheme crosses this area (although the Scoping Boundary does not).

Whelk (*Buccinum undatum*)

20.4.34. Whelk are frequently found off all British coasts and inhabits a range of seabed types including hard and soft substrates (including subtidal substrates) and occasionally intertidal fringes (Ref 20.53). There are no known specific whelk migrations for spawning, though they can show aggregating behaviour. The distribution of young whelk tends to be limited to areas close to the adult stock (Ref 20.54).

20.4.35. Breeding occurs in late autumn where demersal egg-cases are laid in masses from November until April. Egg development is intracapsular, meaning clumps of demersal egg-cases are laid, from which young hatch as a fully formed whelk during February and March (Ref 20.55). Whelk is a highly valued species and is caught mostly in the southernmost ICES rectangles 35F0, 36F0 and 37F0 within the Study Area.

Cockles *(Cerastoderma edule*)

20.4.36. Cockles inhabit the surface of the sediment, burrowing to a maximum depth of 5 cm (Ref 20.56). They are active filter feeders, using a syphon tube to feed on material suspended in the water column. Cockles spawn in spring, with the cockle fishing season between June and September. Cockle habitat comprises intertidal beaches of sand, muddy sand and fine gravel within The Wash, which is at the furthermost reaches of the southern part of the Study Area.

Protected Species

20.4.37. **Table 20-12** lists the protection afforded to species which have been identified within the Study Area. Some fish species are protected by several national and international conventions including:

- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). The aim is to protect endangered plant and animal species from illegal trade and over exploitation.
- Convention for the Protection of the Marine Environment of the North-East Atlantic – OSPAR Convention. The OSPAR Convention aims to protect the marine environment of the North-East Atlantic.
- IUCN. The IUCN Red Data list catalogues and highlights those animals and plants at high risk of global extinction.

[16] Free swimming larvae of a crab

- The Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended) (COMHSR)
- The NERC Act.
- Wildlife and Countryside Act 1981 (as amended in 1985).

Table 20-12: Protected fish/shellfish species observed within the Study Area

Species	International			UK			England
	OSPAR	CITES	IUCN	Wildlife and Countryside Act	COMHSR	Features of Conservation Interest (FOCI)	Species of Principal Importance
Pelagic Species							
Herring (*Clupea harengus*)			Least concern				Y
Horse mackerel (*Trachurus trachurus*)			Least concern				Y
Mackerel (*Scomber scombrus*)			Least concern				Y
Demersal Species							
Atlantic cod (*Gadus morhua*)	Y		Vulnerable				Y
Atlantic halibut (*Hippoglossus hippoglossus*)			Endangered				Y
Bass (*Dicentarchus labrax*)			Least concern				

Species	International			UK			England
	OSPAR	CITES	IUCN	Wildlife and Countryside Act	COMHSR	Features of Conservation Interest (FOCI)	Species of Principal Importance
Haddock (*Melanogrammus aeglefinus*)			Vulnerable				
Ling (*Molva molva*)			Least concern				Y
Plaice (*Pleuronectes platessa*)			Least concern				Y
Saithe (*Pollachius virens*)			Least concern				
Sole (*Solea solea*)			Data deficient				
Whiting (*Merlangius merlangus*)			Least concern				Y
Elasmobranch species							
Basking shark (*Cetorhinus maximus*)	Y	Appendix II	Endangered	Schedule 5			Y

Species	International			UK			England
	OSPAR	CITES	IUCN	Wildlife and Countryside Act	COMHSR	Features of Conservation Interest (FOCI)	Species of Principal Importance
Blonde Ray (*Bathyraja brachyurops*)			Near threatened				
Common Skate (*Dipturus batis*)	Y		Critically endangered				Y
Flapper skate (*Dipturus intermedius*)	Y		Critically endangered				Y
Cuckoo Ray (*Leucoraja naevus*)			Least concern				
Lesser spotted dogfish (*Schyliorhinus canicula*)			Least concern				
Nurse hound (*Scyliorhinus stellaris*)			Near threatened				
Starry smooth-hound (*Mustelus asterias*)			Near threatened				
Spotted ray (*Raja montagui*)	Y		Least concern				

Species	International			UK			England	
	OSPAR	CITES	IUCN	Wildlife and Countryside Act	COMHSR	Features of Conservation Interest (FOCI)	Species of Principal Importance	
Starry Ray (*Amblyraja radiata*)			Least concern					
Thornback Ray (*Raja clavata*)	Y		Near threatened					
White Skate (*Rostroraja alba*)	Y		Endangered					
Diadromous species								
Allis shad (*Alosa alosa*)	Y		Least concern	Schedule 5		Annex II & V		Y
River Lamprey (*Lampetra fluviatalis*)			Least concern			Y		Y
Sea Lamprey (*Petromyzon marinus*)	Y							Y
Smelt (*Osmerus eperlanus*)			Least concern				Y	Y
Twaite shad (*Alosa fallax*)			Least concern	Schedule 5		Annex II and V		Y

Species	International			UK			England
	OSPAR	CITES	IUCN	Wildlife and Countryside Act	COMHSR	Features of Conservation Interest (FOCI)	Species of Principal Importance
Anadromous species							
Atlantic salmon (*Salmo salar*)	Y		Vulnerable			Annex II	Y
Shellfish species							
Cuttlefish (*Sepia officinalis*)			Least concern				
Ocean quahog (*Arctica islandica*)	Y						Y

Designated Sites

Holderness Offshore MCZ

20.4.38. Two subsea cable corridor options are being investigated for the English Offshore Scheme; one that largely avoids the MCZ by routeing around the eastern boundary; and one that crosses directly through the site (see **Volume 3, Figure 19-2** for more detail). The base case subsea cable corridor passes through the MCZ for 4.5 km and the alternative route option crosses through the site for 20.4 km.

20.4.39. The MCZ covers an area of 1,176 km^2 and is located approximately 11 km offshore from the Holderness coast in the Southern North Sea region. It crosses the 12 NM territorial seas limit and overlaps with the Southern North Sea SAC (Ref 20.57). The seabed of the Holderness Offshore MCZ is predominantly composed of sediment habitats ranging from subtidal sand to subtidal coarse sediment and contains part of a glacial tunnel valley. The varied nature of the seabed means it supports a wide range of species, both on and in the sediment, including multiple species of worms, mussel beds, sponges, starfish and crustaceans (such as crabs and shrimp). The site is also a spawning and nursery ground for several fish species, including lemon sole, plaice and European sprat. Ocean quahog has also been recorded within the site. The conservation objective for the site is to maintain and / or restore the favourable conservation status of the species.

Humber Estuary SAC

20.4.40. The English Offshore Scheme Scoping Boundary lies approximately 7.5 km from the Humber Estuary European Marine Site, which is comprised of the Humber Estuary SAC, Humber Estuary Special Protection Area (SPA), Humber Estuary Ramsar Site and Humber Estuary Site of Special Scientific Interest (SSSI). The site extends for 366.57 km² and includes the second largest coastal plain estuary in the UK (Ref 20.58). The estuary supports a full range of saline conditions from the open coast to the limit of saline intrusion on the tidal rivers of the Ouse and Trent. Significant Annex II migratory fish species are present and include river lamprey and sea lamprey, which breed in the River Derwent, a tributary of the River Ouse and are a protected species of the SAC. The conservation objective for the site is to maintain and / or restore the favourable conservation status of the species.

20.4.41. **Table 20-13** summarises the seasonality of sea and river lamprey within the SAC.

Table 20-13: Seasonality of protected species in the Humber Estuary SAC

Feature	Life Stage	J	F	M	A	M	J	J	A	S	O	N	D
River Lamprey	Downstream Migration (Juveniles)												
River Lamprey	Spawning (Freshwater)												

Feature	Life Stage	J	F	M	A	M	J	J	A	S	O	N	D
River Lamprey	Upstream migration (Adults)												
River Lamprey	Estuarine feeding												
Sea Lamprey	Downstream Migration (Juveniles)												
Sea Lamprey	Spawning (Freshwater)												
Sea Lamprey	Usptream migration (Adults)												

Source: Natural England (2025)

North East of Farnes Deep HMPA and MCZ

20.4.42. The English Offshore Scheme Scoping Boundary does not pass through the North East of Farnes Deep HMPA and MCZ, though the two sites do fall within the Study Area (12 km west of the English Offshore Scheme Scoping Boundary at the nearest point). The HPMA and MCZ are located approximately 55 km offshore from the north Northumberland coast, in the northern North Sea. The habitats within the sites are relatively stable and support a diverse range of marine flora and fauna such as anemones, worms, molluscs, echinoderms and fish species. Also found here is the ocean quahog which is a FOCI and smelt (Ref 20.45).

20.4.43. The conservation objective for the MCZ is to maintain and / or restore the favourable conservation status of the species, and the conservation objective for the HPMA is to a) achieve full recovery of the protected feature, including its structure and functions, its qualities and the composition of its characteristic biological communities present within the North East of Farnes Deep HPMA, to a natural state, and b) prevent further degradation and damage to the protected feature, subject to natural change. The protected feature of the HPMA is the ‘whole marine ecosystem of the area’, defined as: All marine flora and fauna, all marine habitats and all geological or geomorphological interests, including all abiotic elements and all supporting ecosystem functions and processes, in or on the seabed, water column and the surface of the sea.

Future Baseline

20.4.44. As the Project will be licensed for 40 years it is difficult to provide accurate predictions of the future baseline scenario for fish and shellfish ecology, given the spatiotemporal changes to the marine environment. The baseline environment for fish and shellfish will change, due to natural coastal processes and weather events (such as storms), and effects of climate change.

20.4.45. It is therefore important to consider these changes which may directly or indirectly affect fish and shellfish species and populations in the short, mid, and long-term future. For example, one of the most responsive shellfish receptor groups to environmental change are squids; expansion ranges of squids have been shown to have increased throughout the North Sea in the last 35 years (Ref 20.60) due to increases in water temperatures. Indirectly, it could be expected that large fish populations could add additional impacts on prey species (such as mackerel, herring, whiting and haddock; Barrett *et al.*, (2022)) And also provide additional prey resources for squid predators such as spurdog and whiting.

20.4.46. Research has suggested that there have been significant changes in fish communities in the northeast Atlantic over several decades as a result of a number of factors including climate change and fishing activities (Ref 20.23). These communities consist of species that have complex interconnections with one another and the natural environment.

20.4.47. Fish and shellfish populations are prone to natural variations in population size and distributions, largely as a result of year-to-year variation in recruitment success and these population trends will be influenced by broad-scale climatic and hydrological variations, as well as anthropogenic effects such as climate change and overfishing.

20.4.48. Fish and shellfish play a crucial role in the transfer of energy from lowest to the highest trophic levels within the ecosystem and serve to recycle nutrients from higher levels through the consumption of detritus. Therefore, their populations will be decided by both top-down factors such as predation, and bottom-up factors such as ocean climate and plankton abundance.

20.4.49. Future developments which may impact the future baseline for fish and shellfish in the area include several offshore wind farm sites in the North Sea. This includes Ossian, Morven, Hornsea 3, Dogger Bank A, B, C, D and South, Outer Dowsing and Sofia offshore windfarms. In addition, other infrastructure such as Viking Link, NU Link, Aminth and Continental Link interconnector projects and Viking and Endurance Carbon Capture and Storage (CCS) pipelines. Of note are the Ossian wind farm export cables and the EGL 3 and EGL 4 transmission reinforcement projects which are planned to make landfall at Anderby Creek, Lincolnshire. The potential for cumulative effects will be considered as part of the future EIA documents in accordance with the approach and guidance outlined within **Part 4, Chapter 30: Cumulative Effects**.

20.5 Design and Control Measures

20.5.1. As set out in **Part 1, Chapter 5: EIA Approach and Methodology**, the environmental measures are characterised as design measures or control and management measures. A range of environmental measures would be implemented as part of the English Offshore Scheme and will be secured through the Deemed Marine Licence (DML) and in the Development Consent Order (DCO) as relevant.

20.5.2. Several management plans will be provided as Outline Management Plans with the application for development consent to support the DML. These will include an Outline Construction Environmental Management Plan (CEMP) and Outline Marine Pollution Contingency Plan. These documents will outline measures to be implemented to comply with legislation (e.g., in relation to the prevention of oil and chemical spills) during all phases of the English Offshore Scheme. Final management plans will be submitted in accordance with the DML to discharge the licence conditions. An Outline CEMP would be provided with the PEIR and ES.

20.5.3. In addition, design measures identified through the EIA process would be applied to avoid or reduce potential significant effects. Design measures included that are relevant to fish and shellfish receptors are included below and would also be included in an Commitments Register to be provided with the PEIR and ES. Compliance with these measures will be secured by way of the DCO or DML.

20.5.4. The following environmental measures are relevant to the fish and shellfish assessment:

- The intention is to bury the cables in the seabed, except in areas where burial is not possible e.g. where ground conditions do not allow or at infrastructure crossings.
- Cable protection features would only be installed where considered necessary for the safe operation of the English Offshore Scheme. This includes the repair of cables due to accidental damage, where depth of lowering is not achieved and at infrastructure crossings.
- Where possible, cable protection materials would be selected to match the environment (e.g. when cables are installed in areas of cobbles or other natural rock features, rock of similar diameter and material as the receiving environment should be used as an alternative to the current normal approach of using terrestrially sourced granite).
- High-Voltage Direct Current (HVDC) poles would be bundled to minimise the effects of Electromagnetic Fields (EMF) for electrosensitive receptors.

20.6 Scope of the Assessment

Potential Sensitive Receptors

20.6.1. The principal fish and shellfish receptors that have been identified as being potentially impacted by the English Offshore Scheme are:

- Shellfish and fish species with demersal life stages (including cockles, sandeel and herring).
- High and medium hearing sensitivity species e.g., those with a swim bladder connected to their hearing apparatus (Atlantic cod, herring and other clupeids) and those with a swim bladder but do not use it to support hearing (Atlantic salmon, sea trout, European eel).
- Electrosensitive species e.g., elasmobranchs and some species of shellfish.
- European and nationally designated sites with a fish / shellfish qualifying feature.

Likely Significant Effects

20.6.2. A range of potential impacts on fish and shellfish receptors have been identified which may occur during the construction, operation and maintenance, and decommissioning phases of the English Offshore Scheme. **Table 24-9** describes the potential impacts identified and provides justification as to whether they will be scoped ‘in’ or ‘out’ of the EIA.

20.6.3. A precautionary approach has been taken and where there is no strong evidence base, or the significance is uncertain at this stage, the impact has been scoped ‘in’ to the EIA. Where there is a clear evidence base that the effect from the impact will not be

significant, either alone or in combination with other plans and projects, the impact has been scoped ‘out’ of the EIA.

20.6.4. Potential impacts have been established based on industry experience and where applicable reference to the list of marine pressures established by the JNCC Marine Pressures-Activities Database v1.5 (Ref 20.62) and Natural England’s advice on operations for relevant European protected sites. The relevant JNCC pressures that would be covered by the impact pathways identified are provided in italics in the potential impact column.

20.6.5. For clarity, where seabed preparation is mentioned in the project activity column this includes the following activities: boulder clearance, sandwave clearance (pre-sweeping), unexploded ordnance (UXO) identification, and pre-lay grapnel run (PLGR).

Table 20-14: Scoping assessment of impacts on fish and shellfish

Potential Impacts	Project Activities	Sensitive Receptors	Scoping Justification		
			Construction	**Operation (including maintenance)**	**Decommissioning**
Temporary habitat loss / seabed disturbance *(Abrasion / disturbance of the substrate on the surface of the seabed* *Penetration and / or disturbance of the substratum below the surface, including abrasion)*	Seabed preparation Horizontal Directional drilling (HDD) duct excavation Cable burial and trenching Cable removal	Shellfish and fish species with demersal life stage	**In** - Any disturbance of the seabed has the potential to affect species which use the seabed for part / all of their lifecycle. Species most at risk are those that live in the upper layers of sediment (e.g., cockles), those that live on the seabed with limited mobility (e.g., , whelk, crab, lobster, hibernating sandeel) or those which lay their eggs on the seabed (demersal spawners) e.g., herring. The English Offshore Scheme crosses many spawning and nursery grounds and whilst these cover large areas of the North Sea suitable habitats within these areas may be limited. Disturbance during the spawning season could have a direct impact on the spawning biomass for a specific year group. The assessment will focus on the effect on shellfish species due to their limited mobility and high commercial values and sandeel and herring as significant prey species.	**IN** - Should localised repair works, or remedial external cable protection be required, the significance of the effect will be of lower magnitude that during installation. However, if the activity takes place during key spawning periods, impacts could potentially be significant.	**IN** - The significance of the effect during decommissioning is similar or of lower magnitude than installation. However, effects could potentially be significant if within a sensitive spawning ground.
		Species with fully pelagic life cycle	**OUT** - Species which have a fully pelagic lifecycle will not be significantly affected by disturbance of the seabed and will therefore be scoped out of the assessment.		
Permanent habitat loss		Shellfish and fish species with	**IN** - The presence of the deposit of external cable protection has the	**IN** - During operation, the likelihood of the Project requiring maintenance and	**IN** - The significance of the effect during

Potential Impacts	Project Activities	Sensitive Receptors	Scoping Justification		
			Construction	**Operation (including maintenance)**	**Decommissioning**
(Physical change (to another seabed type or sediment type) *Water flow (tidal current) changes including sediment transport considerations)*	Deposit of external cable protection	demersal life stage	potential to change the seabed type, changing the habitat for shellfish and marine species with demersal life stages. They also have the potential to alter sediment transport at a local level, creating scour pits or causing accretion. If the deposits are close to sensitive shellfish beds or within demersal spawning grounds, there is the potential that changes to the habitat could have a significant effect on shellfish or species with demersal life stages. The significance of the effect will vary according to local factors such as the position of the external cable protection in relation to the prevailing current, the mobility of the seabed, and the sensitivity of the habitat. Information from ecological and marine surveys will be used to avoid areas of significant importance where possible. However, as the locations where external cable protection will be used has not currently been identified, the impact pathway cannot be scoped out of the assessment.	repair is low. However, there remains the potential that localised repair works, or remedial external cable protection may be required. In these circumstances the significance of the effect will be of lower magnitude that during installation. However, if the activity takes place during key spawning periods, impacts could potentially be significant.	decommissioning is similar or if lower magnitude than installation. However, effects could potentially be significant if within a sensitive spawning ground. Removal of cable protection during decommissioning may cause permanent habitat loss to any shellfish that have colonised the cable over the Project's lifetime.
		Species with fully pelagic life cycle	**OUT** - Species which have a fully pelagic lifecycle will not be significantly affected by localised seabed deposits and will therefore be scoped out of the assessment.		

Potential Impacts	Project Activities	Sensitive Receptors	Scoping Justification		
			Construction	Operation (including maintenance)	Decommissioning
Temporary increase and deposition of suspended sediments *(Changes in suspended solids (water clarity)* *Smothering and siltation rate changes* *Hydrocarbon and Polycyclic Aromatic Hydrocarbons (PAH) contamination)*	Sandwave clearance (pre-sweeping)	Shellfish and fish species with demersal life stage	**IN** - Pre-sweeping of sand waves involves the re-positioning of large quantities of sediment from the cable route to either immediate alongside the cable route, or to a separate disposal location. Depending on the technique used and the size of sand waves requiring pre-sweeping, the redeposition of sediment can cause smothering >10 cm deep over relatively wide areas of seabed (in the order of tens of thousands square metres). Effects could potentially be significant if the disposal site contains sensitive spawning grounds or shellfish beds. Therefore, the impact pathway cannot be scoped out for this specific activity until further information is available on the areas that will require pre-sweeping.	**OUT** - Pre-sweeping is used during construction to ensure that the cables are buried below the base of mobile sediments. Generally during operation, remedial works are focused on protecting sections of cable that have become exposed due to sediment mobility, or to repair cables that have been damaged by a third party (e.g., fishing damage). Pre-sweeping would not be required during a cable repair for third-party damage as the cable would already be exposed on the seabed. Therefore, the only scenario pre-sweeping might be required is where the cable has been damaged during construction and develops a fault in an area where pre-sweeping was used during construction. In this scenario the significance of the effect will be of lower magnitude than during construction and has been scoped out of the assessment.	**IN** - Pre-sweeping or controlled flow excavation could be used during decommissioning to expose the buried cable. The significance of the effect during decommissioning is similar or of lower magnitude than construction. However, effects could potentially be significant if within a sensitive habitat.
		Species with fully pelagic life cycle	**OUT** - Species which have a fully pelagic lifecycle will not be significantly affected by localised seabed deposits, nor temporary changes in water clarity and will therefore be scoped out of the assessment.		
Temporary increase and deposition of suspended sediments	Seabed preparation HDD duct excavation	Shellfish and fish species with demersal life stages	**OUT** - The most significant contributor (relatively) will be from the sediment plume generated by cable trenching. During trenching the area affected depends on the trenching technique deployed e.g., ploughing	**OUT** - During operation, the likelihood of the Project requiring maintenance and repair is low. However, there remains the potential that localised	**OUT** - The significance of the effect during decommissioning is similar or of lower magnitude than construction and has therefore been scoped out

Potential Impacts	Project Activities	Sensitive Receptors	Scoping Justification		
			Construction	Operation (including maintenance)	Decommissioning
(Changes in suspended solids (water clarity) *Smothering and siltation rate changes* *Hydrocarbon and PAH contamination)*	Cable burial and trenching Anchoring / jack-up legs Deposit of external cable protection Cable removal		will create a slightly larger footprint than jet trenching. However, in both cases the spatial extent of heavy smothering is extremely localised, restricted to less than a couple of metres either side of the trench (Ref 20.63, Ref 20.66) and significant effects are unlikely. Sediment transport modelling undertaken for the EGL 3 and EGL 4 Projects (Ref 20.65) found that fine particles (very fine sand 125 µm) will settle within 3.15 km of the disposal location. Fines (<63 µm) will remain in suspension (potentially indefinitely) and may travel up 11.77 km, but sediment deposition would be <2 mm, and unnoticeable against background levels of sediment deposition. With respect to changes in water clarity, the benchmark used by NE for the pressure is a change in one rank e.g., from clear to intermediate, on the WFD scale for one year. While trenching is undertaken a sediment plume will be generated continuously, but it will move with the location of the cable spread. Sands and gravels do not form part of the sediment load and will settle out of suspension quickly. Sediment transport modelling undertaken for the EGL 3 and EGL 4 Projects (Ref 20.65) found that he maximum distance the suspended sediment concentrations (SSC) exceed 10 mg/l is 4 km from the	repair work or remedial external cable protection may be required. In these circumstances the significance of the effect will be of lower magnitude than during construction and the impact has therefore been scoped out of the assessment for the same reasons.	of the assessment for the same reasons.

Potential Impacts	Project Activities	Sensitive Receptors	Scoping Justification		
			Construction	**Operation (including maintenance)**	**Decommissioning**
			source. As such, any impact from SSC is expected to be small and localised, and any measurable change in SSC will be temporary and localised Overall, the change in water clarity is not significant and generally in line with changes experienced during storm conditions when background concentrations can reach 1000 mg/l (Ref 20.64). Sediment contamination in the North Sea is focused on areas of high anthropogenic activity e.g., around disposal sites, estuaries and where drilling activity has taken place. Analysis of sediments undertaken as part of the EGL 4 Project showed that the presence of contaminated sediment was minimal (Ref 20.65), with concentrations below Cefas Action Level 1 for all contaminants except for Arsenic (which exceeded AL1 at 8 out of 54 sites) The conclusion of the PEIR for the release of contaminated sediment resulting from the EGL 3 and EGL 4 Projects was negligible and not significant. As the English Offshore Scheme is in a similar location and of a similar scale the impact is also predicted to be not significant and is therefore scoped out.		
		Herring	**IN** - Herring are sensitive to disturbances to the sediment composition of their spawning grounds. The English Offshore	**OUT** - During operation, the likelihood of the Project requiring maintenance and repair is low. However, there remains the potential that localised	**IN** - The significance of the effect during decommissioning is similar or of lower magnitude than

Potential Impacts	Project Activities	Sensitive Receptors	Scoping Justification		
			Construction	Operation (including maintenance)	Decommissioning
			Scheme crosses through a significant area of herring spawning ground. Whilst the area of disturbed sediment is likely to be highly localised, significant impacts cannot be scoped out at this stage.	repair works may be required. In these circumstances the significance of the effect will be of lower magnitude than during installation and has therefore been scoped out of the assessment.	installation. However, whilst the area of disturbed sediment is likely to be highly localised, significant impacts cannot be scoped out at this stage.
		Species with fully pelagic life cycle	**OUT** - Sediment transport modelling undertaken for the EGL 3 and EGL 4 Projects (Ref 20.65) found that he maximum distance the suspended sediment concentrations (SSC) exceed 10 mg/l is 4 km from the source. As such, any impact from SSC is expected to be small and localised, and any measurable change in SSC will be temporary and localised. Species with a fully pelagic life cycle will be acclimated to occasional temporary increases in SSC, and as mobile receptors can easily move away from areas with temporarily increased SSC.		
Accidental spills *(Hydrocarbon & PAH contamination)*	Presence of project vessels and equipment	All species	**OUT** - Project vessels and Construction Contractor(s) will comply with the International Convention for the Prevention of Pollution from Ships (MARPOL) 73/78 which relate to pollution from oil from equipment, fuel tanks etc and release of sewage (black and grey water). It is a legal requirement that all vessels have a SOPEP. Compliance with Regulations will be sufficient to minimise the risk to the environment. Several management plans will be provided as outline management plans with the application for development consent, to be secured as a condition of the DML. These will include an Outline Construction Environmental Management Plan and Outline Marine Pollution Contingency Plan. These documents will outline measures to be implemented to comply with legislation (e.g., in relation to the prevention of oil and chemical spills) during all phases of the English Offshore Scheme.		
Introduction or spread of marine invasive non-native species (INNS)	Presence of project vessels and equipment Deposit of external cable protection	Shellfish	**OUT** - Although the introduction of Project's vessels, equipment, and external cable protection have the potential to introduce and spread MINNS, all relevant guidelines will be followed (Ref 20.68) including vessel cleaning facilities and the use of anti-fouling paint. Project's vessels and Construction Contractor(s) will comply with the International Convention for the Control and Management of Ships' Ballast water and Sediments. All seabed deposits will be inert with no biologically active material. Project's vessels will complete a biosecurity risk assessment prior to arriving on site which will include factors such as origins of the vessels and ensuring that relevant equipment is cleaned before use. Compliance with Regulations will be sufficient to minimise the risk to the environment. Several management plans will be provided as outline management plans with the application for development consent, to be secured as a condition of the DML. These will include an Outline Construction		

Potential Impacts	Project Activities	Sensitive Receptors	Scoping Justification		
			Construction	Operation (including maintenance)	Decommissioning
			Environmental Management Plan which would detail how the biosecurity plan would be implemented during all phases of the English Offshore Scheme.		
Underwater noise changes	Presence of project vessels and equipment	High and medium hearing sensitivity species e.g., those with a swim bladder connected to their hearing apparatus (Atlantic cod, herring, and other clupeids) and those with a swim bladder but do not use it to support hearing (Atlantic salmon, sea trout, European eel)	**OUT** - Anthropogenic noise can be highly disturbing to fish and shellfish, particularly 'hearing specialists' such as herring and shad. Noise modelling undertaken for the EGL 3 and EGL 4 Projects concluded that impacts on fish as a result of project vessels and equipment was not significant (Ref 20.29). Given that the vessel and activities proposed for this Project are identical and in the same location it can be inferred that the effects will be the same and not significant and therefore can be scoped out.	**OUT** - During operation, the likelihood of the Project requiring maintenance and repair is low. However, there remains the potential that localised repair works may be required. In these circumstances the significance of the effect will be of lower magnitude than during construction and has therefore been scoped out of the assessment for the same reasons.	**OUT** - The significance of the effect during decommissioning is similar or of lower magnitude than construction and has therefore been scoped out of the assessment for the same reasons.
Collision risk	Presence of project vessels and equipment	Basking shark	**OUT** - There have only been a couple of sightings of basking shark within the waters of the Study Area during the last 20 years (Ref 20.67). This impact pathway has been scoped out due to the scarcity of the species within the Study Area.		
Electromagnetic changes / barrier to species movement	Presence of cables	Electrosensitive species e.g., elasmobranchs and some species of shellfish	No impact pathway	**OUT** - Some species of mollusc, crustacean, marine fish, and elasmobranchs detect electric and magnetic fields. Bundling of the cables and cable burial reduces the EMF exposure. EMF calculations were undertaken in support of the	No impact pathway

Potential Impacts	Project Activities	Sensitive Receptors	Scoping Justification		
			Construction	Operation (including maintenance)	Decommissioning
				EGL 3 and EGL 4 Projects, and are reported in Chapter 20 of the PEIR (Ref 20.29). They show that for bundled HVDC poles the magnetic field dissipates to below background geomagnetic levels within 20 m when cables are buried at 1 m below the seabed. The magnetic field directly above the cables at the seabed is 122.8 µT (or 75.4 µT without the earth's magnetic field), falling to 57.5 µT within 2 m of the cables. The impact was concluded to be negligible and the effect not significant. Given a similar cable system is proposed for this Project, significant effects are not anticipated and are scoped out of the assessment. An EMF Study will be undertaken for the Project to validate this.	
Temperature increase	Presence of cables	Species with demersal life stage	No impact pathway	**OUT** - During the operation of an HVDC cable heat losses occur because of the resistance in the cable / conductor. This can cause localised heating of the surrounding environment (i.e., sediment for buried cables, or water in the interstitial spaces of external cable protection). There are no specific regulatory limits applied to temperature changes in the seabed, although a 2 °C changed between seabed surface and 0.2 m depth is used as a guideline in Germany.	No impact pathway

Potential Impacts	Project Activities	Sensitive Receptors	Scoping Justification		
			Construction	Operation (including maintenance)	Decommissioning
				Heat calculations were undertaken for the EGL 3 and EGL 4 Projects and are reported on in Chapter 20 of the PEIR (Ref 20.29). It is reported that, assuming an ambient seabed temperature of 12 °C, seabed temperatures at 0.2 m immediately above the cables are estimated to be 13 - 14 °C, with the cables operating at maximum operating temperatures. The actual system is unlikely to reach these temperatures as the system would have to operate at full load continuously for an extended period of time to meet these temperatures. The magnitude of impact was concluded to be low, with no significant effects predicted. Given a similar cable system is proposed for this Project, significant effects are not anticipated and are scoped out of the assessment.	

20.7 Assessment Methodology

Further Data to be Gathered / Processed

Desk-Based Assessments

20.7.1. The following additional studies would be undertaken to inform the fish and shellfish assessment.

Atlantic Herring and Sandeel Habitat Assessment

20.7.2. Atlantic herring (*Clupea harengus*) and Sandeel (*Ammodytes* spp.) have specific habitat preferences that limit the spatial extent of spawning. As primary prey species for higher trophic levels, it is important to understand whether there is primary habitat within the Study Area which could be utilised by the species for activities such as spawning[17], feeding or resting.

20.7.3. A habitat assessment will be completed to inform the EIA. The objective of the assessment would be to define within the proposed Order Limits where sediments and environmental conditions are suitable for herring spawning and as habitat for sandeel. The assessment would be based on a review of sediment particle size analysis to be carried out on grab samples and vibrocores acquired in the English Offshore Scheme Scoping Boundary. This will be supplemented with a desk-based literature review, examining factors such as seafloor temperature, dissolved oxygen content, water depth, IHLS data (minimum of 10 years). The assessment will follow the EIA methodology in conjunction with the approaches developed by MarineSpace (Ref 20.26, Ref 20.27).

20.7.4. The frequency of sediment sampling within the English Offshore Scheme has been increased in areas of potential sandeel or herring spawning from every 4 km to every 2 km. Areas where increased sampling has been required was based on review of Coull *et al.* (1998) spawning maps, and the preliminary findings from EGL 3 and EGL 4 Projects herring and sandeel habitat assessment. Similar to the scope proposed for the English Offshore Scheme this is based on literature review and analysis of sediment particle size data. Given the proximity of EGL 3 to the English Offshore Scheme it is analogous.

Outline Fisheries Liaison and Coexistence Plan (FLCP)

20.7.5. An Outline FLCP will be produced to outline how the Applicant will interact with legitimate sea users prior to and during any works on the English Offshore Scheme. This will be provided at Statutory Consultation with the PEIR and submitted with the application for development consent.

Thermal and EMF Calculations

20.7.6. During operation HVDC cables generate heat through a process referred to as resistive heating. This is caused by energy loss as the electric current flows through the cables. Whilst the use of high voltages minimises this heat loss, where the power cables are buried, the surrounding sediment may be heated, which could potentially affect species

[17] When fish release or deposit eggs.

in the sediment. There is a negligible capability to heat the overlying water column due to the very high heat capacity of water.

20.7.7. During operation HVDC cables would also generate EMF, again due to the electric current flowing through the cables. The EMF strengths will be highest where the cables are separated and / or partially or unburied. Species such as elasmobranchs are known to be particularly sensitive to anthropogenically-induced EMFs.

20.7.8. The proposed cable system technology is similar in specification to that proposed for the EGL 3 and EGL 4 Projects. Heat calculations and EMF calculations were completed for the cable systems that defined the maximum thermal heating of sediments, the maximum EMF strengths and the distance at which effects would dissipate to background values. These studies have been used to determine the spatial extent over which thermal and electromagnetic changes could affect sensitive receptors. It is not proposed that separate calculations are completed for the English Offshore Scheme.

Underwater Noise Modelling

20.7.9. Sound is readily transmitted into the underwater environment and there is potential for the noise emissions from construction, operation, maintenance and decommissioning activities. Underwater noise propagation modelling has been undertaken for the EGL 3 and EGL 4 Projects to inform the EIA. The report uses sound propagation models to calculate the impact ranges for fish from each phase of the Projects for three key modelled sources (geophysical surveys, vessels and equipment and clearance of UXO), referencing them back to impact criteria from Popper *et al.*, (2014) and the Washington State Department of Transport (2011). As the EGL 3 and EGL 4 Projects are analogous to the English Offshore Scheme, within the same water depths and region, and with the same vessel and equipment requirements, it is proposed that the EGL 3 and EGL 4 underwater noise modelling would be used to inform the English Offshore Scheme EIA. It is not proposed that separate calculations are completed for the English Offshore Scheme.

Surveys

20.7.10. Extensive contemporary and historic information are available regarding the fish and shellfish ecology of the North Sea. Following a detailed review to inform the scope of the data and assessment, as presented, no site-specific surveys are planned for this topic, however data from the benthic survey (see **Part 3, Chapter 19 Intertidal and Subtidal Benthic Ecology** for details of the approach to these surveys) may provide useful data for the assessment. eDNA surveys were undertaken for the English Offshore Scheme and where appropriate data will be used to inform the assessment. Furthermore, eDNA surveys were undertaken in support of the EGL 4 Project. Where the English Offshore Scheme runs parallel with the EGL 4 Project the data gathered is of relevance to this Project.

Assessment of Significance

20.7.11. The fish and shellfish ecology assessment will follow the assessment approach set out in **Part 1, Chapter 5 EIA Approach and Methodology**, using the project-wide assessment matrix. However, whilst this has informed the approach that would be used in the fish and shellfish ecology assessment, it is necessary to set out how this methodology would be applied, and adapted as appropriate, to address the specific needs of this fish and shellfish ecology assessment.

20.7.12. The criteria for characterising the value and sensitivity and magnitude for fish and shellfish ecology that would be used are outlined in **Table 20-15** and **Table 20-16**, respectively.

20.7.13. The assessment of sensitivity will be made with consideration of the vulnerability of the receptor to an impact and its ability to recover and adapt. Vulnerability can differ between different groups and species of fish and shellfish and will also vary depending on the impact pathway. For example, certain mobile demersal species are less sensitive to temporary habitat loss than shellfish species with limited mobility, whilst sensitivity to underwater noise changes differs between fish species depending on their anatomy.

20.7.14. Several species identified as present within the Study Area are protected by international and national legislation and are therefore considered to be of very high importance. These species will also be considered in the Habitats Regulations Assessment (HRA) and MCZ assessment processes. Screening for these species will be set out within the PEIR and ES. Where likely significant effects cannot be ruled out, the impacts on a relevant designated site would be considered in either a Report to Inform Appropriate Assessment or Stage 1 MCZ Assessment, to be submitted with the ES.

20.7.15. The assessment of magnitude will be made with consideration of the extent of the area impacted, the duration and frequency of the impact and the scale of the change i.e., whether it has an effect at an individual or population level. When determining the magnitude of impacts the life history and ecology of the receptors is important. Factors such as seasonality of presence or whether specific areas are required for a certain life stage which the species may be unwilling or unable to move away from are considered.

20.7.16. The Ecological Impact Assessment (EcIA) will use available evidence, professional judgement and knowledge of fish and shellfish ecology and behaviour to determine the level of impact.

20.7.17. The significance of an effect, either adverse or beneficial, will be determined using a combination of the magnitude of the impact and the sensitivity of the receptor. A matrix approach is used throughout all topic areas to ensure a consistent approach within the assessment. This is described further in **Part 1, Chapter 5: EIA Approach and Methodology**.

Table 20-15: Criteria for Characterising the Sensitivity of Receptors

Receptor sensitivity / value	Definition
High	Receptor has low tolerance to change i.e.; recovery will take longer than 10 years following the cessation of activity or will not occur. The receptor is a protected feature of an internationally or nationally designated site (e.g., SAC, MCZ) and the licensable activity is taking place during a sensitive season.
Medium	Receptor has intermediate tolerance to change i.e., recovery to pre-impact conditions is possible between 5 and 10 years.
Low	Receptor has high tolerance to change with recovery to pre-impact conditions between 1 and 5 years.

Receptor sensitivity / value	Definition
	Common and widespread habitats / species of no specific conservation value.
Negligible	Receptor is common or widespread. The receptor is tolerant to change with no effect on its character. Recovery expected to be relatively rapid, i.e., less than approximately six months following cessation of activity.

Table 20-16: Criteria for Characterising the Magnitude of Impact

Magnitude	Definition
High	Impacts are of long-term (>15 years) through to long-term / permanent duration and / or on a regional or population/habitat level or major alteration to key elements / features of the baseline condition such that post-impact baseline character will be fundamentally changed. Natural recruitment will not return the population / habitat to the baseline condition.
Medium	Impacts are of medium term (7-15 years) duration and / or on a local level (wider than Project footprint) or alter an element of the baseline conditions such as that post-impact the damage to the baseline is above that experienced under natural conditions but with no permanent effect on integrity.
Low	Impacts are temporary (<1 year) or short term (1-7 years) in duration, site specific and / or a minor shift away from the baseline condition such as that experienced under natural conditions. Impacts limited to within the Project footprint. Negligible contribution to cumulative effects.
Negligible	Very little or no detectable change from baseline conditions. Disturbance is within the range of natural variability. Impacts predicted to be brief (one to two days) or for a short period (up to 3 months). No contribution to cumulative effects.

Assessment of Cumulative Impacts and Effects

20.7.18. **Part 4, Chapter 30: Cumulative Effects** defines the methodology for the assessment of cumulative effects. The fish and shellfish assessment of intra- and inter-project cumulative effects will be carried out and reported within the ES to be submitted with the application for development consent.

20.7.19. The zone of influence for the inter-project cumulative effects assessment of fish and shellfish would comprise the English Offshore Scheme Scoping Boundary, plus an additional 15 km buffer each side. This is a precautionary maximum zone of influence that encompasses the worst-case scenario of potential impact pathways from increased suspended sediment concentrations, as calculated in **Part 3, Chapter 18: Coastal Marine Physical Processes**.

20.7.20. The PEIR will present the long and short lists of ‘other developments’ which will be considered at the ES stage, and the methodology which allowed for the identification of these other developments, to allow consultation bodies to form a view and provide comment on the other developments included. The long-list will be reviewed and if necessary, updated, in the lead up to the ES, as the Project design further evolves and in response to any comments raised at statutory consultation.

20.8 Assessment Limitations and Assumptions

20.8.1. The baseline description collated in this technical aspect chapter has been based on a range of publicly available data and information. It is assumed that the data collated is accurate. The data would be supplemented with additional information acquired as part of the stakeholder engagement process and through the additional studies identified in this chapter to inform the PEIR and ES.

20.8.2. For many species information regarding spawning and nursery grounds is largely from the data published by Coull, Johnstone and Rogers (1998), and Ellis *et al.* (2012) which remain key data sources for UK waters. It is important to recognise the limitations of these sources in the context of the Project. For many demersal and pelagic fish species, the underlying data sets provide good coverage of the Study Area, however for others, such as elasmobranchs, there is limited information about their spawning grounds. It is also noted that more current and regional trends in fish abundance, distribution and behaviours may not be fully represented by the spawning and nursery maps due to the historic and widescale nature of the data sets.

20.8.3. The MMO annual catch statistics up to 2023 were the most recent data available at the time of this chapter preparation. There are limitations on this data as smaller vessels do not legally have to share their catch data if the catch is below 30 kg. It also assumes the species are equally spread out within their ICES reporting rectangle. If newer data is published ahead of the PEIR and ES, this will be used. It is important to understand that catch statistics focus on the commercial species present, but other species are also found within the Study Area. Data from ICES biannual bottom trawl surveys, referred to as Datras surveys, and data from the English Offshore Scheme specific marine characterisation surveys would be used to fill this potential data gap.

20.8.4. Various technical assessments were undertaken to inform the EGL 3 and EGL 4 EIA. Where relevant (i.e. where construction methodologies are essentially identical, or where an impact pathway would occur over a similar spatial / temporal scope) the conclusions of those assessments have been used to scope ‘in’ or ‘out’ various impact pathways. These are not necessarily proposed to be repeated to inform the PEIR for this Project.

20.8.5. In the absence of data, a precautionary approach has been taken and professional judgement, based on experience of similar linear projects, have been used where required to inform the scope of the assessment.

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21. Intertidal and Offshore Ornithology

21.1 Introduction

21.1.1. This chapter of the Scoping Report describes the potential impacts arising from the construction, operation and maintenance, and decommissioning of the English Offshore Scheme on intertidal and offshore ornithology. Intertidal and offshore ornithology receptors include species of bird that use the intertidal and offshore area for breeding, foraging and loafing.

21.1.2. There may be interrelationships related to the potential effects on intertidal and offshore ornithology and other disciplines. Therefore, please also refer to the following technical aspect chapters of this Scoping Report found in Volume 1:

- **Part 2, Chapter 6: Biodiversity**: outputs from the biodiversity assessment where there is an overlap between study areas between mean-high water and mean-low water springs.
- **Part 3, Chapter 18: Coastal and Marine Physical Processes**: outputs from coastal and marine physical environment assessments will inform the consideration of impacts such as temporary increase in suspended sediments and subsequent deposition.
- **Part 3, Chapter 19: Intertidal and Subtidal Benthic Ecology**: which identifies the potential impacts on supporting habitats and key prey species for birds; and
- **Part 3, Chapter 20: Fish and Shellfish**: which identifies the potential impacts on key prey species for birds.

21.1.3. This chapter is supported by the following figures found in Volume 3:

- **Figure 21-1 Study Area for Intertidal and Offshore Ornithology**
- **Figure 21-2 Relevant Designated Sites for Intertidal and Offshore Ornithology**

21.1.4. At this early stage in the development of the English Offshore Scheme, only desk-based information has been used for this chapter. No data is yet available from the 2025 marine characterisation surveys to inform the Scoping Report. Further details of the marine characterisation surveys are provided in **Part 3, Chapter 18: Coastal and Marine Physical Processes** and **Part 3, Chapter 19: Intertidal and Subtidal Benthic Ecology**.

21.2 Relevant Legislation, Planning Policy and Technical Guidance

21.2.1. This section identifies the relevant legislation, national and local policy and guidance which has informed the scope of the intertidal and offshore ornithology assessment.

Legislation

21.2.2. A summary of the key legislation considered in, but not limited to, the scope of intertidal and offshore ornithology effects is outlined in **Table 21-1**.

Table 21-1: Legislation relevant to intertidal and offshore ornithology assessment

Legislation	Legislative context
The Planning Act 2008 (Ref 21.1)	An Act to establish the Infrastructure Planning Commission and make provision about its functions; to make provision about, and about matters ancillary to, the authorisation of projects for the development of nationally significant infrastructure.
The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (Ref 21.2)	This Act transposes the European Union (EU) Directive 2011/92/EU (the EIA Directive) into United Kingdom (UK) law for nationally significant infrastructure projects, ensuring environmental safeguards while potentially streamlining the process.
The Marine Works (Environmental Impact Assessment) regulations 2007 (as amended) (Ref 21.3)	The Marine Works (EIA) Regulations 2007 require certain types of projects that have the potential to significantly affect the environment to submit an Environmental Impact Assessment before a marine licence decision is made.
Marine and Coastal Access Act 2009 (Ref 21.4)	This Act provides a framework for managing and protecting marine and coastal areas, promoting sustainable development, enhancing public access to the coast, and conserving marine biodiversity and habitats, including establishing Marine Protected Areas (MPAs) and coastal access routes. The Act also establishes the Marine Management Organisation (MMO) as the authority responsible for the preparation and implementation of marine plans and enforcing fisheries and nature conservation regulations.
The Conservation of Habitats and Species Regulations 2017 (as amended) (Ref 21.5)	These Regulations, along with The Wildlife and Countryside Act are collectively referred to as the Habitats Regulations. The Conservation of Habitats and Species Regulations applies out to 12 nautical miles (NM) from the coastline; the Conservation of Offshore Marine Habitats and Species Regulations applies from 12 NM to the boundary of the UK Exclusive Economic Zone (EEZ). The Habitats Regulations provide a framework for the protection of European Sites, which include Special Protection Areas (SPAs), designated to protect wild bird species. Under the Regulations, Applicants must demonstrate that a proposed development will not adversely affect the integrity of a European site either alone or in combination with other plans or projects. This is done through the Habitats Regulations Assessment (HRA) process. The process requires 'competent authorities' to carry out an appropriate assessment of any proposal likely to affect an SPA, to seek advice from Natural England and / or the Joint Nature Conservation Committee (JNCC), and to not approve an application that would have an adverse effect on the integrity of an SPA.
The Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended) (Ref 21.6)	

Legislation	Legislative context
	Ramsar sites are designated under the Convention on Wetlands (Ramsar, Iran, 1971), known as the "Ramsar Convention" to protect wetlands of international importance (Ref 21.7). UK Government policy (ODPM Circular 06/2005) (Ref 21.8) states that sites designated under the Ramsar Convention are also included under the definition of European sites, and therefore the Habitats Regulations. The vast majority of Ramsar sites are also classified as SPAs.
The Wildlife and Countryside Act 1981 (Ref 21.9)	This Act allows for the protection of specifically listed wildlife, including birds, animals and plants, as well as their habitats. It prohibits killing, injuring, or taking any wild bird, as well as disturbing their nests or eggs.
Natural Environment and Rural Communities (NERC) Act (Ref 21.10)	This Act requires competent authorities to have due regard for protecting and enhancing species and habitats when making public decisions. Section 41 refers to a published list of habitats and species which are of principal importance for the conservation of biodiversity in England. Several intertidal and marine birds are included in the list.

Planning Policy

21.2.3. A summary of the planning policies at both a national and local level relevant to the scope of intertidal and offshore ornithology effects is outlined in **Table 21-2** and **Table 21-3**.

Table 21-2: National Planning Policy relevant to intertidal and offshore ornithology assessment

Policy Reference	Policy Context
Overarching National Policy Statement for Energy (NPS EN-1) (Ref 21.11) Sections 4.5 and 5.4	Requires applicants to take account of any relevant Marine Plans and complete a Marine Plan Assessment to support a Development Consent Order (DCO) application. In addition, the policy requires that consideration is given to mobile and migratory species, which is of relevance to this ornithology assessment. Details steps Applicants should take to conserve and enhance biodiversity including the adoption of appropriate avoidance, mitigation, compensation and enhancement measures.
Overarching National Policy Statement for Energy (NPS EN-1) Consultation Draft (April 2025) (Ref 21.12)	The Government has published a draft update to NPS EN-1. The 2025 Draft NPS EN-1 is largely the same as the 2023 document and relevant section numbers will remain the same.
National Policy Statement for Energy (NPS EN-3) (Ref 21.13)	Provides a range of requirements in relation to birds. Whilst the majority relates to offshore wind, some of the principles can be applied to cable projects such as avoiding or minimising

Policy Reference	Policy Context
Paragraphs 2.8.136 – 2.8.146 and 2.8.242	construction vessels operating in areas where seabirds are rafting during sensitive periods. Refers to avoiding "*rafting seabirds during sensitive periods and follow agreed navigation routes to and from the site and minimise the number of vessel movements overall*"
National Policy Statement for Energy (NPS EN-3) Consultation Draft (April 2025) (Ref 21.14) Paragraphs 2.8.125 – 2.8.129 and 2.8.213	The Government has published a draft update to NPS EN-3. The 2025 Draft NPS EN-3 is largely the same as the 2023 document, with relevant section numbers the same, however paragraph numbers will be updated.
UK Marine Policy Statement 2011 (Ref 21.15)	The UK Marine Policy Statement notes the relevance of the conservation status of seabirds and that when the Secretary of State makes a decision, they should be satisfied that cumulative and in-combination impacts have been considered.

Table 21-3: Local planning policy relevant to intertidal and offshore ornithology assessment

Policy reference	Policy context
East Inshore and East Offshore Marine Plan 2014 (Ref 24.16) and Northeast Offshore Marine Plans 2021 (Ref 24.17)	Marine plans set out the priorities and direction for future planning within the plan area and provide guidance on activities to avoid or promote. A Marine Plan Assessment would be provided with the Preliminary Environmental Information Report (PEIR) and Environmental Statement (ES) that outlines how the English Offshore Scheme complies with the policies and objectives of the relevant marine plans.

Technical Guidance

21.2.4. A summary of the relevant technical guidance, specific to the intertidal and offshore ornithology assessment, that has informed this Scoping Report and will inform the assessment within the PEIR and ES, is given in **Table 21-4**.

Table 21-4: Technical guidance relevant to intertidal and offshore ornithology assessment

Technical guidance document	Context
Natural England Conservation Advice for Marine Protected Areas (Ref 21.18)	Provides conservation advice for MPAs within England's inshore waters (i.e., territorial waters - out to 12 NM).
JNCC Conservation Advice for Marine Protected Areas (Ref 21.19)	Provides conservation advice for MPAs with England's offshore waters (12 NM to EEZ Limit).

Technical guidance document	Context
Joint Statutory Nature Conservation Bodies (SNCBs) Interim Displacement Advice Note (Ref 21.20)	Marine Industry Group for Ornithology (MIG-Birds) with contributions from JNCC, Natural England, Natural Resources Wales, Northern Ireland Environment Agency and Scottish Natural Heritage. Although prepared to advise on how offshore wind development should present information on the extent and potential consequences of seabird displacement, certain aspects can be applied to vessel disturbance.
Joint SNCB interim advice on the treatment of displacement for red-throated diver (*Gavia stellata*) (Ref 21.21)	Provides updated advice on treatment of displacement of red-throated diver in relation to offshore wind development and supersedes the 2017 advice note. Recommends a displacement buffer of at least 10 km for impact assessment where an offshore wind farm is within 10 km of a SPA designated for non-breeding red-throated diver, and 4 km for vessel disturbance.
Natural England's Best Practice Protocol for Vessels in Red-throated Diver SPAs (Ref 21.22)	Natural England have developed text for licence conditions of vessel management plans for proposals where a red-throated diver Best Practice Protocol is required. The Protocol is to be adopted where there is a need to minimise risk from vessel disturbance from activities like cable installation or where construction, operation and maintenance vessels will transit through a site designated for this species.
Natural England offshore wind cabling: ten years' experience and recommendations (Ref 21.23)	Provides evidence for Natural England's advice on impact assessments for cable projects and their advice for routeing and mitigation.
Natural England and JNCC guidance on key sensitivities of habitats and Marine Protected Areas in English waters to aggregate extraction (Ref 21.24)	Provides advice on marine bird sensitivities to impacts such as visual disturbance, above water noise and changes in suspended solids (water clarity).
Nature conservation considerations and environmental best practice for subsea cables for English Inshore and UK offshore waters (Ref 21.25)	Jointly developed between Natural England, JNCC and the European Subsea Cable Association (ESCA), this report identifies the main pressures, sensitive habitats, and best practice during development of subsea cables.
The Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine (Ref 21.26)	Sets out the industry standard approach to Ecological Impact Assessment (EcIA) for assessing the potential effects of a project on ecological receptors.

21.3 Consultation and Engagement

21.3.1. In respect of intertidal and offshore ornithology, key consultees have been identified and focussed engagement (through both informal and formal consultation) will be undertaken and recorded throughout the pre-application stages of the project. Key consultees identified to date are:

- Natural England;
- JNCC;
- Lincolnshire Wildlife Trust; and
- MMO.

21.3.2. Key areas of consultation are intended to include engagement on disturbance / displacement effects on red-throated diver (*Gavia stellata*) and common scoter (*Melanitta nigra*) within the Greater Wash SPA and proposed mitigation.

21.3.3. Local or specialist groups will be contacted should the assessment process identify a need to engage further detailed local knowledge, or if requested during the statutory consultation process.

21.3.4. The Applicant has engaged with several stakeholders with ornithological interests as summarised in **Table 21-5**.

Table 21-5: Summary of consultation to date

Stakeholder	Date	Summary of meeting
Natural England	3 March 2025	Introduction to the Project, confirming the project description, proposed landfall location and the suggested consenting strategy. Natural England expressed concerns with regards to the level of resourcing required given the number of projects intending to make landfall within Lincolnshire, including both offshore wind and transmission reinforcement projects, and with regards to potential congestion at the Anderby Creek Landfall.
	8 July 2025	Discussed the terrestrial and marine aspects of the Project, including the intention of the Applicant to follow the mitigation hierarchy during route development to minimise potential adverse effects.
JNCC	28 January 2025	Introduction to the Project, confirming the project description, proposed landfall location, suggested consenting strategy as well as survey approach.
	29 July 2025	Updating on project progress and future programme
Lincolnshire Wildlife Trust	30 July 2025	Introduction to the Project, confirming the project description, proposed landfall location, suggested consenting strategy as well as survey approach

21.4 Baseline Conditions

Study Area

21.4.1. The Study Area for intertidal and offshore ornithology and its relation to the English Offshore Scheme is presented in **Volume 3, Figure 21-1**.

21.4.2. The Study Area has been defined recognising the highly mobile nature of birds and the distance over which they can range. This includes the English Offshore Scheme Scoping Boundary plus an additional 15 km buffer either side. This buffer is informed by the tidal excursion, which varies along the English Offshore Scheme. It acts a precautionary maximum zone of influence and incorporates the area within which there is the potential for direct impacts associated with the deposition of suspended sediments. It is consistent with **Part 3, Chapter 18: Coastal and Marine Physical Processes** and has been validated through reference to fine sediment modelling calculations presented in the EGL 3 and EGL 4 PEIR)(Ref 21.27). The zone of influence will be influenced by the conclusions of **Part 3, Chapter 18: Coastal and Marine Physical Processes,** which should be read in conjunction with this chapter. The intertidal and offshore ornithology Study Area has considered:

- Seabird foraging ranges (Ref 21.28; Ref 21.29); and
- Recent recommendations from SNCBs regarding maximum disturbance / displacement ranges for sensitive bird species (Ref 21.20, Ref 21.21).

21.4.3. According to advice from SNCBs, a maximum buffer of 10 km should be applied to assess disturbance / displacement effects to red-throated diver, which are particularly vulnerable to disturbance (Ref 21.21), and a buffer of at least 4 km should be applied for other diving birds. The 15 km buffer used to define the Study Area is therefore sufficiently precautionary to cover the potential effects of displacement as well as potential effects resulting from changes in water clarity.

Data Gathering Methodology

21.4.4. Data sourced for the baseline characterisation will be presented in accordance with relevant guidance for the topic. A desk-based review of publicly available data sources (literature and geographic information system (GIS) mapping files) will be used to describe the baseline environment. Extensive contemporary and historic information are available regarding the ornithological characteristics of the North Sea and will be used in the EIA. **Table 21-6** lists the key data sources which will be used in the assessment.

21.4.5. The Applicant is aware that Natural England commissioned surveys of the Greater Wash SPA plus a 10 km seaward buffer, which were undertaken over the 2022/2023 winter period (which are yet to be published). The Applicant will request this data and any other recent data from Natural England to ensure that the most up to date data are used in the assessment within the PEIR and ES.

Table 21-6: Key publicly available data sources for intertidal and offshore ornithology

Data source	Description
Natural England (Ref 21.18)	Natural England's Conservation Advice for MPAs
JNCC (Ref 21.19)	JNCC Conservation Advice for MPAs
The International Convention for the Conservation of Nature (IUCN) (Ref 21.30)	IUCN Red List of Threatened Species
Offshore Energy Strategic Environmental Assessment 4 (OESEA4) (Ref 21.31)	Appendix 1 Environmental Baseline, A1a.5 Birds
British Trush for Ornithology (BTO) Wetland Bird Survey (WeBS) (Ref 21.32)	Annual survey reports of wetland waterbirds
BTO Non-Estuarine Waterbird Surveys (NEWS) (Ref 21.33)	Waterbird Populations: Numbers and Trends by Count Sector
National Bird Atlas (Ref 21.34)	Results of the five years of breeding season and wintering surveys across the UK at a 10 km resolution
Lawson *et al*., 2015 (Ref 21.35)	An assessment of the numbers and distribution of wintering red-throated diver, little gull and common scoter in the Greater Wash. JNCC Report No. 574
Waggitt *et al.* 2019 (Ref 21.36)	Distribution maps of cetacean and seabird populations in the North-East Atlantic
JNCC (2023) (Ref 21.37)	Visual aerial bird survey data collected at a number of sites identified as holding potentially important aggregations of non-breeding waterbirds, including the Greater Wash SPA.
Environmental Statements from offshore wind farm (OWF) developments	Outer Dowsing Offshore Wind Preliminary Environmental Information Report Volume 1, Chapter 12: Intertidal and Offshore Ornithology (Ref 21.38) Hornsea Three Offshore Wind Farm Environmental Statement, Volume 2, Chapter 5, Offshore Ornithology (Ref 21.39) Hornsea Four Offshore Wind Farm Environmental Statement, Volume A2, Chapter 5: Offshore and Intertidal Ornithology (Ref 21.40) Dogger Bank South Offshore Wind Farms Environmental Statement, Volume 7, Chapter 12 Offshore Ornithology (Revision 3) (Ref 21.41) Hornsea Offshore Wind Farm Project One (Ref 21.42) Race Bank 2005-2007 Boat-Based Ornithological Surveys (Ref 21.43)

Data source	Description
	Dudgeon and Sheringham Shoal Offshore Wind Farm Extensions Preliminary Environmental Information Report Appendix 13.1 – Offshore Ornithology Technical Report (Ref 21.44)
Environmental Appraisal Report for HVDC link projects. National Grid Electricity Transmission (NGET) and Scottish Hydro Electric Transmission plc.	Eastern Green Link (EGL) 2 Environmental Appraisal Report (Ref 21.45)
NGET	Eastern Green Link 3 (EGL 3) and Eastern Green Link 4 (EGL 4) Preliminary Environmental Information Report (PEIR): Volume 2, Part 3, Chapter 21 Intertidal and Offshore Ornithology (Ref 21.46)

Current Baseline

21.4.6. Intertidal and offshore ornithology refers to the diversity, abundance and function of marine bird species present in the Study Area up to mean high water springs (MHWS), at all life stages including feeding, breeding, overwintering and migrating. Marine birds are highly mobile but can be constrained during certain times of the year by factors such as their need to return to a colony to feed and care for chicks, or when they are flightless during a post-breeding moult. Species can also be restricted by their foraging strategy, the availability of prey species and their sensitivity to human activities such as vessel traffic (Ref 21.24).

21.4.7. It should be noted that **Part 2, Chapter 6 Biodiversity** assesses the potential impacts of the English Onshore Scheme on ornithology receptors down to mean low water springs (MLWS), and the intertidal and offshore ornithology assessment up to mean high water springs (MHWS), therefore, there is an overlap between the assessments at the Anderby Creek Landfall. This chapter focuses on the potential impacts of the offshore scheme on intertidal and offshore ornithology receptors only, however, should be read in conjunction with **Part 2**, **Chapter 6 Biodiversity**.

21.4.8. For the purposes of this Scoping Report, marine birds have been grouped according to Ref 21.24 based on their sensitivity and exposure to impacts. **Table 21-7** (extracted and adapted from Ref 21.24) describes the various functional groups.

Table 21-7: Marine bird functional groups (adapted from Table 3: Marine Birds in Ref 21.24 pg.4)

Functional group	Information
Divers, grebes, and mergansers	"*This group includes great northern diver, black-throated diver, red-throated diver, Slavonian grebe, and red-breasted merganser. These species tend to aggregate in coastal waters, and in bays, estuaries and firths. They can aggregate in large numbers in specific areas over the winter, whilst during the breeding season they tend to forage within restricted ranges from their breeding areas. Some of these species have a flightless period following breeding (moulting), during which they may be particularly sensitive to some impacts. They are largely thought to be water column feeders, although there is some evidence that some species may also be benthic feeders (Ref 21.47 in Ref 21.24).*" *"This group is highly sensitive to noise and visual disturbance, such as from vessel traffic (Ref 21.48 in Ref 21.24). Since some of these species may not resettle quickly after being flushed, the vessel transit route plus a buffer of several kilometres may be effectively lost as habitat to some diver and grebe species, with evidence for this being particularly strong for red-throated diver (Ref 21.49 in Ref 21.24).*" *"These species are thought to have some sensitivity to underwater noise and may be impacted by changes in suspended solids when foraging in the water column.*"
Seaducks, geese, and swans	*"This group includes common eider, goldeneye, scaup, long-tailed duck, common scoter, velvet scoter, whooper swan, Bewick's swan, greylag goose, barnacle goose, pink-footed goose, dark-bellied brent goose, light-bellied brent goose, shelduck, pintail, pochard, shoveler, wigeon, teal, mallard and gadwall. This category includes species which breed in the UK, migrate through UK waters, and/or winter in the UK. They can use a variety of waters both inshore and offshore. They are benthic, surface or grazing feeders. While some diving sea duck species like eiders and scoters specialise in foraging on shellfish and crustaceans, others such as long-tailed duck, goldeneye and scaup are generalist feeders and their diet can include aquatic plants, polychaetes, amphipods, aquatic insects and some small fish. Other duck, swan and goose species within this group are surface feeders, utilising prey on the surface of intertidal habitats such as the small gastropod mollusc Hydrobia, as well as grazing on saltmarsh and coastal grazing marsh.* *Most species within this group are sensitive to visual and noise disturbance from vessel traffic (Ref 21.48 in Ref 21.24). In two studies looking at the disturbance effects caused by vessels, common scoters were not observed resettling after being flushed (Ref 21.49; Ref 21.50 both cited in Ref 21.24). However, for most species in this group, it is not known if or how quickly they recover and move back to areas once a vessel has passed through. It is unknown whether species within this group are sensitive to underwater noise. For species which are benthic feeders, activities that are likely to disturb seabed habitats and species may affect the availability of suitable prey."*

Functional group	Information
Auks	*"There are four auk species commonly found in waters around the UK: Atlantic puffin, black guillemot, common guillemot and razorbill. They aggregate around the UK in inshore and offshore waters throughout the year. During the breeding season, they tend to form large colonies, and impacts occurring in favoured foraging areas within range of these colonies can have implications for their ability to successfully raise chicks. Adults have a flightless moult period immediately after chicks fledge, which can last several months. When chicks fledge, they too are flightless for several weeks. During these periods adults and chicks may be particularly sensitive to some pressures, including noise and visual disturbance. Auks are water-column feeders, feeding largely on pelagic and demersal fish.* *Auks are sensitive to noise and visual disturbance. Vessel transits through important foraging areas or aggregations of these species should be avoided. While there is evidence for underwater anthropogenic noise affecting the foraging behaviour of related species (African penguins; Ref 21.51 in Ref 21.24), it remains unclear how sensitive auks are to this impact. As these are species that feed in the water column, they may be affected by changes in water turbidity due to increases in suspended sediments…, which would affect their ability to successfully forage for their prey. In addition, disturbance and loss of seabed habitats can affect availability of suitable prey (e.g., sandeel)."*
Terns, gulls, kittiwakes, and gannets	*"This group includes common tern, Sandwich tern, Arctic tern, little tern, roseate tern, great black-backed gull, lesser black-backed gull, herring gull, common gull, black-headed gull, Mediterranean gull, little gull, black-legged kittiwakes, petrel species and northern gannet. These species aggregate around the UK in inshore and offshore waters, with terns being present during the spring and autumn migrations and the breeding season, while others can be present in UK waters throughout the year. During the breeding season, they tend to breed in colonies, and impacts occurring in favoured foraging areas within range of these colonies can have implications for their ability to successfully raise chicks. Except for gannets, all species in this group are surface feeders, with some species also feeding in exposed tidal areas. They feed on a wide variety of marine prey including fish, squid, crustaceans, jellyfish and offal.* *These species are low to moderately sensitive to noise and visual disturbance, and some species within this group may be attracted to some vessels, potentially in hope of fishery discards/offal. It is unknown whether species within this group are sensitive to underwater noise. As most species in this group are surface feeders, they may be affected by changes in suspended solids that would affect their ability to successfully forage for their prey (Ref 21.52; Ref 21.53, both cited in Ref 21.24)."*

Functional group	Information
Waders and harriers	*"This group includes wader species which breed, migrate and winter along the UK coast. Wader species have various foraging strategies, but all are surface or near-surface feeders, making use of open coast, mud and sandflats, saltmarshes, saline lagoons, rocky coasts (e.g., purple sandpiper, oystercatcher) and nearby grazing marsh and arable land to both feed and roost. Some, such as oystercatcher, are more (but not exclusively) reliant on localised food resources such as cockle and mussel beds whilst others are more generalist. Some species are largely restricted to certain breeding habitats (e.g., avocet: saline lagoons, saltpans and scrapes; ringed plover: sand and shingle, saltmarsh edges) whilst other species utilise a broader range of coastal and adjacent habitats.* *This group also includes marsh and hen harrier. Both species can use intertidal habitats extensively in winter for foraging and roosting. Marsh harrier will also utilise coastal habitats in the breeding season and may also breed in saline reedbeds.* *This group is sensitive to visual and noise disturbance from vessel traffic. Waders and other species using intertidal habitats are at risk from disturbance caused by people and machinery…across and adjacent to those habitats. In general, there is less risk of disturbance of those habitats from shipping…except where vessels capable of navigating shallow waters are employed. Activities that are likely to disturb their intertidal habitats and prey species may affect the availability of suitable prey for these species."*

21.4.9. The southern North Sea and the adjacent coastline provide habitats (both breeding and foraging areas) for a wide range of both nationally and internationally recognised marine bird populations. The distribution and abundance of these bird populations fluctuates throughout the year depending on factors such as food availability and seasonality for periods such as breeding.

Species Overview

21.4.10. The Anderby Creek Landfall lies within the WeBS site Anderby (Location Code 35S01). The site is set back from the MHWS mark in the adjacent fields with the habitat noted as goose and swan 'fields'. Analysis of the last 10 years of peak count data as published in 2022 / 2023 WeBS report (Ref 21.33) suggests that the average number of birds using the site has increased over the last five years with the average total 5-year count being 534 individuals. 2022 / 2023 saw a five-year high with numbers reaching 937. Forty-seven different species have been recorded in the last 10 years using the site, although 17 species have only been identified in one or two years in low numbers. The most prevalent functional group are species 'seaducks, swans and geese' (18 species) with 'waders' (15 species) also highly represented. Six species of gull and three species of 'divers, grebes and mergansers' have been noted. The remainder are either terrestrial birds or species that prefer terrestrial waterbodies such as rivers, lakes and ponds.

21.4.11. The top five abundant species over the last five years are (in order of abundance) wigeon (*Anas penelope*), black-headed gull (*Chroicocephalus ridibundus*), lapwing (*Vanellus vanellus),* curlew (*Numenius arquata*) and teal (*A.crecca*). Of the marine birds present black-headed gull and herring gull (*Larus argentatus*) are the most numerous.

21.4.12. The EGL 3 and EGL 4 PEIR noted that vantage point surveys were ongoing but that preliminary results at Anderby Creek recorded red-throated diver and common scoter on only two surveys to date. A peak count of two red-throated diver in September 2024 and a peak count of 25 common scoter were recorded in January 2025 within the first few hundred metres out to sea (Ref 21.46).

21.4.13. The Anderby Creek Landfall is within the Greater Wash SPA, and the English Offshore Scheme Scoping Boundary crosses several other neighbouring designated sites as it approaches the Anderby Creek Landfall. The designated sites include a variety of marine habitats of importance for breeding and non-breeding birds, including extensive intertidal mudflats and sandflats, subtidal sandbanks and biogenic reef. Offshore, the English Offshore Scheme Scoping Boundary is characterised by extensive sandbank features present at depths of less than 25 m, many of which are protected for their importance in providing habitat and affecting water and sediment dynamics (Ref 21.31, Ref 21.54). As discussed above, a large proportion of the offshore area in this location is covered by other habitats and species listed under the relevant legislation and protected through the designation of Marine Conservation Zones (MCZs) and Special Areas of Conservation (SACs).

21.4.14. The recent OESEA4 (Ref 21.31) discusses aspects of the UK baseline environment to facilitate discussion around the potential for future development of renewable energy and oil and gas abstraction. It characterises the UK bird fauna as ‘western Palaearctic’, meaning that most species are found across western Europe and extend into western Asia and northern Africa.

21.4.15. Digital aerial bird surveys from the JNCC, Wildfowl and Wetlands Trust and OWFs in the Study Area and local region (Outer Dowsing, Hornsea 3 and 4, Dogger Bank South, Hornsea One, Race Bank, Dudgeon and Sheringham Shoal Extensions) consistently identified the marine birds listed in **Table 21-8** as being present in the Study Area (Ref 21.38, Ref 21.39, Ref 21.40, Ref 21.41, Ref 21.42. Ref 21.43 and Ref 21.44).

Table 21-8: Key publicly available data sources for intertidal and offshore ornithology

Data source	Description
Natural England (Ref 21.18)	Natural England’s Conservation Advice for MPAs
JNCC (Ref 21.19)	JNCC Conservation Advice for MPAs
The International Convention for the Conservation of Nature (IUCN) (Ref 21.30)	IUCN Red List of Threatened Species
Offshore Energy Strategic Environmental Assessment 4 (OESEA4) (Ref 21.31)	Appendix 1 Environmental Baseline, A1a.5 Birds
British Trush for Ornithology (BTO) Wetland Bird Survey (WeBS) (Ref 21.32)	Annual survey reports of wetland waterbirds
BTO Non-Estuarine Waterbird Surveys (NEWS) (Ref 21.33)	Waterbird Populations: Numbers and Trends by Count Sector
National Bird Atlas (Ref 21.34)	Results of the five years of breeding season and wintering surveys across the UK at a 10 km resolution

Data source	Description
Lawson *et al*., 2015 (Ref 21.35)	An assessment of the numbers and distribution of wintering red-throated diver, little gull and common scoter in the Greater Wash. JNCC Report No. 574
Waggitt *et al.* 2019 (Ref 21.36)	Distribution maps of cetacean and seabird populations in the North-East Atlantic
JNCC (2023) (Ref 21.37)	Visual aerial bird survey data collected at a number of sites identified as holding potentially important aggregations of non-breeding waterbirds, including the Greater Wash SPA.
Environmental Statements from offshore wind farm (OWF) developments	Outer Dowsing Offshore Wind Preliminary Environmental Information Report Volume 1, Chapter 12: Intertidal and Offshore Ornithology (Ref 21.38) Hornsea Three Offshore Wind Farm Environmental Statement, Volume 2, Chapter 5, Offshore Ornithology (Ref 21.39) Hornsea Four Offshore Wind Farm Environmental Statement, Volume A2, Chapter 5: Offshore and Intertidal Ornithology (Ref 21.40) Dogger Bank South Offshore Wind Farms Environmental Statement, Volume 7, Chapter 12 Offshore Ornithology (Revision 3) (Ref 21.41) Hornsea Offshore Wind Farm Project One (Ref 21.42) Race Bank 2005-2007 Boat-Based Ornithological Surveys (Ref 21.43) Dudgeon and Sheringham Shoal Offshore Wind Farm Extensions Preliminary Environmental Information Report Appendix 13.1 – Offshore Ornithology Technical Report (Ref 21.44)
Environmental Appraisal Report for HVDC link projects. National Grid Electricity Transmission (NGET) and Scottish Hydro Electric Transmission plc.	Eastern Green Link (EGL) 2 Environmental Appraisal Report (Ref 21.45)
NGET	Eastern Green Link 3 (EGL 3) and Eastern Green Link 4 (EGL 4) Preliminary Environmental Information Report (PEIR): Volume 2, Part 3, Chapter 21 Intertidal and Offshore Ornithology (Ref 21.46)

Current Baseline

21.4.16. Intertidal and offshore ornithology refers to the diversity, abundance and function of marine bird species present in the Study Area up to mean high water springs (MHWS), at all life stages including feeding, breeding, overwintering and migrating. Marine birds are highly mobile but can be constrained during certain times of the year by factors such as their need to return to a colony to feed and care for chicks, or when they are flightless during a post-breeding moult. Species can also be restricted by their foraging strategy, the availability of prey species and their sensitivity to human activities such as vessel traffic (Ref 21.24).

21.4.17. It should be noted that **Part 2, Chapter 6 Biodiversity** assesses the potential impacts of the English Onshore Scheme on ornithology receptors down to mean low water springs (MLWS), and the intertidal and offshore ornithology assessment up to mean high water springs (MHWS), therefore, there is an overlap between the assessments at the Anderby Creek Landfall. This chapter focuses on the potential impacts of the offshore scheme on intertidal and offshore ornithology receptors only, however, should be read in conjunction with **Part 2**, **Chapter 6 Biodiversity**.

21.4.18. For the purposes of this Scoping Report, marine birds have been grouped according to Ref 21.24 based on their sensitivity and exposure to impacts. **Table 21-9** (extracted and adapted from Ref 21.24) describes the various functional groups.

Table 21-9: Marine bird functional groups (adapted from Table 3: Marine Birds in Ref 21.24 pg.4)

Functional group	Information
Divers, grebes, and mergansers	"*This group includes great northern diver, black-throated diver, red-throated diver, Slavonian grebe, and red-breasted merganser. These species tend to aggregate in coastal waters, and in bays, estuaries and firths. They can aggregate in large numbers in specific areas over the winter, whilst during the breeding season they tend to forage within restricted ranges from their breeding areas. Some of these species have a flightless period following breeding (moulting), during which they may be particularly sensitive to some impacts. They are largely thought to be water column feeders, although there is some evidence that some species may also be benthic feeders (Ref 21.47 in Ref 21.24).*" *"This group is highly sensitive to noise and visual disturbance, such as from vessel traffic (Ref 21.48 in Ref 21.24). Since some of these species may not resettle quickly after being flushed, the vessel transit route plus a buffer of several kilometres may be effectively lost as habitat to some diver and grebe species, with evidence for this being particularly strong for red-throated diver (Ref 21.49 in Ref 21.24)."* *"These species are thought to have some sensitivity to underwater noise and may be impacted by changes in suspended solids when foraging in the water column."*

Functional group	Information
Seaducks, geese, and swans	*"This group includes common eider, goldeneye, scaup, long-tailed duck, common scoter, velvet scoter, whooper swan, Bewick's swan, greylag goose, barnacle goose, pink-footed goose, dark-bellied brent goose, light-bellied brent goose, shelduck, pintail, pochard, shoveler, wigeon, teal, mallard and gadwall. This category includes species which breed in the UK, migrate through UK waters, and/or winter in the UK. They can use a variety of waters both inshore and offshore. They are benthic, surface or grazing feeders. While some diving sea duck species like eiders and scoters specialise in foraging on shellfish and crustaceans, others such as long-tailed duck, goldeneye and scaup are generalist feeders and their diet can include aquatic plants, polychaetes, amphipods, aquatic insects and some small fish. Other duck, swan and goose species within this group are surface feeders, utilising prey on the surface of intertidal habitats such as the small gastropod mollusc Hydrobia, as well as grazing on saltmarsh and coastal grazing marsh.* *Most species within this group are sensitive to visual and noise disturbance from vessel traffic (Ref 21.48 in Ref 21.24). In two studies looking at the disturbance effects caused by vessels, common scoters were not observed resettling after being flushed (Ref 21.49; Ref 21.50 both cited in Ref 21.24). However, for most species in this group, it is not known if or how quickly they recover and move back to areas once a vessel has passed through. It is unknown whether species within this group are sensitive to underwater noise. For species which are benthic feeders, activities that are likely to disturb seabed habitats and species may affect the availability of suitable prey."*
Auks	*"There are four auk species commonly found in waters around the UK: Atlantic puffin, black guillemot, common guillemot and razorbill. They aggregate around the UK in inshore and offshore waters throughout the year. During the breeding season, they tend to form large colonies, and impacts occurring in favoured foraging areas within range of these colonies can have implications for their ability to successfully raise chicks. Adults have a flightless moult period immediately after chicks fledge, which can last several months. When chicks fledge, they too are flightless for several weeks. During these periods adults and chicks may be particularly sensitive to some pressures, including noise and visual disturbance. Auks are water-column feeders, feeding largely on pelagic and demersal fish.* *Auks are sensitive to noise and visual disturbance. Vessel transits through important foraging areas or aggregations of these species should be avoided. While there is evidence for underwater anthropogenic noise affecting the foraging behaviour of related species (African penguins; Ref 21.51 in Ref 21.24), it remains unclear how sensitive auks are to this impact. As these are species that feed in the water column, they may be affected by changes in water turbidity due to increases in suspended sediments…, which would affect their ability to successfully forage for their prey. In addition, disturbance and loss of seabed habitats can affect availability of suitable prey (e.g., sandeel)."*

Functional group	Information
Terns, gulls, kittiwakes, and gannets	*"This group includes common tern, Sandwich tern, Arctic tern, little tern, roseate tern, great black-backed gull, lesser black-backed gull, herring gull, common gull, black-headed gull, Mediterranean gull, little gull, black-legged kittiwakes, petrel species and northern gannet. These species aggregate around the UK in inshore and offshore waters, with terns being present during the spring and autumn migrations and the breeding season, while others can be present in UK waters throughout the year. During the breeding season, they tend to breed in colonies, and impacts occurring in favoured foraging areas within range of these colonies can have implications for their ability to successfully raise chicks. Except for gannets, all species in this group are surface feeders, with some species also feeding in exposed tidal areas. They feed on a wide variety of marine prey including fish, squid, crustaceans, jellyfish and offal.* *These species are low to moderately sensitive to noise and visual disturbance, and some species within this group may be attracted to some vessels, potentially in hope of fishery discards/offal. It is unknown whether species within this group are sensitive to underwater noise. As most species in this group are surface feeders, they may be affected by changes in suspended solids that would affect their ability to successfully forage for their prey (Ref 21.52; Ref 21.53, both cited in Ref 21.24)."*
Waders and harriers	*"This group includes wader species which breed, migrate and winter along the UK coast. Wader species have various foraging strategies, but all are surface or near-surface feeders, making use of open coast, mud and sandflats, saltmarshes, saline lagoons, rocky coasts (e.g., purple sandpiper, oystercatcher) and nearby grazing marsh and arable land to both feed and roost. Some, such as oystercatcher, are more (but not exclusively) reliant on localised food resources such as cockle and mussel beds whilst others are more generalist. Some species are largely restricted to certain breeding habitats (e.g., avocet: saline lagoons, saltpans and scrapes; ringed plover: sand and shingle, saltmarsh edges) whilst other species utilise a broader range of coastal and adjacent habitats.* *This group also includes marsh and hen harrier. Both species can use intertidal habitats extensively in winter for foraging and roosting. Marsh harrier will also utilise coastal habitats in the breeding season and may also breed in saline reedbeds.* *This group is sensitive to visual and noise disturbance from vessel traffic. Waders and other species using intertidal habitats are at risk from disturbance caused by people and machinery…across and adjacent to those habitats. In general, there is less risk of disturbance of those habitats from shipping…except where vessels capable of navigating shallow waters are employed. Activities that are likely to disturb their intertidal habitats and prey species may affect the availability of suitable prey for these species."*

21.4.19. The southern North Sea and the adjacent coastline provide habitats (both breeding and foraging areas) for a wide range of both nationally and internationally recognised marine bird populations. The distribution and abundance of these bird populations fluctuates

throughout the year depending on factors such as food availability and seasonality for periods such as breeding.

Species Overview

21.4.20. The Anderby Creek Landfall lies within the WeBS site Anderby (Location Code 35S01). The site is set back from the MHWS mark in the adjacent fields with the habitat noted as goose and swan 'fields'. Analysis of the last 10 years of peak count data as published in 2022 / 2023 WeBS report (Ref 21.33) suggests that the average number of birds using the site has increased over the last five years with the average total 5-year count being 534 individuals. 2022 / 2023 saw a five-year high with numbers reaching 937. Forty-seven different species have been recorded in the last 10 years using the site, although 17 species have only been identified in one or two years in low numbers. The most prevalent functional group are species 'seaducks, swans and geese' (18 species) with 'waders' (15 species) also highly represented. Six species of gull and three species of 'divers, grebes and mergansers' have been noted. The remainder are either terrestrial birds or species that prefer terrestrial waterbodies such as rivers, lakes and ponds.

21.4.21. The top five abundant species over the last five years are (in order of abundance) wigeon (*Anas penelope*), black-headed gull (*Chroicocephalus ridibundus*), lapwing (*Vanellus vanellus),* curlew (*Numenius arquata*) and teal (*A.crecca*). Of the marine birds present black-headed gull and herring gull (*Larus argentatus*) are the most numerous.

21.4.22. The EGL 3 and EGL 4 PEIR noted that vantage point surveys were ongoing but that preliminary results at Anderby Creek recorded red-throated diver and common scoter on only two surveys to date. A peak count of two red-throated diver in September 2024 and a peak count of 25 common scoter were recorded in January 2025 within the first few hundred metres out to sea (Ref 21.46).

21.4.23. The Anderby Creek Landfall is within the Greater Wash SPA, and the English Offshore Scheme Scoping Boundary crosses several other neighbouring designated sites as it approaches the Anderby Creek Landfall. The designated sites include a variety of marine habitats of importance for breeding and non-breeding birds, including extensive intertidal mudflats and sandflats, subtidal sandbanks and biogenic reef. Offshore, the English Offshore Scheme Scoping Boundary is characterised by extensive sandbank features present at depths of less than 25 m, many of which are protected for their importance in providing habitat and affecting water and sediment dynamics (Ref 21.31, Ref 21.54). As discussed above, a large proportion of the offshore area in this location is covered by other habitats and species listed under the relevant legislation and protected through the designation of Marine Conservation Zones (MCZs) and Special Areas of Conservation (SACs).

21.4.24. The recent OESEA4 (Ref 21.31) discusses aspects of the UK baseline environment to facilitate discussion around the potential for future development of renewable energy and oil and gas abstraction. It characterises the UK bird fauna as 'western Palaearctic', meaning that most species are found across western Europe and extend into western Asia and northern Africa.

21.4.25. Digital aerial bird surveys from the JNCC, Wildfowl and Wetlands Trust and OWFs in the Study Area and local region (Outer Dowsing, Hornsea 3 and 4, Dogger Bank South, Hornsea One, Race Bank, Dudgeon and Sheringham Shoal Extensions) consistently identified the marine birds listed in **Table 21-10** as being present in the Study Area (Ref 21.38, Ref 21.39, Ref 21.40, Ref 21.41, Ref 21.42. Ref 21.43 and Ref 21.44).

Table 21-10: Marine birds present in the Study Area

Functional group	Species
Divers, grebes, and mergansers	Black-throated diver (*G.arctica*), cormorant (*Phalacrocorax carbo*), great crested grebe (*Podiceps cristatus*), great northern diver (*G.immer*), European shag (*P.aristotelis*), red-breasted merganser (*Merus serrator*), red-necked grebe (*P.grisegena*), red-throated diver, Slavonian grebe (*P.auritus*)
Auks	Atlantic puffin (*Fratercula arctica*), common guillemot (*Uria aalge*), razorbill (*Alca torda*), little auk (*Alle alle*)
Terns, gulls, kittiwakes, and gannets	Artic skua (*Stercorarius parasiticus*), Arctic tern (*Sterna paradisaea*), Balearic shearwater (Puffinus mauretanicus), black-headed gull (*C.ridibundus*), Black tern (*Chlidonias niger*), common gull (*L.canus*), Cory's shearwater (*Calonectris borealis*), common tern (*S.hirundo*), fulmar (*Fulmarus glacialis*), gannet (*Morus bassanus*), great black-backed gull (*L.marinus*), Great skua (*S.skua*), herring gull, kittiwake (*Rissa tridactyla*), Leach's petrel (*Hydrobates leucorhous*), lesser black-backed gull (*L.fucus*), little gull (*Hydrocoloeus minutus*), little tern (*Sternula albifrons*), long-tailed skua (*S.longicaudus*), Manx shearwater (*P.puffinus*), Pomarine skua (*S.pomarinus*), Sabine's gull (*Xema sabini*), Sandwich tern (*Thalasseus sandvicensis*), Sooty shearwater (*Ardenna grisea*), Storm petrel (*H.pelagicus*), yellow-legged gull (*L.michahellis*)
Seaducks, geese and swans	Common scoter, eider (*Somateria mollissima*), goldeneye (*Bucephala clangula*)
Waders and harriers	Bar-tailed godwit (*Limosa lapponica*), curlew (*N.arquata*), dunlin (*Calidris alpina*), grey phalarope (*Phalaropus fulicarius*), knot (*C.canutus*), lapwing, oystercatcher (*Haematopus ostralegus*), whimbrel (*N.phaeopus*)

Designated Sites

21.4.26. The intertidal and offshore areas along the English Offshore Scheme Scoping Boundary are extensively covered by designated sites for the protection of bird species and their habitats, including SPAs, proposed SPAs (pSPAs), Ramsar sites, Sites of Special Scientific Interest (SSSIs) and National Nature Reserves (NNRs). These sites are illustrated in **Volume 3, Figure 21-2**.The following section identifies the designated features for these sites, as these are the species which are most likely to be seen within the Study Area and are considered the most relevant sensitive receptors for the purposes of characterising the environment. However, it should be noted that other bird species may be encountered within the Study Area.

21.4.27. There are several bird species known to be reliant on the intertidal habitats of the east coast that lie in the vicinity of the Anderby Creek Landfall and the nearshore parts of the English Offshore Scheme. The intertidal environment of the Lincolnshire coast is characterised by shifting, sandy beaches, sand dunes and soft cliffs, and it is actively eroding. The Humber Estuary and The Wash are at the northern and southern boundaries of the Lincolnshire coast, respectively. Intertidal areas of both The Wash and Humber are important habitat for wading birds. However, the distribution and

abundance of seabirds in the area varies throughout the year depending on factors such as food availability and seasonality for periods such as breeding. These are summarised in **Table 21-11** below, along with the bird species which have been identified as protected features. The Anderby Creek Landfall at Anderby Creek overlaps the Greater Wash SPA.

21.4.28. **Table 21-11** presents the sites that are designated for ornithology identified within the Study Area using publicly available GIS data (Ref 21.55). The English Offshore Scheme Scoping Boundary to the Anderby Creek Landfall passes through the Greater Wash SPA for approximately 38.1 km. It also passes through the Holderness Offshore MCZ, which is designated for subtidal habitats and species that support bird populations within the Study Area.

Table 21-11: Designated sites within the Study Area

Note: *non-marine birds are in light grey*.

Designated site	Distance from English Offshore Scheme Scoping Boundary * (km)	Site description	Protected feature
Humber Estuary SPA	7.3 km	The Humber Estuary SPA is located on the east coast of England and comprises extensive wetland and coastal habitats. The inner estuary supports extensive areas of reedbed, with areas of mature and developing saltmarsh backed by grazing marsh in the middle and outer estuary. On the north Lincolnshire coast, the saltmarsh is backed by low sand dunes with marshy slacks and brackish pools. Parts of the estuary are owned and managed by conservation organisations. The estuary supports important numbers of waterbirds (especially geese, ducks and waders) during the migration periods and in winter. In summer, it supports important breeding populations of bittern, marsh harrier, avocet and little tern (Ref 21.56). The SPA covers an area of 37,630.24 ha and qualifies under Article 4.2 of the Directive (79/409/EEC) as it is used regularly by over 20,000 waterbirds (waterbirds as defined by the Ramsar Convention) in any season.	**Breeding** Avocet (*Recurvirostra avosetta*) Bittern (*Botaurus stellaris*) Little tern Marsh harrier (*Circus aeruginosus*) **Non-breeding** Avocet Bar-tailed godwit Bittern Black-tailed godwit (*L. limosa islandica*) Dunlin Golden plover (*Pluvialis apricaria*) Hen harrier (*C. cyaneus*) Knot Redshank (*Tringa tetanus*) Ruff (*C. pugnax*) Shelduck (*Tadorna tadorna*) Waterbird assemblage

Designated site	Distance from English Offshore Scheme Scoping Boundary * (km)	Site description	Protected feature
Greater Wash SPA	Overlaps for 38.1 km	The Greater Wash SPA lies along the east coast of England, predominantly in the coastal waters of the mid–southern North Sea between the counties of Yorkshire to the north and Suffolk to the south. It covers an area of c. 3,536 km^2 and supports the largest breeding populations of little terns within the UK SPA network by protecting important foraging areas. It also supports the second largest aggregations of non-breeding red-throated diver and little gull (Ref 21.57). The Greater Wash SPA includes a range of marine habitats, including intertidal mudflats and sandflats, subtidal sandbanks and biogenic reef, including *Sabellaria* reefs and mussel beds. Much of the area is less than 30 m water depth, with a deep channel of 90 m depth at The Wash approaches.	**Breeding** Little tern Sandwich tern **Non-breeding** Common scoter Common tern Little gull Red-throated diver
Humber Estuary Ramsar site	7.3 km	The Humber Estuary Ramsar site is 379.88 km^2. It drains a catchment of some 24,240 km^2 and is the site of the largest single input of freshwater from Britain into the North Sea. It has the second-highest tidal range in Britain (max 7.4 m) and approximately one-third of the estuary is exposed as mud or sand flats at low tide. Vegetation includes extensive reedbeds, areas of mature and developing saltmarsh, backed by grazing marsh or low sand dunes with marshy slacks and brackish pools. The area regularly supports internationally important numbers of various species of breeding and wintering waterbirds, as well as passage birds, notably internationally important	**Wintering and Passage** Bar-tailed godwit Black-tailed godwit (*L.limosa*) Dunlin Golden plover Knot Redshank **Wintering** Shelduck

Designated site	Distance from English Offshore Scheme Scoping Boundary * (km)	Site description	Protected feature
		populations of ringed plover and sanderling. The site supports Britain's most southeasterly breeding colony of grey seal (*Halichoerus grypus)*. Human activities include tourism, recreation, commercial and recreational fishing, livestock grazing, and hunting (Ref 21.58).	Waterbird assemblage
Humber Estuary SSSI	7.7 km	The Humber Estuary SSSI is 108.66 km^2 and extends from Grimbsy Dock to Humber Mouth Subtidal. The current condition of the site has been classed as unfavourable – recovering condition, with a section between Humberston and Louth Canal of favourable condition along the coast. Another favourable section is located off the coast which forms the Donna Nook NNR (Ref 21.59). The site supports nationally important numbers of 22 wintering waterfowl and nine passage waders, and a nationally important assemblage of breeding birds along the lowland open waters. Wintering waterfowl and passage waders are widely distributed throughout the estuary. The distribution of species reflects the varying habitats and species ecology across the site. The sandy sediments of the outer estuary are populated by assemblages of knot and grey plover, while the upper estuary is characterised by large concentrations of wigeon. The Humber Estuary also supports a breeding bird assemblage across the open waters in the lowlands, including nationally important numbers of bitten,	**Non-Breeding** Avocet Bar-tailed godwit Bittern Dark-bellied brent goose (*Branta bernicla bernicla*) Curlew Dunlin Golden plover Goldeneye Greenshank (*T.nebularia*) Grey plover (*P.squatarola*) Knot Lapwing Oystercatcher Pochard (*Aythya farina*) Redshank Ringed plover (*Charadrius hiaticula*) Ruff

Designated site	Distance from English Offshore Scheme Scoping Boundary * (km)	Site description	Protected feature
		marsh harrier, avocet and bearded tit. Breeding avocets were first recorded at the site in 1992 and in recent years numbers of the species have sustainably increased. Most of the assemblage are found in concentrations within the lagoons, clay pits and reedbeds at Far Ings (Ref 21.60).	Sanderling (*C.alba*) Shelduck Wigeon Teal Scaup (*A.marila*) Turnstone (*Arenaria interpres*) Whimbrel Breeding bird assemblages
Saltfleetby – Theddlethorpe Dunes SSSI	7.3 km	The Saltfleetby to Theddlethorpe Dunes SSSI is a nationally important site which compromises of salt and freshwater marshes, flats and dunes. These habitats support a variety of rich flora and fauna. There are outstanding assemblages of invertebrates, vascular plants and breeding birds, and it is the most north-easterly breeding site in the UK for the natterjack toad (*Epidalea calamita*). The extensive intertidal sands and mudflats provide perfect grounds for feeding and roosting waterfowl and waders including shelduck, dunlin and brent geese. Saltmarsh communities in succession dominate the area and attract yellow wagtails which breed on the marsh and a small colony of little tern on the shingle bank (Ref 21.61).	**Breeding** Little tern **Non-Breeding** Dark-bellied Brent goose Dunlin Knot Redshank Sanderling Wigeon Breeding bird assemblages

Designated site	Distance from English Offshore Scheme Scoping Boundary * (km)	Site description	Protected feature
Lincolnshire Coronation Coast NNR (Previously known as Saltfleetby – Theddlethorpe Dunes NNR)	7.3 km	The Lincolnshire Coronation Coast NNR is an important reserve which contains tidal sands and mudflats, salt and freshwater marshes and sand dunes. The site spans over 951 hectares. On the foreshore, accreting mud and silt flats and saltmarsh in the north give way to a narrower sandy beach at the southern end. The sand dunes are also much wider in the north and there is an extensive freshwater marsh between two dune ridges, which converge into a narrower ridge south of Churchill Lane at Theddlethorpe (Ref 21.62).	SPA birds (Greater Wash SPA and Humber Estuary SPA) SSSI birds (Saltfleetby – Theddlethorpe Dunes SSSI)

*This is the nearest distance to the English Offshore Scheme Scoping Boundary.

21.4.29. The Habitats Regulations Assessment (HRA) Screening and MCZ Screening Assessment will identify the relevant designated sites to be considered by the HRA and EIA. For intertidal and offshore ornithology receptors, the assessments will incorporate birds' foraging ranges to ensure that all relevant sites are identified.

21.4.30. Any relevant transboundary sites (e.g., those in Scotland) will also be taken into consideration as part of the HRA and EIA.

Species seasonality

21.4.31. There are three regular patterns of species occurrence in the UK: resident, summer visitors (breeding) and winter visitors (non-breeding) (Ref 21.31). **Table 21-12** provides information on the seasonality of each species listed as a qualifying feature of the designated sites identified above. Information on seasonality has been recorded from Natural England's conservation advice packages (Ref 21.18). Where seasonality between sites differs, all months where species presence is noted have been identified. Species seasonality has only been considered for marine birds. Species not considered to be marine birds including lapwing, hen harrier, bittern and marsh harrier have not been included in the seasonality table.

Table 21-12: Species seasonality for designated sites

Key	Annex I Species			Non-Annex I Species	

Protected species	Site	Sensitivity	Seasonality											
			J	F	M	A	M	J	J	A	S	O	N	D
Avocet	Humber Estuary SPA	Breeding												
Avocet	Humber Estuary SPA	Non-breeding												
Bar-tailed godwit	Humber Estuary SPA, Ramsar site and SSSI	Non-breeding												
Black-tailed godwit	Humber Estuary SPA and Ramsar site	Non-breeding												
Common scoter	Greater Wash SPA	Non-breeding												
Common tern	Greater Wash SPA	Breeding												
Curlew	Humber Estuary SSSI	Non-breeding												
Dark-bellied brent Goose	Saltfleetby – Theddlethorpe Dunes SSSI and NNR, Humber Estuary SSSI	Non-breeding												
Dunlin	Humber Estuary SPA, Ramsar site and SSSI, Saltfleetby – Theddlethorpe Dunes SSSI and NNR	Non-breeding												
Golden plover	Humber Estuary SPA, Ramsar site and SSSI	Non-breeding												
Goldeneye	Humber Estuary SSSI	Non-breeding												
Greenshank	Humber Estuary SSSI	Non-breeding												
Grey plover	Humber Estuary SSSI	Non-breeding												
Knot	Humber Estuary SPA, Ramsar site and SSSI, Saltfleetby – Theddlethorpe Dunes NNR	Non-breeding												
Little gull	Greater Wash SPA	Non-breeding												
Little tern	Humber Estuary SPA, Greater Wash SPA, Humber Estuary SPA, Saltfleetby – Theddlethorpe Dunes SSSI and NNR	Breeding												
Oystercatcher	Humber Estuary SSSI	Non-breeding												
Pochard	Humber Estuary SSSI	Non-breeding												
Redshank	Humber Estuary SPA, Ramsar site and SSSI, Saltfleetby –	Non-breeding												

Protected species	Site	Sensitivity	Seasonality											
			J	F	M	A	M	J	J	A	S	O	N	D
	Theddlethorpe Dunes SSSI and NNR													
Ringed plover	Humber Estuary SSSI	Non-breeding												
Ruff	Humber Estuary SPA and SSSI	Non-breeding												
Red-throated diver	Greater Wash SPA	Non-breeding												
Sanderling	Saltfleetby – Theddlethorpe Dunes SSSI and NNR, Humber Estuary SSSI	Non-breeding												
Sandwich tern	Greater Wash SPA	Breeding												
Shelduck	Humber Estuary SPA, Ramsar site and SSSI	Non-breeding												
Scaup	Humber Estuary SSSI	Non-breeding												
Turnstone	Humber Estuary SSSI	Non-breeding												
Teal	Humber Estuary SSSI	Non-breeding												
Wigeon	Saltfleetby – Theddlethorpe Dunes SSSI and NNR, Humber Estuary SSSI	Non-breeding												
Whimbrel	Humber Estuary SSSI	Non-breeding												

Future Baseline

21.4.32. This section summarises the predicted changes in the absence of the English Offshore Scheme over the next 10 – 40 years.

21.4.33. The ornithology population in the North Sea has several impacts acting upon it at present, including changes in prey availability due to climate change, alterations in commercial fisheries and cumulative disturbance and displacement from offshore developments and activities in the oil and gas and renewable sectors (Ref 21. 64). In addition, some populations are still recovering from the 2022 outbreak of Highly Pathogenic Avian Influenza (HPAI, Avian Influenza) so future monitoring may reveal new population trends in the North Sea (Ref 21.65).

21.4.34. Breeding populations of marine bird species in the North Sea are closely monitored as part of the Seabird Monitoring Programme (SMP) (Ref 21.66) which is funded jointly by the BTO and JNCC, in association with the Royal Society for the Protection of Birds (RSPB). The latest annual report from the SMP, published in 2024, provides a detailed analysis of bird survey data from 2021, 2022 and 2023 and considers historic data dating back to 1986, concluding a general declining trend in English seabird populations (Ref 21.66, Ref 21.67).

21.4.35. The most likely pressure on the future baseline for intertidal and offshore ornithology will be climate change. This will both be through indirect impacts such as changes in prey abundance or frequency of extreme weather events, and directly through mortality (Ref 21.68; Ref 21.69).

21.4.36. Future developments which may impact the future baseline for intertidal and offshore ornithology in the area include several offshore wind farm sites in the North Sea. This includes Ossian, Morven, Hornsea 3, Dogger Bank A, B, C, D and South, Outer Dowsing and Sofia offshore windfarms. In addition, other infrastructure such as Viking Link, NU Link, Aminth and Continental Link interconnector projects and Viking and Endurance Carbon Capture and Storage (CCS) pipelines. Of note are the Ossian wind farm export cables and the EGL 3 and EGL 4 transmission reinforcement projects which are planned to make landfall at Anderby Creek, Lincolnshire. The potential for cumulative effects will be considered as part of the future EIA documents in accordance

with the approach and guidance outlined within **Part 4, Chapter 30: Cumulative Effects**. Additionally, fisheries management has the potential to affect the future populations of seabirds along the UK coast, including within the Study Area. This is especially true of the North Sea, where recent management changes of commercial fisheries included the closing of the sandeel fishing grounds throughout the North Sea (Ref 21.70, Ref 21.71). This has the intention of increasing prey availability for seabirds which rely on sandeel as a main source of food.

21.4.37. The potential for cumulative effects will be considered as part of the future EIA documents in accordance with the approach and guidance outlined within **Part 4, Chapter 30: Cumulative Effects**.

21.5 Design and Control Measures

21.5.1. As set out in **Part 1, Chapter 5: EIA Approach and Methodology**, the environmental measures are characterised as design measures or control and management measures. A range of environmental measures would be implemented as part of the English Offshore Scheme and will be secured through the Deemed Marine Licence (DML) and in the Development Consent Order (DCO) as relevant.

21.5.2. Several management plans will be provided as Outline Management Plans with the application for development consent to support the DML. These will include an Outline Construction Environmental Management Plan (CEMP) and Outline Marine Pollution Contingency Plan (MPCP). These documents will outline measures to be implemented to comply with legislation (e.g., in relation to the prevention of oil and chemical spills) during all phases of the English Offshore Scheme. Final management plans will be submitted in accordance with the DML to discharge the licence conditions. An Outline CEMP would be provided with the PEIR and ES.

21.5.3. In addition, design measures identified through the EIA process would be applied to avoid or reduce potential significant effects. Design measures included that are relevant to commercial fisheries are included below and would also be included in a Commitments Register to be provided with the PEIR and ES. Compliance with these measures will be secured by way of the DCO or DML.

21.5.4. The following environmental measures are relevant to the intertidal and offshore ornithology assessment:

- Intertidal zone would be crossed by Horizontal Directional Drilling (HDD) to avoid disturbance to surface sediments and habitats.
- Existing shipping lanes would be utilised for vessel transiting routes to avoid additional disturbance, where practicable.
- Vessel operators would be made aware of the importance and sensitivity of the species to disturbance. Vessels will avoid rafting birds and areas with high densities of birds, where practicable.
- Artificial lighting on vessels would be directional and only used when necessary, noting that health and safety requirements will need to be met for safe working practices.
- The intention is to bury the cables in the seabed, except in areas where trenching is not possible e.g., where ground conditions do not allow burial or at infrastructure crossings.

- Cable protection would only be installed where considered necessary for the safe operation of the English Offshore Scheme. This includes the repair of cables due to accidental damage, where depth of lowering is not achieved and at infrastructure crossings.
- In sites designated for benthic features, cable protection materials will be selected to match the environment (e.g., when cables are installed in areas of cobbles or other natural rock features, rock of similar grade as the receiving environment should be used as an alternative to the current normal approach of using terrestrially sourced granite) where feasible.

21.6 Scope of the Assessment

Potential Sensitive Receptors

21.6.1. Species identified as sensitive receptors are likely to form the focus of the EIA. These include Annex I species for which sites are designated, as well as those which are particularly sensitive to disturbance due to factors such as their abundance, particular biological characteristics, and susceptibility to disturbance. The following sections identify potential sensitivities of the functional groups according to Ref 21.24 and Ref 21.48.

21.6.2. The principal intertidal and offshore ornithology receptors that have been identified as being potentially impacted by the English Offshore Scheme are:

- **Divers, grebes and mergansers**: which are highly sensitive to noise and visual disturbance, such as that caused by vessel traffic (Ref 21.24), and are sensitive to changes in water clarity which may impede their ability to locate prey species.
- **Seaducks:** are sensitive to noise and visual disturbance (Ref 21.24).
- **Terns, gulls, kittiwakes, and gannets**: have low to moderate sensitivity to noise and visual disturbance (Ref 21.24).
- **Auks**: which are sensitive to noise and visual disturbance, susceptible to changes in water turbidity caused by increased suspended sediments, and vulnerable to loss of seabed habitats which may reduce the availability of preferred prey such as sandeel (*Ammodytidae spp.*); and
- **Waders**: which are sensitive to noise and visual disturbance and are particularly vulnerable during works within the intertidal zone and at the location of the Anderby Creek Landfall as they spend large portions of time in those areas (Ref 21.48).

Likely Significant Effects

21.6.3. A range of potential impacts on intertidal and offshore ornithology have been identified which may occur during the construction, operation and maintenance, and decommissioning phases of the Project. **Table 21-13** describes the potential impacts identified and justification as to whether they will be scoped in or out of the EIA.

21.6.4. A precautionary approach has been taken and where there is no strong evidence base, or the significance is uncertain at this stage the impact has been scoped ‘in’ to the EIA. Where there is clear evidence that the effect from the impact will not be significant, either alone or in combination with other plans and projects, the impact has been scoped ‘out’ of the EIA.

21.6.5. Potential impacts have been established based on the standard Source-Pathway-Receptor approach, industry experience and where applicable reference to the list of marine pressures established by the JNCC Marine Pressures-Activities Database v1.5 (Ref 21.72). The relevant JNCC pressures that would be covered by the impact pathways identified are provided in italics in the potential impact column.

21.6.6. Where relevant, bird species have been grouped according to their sensitivity to disturbance or their method of feeding after Atterbury *et al.* (2021) (Ref 21.24).

21.6.7. Whilst it is acknowledged that some purely onshore species may use the intertidal area for foraging, passage or loafing, the English Offshore Scheme will have very limited interaction with the intertidal area should the preferred method of using a trenchless solution (such as HDD) to install the cables within the intertidal area be used. Works associated with the transition from offshore to onshore such as the HDD punch out and cable pull-in may require personnel and equipment on the intertidal area, but this will be limited in duration. Components such as an HDD compound are part of the scope of the English Onshore Scheme, within which the potential impacts will be assessed in the onshore environmental assessment.

21.6.8. For clarity, where seabed preparation is mentioned in the project activity column of **Table 21-13** this includes the following activities: boulder clearance, sandwave clearance (pre-sweeping), unexploded ordnance (UXO) identification, and pre-lay grapnel run (PLGR).

Table 21-13: Scoping assessment for impacts on intertidal and offshore ornithology

Potential impacts	Project activities	Sensitive receptors	Scoping justification		
			construction	Operation (including maintenance)	Decommissioning
Temporary increase and deposition of suspended sediments *(Changes in suspended solids (water clarity)*	Seabed preparation. HDD duct excavation. Cable burial and trenching. Deposit of external cable protection. Cable removal.	Divers, grebes, and mergansers	**IN -** Diving species such as red-throated divers dive for prey and rely on clear vision for success. A reduction in water clarity because of increased suspended solids in the water column following disturbance of seabed sediments (i.e., because of seabed preparation, cable burial, deposition of external cable protection, repair / remediation works and cable removal), could negatively impact foraging success. In addition, the deposition of suspended sediments from the water column has the potential to smother potential prey species which live on the sea floor, thus reducing prey abundance. As described in **Part 3, Chapter 18: Coastal and Marine Physical Processes**, there is evidence that any sediment plumes will be rapidly dissipated as result of natural current flow. In addition, the footprint of the English Offshore Scheme is sufficiently narrow such that a relatively small area of the seabed will be affected at any one time. This impact has been scoped in for divers, grebes, and mergansers due to uncertainty regarding the extent of available feeding grounds and the potential for significant displacement during certain periods of the year.		
		Seaducks	**OUT -** Some species of sea ducks, geese and swans present in the designated sites as protected species are classified as 'diving ducks' according to the Wildlife Trust (Ref 21.73), including eider, goldeneye and pochard. There are also species of surface feeders including shelduck, teal and wigeon that may on occasion 'shallow dive' in search of invertebrates, shellfish, and aquatic snails. Therefore, there is potential for an adverse impact on their foraging abilities because of decreased water clarity. However, as described in **Part 3, Chapter 18: Coastal and Marine Physical Processes**, there is evidence that any sediment plumes are likely to be rapidly dissipated as result of natural current flow. In addition, the footprint of the English Offshore Scheme is sufficiently narrow such that a relatively small area of the seabed will be affected at any one time. Diving birds will therefore have sufficient alternative feeding grounds available and as a result are unlikely to be significantly adversely affected by a temporary reduction in water clarity.		

Potential impacts	Project activities	Sensitive receptors	Scoping justification		
			construction	**Operation (including maintenance)**	**Decommissioning**
		Terns, gulls, kittiwakes, and gannets	**IN -** Diving birds such as common tern and little tern, which are protected features across several designated sites in the Study Area, plunge dive for food and therefore there is potential for an adverse impact on their foraging abilities because of decreased water clarity. Kittiwakes are particularly vulnerable to food shortages because of increased suspended sediments, as they can only take prey when it occurs near to the surface of the sea, unlike auks which can dive to greater depths for a variety of prey in the water column (Ref 21.74). As described in **Part 3, Chapter 18: Coastal and Marine Physical Processes** there is evidence that any sediment plumes are likely to be rapidly dissipated as result of natural current flow. In addition, the footprint of the English Offshore Scheme is sufficiently narrow such that a relatively small area of the seabed will be affected at any one time. This impact has been scoped in for terns, gulls, kittiwakes, and gannets due to uncertainty regarding the extent of available feeding grounds and the potential for significant displacement during certain periods of the year.		
		Auks	**IN -** Auk species such as Atlantic puffin and common guillemot dive for food and therefore there is potential for an adverse impact on their foraging abilities because of decreased water clarity. As described in **Part 3, Chapter 18: Coastal and Marine Physical Processes,** there is evidence that any sediment plumes are likely to be rapidly dispersed because of natural current flow. This impact has been scoped in for auks due to uncertainty regarding the extent of available feeding grounds and the potential for significant displacement during certain periods of the year.		
		Waders and harriers	**OUT -** Wading birds and harriers do not dive for food and are therefore very unlikely to be adversely affected by a decrease in water clarity because of increased suspended sediments during any stage of the English Offshore Scheme.		
Changes in distribution of prey species	Pre-sweeping of sand waves.	All species	**OUT -** Pre-sweeping of the seabed and the installation of the cable will cause a localised, temporary loss of habitat leading to a potential reduction in prey availability.	**OUT -** Any pre-sweeping or cable maintenance required during the lifetime of the cable will be temporary and localised in nature. Such	**OUT -** It is expected that decommissioning activities will result in a lower magnitude effect than that

Potential impacts	Project activities	Sensitive receptors	Scoping justification		
			construction	**Operation (including maintenance)**	**Decommissioning**
	Cable burial and trenching. Cable removal.		However, these activities will take place over a relatively small area of the seabed, and there will be sufficient alternative foraging areas available. In addition, these activities are transient in nature. The seabed habitat will recover and will continue to support prey species within the short-term. These activities are therefore not considered to significantly adversely affect the prey availability for bird species within the Study Area.	activities will not constitute a significant impact on prey availability due to their transience and small footprint.	already considered during installation.
	Deposit of external cable protection.	All species	**IN -** The deposition of cable protection will result in permanent alteration of affected areas of the seabed. This has the potential to reduce areas of habitat for prey species such as sandeel and herring and consequently reduce prey availability for bird species in the Study Area. Further assessment will be undertaken within the EIA to evaluate the sensitivity of relevant prey species to habitat alteration.	**IN -** If the cable is installed correctly the likelihood of it requiring maintenance and repair is significantly reduced. However, there remains the potential that remedial external cable protection may be required in discrete locations which has the potential to reduce sandeel and herring habitat and therefore reduce prey availability.	**OUT –** No additional cable protection will be deposited for decommissioning therefore it can be scoped out..

Potential impacts	Project activities	Sensitive receptors	Scoping justification		
			construction	Operation (including maintenance)	Decommissioning
Visual / physical disturbance or displacement	Presence of project vessels and equipment.	Divers, grebes, and mergansers	**IN -** Diving species such as red-throated divers are recognised as being highly sensitive to noise and visual disturbance, such as that caused by vessel traffic (Ref 21.24). Once flushed, they may not rapidly resettle. The extent of the potential impact of Project vessels within the English Offshore Scheme and during transit to / from the English Offshore Scheme during all phases of the Project's life cycle on diving species will be considered further as part of the EIA.		
		Seaducks, geese and swans	**IN -** Species present within this group such as shelduck are sensitive to noise and visual disturbance (Ref 21.24), and it is not known how rapidly they resettle following disturbance. The extent of the potential impact of Project vessels (especially at the landfall / intertidal area) during all phases of the Project's life on this group will be considered further as part of the EIA.		
		Terns, gulls, kittiwakes, and gannets	**OUT -** These species are low to moderately sensitive to noise and visual disturbance (Ref 21.24). Therefore, the presence of the Project's vessels is unlikely to have a significant impact on this group.		
		Auks	**IN -** Auk species are sensitive to noise and visual disturbance (Ref 21.24). The extent of the potential impact of Project vessels during all phases of the Project's life on this group will be considered further as part of the EIA.		
		Harriers and Waders	**IN -** These species are sensitive to noise and visual disturbance (Ref 21.24). Although they are largely present within the intertidal areas rather than offshore, there is the potential for them to be disturbed due to vessel traffic during works in close proximity to the Anderby Creek Landfall and intertidal area. The extent of any potential impact on these species will be considered further as part of the EIA.		
Accidental spills *(Hydrocarbon and PAH contamination)*	Presence of project vessels and equipment.	All species	**OUT -** Project vessels and contractors will comply with the International Convention for the Prevention of Pollution from Ships (MARPOL) 73/78 which relate to pollution from oil from equipment, fuel tanks etc and release of sewage (black and grey water). It is a legal requirement that all vessels have a Shipboard Oil Pollution Emergency Plan (SOPEP). Compliance with Regulations will be sufficient to minimise the risk to the environment.		

Potential impacts	Project activities	Sensitive receptors	Scoping justification		
			construction	**Operation (including maintenance)**	**Decommissioning**
			Several management plans will be provided as outline management plans with the application for development consent, to be secured as a condition of the DML. These will include an Outline CEMP and Outline MPCP. These documents will outline measures to be implemented to comply with legislation (e.g., in relation to the prevention of oil and chemical spills) during all phases of the English Offshore Scheme.		
Transboundary impacts	All project activities.	All species	**OUT -** Due to the large distance between the English Offshore Scheme Scoping Boundary and Natura 2000 sites located outside of the UK it is not considered feasible that migratory birds directly associated with Natura 2000 sites in other states would be disturbed or suffer from loss of foraging or resting opportunities in any way that would be likely to result in significant effects on those Natura 2000 sites. The English Offshore Scheme Scoping Boundary is largely offshore (past the 12 NM limit). Marine birds present in offshore waters include species within the functional groups, 'auks' and 'terns, gulls, kittiwakes and gannets. These species have lower sensitivity to visual disturbance than other functional groups, but auks can form large aggregations on the water post-breeding when they moult and become flightless. Species have low disturbance susceptibility suggesting that the zone of influence of displacement and disturbance would be limited to the English Offshore Scheme Scoping Boundary. This would limit pathways for transboundary impacts, therefore no significant transboundary effects are predicted. A separate application will be submitted to the relevant Statutory Authority for the Scottish Scheme. Where the English and Scottish Schemes meet, collaborative environmental assessments will ensure impacts are fully assessed.		

21.7 Assessment Methodology

Further Data to be Gathered / Processed

Desk-Based Assessments

21.7.1. No specific additional studies will be undertaken to inform the baseline characterisation for this receptor. However, the EIA will draw upon the findings of studies undertaken for other topics as relevant.

21.7.2. The Applicant is aware that Natural England recommends a seasonal restriction on licensable activities taking place within the Greater Wash SPA between September and April inclusive, during the wintering period for red-throated diver and common scoter. If the timings of works are unknown at the PEIR and ES stages a vessel disturbance assessment would be undertaken for works within the Greater Wash SPA. This assessment would assume the following:

- 100% displacement would occur from each vessel:
- Displacement distances would be up to 2 km for red-throated diver and 2.5 km for common scoter; and
- Vessel transit routes through the Greater Wash SPA and within the respective displacement buffers would be assessed (i.e., within 2 / 2.5 km of the SPA).

21.7.3. The assessment would:

- Use the kernel density estimates provided in Lawson *et al.,* 2015 (Ref 21.35) and the 2022 / 2023 aerial data published by the JNCC (Ref 21.37) to calculate the number of birds present within the English Offshore Scheme Scoping Boundary, vessel transit routes and buffer zones (providing minimum and maximum numbers based on the different surveys).
- Calculate the proportion of the Greater Wash SPA impacted.
- Estimate the number of vessel days occurring within the Greater Wash SPA between September and April (ideally on a monthly basis).
- Calculate the number of ‘bird’ days lost (number of birds x number of days) that would be affected.

21.7.4. The assessment would be discussed with Natural England and JNCC to agree appropriate mitigation where necessary.

Surveys

21.7.5. Due to the temporary and transient nature of construction, offshore site-specific bird surveys are not considered necessary for the English Offshore Scheme, which is consistent with the approach taken by other subsea electricity interconnectors in UK waters, for example EGL 3 and EGL 4, Viking Link and GridLink. Wintering, breeding, passage and intertidal bird surveys (single year of data collection) will be undertaken for the English Onshore Scheme, which include a single coastal vantage point survey at the Anderby Creek Landfall. These would include walked transect surveys timed to cover high and low tide survey periods, for the intertidal areas. In addition, vantage point data collected at the landfall for the EGL 3 and EGL 4 Projects from September 2024 onwards is also available for use by the English Offshore Scheme.

Assessment of Significance

21.7.6. The intertidal and offshore ornithology EIA will follow the assessment approach set out in **Part 1, Chapter 5: EIA Approach and Methodology** of this Scoping Report, using the project-wide assessment matrix. However, whilst this has informed the approach that would be used in the intertidal and offshore ornithology assessment, it is necessary to set out how this methodology would be applied, and adapted as appropriate, to address the specific needs of the assessment.

21.7.7. The criteria for characterising the value and sensitivity and magnitude for intertidal and offshore ornithology are outlined in **Table 21-14** and **Table 21-15**, respectively.

21.7.8. The EcIA would use available evidence, professional judgement and knowledge of bird ecology and behaviour to determine the level of impact.

21.7.9. The assessment of sensitivity would be made with consideration of the rarity and importance of the receptor but would primarily focus on the vulnerability of the receptor to an impact and its ability to recover and adapt. Vulnerability can differ between different functional groups of marine birds and would also vary depending on the impact pathway and season. For example, certain species of diver (e.g., red-throated diver) and seaduck (e.g., common scoter) are more sensitive to visual disturbance than terns and gulls, whilst sensitivity to temporary changes in suspended sediment concentrations typically only affects species which plunge dive for prey (e.g., red-throated diver, tern species), with species such as waders not considered sensitive.

21.7.10. It should be noted though, that a species may be of international importance (e.g., a designated feature of an SPA) and initially categorised as 'highly' sensitive according to **Table 21-15**. However, if baseline studies and species characteristics show that the species is only rarely or occasionally present in the Order Limits (for the ES), or if it is not sensitive to the impact pathway, professional judgment may justify lowering its sensitivity category. Where such assessments are made, justification would be provided.

21.7.11. The assessment of magnitude would be made with consideration of the extent of the area impacted, the duration and frequency of the impact and the scale of the change i.e., whether it has an effect at an individual or population level. When determining the magnitude of impacts the life history and ecology of the receptors is important. Factors such as seasonality of presence or whether specific areas are required for foraging and loafing which the species may be unwilling or unable to move away from are considered.

21.7.12. The significance of an effect, either adverse or beneficial, will be determined using a combination of the magnitude of the impact and the sensitivity of the receptor. A matrix approach is used throughout all topic areas to ensure a consistent approach within the assessment. This is described further in **Table 5-3** of **Part 1, Chapter 5: EIA Approach and Methodology**.

Table 21-14: Criteria for characterising the sensitivity of receptors

Receptor Sensitivity / Value	Definition
High	Receptor is of very high or high importance and rarity, international or national scale (i.e. designated feature of a SPA, Ramsar site or MCZ. Receptor has low tolerance to change i.e. recovery will take longer than 10 years following the cessation of activity or will not occur The licensable activity is taking place during a sensitive season.
Medium	Receptor is of medium importance and rarity, regional scale (i.e., a designated feature of a SSSI or NNR). Receptor has intermediate tolerance to change i.e., recovery to pre-impact conditions is possible between 5 and 10 years.
Low	Receptor is of low importance and rarity, local scale. Receptor has high tolerance to change with recovery to pre-impact conditions between 1 and 5 years.
Negligible	Receptor is common or widespread. The receptor is tolerant to change with no effect on its character. Recovery expected to be relatively rapid, i.e., less than approximately six months following cessation of activity.

Table 21-15: Criteria for characterising the magnitude of impact

Magnitude	Definition
High	Major disturbance over multiple seasons such that population can no longer use key nesting / foraging / loafing grounds and recruitment declines above that which would be expected from natural fluctuations. A change in the size or extent of distribution of the population that is the interest feature of a specific designated site such that the viability of the population and / or the integrity of the designated site is predicted to be irreversibly altered in the short-to-long term. Recovery from that change would be predicted to be achieved in the long-term (i.e., more than five years) through to permanent duration following cessation of the development activity.
Medium	Significant disturbance over the whole season for a sensitive species such that they are displaced from preferred nesting / foraging / loafing areas, with limited alternatives. A change in the size or extent of distribution of the population that is the interest feature of a specific designated site that is expected to occur in the short and long-term, but which is not expected to alter the long-term viability of the population and / or the integrity of the designated site. Recovery from that change predicted to be achieved in the medium-term (i.e., no more than five years) following cessation of the development activity.
Low	Disturbance is temporary (less than a season), site specific and / or a minor shift away from the baseline condition such as that experienced under natural conditions. Impacts limited to within the project's footprint. Negligible contribution to cumulative effects.

Magnitude	Definition
	A change in the size or extent of distribution of the population that is the interest feature of a specific designated site that is expected to occur at a sufficiently small scale or of a short duration such that no long-term harm to the viability of the population or the integrity of the designated site is expected. Recovery from that change is predicted to be achieved in the short-term (i.e., no more than one year) following cessation of the development activity.
Negligible	Very little or no detectable change from baseline conditions. Disturbance is within the range of natural variability. Impacts predicted to be brief (one to two days) or for a short period but outside of the key season (up to 3 months). No contribution to cumulative effects. Any change is predicted to be reversible and recovery from any change is predicted to be rapid (i.e., no more than approximately 6 months) following cessation of the development activity.

Assessment of Cumulative Impacts and Effects

21.7.13. **Part 4, Chapter 30: Cumulative Effects** defines the methodology for the assessment of cumulative effects. The intertidal and offshore ornithology assessment of intra- and inter-project cumulative effects will be carried out and reported within the ES to be submitted with the application for development consent.

21.7.14. The zone of influence for the inter-project cumulative effects assessment of intertidal and offshore ornithology would comprise Order Limits (in the ES), plus an additional 15 km buffer each side. This is a precautionary maximum zone of influence that encompasses the worst-case scenario of potential impact pathways from increased suspended sediment concentrations, as calculated in **Part 3, Chapter 18: Coastal and Marine Physical Processes**.

21.7.15. The Cumulative Effects chapter of the PEIR will present the long and short lists of 'other developments' which will be considered at the ES stage, and the methodology which allowed for the identification of these other developments, to allow consultation bodies to form a view and provide comment on the other developments included. The long list will be reviewed and if necessary, updated, in the lead up to the ES, as the English Offshore Scheme design further evolves and in response to any comments raised at statutory consultation.

21.8 Assessment Assumptions and Limitations

21.8.1. The baseline description collated in this chapter has been based on a range of publicly available data and information. It is assumed that the data collated is accurate. The data would be supplemented with additional information acquired as part of the stakeholder engagement process and through the additional studies identified in this chapter to inform the PEIR and ES.

21.8.2. It should be noted that the survey data currently available for the Greater Wash SPA was published in 2015 (Ref 21.24). A more recent survey was commissioned by Natural England and carried out over the winter of 2022 / 2023. Preliminary data from the 2022 / 2023 survey has been viewed by the Applicant, a full analysis of this will be provided as part of the PEIR and ES. Whilst some data sets are limited as they provide a short

‘snapshot’ of the populations present within the Greater Wash SPA during one day in one particular season, the Applicant would also make use of available data from offshore wind farm projects in the area of the English Offshore Scheme, as well as information from the JNCC which was used to inform the designation of the Greater Wash SPA. Whilst the Applicant recognises that the use of data from offshore wind projects will not provide a full ‘picture’ of seasonal and annual variation in species distribution and density, it will assist in the identification of trends, for example certain hotspots for red-throated diver.

21.8.3. In the absence of data, a precautionary approach has been taken and professional judgement, based on experience of similar linear projects, have been used where required to inform the scope of the assessment.

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22. Marine Mammals and Marine Reptiles

22.1 Introduction

22.1.1. This chapter of the Scoping Report describes the potential impacts arising from the construction, operation and maintenance, and decommissioning of the Project on marine megafauna receptors, including marine mammals (European otter (*Lutra lutra*), cetaceans[18], pinnipeds[19]) and marine turtles (chelonians).

22.1.2. There may be interrelationships related to the potential effects on marine mammals and marine reptiles and other disciplines. Therefore, please also refer to the following technical aspect chapters of this Scoping Report found in **Volume 1**:

- **Part 3, Chapter 18: Coastal and Marine Physical Processes**: outputs from marine physical environment assessments will inform the consideration of impacts such as temporary increase in suspended sediments and subsequent deposition.
- **Part 3, Chapter 19: Intertidal and Subtidal Benthic Ecology**: which identifies the potential impacts on supporting habitats and key prey species for marine mammals; and
- **Part 3, Chapter 20: Fish and Shellfish**: which identifies the potential impacts on key prey species for marine mammals.

22.1.3. This chapter is supported by the following figures found in **Volume 3**:

- **Figure 22-1 Marine Mammals Study Area and Management Units**;
- **Figure 22-2 Grey Seal and Harbour Seal Densities within the Study Area**;
- **Figure 22-3 Designated Seal Haul Out Sites within proximity of the Scoping Boundary**; and
- **Figure 22-4 Harbour Porpoise Summer and Winter Grounds within the Southern North Sea SAC**.

22.1.4. At this early stage in the development of the Project, only desk-based information has been used for this scoping chapter. No data is yet available from the 2025 marine characterisation surveys to inform the Scoping Report. Further details of the marine characterisation surveys are provided in **Part 3, Chapter 18: Coastal and Marine Physical Processes** and **Chapter 19: Intertidal and Subtidal Benthic Ecology**.

[18] Cetaceans include whales, dolphins and porpoises.

[19] Pinnipeds include seals, sea lions and walruses.

22.2 Relevant Legislation, Planning Policy and Technical Guidance

22.2.1. This section identifies the relevant legislation, national and local policy and guidance which has informed the scope of the marine mammals and marine reptiles assessment.

Legislation

22.2.2. A summary of the key legislation considered in, but not limited to, the scope of marine mammals and marine reptiles effects is outlined in **Table 22-1**.

Table 22-1: Legislation relevant to marine mammals and marine reptiles assessment

Legislation	Legislative context
The Planning Act 2008 (Ref 22.1).	An Act to establish the Infrastructure Planning Commission and make provision about its functions; to make provision about, and about matters ancillary to, the authorisation of projects for the development of nationally significant infrastructure.
The Infrastructure Planning (Environmental Impact Assessment (EIA)) Regulations 2017 (Ref 22.2).	This Act transposes the European Union (EU) Directive 2011/92/EU (the EIA Directive) into UK law for nationally significant infrastructure projects, ensuring environmental safeguards while potentially streamlining the process.
The Marine Works (EIA) regulations 2007 (as amended) (Ref 22.3).	The Marine Works (EIA) Regulations 2007 require certain types of projects that have the potential to significantly affect the environment to submit an EIA before a marine licence decision is made.
Marine and Coastal Access Act 2009 (Ref 22.4).	This Act provides a framework for managing and protecting marine and coastal areas, promoting sustainable development, enhancing public access to the coast, and conserving marine biodiversity and habitats, including establishing Marine Protected Areas (MPAs) and coastal access routes.
The Wildlife and Countryside Act 1981 (Ref 22.5).	This Act allows for the protection of specifically listed wild animals, including marine species. The Act makes it an offence to intentionally harm, kill, capture, or disturb species listed in Schedule 5. This includes marine mammals including cetaceans (dolphins, whales and porpoises) and European otter.
Conservation of Habitats and Species Regulations 2017 (as amended) (Ref 22.6).	These Regulations are collectively referred to as the Habitats Regulations. The Conservation of Habitats and Species Regulations applies out to 12 nautical miles (NM) from the coastline; the Conservation of Offshore Marine Habitats and Species Regulations applies from 12 NM to the boundary of the United Kingdom (UK) Exclusive Economic Zone (EEZ).
Conservation of Offshore Marine Habitats and	

Legislation	Legislative context
Species Regulations 2017 (as amended) (Ref 22.7)	The Habitats Regulations provide a framework for the protection of European Sites, which include Special Areas of Conservation (SACs). These sites are designated to protect species and habitats listed in the Annexes of the Regulations. Under the Regulations, Applicants must demonstrate that a proposed development will not adversely affect the integrity of a European site either alone or in combination with other plans or projects. This is done through the Habitats Regulations Assessment (HRA) process. In addition, the regulations give certain species the designation of a European Protected Species (EPS) and make it offence to deliberately disturb, injure or kill individuals within this category. All cetaceans and European otter are classified as EPS. Several SACs are present within the study area which have been designated for the protection of marine mammals.
Conservation of Seals Act 1970 (as amended) (Ref 22.8)	This Act provides specific regulations for both harbour seals (*Phoca vitulina*) and grey seals (*Halichoerus grypus*), ensuring their welfare and regulating activities that may harm them. Licensing conditions ensure that any authorised actions involving seals are justified and do not negatively impact seal populations in the long term.
Natural Environment and Rural Communities Act 2006 (NERC) (Ref 22.9)	The Act requires competent authorities to have due regard for protecting and enhancing species and habitats when making public decisions. In particular, Section 41 refers to a published list of habitats and species which are of principal importance for the conservation of biodiversity in England. European otter, 16 species of cetacean and common / harbour seal are included on the list.

Planning Policy

22.2.3. A summary of the planning policies at both a national and local level relevant to the scope of marine mammals and marine reptiles effects is outlined in **Table 22-2** and **Table 22-3**.

Table 22-2: National Planning Policy relevant to marine mammals and marine reptiles assessment

Policy reference	Policy context
Overarching National Policy Statement (NPS) for Energy (NPS EN-1) (Ref 22.10).	Requires applicants to take account of any relevant Marine Plans and complete a Marine Plan Assessment to support a Development Consent Order (DCO) application.

Policy reference	Policy context
Paragraphs 4.5.8 and 5.4.22	Requires that consideration is given to mobile and migratory species, which is of relevance to this marine mammals and marine reptiles assessment.
Overarching National Policy Statement (NPS) for Energy (NPS EN-1) Consultation Draft (April 2025) (Ref 22.11). Paragraphs 4.12.5 and 5.4.23.	The Government has published a draft update to NPS EN-1. The 2025 Draft NPS EN-1 is largely the same as the 2023 document where relevant section numbers will remain the same, however, paragraph numbers will be updated.
National Policy Statement for Renewable Energy Infrastructure (NPS EN-3) (Ref 22.12).	Outlines specific considerations for marine mammals in relation to offshore renewable energy infrastructure, although it should be noted that these assessments are focused on offshore wind development and underwater noise impacts and whilst applicable to the Project, a level of proportionality should be applied.
Paragraphs 2.8.127 – 2.8.135, 2.8.237 – 2.8.239 and 2.8.312 – 2.8.314.	Outline specific considerations in relation to underwater noise and mitigation. States the Secretary of State should be satisfied the preferred methods of construction are designed reasonably to minimise significant impacts on marine mammals and unless suitable noise mitigation measures have been used or can be secured through requirements within a DCO, the Secretary of State may refuse the application. It also states that the Secretary of State should be satisfied that cumulative and in-combination impacts on marine mammals have been considered.
National Policy Statement for Renewable Energy Infrastructure (NPS EN-3) Consultation Draft (April 2025) (Ref 22.13). Paragraphs 2.8.117 – 2.8.124, 2.8.208 – 2.8.210 and 2.8.279 – 2.8.281.	The Government has published a draft update to NPS EN-3. The 2025 Draft NPS EN-3 is largely the same as the 2023 document, relevant section numbers will remain the same, however paragraph numbers will be updated.
UK Marine Policy Statement 2011 (Ref 22.14).	The UK Marine Policy Statement does not specifically reference marine mammals but reiterates the UK aims to halt, and if possible reverse, biodiversity loss; and the policy that all relevant public, private and non-governmental policies should accept biodiversity's essential role in enhancing the quality of life.

Table 22-3: Local Planning Policy relevant to marine mammals and marine reptiles assessment

Policy reference	Policy context
East Inshore and East Offshore Marine Plan 2014 (Ref 22.15) and North East Offshore Marine Plan 2021 (Ref 22.16).	Marine plans set out the priorities and direction for future planning within the plan area and provide guidance on activities to avoid or promote. A Marine Plan Assessment would be provided with the Preliminary Environmental Information Report (PEIR) and Environmental Statement (ES) that outlines how the Project complies with the policies and objectives of the relevant marine plans.

Technical Guidance

22.2.4. A summary of the relevant technical guidance, specific to the marine mammals and marine reptiles assessment, that has informed this Scoping Report and will inform the assessment within the PEIR and ES, is given in **Table 22-4**.

22.2.5. At the time of writing the Applicant is aware that the Joint Nature Conservation Committee (JNCC) issued draft guidelines for minimising the risk of injury to marine mammals from geophysical survey in February 2025 for consultation. The consultation closed on the 23 March 2025. The objective of these guidelines is to update the 2017 guidance of the same name. The progress of these guidelines would be monitored for the PEIR and ES and reference made to the 2017 guidance noting where it differs from the draft 2025 guidance as relevant.

Table 22-4: Technical Guidance relevant to marine mammals and marine reptiles assessment

Technical guidance document	Context
Update to: Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 3.0) (Ref 22.17).	These publications set out the peer reviewed thresholds for assessing the significance of underwater noise changes on marine mammals in terms of injury and disturbance effects.
Marine Mammal Noise Exposure Criteria: Assessing the Severity of Marine Mammal Behavioural Responses to Human Noise (2021, Ref 22.18).	
Marine Mammal Noise Exposure Criteria: Updated Scientific Recommendations for Residual Hearing Effects (Ref 22.19).	
Revisions to: Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 2.0): Underwater Thresholds for Onset of Permanent and Temporary Threshold Shifts (Ref 22.20).	

Technical guidance document	Context
Guidance for assessing the significance of noise disturbance against Conservation Objectives of harbour porpoise SACs (Ref 22.21).	Sets out the industry standard approach to assessing the potential effects of a project on harbour porpoise. Establishes Effective Deterrence Ranges (EDR) for geophysical survey and other impulsive sound sources used in offshore construction.
JNCC guidelines for minimising the risk of injury to marine mammals from geophysical surveys (Ref 22.22).	Sets out industry standard approach to mitigation for geophysical surveys.
JNCC guidelines for minimising the risk of injury to marine mammals from unexploded ordnance (UXO) clearance in the marine environment (Ref 22.23).	Sets out the industry approach to mitigation for UXO clearance.
UK Government Guidance Supporting minimising environmental impacts from unexploded ordnance clearance (Ref 22.24).	

22.3 Consultation and Engagement

22.3.1. In respect of marine mammals and marine reptiles, key consultees have been identified and focussed engagement (through both informal and formal consultation) will be undertaken and recorded throughout the pre-application stages of the project. Key consultees identified to date are:

- Centre for Environment, Fisheries and Aquaculture Science (Cefas);
- Joint Nature Conservation Committee (JNCC);
- Natural England; and
- Marine Management Organisation (MMO).

22.3.2. Key areas of consultation are intended to include engagement on underwater noise impacts within the Southern North Sea SAC, impact assessment conclusions and proposed mitigation.

22.3.3. Local or specialist groups will be contacted should the assessment process identify a need to engage further detailed local knowledge, or if requested during the statutory consultation process.

22.3.4. The Applicant has engaged with several stakeholders with marine mammal and marine reptile interests as summarised in **Table 22-5**.

Table 22-5: Summary of Consultation to Date

Stakeholder	Date	Summary of Meeting
JNCC	28th January 2025	Introduction to the Project, confirming the project description, proposed Landfall location, proposed consenting strategy as well as survey approach.
	29th July 2025	Updating on project progress and future programme.
MMO	31st July 2025	Introduction to the Project, confirming the project description, proposed Landfall location, proposed consenting strategy as well as approach to surveys.
Natural England	3rd March 2025	Introduction to the Project, confirming the project description, proposed Landfall location and the suggested consenting strategy. Natural England expressed concerns with regards to the level of resourcing required given the number of projects intending to make landfall within Lincolnshire, including both offshore wind and transmission reinforcement projects, and with regards to potential congestion at the Anderby Creek Landfall.
	8th July 2025	Discussed the terrestrial and marine aspects of the Project, including the intention of the Applicant to follow the mitigation hierarchy during route development to minimise potential adverse effects.

22.4 Baseline Conditions

Study Area

22.4.1. The study area has been defined for each receptor based on the mobility of the species and its geographic extent, as outlined in **Table 22-6**. This is a precautionary maximum Zone Of Influence (ZOI) that will be reviewed and refined for the Environmental Impact Assessment (EIA) based on the final project description.

22.4.2. Separate areas for each cetacean species have been defined using Management Units (MUs). These are delineated by the Inter-Agency Marine Mammal Working Group (IAMMWG) (which comprises representatives from the UK Statutory Nature Conservation Bodies (SNCBs) i.e., Natural England, NatureScot, Natural Resources Wales (NRW), JNCC and the Department of Agriculture, Environment and Rural Affairs (Defra)). The boundaries of a MU do not necessarily reflect the full range of a species but instead shows areas within their territory within which management of human activities is undertaken. These units were defined by considering several factors including the known population structure, movement and habitat use, as well as jurisdictional boundaries and divisions already used in the management of human activities. MUs are used to inform SNCB advice and are therefore the appropriate spatial scale for assessment of environmental impacts on species from marine development projects. MUs are reviewed at least every five years and are defined for the seven most commonly occurring cetacean species in UK waters: harbour porpoise (*Phocoena phocoena*), white-beaked dolphin (*Lagenorhynchus albirostris*), bottlenose

dolphin (*Tursiops truncatus*), short-beaked common dolphin (*Delphinus delphis*), minke whale (*Balaenoptera acutorostrata*), Atlantic white-sided dolphin (*L. acutus*) and Risso's dolphin (*Grampus griseus*). The latest review of MUs was published in March 2023 (Ref 22.25).

22.4.3. The study area for marine turtles has been defined based on maritime regions formed by the Convention for the Protection of the Marine Environment of the North-East Atlantic (the OSPAR convention). The OSPAR Maritime Area encompasses the North-East Atlantic and its adjacent seas and is regularly assessed to understand the state of the marine environment and its associated ecosystems with the aim of achieving clean, healthy and productive seas (Ref 22.103). The Project falls within OSPAR Region II: Greater North Sea.

Table 22-6: Study Area for marine mammals and marine reptiles

Receptor	Extent of study area	Justification
Cetaceans (porpoises, dolphins and whales).	Mus 250 km from the Scoping Boundary for transboundary European sites.	The relevant MUs for the seven commonly occurring species have been used to define the study area, noting that the study area will change per species. **Volume 3, Figure 22-1** illustrates the spatial scale of the MUs through which the Project passes. The maximum ZOI for effects on marine mammals and marine reptiles is predicted to be 5 km from the English Offshore Scheme Scoping Boundary; based on underwater noise changes from geophysical survey. The spatial scale of the MUs is therefore sufficient to encompass this ZOI. A buffer of 250 km from the Scoping Boundary has been used to identify relevant transboundary European sites. In UK waters harbour porpoise are observed to have seasonal grounds which stretch longitudinally for approximately 250 km. Therefore, a study area of 250 km is considered to be an appropriate distance to screen designated sites for mobile marine mammal species.
Grey seal (*Halichoerus grypus*).	100 km from coastline.	It is estimated that grey seal forage up to 100 km from haul-out sites on the east coast of the UK (Ref 22.26), with the area along the western and southern edges of the Dogger Bank of particular importance for grey seal foraging distribution in eastern England. Telemetry data indicates that there is exchange of grey seals between colonies in the Netherlands, France, England, Wales, Scotland and Ireland (Ref 22.27).
Harbour seal (*Phoca vitulina*).	50 km from coastline.	Harbour seals are not known to forage further than 50 km from haul-out sites (Ref 22.28, Ref 22.27), and

Receptor	Extent of study area	Justification
		tend to remain concentrated around the coastline (Ref 22.26).
European otter (*Lutra lutra*).	Up to 80 m from mean high water springs (MHWS) and seaward. Up to 32 km along the coast from the Anderby Creek Landfall.	In freshwater habitats, otters are largely (but not exclusively) nocturnal and occupy very large home ranges (around 32 km for males and 20 km for females). Coastal otters generally have much smaller home ranges than their riverine counterparts, these can be as little as 4-5 km of coastline, because of the abundance of fish and crustacean prey in inshore waters (Ref 22.29). It has been suggested that the otter's range is approximately 80 m seaward from the coast (Ref 22.29).
Chelonians (sea turtles).	Greater North Sea OSPAR maritime region.	Chelonians are wide ranging and infrequent visitors to UK waters, with the majority of sightings accidental, resulting from displacement by adverse currents (Ref 22.30). Their migration in response to food distribution extends from the tropics of Caribbean islands through the Atlantic Ocean towards their summer grounds in Nova Scotia, however in some cases individuals follow the north Atlantic gyre towards the European shelf and may progress into UK waters (Ref 22.30).

Data Gathering Methodology

22.4.4. Data sourced for the baseline characterisation will be presented in accordance with relevant guidance for the topic. A desk-based review of publicly available data sources (literature and Geographical Information System mapping files) will be used to describe the baseline environment, supplemented by information gathered through stakeholder engagement. **Table 22-7** lists the key data sources which will be used in the assessment.

Table 22-7: Key publicly available data sources for marine mammals and marine reptiles

Data source	Description
Natural England.	Natural England Conservation Advice for Marine Protected Areas in England.
Joint Nature Conservation Committee (JNCC).	JNCC Conservation Advice for Marine Protected Areas.
Marine Management Organisation (MMO) – Marine Activity Data.	An interactive tool that enables access to spatial information relating to the marine environment in England.

Data source	Description
Magic Maps.	An interactive mapping system developed by Defra that holds spatially referenced data on the natural environment for England.
BEIS (2022) (Ref 22.30).	Offshore Energy Strategic Environmental Assessment (OESEA4).
Reid *et al.* (2016) (Ref 22.31).	Atlas of cetacean distribution in northwest European waters.
Hammond *et al.* (2021) (Ref 22.32).	Estimates of cetacean abundance in European Atlantic waters in summer 2016 from the SCANS-III.
Gilles *et al.* (2023) (Ref 22.33).	Estimates of cetacean abundance in European Atlantic waters in summer 2022 from the SCANS-IV aerial and shipboard surveys.
Joint Cetacean Data Programme (JCDP) (2022) (Ref 22.34).	Portal collating at-sea effort-related data collected via ship-based or aerial methods, under the JCDP.
Heinanen and Skov (2015) (Ref 22.35).	The identification of discrete and persistent areas of relatively high harbour porpoise density in the wider UK marine area.
Russell *et al.* (2017) (Ref 22.36).	Updated seal usage maps: The estimated at-sea distribution of grey and harbour seals.
Sea Watch Foundation (Ref 22.37).	Sea Watch Foundation sightings data.
The Marine Life Information Network (MarLIN, 2023) (Ref 22.38).	Species Information.
National Biodiversity Network Gateway http://data.nbn.org.uk/ (Ref 22.39).	Occurrence records for marine turtles, cetaceans, pinnipeds and European otter.
Waggitt *et al*. (2020) (Ref 22.40).	Distribution maps of cetacean and seabird populations in the North-East Atlantic.
Hague *et al.* (2020) (Ref 22.41).	Provides a review of abundance estimates and distribution of marine mammals across the North Sea and Atlantic areas of Scottish waters.
Special Committee on Seals (Ref 22.42).	UK seals monitoring programme – annual report 2024 (or subsequent update if released).
Carter *et al*. (2020) (Ref 22.26).	Habitat-based predictions of at-sea distribution for grey and harbour seals in the British Isles.
Reeds (2004) (Ref 22.43).	Provides a summary of turtle distribution data supplied by the Ocean Biodiversity Information Systems (OBIS).
Crawford (2010) (Ref 22.44).	Fifth otter survey of England 2009 – 2010.

Data source	Description
IAMMWG (2023) (Ref 22.25).	Updated abundance estimates for cetacean Management Units in UK waters. JNCC Report No. 734.
National Grid Electricity Transmission (Ref 22.48).	Eastern Green Link 3 (EGL 3) and Eastern Green Link 4 (EGL 4) Projects marine mammal observations from geophysical surveys between August 2023 and February 2024.
Offshore Wind Farm Aerial Surveys.	Offshore Wind Farms (OWF) collect two years of aerial survey data to establish the baseline for marine mammals within the array sites. The following OWFs lie within the study area and data will be sought from the Project consent applications to inform the baseline: • Hornsea Three (Ref 22.45) • Dogger Bank A (Ref 22.46) • Dogger Bank South (Ref 22.47) Other applications will be monitored to see if any developments at the pre-consent phase release relevant information which can be used .

Current Baseline

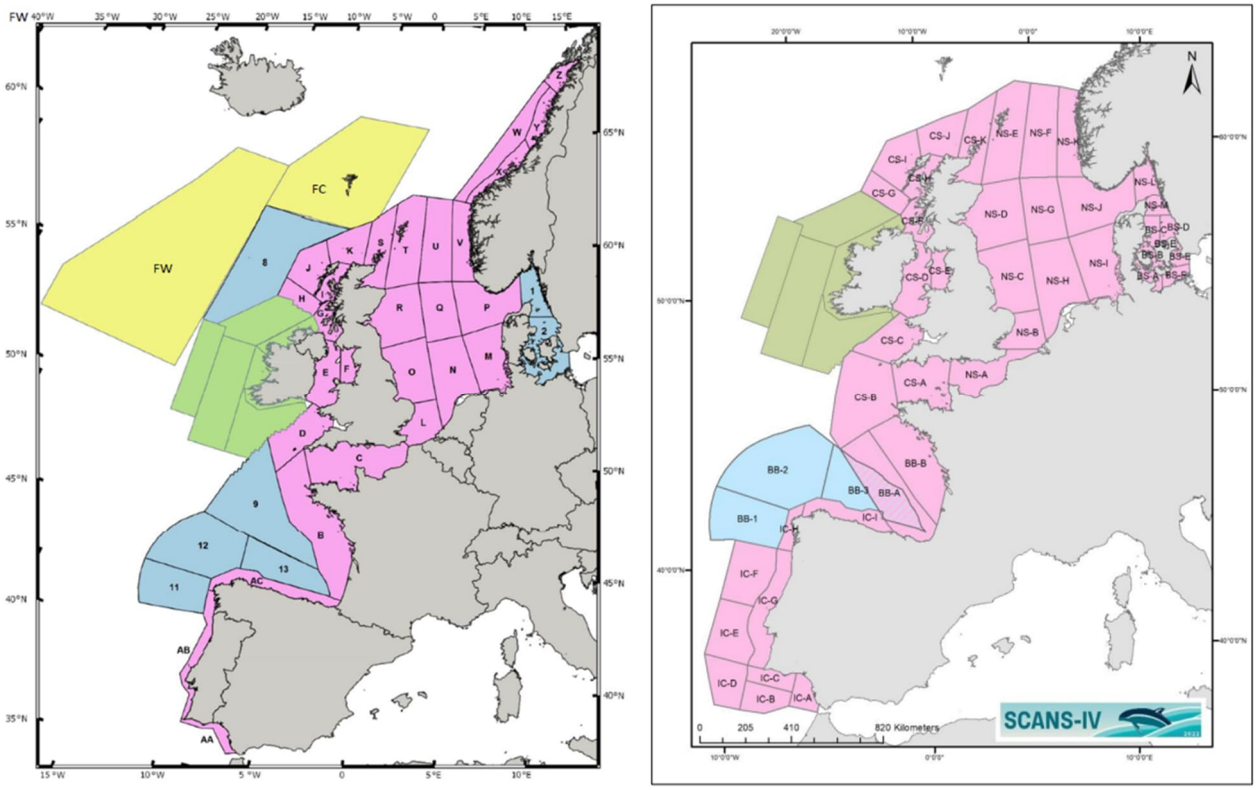
Overview – General Species Information

22.4.5. Large scale surveys to monitor the cetacean population size have been carried out in UK waters by the Small Cetacean Abundance in the European Atlantic and North Seas (SCANS) and Cetaceans Offshore Distribution and Abundance in the European Atlantic (CODA) studies. SCANS surveys were carried out in 1994, 2005, 2016 and 2022, and CODA surveys in 2007. The Project passes through survey Blocks O and R as designated in the SCANS III survey (Ref 22.32) and renamed Block NS-C and Block NS-D respectively in the SCANS IV survey (Ref 22.33). **Plate 22-1** illustrates the survey blocks used in the 2016 SCANS III survey and the 2022 SCANS IV survey.

22.4.6. The data from these surveys showed that twenty-eight cetacean species have been recorded in UK waters, however, only eleven are regular visitors, with the remainder rare occasional visitors (Ref 22.30). North Sea species density and individual counts are relatively low in comparison to other areas of the UK continental shelf.

22.4.7. The Sea Mammal Research Unit (SMRU) at the University of St Andrews provide annual reports on the state of the UK seal populations through the Special Committee on Seals (SCOS). The most recently published report in 2024 (Ref 22.42) reviewed survey data from between 2016 and 2023 for the two species of seal, harbour seal and grey seal. The data showed an overall decrease in harbour seal populations in English waters of 27%, largely attributed to population declines in south-eastern England. The UK grey seal population shows an annual increase of between 0.7% and 1.5%, with the highest rates of increase recorded in western Scotland. All seal management units on the east coast of the UK (both Scottish and English sites) show either stable or increasing trends in pup production (Ref 22.42).

Plate 22-1: SCANS survey blocks



Left image: SCANS III survey blocks (Hammond et al., 2020) (Ref 22.32), Right image: SCANS IV survey blocks (Gilles et al., 2023) (Ref 22.33), Blue areas surveyed by vessel and pink areas surveyed from air.

Sightings Data

Cetaceans, pinnipeds and marine turtles

22.4.8. **Table 22-8** lists recent marine mammal sightings within the study area along with their relevant MU, seasonality and frequency. Five data sources have been used to compile **Table 22-8**:

- Sea Watch Foundation – an organisation which collates sightings data from scientists and members of the public. Sightings for a rolling twelve-month period are typically publicly available. This Scoping Report references data available at the time of writing between June 2024 and June 2025. As SeaWatch is a voluntary organisation it does not follow standard data periods (Ref 22.37).
- National Biodiversity Network (NBN) Atlas – holds species data back to the 1900s for some species. Data for the period 2023 to 2025 was used for this Scoping Report (Ref 22.39).
- Sightings from marine mammal observations from the EGL 3 Project's geophysical surveys undertaken between August 2023 and February 2024 (Ref 22.48). EGL 3 runs parallel to the Project for most of the route.
- The species density estimates are taken from the SCANS III survey undertaken in 2016 and the SCANS IV survey undertaken in 2022. The Project passes through SCANS III survey Blocks O and R and SCANS IV survey Blocks NS-C and NS-D (see **Plate 22-1**).

Table 22-8: Species and sightings within the study area

Species	Relevant MU	Seasonality	Frequency	Sightings Data				
				Density estimate (individuals per km^2)		Sea Watch Foundation Sightings June 24 -June 25	NBN Atlas – Sighting 2023 - 2025	EGL 3 Project marine mammal observations
				2016 ^	2022			
Harbour porpoise.	North Sea.	All year.	Common	Block O – 0.888 Block R 0.599	NS-C – 0.6027 NS-D – 0.5985	38 sightings with a max group size of 6.	5 sightings	2 sightings of max group size of 2 mammals in 7 months.
Short-beaked common dolphin.	Celtic and Greater North Sea.	Summer	Occasional	-	NS-C – 0.0032	3 sightings with a max group size of 3.	-	-
Bottlenose dolphin.	Greater North Sea.	All year.	Occasional	Block R 0.0298	NS-C – 0.0419	1 sighting with a max group size of 1.	2 sightings	1 sighting of 1 mammal in 7 months.
White-beaked dolphin.	Celtic and Greater North Sea.	Summer	Occasional	Block O – 0.002 Block R 0.243	NS-C – 0.0149 NS-D - 0.0799	-	-	1 sighting of max group size of 2 mammals in 7 months.
Minke whale.	Celtic and Greater	Summer	Rare	Block O – 0.010 Block R 0.387	NS-C – 0.0068 NS-D – 0.0419	-	1 sighting	5 sighting of max group size of 1 mammal in 7 months.

Species	Relevant MU	Seasonality	Frequency	Sightings Data				
				Density estimate (individuals per km^2)		Sea Watch Foundation Sightings June 24 -June 25	NBN Atlas – Sighting 2023 - 2025	EGL 3 Project marine mammal observations
				2016 ^	2022			
	North Sea.							
Fin Whale.	n/a	-	Rare	n/a	NS-D – 0.0009	-	-	-
Sperm whale.	n/a	-	Rare	n/a	n/a	-	2 sightings	-
Grey seal.	n/a	-	Common	-	-	-	6 sightings	10 sightings of max group size of 1 mammal in 7 months.
Harbour (Common) seal.	n/a	-	Common	-	-	-	-	1 sighting of max group size of 1 mammal in 7 months.
Leatherback turtle.	n/a	-	Rare	-	- NS-D – 0.5985	-	-	-

Cetaceans

Harbour porpoise (*Phocoena phocoena*)

22.4.9. The harbour porpoise is widespread around the UK. It is the smallest and most common cetacean found within the north-western European continental shelf waters. It is the most populous cetacean species in the North Sea.

22.4.10. Individuals can grow up to 1.6 m in length with the females often slightly larger than the males (Ref 22.49). Typically, they are found in small groups of one to three animals. They generally appear shy, avoiding other species and rarely interact with boats. Due to their size and nature, they are typically difficult to spot for survey purposes.

22.4.11. Though the harbour porpoise has been recorded all year round, they are more common in the summer when they move closer to the shoreline to breed. Individuals also tend to move further north during the summer months so are more likely to be recorded in the study area during summer (Ref 22.32).

22.4.12. The harbour porpoise mating season lasts from April to September (peaking in July and August). Calves are born between May and August (breeding season peaks in June). Recent sighting data for this species are shown in **Table 22-8.**

Short-beaked common dolphin (*Delphinus delphis*)

22.4.13. The short-beaked common dolphin is easily identified at sea by the light-coloured hour-glass pattern on their lower flanks. This species can grow up to 2.4 m in length (Ref 22.50). They commonly breach and often bow-ride. Average group sizes observed are between 6 and 10 individuals, though larger groups have been frequently recorded.

22.4.14. Although commonly seen off the west coast of Britain and Ireland, short-beaked common dolphin are only occasionally observed in the North Sea, mainly during the summer (June to September) (Ref 22.30). Recent sighting data for this species are shown in **Table 22-8**.

White-beaked dolphin (*Lagenorhynchus albirostris*)

22.4.15. The white-beaked dolphin is recognisable by its short, often white, beak. It can grow up to 3.2 m in length (Ref 22.51). This species frequently displays forward, vertical or side breaches and frequently bow-ride vessels. The white-beaked dolphin is also known to mix with other dolphins and whales to assist in co-operative food herding.

22.4.16. The white-beaked dolphin occurs over a large part of the northern European continental shelf and is frequently recorded in the central and northern North Sea but is only occasionally observed in the southern North Sea. Whilst present all year round it has been most frequently observed between June and October (Ref 22.30). Recent sighting data for this species are shown in **Table 22-8**.

Bottlenose dolphin *(Tursiops truncatus)*

22.4.17. The bottlenose dolphin is the largest dolphin which frequents British waters, growing up to 4 m in length. They often display forward to sideways breaches, somersaults and tail slaps and frequently bow-ride. Like the white-beaked dolphin it is frequently seen mixing with other species. Group sizes are regularly between two and 25 animals, but individuals can travel in much larger groups, although this is most common in deep water (Ref 22.30).

22.4.18. There are resident populations of this species in Cardigan Bay, Wales and the Moray Firth, Scotland but animals are occasionally sighted in the North Sea (Ref 22.52). Recent sighting data for this species are shown in **Table 22-8**.

Minke whale (*Balaenoptera acutorostrata)*

22.4.19. The minke whale is the most common and widely distributed of the baleen whales in British waters. They are recorded throughout the northern and central North Sea but are rare visitors to the southern North Sea.

22.4.20. The minke whale is one of smallest of the baleen whales, their length averages 8.5 m. Spy hopping and breaching are common for this whale, which tend to form groups of about three animals (Ref 22.53). Although the species occurs year-round, most sightings have been recorded between May and September (Ref 22.54). Recent sightings data for this species is shown in **Table 22-8**.

Fin whale (*Balaenoptera physalus*)

22.4.21. The fin whale is a baleen whale. It is a slender bodied whale and can reach up to 24 m in length. The pectoral fins are less than one-fifth of the body length. The fin whale has a dark dorsal and lateral colouration with light streaks and the belly is white. The left side of the head is grey, while much of the right side is white in colour. The fin whale is an open ocean whale, not often seen near the coast in north-west Europe. It can be found at the surface or diving down to over 230 m in depth. It is only occasionally seen of the coasts of north and north-western Scotland and southern Ireland (Ref 22.55). Recent sightings data for this species is shown in **Table 22-8**.

Sperm whale (*Physeter macrocephalus*)

22.4.22. The sperm whale is a toothed whale which can be recognised as such by the single blowhole and the presence of teeth. It can be found off the coasts of northern Scotland, and in the north North Sea and off the western coasts of Ireland. They rare visitors in the southern North Sea (Ref 22.30).

22.4.23. Sperm whales can grow up to 18 m length and are normally found in medium to large groups of up to 50 individuals, though bulls are sometime seen alone. Their blow hole is unique amongst whales as it is directed forward. They are able to make dives up to two hours long (Ref 22.56). Recent sightings data for this species is shown in **Table 22-8**.

Other cetaceans

22.4.24. There have been no recorded sightings of the following cetaceans since 2016 within the study area :

- Atlantic white-sided dolphin (*Lagenorhynchus acutus*);
- Risso's dolphin (*Grampus griseus*);
- Long-finned pilot whale (*Globicephala melas*);
- Killer whale (*Orcinus orca*);
- Northern bottlenose whale (*Hyperoodon ampullatus*); and
- Humpback whale *(Megaptera novaeangliae).*

Pinnipeds

Grey seal (*Halichoerus grypus*)

22.4.25. Grey seals, the larger of the two species of seal in the UK, spend most of their time at sea only coming to shore in autumn to form breeding colonies. They are amongst the rarest seals in the world and the UK population represents 36% of the global grey seal population (Ref 22.57). Grey seals prefer to use remote islands, bays and caves as 'haul out' areas to give birth to their pups but also between foraging trips for food.

22.4.26. Grey seals are mainly distributed around and between haul-out sites and foraging areas and are more commonly seen in the central and northern North Sea. Foraging areas can be up to 100 km offshore and are generally connected to haul-out sites by a corridor of higher use (Ref 22.58).

22.4.27. Breeding takes place in the autumn, with a gestation period of 11 months. Exact timings vary not only between years but also location. In eastern England pupping occurs between November and December. A large proportion of the grey seal population will be on land and in waters close to colonies for several weeks from October to December during the pupping and breeding season, and again in February and March during the annual moult. Densities at sea are likely to be lower during this period than at other times of the year (Ref 22.30).

22.4.28. **Volume 3, Figure 22-2** illustrates grey seal distribution during the main foraging season – summer. At the Anderby Creek Landfall, densities are relatively low (0.009% per 25 km^2), as the landfall is south of the Donna Nook haul out. Densities increase to 0.03% per 25 km^2 from approximately KP 12, as the Project traverses closer to the Donna Nook haul out. From approximately KP 40, the density decreases to 0.01% per 25 km^2.

Harbour (Common) seal (*Phoca vitulina*)

22.4.29. The harbour or common seal is a species that is frequently found in British estuaries and on mudflats. Though they spend much of their time at sea they do require land for breeding purposes and therefore haul-out locations are important. The UK population represents 5% of the global harbour seal population (Ref 22.59). Unlike the larger grey seal, the harbour seal foraging area is within 40 - 50 km of their haul out site.

22.4.30. The harbour seal has a slightly shorter gestation period than the grey seal of 10 months. Pupping occurs on land from June to July while the moult is centred around August and extends into September (Ref 22.30). Therefore, from June to September harbour seals are ashore more often than at other times of the year.

22.4.31. **Volume 3, Figure 22-2** illustrates that the at-sea mean population density changes across the Project. There is typically a higher density at the Anderby Creek Landfall, with a mean population density of 0.03%. Densities remain high until approximately KP 30 and then drops to 0.001% further ashore.

Haul-out sites

22.4.32. The main breeding and haul out sites within the study area for grey seal are Donna Nook on the Lincolnshire coast, which is 9.8 km away from the Scoping Boundary, Gibraltar Point on the Lincolnshire Coast, which is 16.1 km away from the Scoping Boundary, and the Farne Islands, Lindisfarne and Coquet Islands on the Northumberland coast which are 90.8 km away from the Scoping Boundary.

22.4.33. The main harbour seal haul-out site is in The Wash on the Lincolnshire / Norfolk coast, over 16km away from the Scoping Boundary. Harbour seals have also been observed hauling out at Donna Nook in Lincolnshire.

22.4.34. Seal haul out sites are illustrated in: **Volume 3, Figure 22-3**.

Chelonians

Leatherback turtle (*Dermochelys coriacea*)

22.4.35. Although not indigenous to the UK, sea turtles are the only marine reptiles to be found in UK waters. The leatherback turtle is the most widely distributed turtle species and is the largest, growing up to 1.7 m in length, being found in all oceans except the Southern Ocean.

22.4.36. Within the North Atlantic its range extends from the tropics to the polar region right across to Europe's north-easterly fringe (Ref 22.60).

22.4.37. Leatherback turtles are pelagic feeders and their presence in UK waters is part of this species' wide-ranging migration in response to food distribution, notably jellyfish and other gelatinous zooplankton.

22.4.38. There have been no recent recorded sightings of leatherback turtles in the study area.

Lutrinae

European Otter (*Lutra lutra*)

22.4.39. The European otter is a largely solitary semi-aquatic mammal, which occurs in a wide variety of aquatic habitats such as rivers, streams, lakes, estuaries and on the coast. Coastal dwelling populations use shallow, inshore marine areas for feeding but they also require access to fresh water for bathing and terrestrial areas for resting and breeding. Their foraging range in the marine environment is limited to coastal areas (Ref 22.61).

22.4.40. An otter's foraging range is highly dependent on the quality of its habitat and food. There is evidence that some male otters will travel as far as 80 km but it is more usual for them to range between 10 and 32 km along the coastline (Ref 22.62). Coastal otters can hunt as far as 80 m offshore in water up to 10 m deep, but most feeding is done much closer to shore in water that is less than 3 m deep (Ref 22.63).

22.4.41. Sightings for the European otter peak in May to June, and September to October, although they can be seen all year round (Ref 22.64).

22.4.42. Although the European otter is found along the UK coastline there have only been rare recent sightings recorded within the study area. Analysis of the NBN Atlas for the period 2015 and 2025 identified no sightings recorded within 32 km of the proposed Landfall. Field observations of otter noted in the EGL 3 and EGL 4 PEIR confirmed otter presence in watercourses north of Willoughby, approximately 15 km inland from the proposed Landfall (Ref 22.65).

Protected Species

22.4.43. **Table 22-9** lists the protection afforded to species which have been identified within the study area. This list includes historical and recent sightings. Marine mammals are protected by several national and international conventions including:

- Convention on International Trade in Endangered Species of Wild Fauna and Flora - CITES. Aims to protect endangered plant and animal species from illegal trade and over-exploitation (Ref 22.66).
- Convention for the Protection of the Marine Environment of the North-East Atlantic - OSPAR Convention. The OSPAR Convention aims to protect the marine environment of the North-East Atlantic (Ref 22.67).
- International Union for Conservation of Nature and Natural Resources - IUCN. The IUCN Red Data list catalogues and highlights those animals and plants at high risk of global extinction (Ref 22.68).
- The Conservation of Habitats and Species Regulations 2017 (as amended) (COHSR) (Ref 22.69).
- The Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended) (COMHSR) (Ref 22.70).
- Natural Environment and Rural Communities (NERC) Act (Ref 22.71).
- Wildlife and Countryside Act 1981 (as amended in 1985) (Ref 22.72).

Table 22-9: Protected species

Species	International			UK		England
	OSPAR	CITES	IUCN	Wildlife and Countryside Act	COMHSR	Species of Principal Importance [20]
Cetaceans						
Harbour porpoise	Yes	Appendix II	Least Concern	Schedule 5	Annex II & Annex IV	Y
Common dolphin		Appendix I	Least Concern	Schedule 5	Annex IV	Y
Bottlenose dolphin		Annex A	Least Concern	Schedule 5	Annex IV	Y
White-beaked dolphin		Appendix I	Least Concern	Schedule 5	Annex II & Annex IV	Y
Atlantic white-sided dolphin		Appendix I	Least Concern	Schedule 5	Annex IV	Y
Risso's Dolphin		Appendix I	Least Concern	Schedule 5	Annex IV	Y

[20] As listed in Section 41 of the NERC Act (NERC, 2006).

Species	International			UK		England
	OSPAR	CITES	IUCN	Wildlife and Countryside Act	COMHSR	Species of Principal Importance [20]
Minke whale		Appendix I	Least Concern	Schedule 5	Annex IV	Y
Humpback whale		Appendix II	Least Concern	Schedule 5	Annex IV	
Long-finned pilot whale		Appendix II	Least Concern	Schedule 5	Annex IV	Y
Fin whale		Appendix I	Vulnerable	Schedule 5	Annex IV	Y
Northern bottlenose whale		Appendix I	Near threatened	Schedule 5	Annex IV	
Killer whale		Appendix I	Data deficient	Schedule 5	Annex IV	Y
Sperm whale		Appendix I	Vulnerable	Schedule 5	Annex IV	Y
Pinnipeds						
Grey seal			Least Concern		Annex II	
Harbour (Common) seal			Least Concern		Annex II	Y
Otters						
European otter		Appendix I	Near Threatened	Schedule 5	Annex II & Annex IV	
Chelonians						
Leatherback turtle	Yes		Vulnerable	Schedule 5	Annex IV	Y

Designated Sites

22.4.44. The Habitats Regulations Assessment (HRA) Screening and MCZ Screening Assessment will identify the relevant designated sites to be assessed by the HRA process and EIA. For cetaceans the assessments will use management units as defined by the IAMMWG (2023) (Ref 22.25) to identify relevant sites. Any transboundary sites within 250 km of the Scoping Boundary will also be considered. For pinnipeds, sites within 100 km of the Scoping Boundary for grey seal and 50 km of the English Offshore Scheme Scoping Boundary for harbour sea would be considered relevant. The following provides a preliminary list of the relevant designated sites identified.

Southern North Sea SAC

22.4.45. The Scoping Boundary for the Project crosses through the Southern North Sea SAC for 42.9 km. The SAC is an area of importance for harbour porpoise. The site stretches from the central North Sea (north of Dogger Bank) to the Straits of Dover in the south, covering an area of 36,951 km2 (Ref 22.73). It is estimated the site supports 17.5% of the UK North Sea MU population (Ref 22.74). The population size for the Southern North Sea SAC was estimated to be between 11,864 and 28,889 in 2019 (Ref 22.75).

22.4.46. Harbour porpoise are thought to move latitudinally between preferred summer and winter grounds within the SAC. The Scoping Boundary crosses both areas of the harbour porpoises' summer ground for 42.9 km and the winter ground for approximately 4.98 km. The conservation objective for the site is to maintain the favourable conservation status of the species.

22.4.47. **Volume 3, Figure 22-4** within the Southern North Sea SAC illustrates densities of harbour porpoise in both the summer and winter grounds in the SAC.

Humber Estuary SAC

22.4.48. The Project Scoping Boundary lies approximately 7.7 km from the Humber Estuary SAC. The site extends for 366.57 km^2 and includes the second largest coastal plain estuary in the UK. Grey seals are listed as a qualifying feature of this SAC. The main haul out site used throughout the year by grey seal on the Lincolnshire coast is Donna Nook (Ref 22.76). In 2018 there was an estimated pup count of 2,066 with a total population counted of 6,288 (Ref 22.76). However, in recent years the grey seal population has decreased by nearly 40% to 3,897 in 2021. The conservation objective for the site is to maintain and / or restore the favourable conservation status of the species.

The Wash and North Norfolk Coast SAC

22.4.49. The Scoping Boundary lies approximately 16.2 km from The Wash and North Norfolk Coast SAC. The SAC encompasses the largest embayment in the UK covering an area of 1,078 km2 (Ref 22.77). The extensive intertidal flats here and on the North Norfolk Coast provide ideal conditions for harbour seal breeding and hauling-out. This site is the largest colony of harbour seal in the UK, supporting some 7% of the total UK population.

22.4.50. The study area falls within the foraging range of European otter from within The Wash and North Norfolk Coast SAC. Otters occur along the North Norfolk coast and can be found in a variety of freshwater and coastal habitats. The conservation objective for the site is to restore the population size attribute of the harbour seal feature.

Berwickshire and Northumberland Coast SAC

22.4.51. The Project Scoping Boundary lies approximately 77.6 km from the Berwickshire and Northumberland Coast SAC. The SAC stretches from Fast Castle Head in Scotland to Alnmouth in England, encompassing both Lindisfarne and the Farne Islands. The site is 652.26 km^2 in size and supports a breeding colony of grey seal which supports around 2.5% of annual UK grey seal pup production (JNCC, 2025) (Ref 22.78). The conservation objective for the site is to maintain and / or restore the favourable conservation status of the species.

Future Baseline

22.4.52. The existing conditions of the study area are relatively stable. Marine mammal populations naturally change over spatial and temporal scales and therefore fluctuations are likely to occur over the lifetime of the Project. The abundance and distribution of prey is typically what influences the movement of marine mammal populations. Many species can adapt to gradual changes in environment, as their areas of feeding cover large distances, so climate change can be adapted too. However, not all species are as adaptational, and anthropogenic activities can alter global trends. For example, grey and harbour seals may be less resilient to long term changes due to them having more restrictive foraging grounds.

22.4.53. The main impacts of anthropogenic climate changes so far have been identified as decreasing ocean productivity, altered food web dynamics, reduced abundance of habitat-forming species, shifting species distributions and a greater incidence of disease. The North Sea has seen one of the greatest increases in sea surface temperature in the past 25 years, a rate of increase of 0.6 °C and 0.8 °C.

22.4.54. A shift in distribution could occur in species vulnerable to temperature changes, such as white-beak dolphin. There is a lot of uncertainty however about the details in timescale and location for white-beaked dolphin movements, but there is a clear alteration in ocean systems. White-beaked dolphin is endemic to cold temperatures of the North Sea, increasing water temperature reduces the areas suitable for foraging and habitat loss (Ref 22.79). Analysis of strandings data has suggested a potential change in their distribution along the North Sea coastline, particularly in southern regions where fewer animals are present. Due to their widespread abundance, the white-beaked dolphin was evaluated as a least concern, despite their range expecting to shrink due to rising sea temperature (Ref 22.80).

22.4.55. Grey seal populations have been increasing in the North Sea since the 1960s. Between 2010 and 2016, pup production has increased by 12% per year due to the rapid expansion of newer colonies in Lincolnshire. The data suggests there may have been some immigration to colonies further south, since the rate of increase in the southern North Sea has been lower in recent years, suggesting populations around the east coast of England may be reaching carrying capacity. Pup production in the Berwickshire and North Northumberland Coast SAC is continuing to increase and does not show any indication of reaching an asymptote (Ref 22.81). An analysis of Persistent Organic Pollutants (POPs) in blubber from grey seal pubs revealed that there were concentrations that could cause a severe toxic effect (Ref 22.82). Other threats include entanglement in marine and plastic debris, particularly ghost fishing gear.

22.4.56. Harbour seal numbers similarly have gradually increased since the 2000s. For the East coast seal counts are stable, however, the 2017 count was 3.9% lower than 2016. This is potentially indicating that the population is reaching carrying capacity earlier than anticipated. In 2002, there was an epidemic called the Phocine Distemper Virus (PDV), the southeast population of harbour seals have recovered from this. There is a high chance that climate change will cause a subtle shift in distribution but based on current trends and epidemics it will be difficult to record the impacts across the marine mammal's study area. Other studies suggest that harbour seal might have been exposed to domoic acid via consumption of contaminated prey. This may have the potential to cause harmful and lethal effects that disrupt population dynamics. Due to the declines recorded, the current UK harbour seal population estimate has been assessed as unfavourable and inadequate.

22.4.57. In the North Sea, the harbour porpoise is vulnerable to bycatch in gillnets used in commercial fishing. Another driver is that harbour porpoise has a high metabolic rate and need to feed regularly, the distribution in porpoise reflects the availability and energy density of prey species (Ref 22.83). Ref 22.84 has reported that necropsies of harbour porpoise strandings have revealed parasitic infections that suggest adverse effects with an anthropogenic origin, such as discharges of POPs. The impact of climate change remains poorly understood, there populations for now remain stable, as there appears to be no change in harbour porpoise range since 1994 (Ref 22.85; Ref 22.86).

22.4.58. The populations of bottlenose dolphins off the east coast of England have increased (Ref 22.87; Ref 22.88). The group sizes of bottlenose dolphin are directly related to an abundance in fish prey but can also be related to social bonds within the population. The overall assessment of prospects, and conservation status for bottlenose dolphin is unknown (Ref 22.89). The impacts affecting their available habitat are not thought to be increasing, and there are no threats identified likely to impact in the next 12 years.

22.4.59. In UK waters, minke whale's major threats are the direct and indirect interactions with fisheries. In Scotland, examination of minke whale strandings between 1990 and 2010 noted that 50% were due to entanglement in static fishing gear (Ref 22.90). Other threats include boat strikes, exposure to anthropogenic noise, ingestion of contaminants and the loss of critical habitat (Ref 22.91; Ref 22.92). Whale abundance in the greater North Sea is stable (Ref 22.93; Ref 22.94) and there is no evidence to support that the range of minke whale has changed since 2013 (Ref 22.94).

22.4.60. Future developments which may impact the future baseline for marine mammals and marine reptiles in the area include several offshore wind farm sites in the North Sea. This includes Ossian, Morven, Hornsea 3, Dogger Bank A, B, C, D and South, Outer Dowsing and Sofia offshore windfarms. In addition, other infrastructure such as EGL3, EGL4, Viking Link, NU Link, Aminth and Continental Link interconnector projects and Viking and Endurance Carbon Capture and Storage (CCS) pipelines. Of note are the Ossian export cable and EGL 3 and EGL 4 electricity links which are planned to make landfall at Anderby Creek, Lincolnshire. The potential for cumulative effects will be considered as part of the future EIA documents in accordance with the approach and guidance outlined within **Part 4, Chapter 30: Cumulative Effects**.

22.5 Design and Control Measures

22.5.1. As set out in **Part 1, Chapter 5: PEIR Approach and Methodology,** the environmental measures are characterised as design measures or control and management measures. A range of environmental measures would be implemented as part of the Project and will be secured in the DCO as relevant.

22.5.2. Several management plans will be provided as Outline Management Plans with the application for development consent to support the Deemed Marine Licence (DML). These will include an Outline Construction Environmental Management Plan (CEMP), Outline Marine Pollution Contingency Plan, and Outline Marine Mammal Mitigation Plan (MMMP). These documents will outline measures to be implemented to comply with legislation (e.g., in relation to the prevention of oil and chemical spills) and best industry practice (e.g., implementation of JNCC guidance to reduce impacts on marine mammals from underwater noise during geophysical surveys) during all phases of the Project. Final management plans will be submitted in accordance with the DML to discharge the licence conditions. An Outline CEMP would be provided with the PEIR and ES.

22.5.3. In addition, design measures identified through the EIA process have been applied to avoid or reduce potential significant effects. Design measures included that are relevant to commercial fisheries are included below and would also be included in a Commitments Register to be provided with the PEIR and ES. Compliance with these measures will be secured by way of the DCO or DML.

22.5.4. The following environmental measures are relevant to the marine mammal and marine reptile assessment:

- All vessels (exceeding 20 m) shall not exceed 14 knots during construction operations within the Project to protect marine mammals from ship strikes.
- Sub-bottom profiling shall comply with the JNCC guidelines for minimising the risk of injury and disturbance to marine mammals.
- HVDC poles would be bundled to minimise the effects of electromagnetic fields (EMF) for electrosensitive receptors.
- The Applicant would apply for a separate DML and European Protected Species Licence for UXO clearance.
- In accordance with the UK Government (2025) guidance *"Supporting minimising environmental impacts from unexploded ordnance clearance"* the UXO mitigation hierarchy would be followed for any targets identified during the UXO survey and confirmed as UXO, namely:
  i. Avoid the UXO by micro-routeing the cables a safe distance away.
  ii. Safely remove UXO to an alternative seabed position.
  iii. Safely remove UXO to surface for onshore disposal.
  iv. If no alternatives exist, in-situ disposal using the most appropriate low noise method.
  v. If in-situ disposal using the most appropriate low noise method fails after a minimum of three attempts, all best practice has been demonstrably applied, there are no alternatives, there is prior agreement with the MMO, and the relevant consent and mitigation is in place, undertake disposal using the high order method.

22.6 Scope of the Assessment

Potential Sensitive Receptors

22.6.1. The principal marine mammal and marine reptile receptors that have been identified as being potentially impacted by the Project are:

- Pinnipeds;
- Cetaceans;
- Marine turtles; and
- Relevant designated sites.

Likely Significant Effects

22.6.2. A range of potential impacts on marine mammals and marine reptiles have been identified which may occur during the construction, operation and maintenance, and decommissioning phases of the Project. **Table 22-10** describes the potential impacts identified and provides justification as to whether they will be scoped ‘in’ or ‘out’ of the EIA.

22.6.3. A precautionary approach has been taken and where there is no strong evidence base, or the significance is uncertain at this stage the impact has been scoped ‘in’ to the EIA. Where there is clear evidence that the effect from the impact will not be significant, either alone or in combination with other plans and projects, the impact has been scoped ‘out’ of the EIA.

22.6.4. Potential impacts have been established based on the standard Source-Pathway-Receptor approach, industry experience and where applicable reference to the list of marine pressures established by the JNCC Marine Pressures-Activities Database v1.5 (2022). The relevant JNCC pressures that would be covered by the impact pathways identified are provided in italics in the potential impact column.

22.6.5. For clarity, where seabed preparation is mentioned in the project activity column of **Table 22-10** this includes the following activities: boulder clearance, sandwave clearance (pre-sweeping), UXO identification, and pre-lay grapnel run (PLGR).

22.6.6. **Part 1, Chapter 4: The Project** establishes that the Applicant would apply to undertake UXO survey, UXO identification and UXO clearance through a separate Marine Licence(s) and Environmental Impact Assessment. A high-level overview of the potential impact on environmental receptors from these activities would be provided in the PEIR and ES to provide a holistic overview of all activities that may be needed during construction but would not be a licensed activity under the DCO and DML.

Table 22-10: Scoping assessment of impacts on marine mammals and marine reptiles

Potential Impacts	Project Activities	Sensitive Receptors	Scoping Justification		
			Construction	Operation (including repair and maintenance)	Decommissioning
Changes in supporting habitat and prey availability	Seabed preparation Cable burial and trenching Cable repair Deposit of external cable protection Cable removal Presence of project vessels and equipment Presence of cables	Cetaceans Pinnipeds Relevant designated sites	**IN** - Marine mammals have various prey species they feed on including a variety of fish, cephalopod and crustacean species and can travel great distances to forage. Activities that lead to temporary or permanent habitat loss affect seabed habitats which in turn could affect the availability of prey. Disturbance of the seabed during the spawning season for fishes with a demersal life stage (such as sandeel and herring) could have a direct impact on the spawning biomass for a specific year group, leading to a shortage of prey species for marine mammals in subsequent years. Other impacts on prey species such as underwater noise, temporary increase and deposition of suspended sediments and sediment heat changes could also combine with temporary and permanent habitat loss to lead to a change in prey availability. The impacts listed on fish and shellfish have been scoped 'in' to the EIA and therefore the potential for a significant indirect effect cannot currently be ruled out.		
		European otter	**OUT** - There are very few records of otter being present near the proposed Landfall and Project. They are not known to use the intertidal area for foraging and there is limited secure and sheltered resting places in the largely arable landscape surrounding the English Onshore Scheme. Impacts in the intertidal area will be limited through the use of a trenchless solution such as horizontal directional drilling (HDD). There is alternative preferred foraging and therefore it is proposed to scope this impact 'out' for European otter. **Part 2, Chapter 6: Biodiversity** will consider potential impacts to otter above MLWS.		
		Marine turtles	**OUT** - There are few records of marine turtles within the study area or wider Southern North Sea. Presence is largely attributed to accidental occurrences. As the Scoping Boundary is not part of the normal foraging ranges for marine turtles it is proposed to scope this impact 'out' of the EIA.		
Underwater noise changes	Geophysical survey (Sub-bottom	Cetaceans Pinnipeds	**IN -** Cetaceans and pinnipeds have evolved to use sound as an important aid in navigation, communication and hunting. It is generally accepted that exposure at close range to high noise levels can cause permanent or temporary hearing damage, while in extreme circumstances and at a very close range gross physical trauma is possible. During		

Potential Impacts	Project Activities	Sensitive Receptors	Scoping Justification		
			Construction	Operation (including repair and maintenance)	Decommissioning
	profiler and USBL)	Relevant designated sites	construction, operation and decommissioning, several sonar-like survey types would be used e.g., multi-beam echosounder (MBES), side scan sonar (SSS), sub-bottom profiler (SBP) and USBL (ultra short baseline). For geophysical survey it is best practice to follow the JNCC guidelines for minimising the risk of injury and disturbance to marine mammals from geophysical surveys. Adherence to the guidelines constitutes best practice and will, in most cases, reduce the risk of deliberate injury to marine mammals to negligible levels. Implementation of the guidance would be secured through the Construction Environmental Management Plan. The JNCC 2017 guidelines state that MBES surveys in shallow waters (<200 m) (the entire Project is in water depths <200 m) use higher frequencies that typically fall outside the hearing frequencies of cetaceans and that the sounds produced are likely to attenuate more quickly than the lower frequencies used in deeper waters. JNCC do not, therefore, advise that mitigation is required for MBES surveys in shallow waters. SSS equipment is similar and mitigation is not required for these surveys. It is therefore proposed that the EIA will focus on the use of SBP and USBL only and will assess the potential for injury and disturbance effects.		
		European otter	**OUT -** There are very few records of otter being present near the proposed Landfall and the Project. They are not known to use the intertidal area for foraging and their exposure to underwater noise from geophysical surveys would therefore be extremely limited. Therefore, it is proposed to scope this impact ‘out’ for European otter. **Part 2, Chapter 6: Biodiversity** will consider potential impacts to otter above MLWS.		
		Marine turtles	**OUT -** There are few records of marine turtles within the study area or wider Southern North Sea. Present is largely attributed to accidental occurrences. As the Scoping Boundary is not part of the normal foraging ranges for marine turtles it is proposed to scope this impact ‘out’ of the EIA. Any mitigation proposed for cetaceans and pinnipeds would be effective for marine turtles if they were to be present.		
Underwater noise changes	Presence of project	Cetaceans Pinnipeds	**OUT -** The vessels and equipment proposed and described in **Part 1, Chapter 4: The Project** are standard survey, construction and cable lay vessels used for cable installation, maintenance, repair and decommissioning. They are the same types as proposed for the EGL 3 and EGL 4 Projects. Underwater noise modelling for the EGL 3 and EGL 4 Projects		

Potential Impacts	Project Activities	Sensitive Receptors	Scoping Justification		
			Construction	Operation (including repair and maintenance)	Decommissioning
	vessels and equipment	Relevant designated sites	concluded that all of the equipment proposed would not cause noise levels sufficient to cause injury to cetaceans or pinnipeds. It is acknowledged that noise levels are sufficient to cause disturbance effects, but that the disturbance ranges calculated were overly precautionary. Construction noise is unlikely to differ significantly from vessel traffic already in the area, with animals within the Southern and Central North Seas subject to high levels of shipping traffic and habituated to vessel movements. The PEIR concluded that disturbance would fit under the JNCC et al., 2010 (Ref 22.95) classification of trivial as it will only lead to *"sporadic disturbances without any likely negative impact on the species"*. As the conclusions for the EGL 3 and EGL 4 Projects are analogous to the Project (same proposed vessels, proposed equipment, geographic location, water depths) it is concluded that no significant impacts are expected and it is proposed to scope this impact 'out' of the EIA.		
		European otter	**OUT -** There are very few records of otter being present near the proposed Landfall and the Project. They are not known to use the intertidal area for foraging and their exposure to underwater noise from vessels and equipment would therefore be extremely limited. Therefore, it is proposed to scope this impact 'out' for European otter. **Part 2, Chapter 6: Biodiversity** will consider potential impacts to otter above MLWS.		
		Marine turtles	**OUT -** There are few records of marine turtles within the study area or wider Southern North Sea. Present is largely attributed to accidental occurrences. As the Project Scoping Boundary is not part of the normal foraging ranges for marine turtles and the use of project vessels and equipment would be set against background of other shipping activity in the North Sea it is proposed to scope this impact 'out' of the EIA.		
Collision with project vessels	Presence of project vessels and equipment	Cetaceans Pinnipeds Marine turtles	OUT - Vessels would be used throughout the lifecycle of the Project. The greatest requirements would be during construction and decommissioning when multiple vessels may be working within or transiting to / from the Project, at any one time. During operation, the use of vessels would be reduced significantly to periodic inspection surveys, sporadic maintenance or repair works on an 'as needed' basis. Although shipping collision is a recognised cause of marine mammal mortality worldwide, the key factor influencing the injury or mortality caused by collisions is ship size and speed. Laist		

Potential Impacts	Project Activities	Sensitive Receptors	Scoping Justification		
			Construction	Operation (including repair and maintenance)	Decommissioning
			et al. (2001) (Ref 22.96) conclude that fatal collisions with marine mammals occur at vessel speeds of 14 knots or more. The Applicant has committed to ensuring that all vessels (exceeding 20 m) shall not exceed 14 knots during operations within the Project to protect marine mammals from ship strikes. This environmental measure would be secured through the Construction Environmental Management Plan. During transit times, vessels will be travelling at speeds greater than 5 knots. However, vessels would follow the shipping routes within the study area. Cetaceans and pinnipeds in the area are exposed to vessels of all sizes on a regular basis due to the density of shipping in the North Sea. An assessment was undertaken for the EGL 3 and EGL 4 Projects (Ref 22.48) that there is already a high level of shipping activity in the region where marine mammals densities are the highest and that additional presence of project vessels which would be travelling at low speeds would have no significant effect as the animals would already be habituated to shipping movements. Therefore, the collision risk posed by project vessels associated with the Project is likely to be significantly lower than that posed by commercial shipping activity. No significant effects are predicted. This impact pathway has therefore been scoped 'out' of the EIA.		
		European otter	**OUT -** European otter forage in shallow waters <3 m deep. There are very few records of otter being present near the proposed Landfall and the Project. They are not known to use the intertidal area for foraging and their exposure to vessels and equipment would therefore be extremely limited. Therefore, it is proposed to scope this impact 'out' for European otter. **Part 2, Chapter 6: Biodiversity** will consider potential impacts to otter above MLWS.		
Electromagnetic changes / Barrier to species movement	Presence of cables	Cetaceans Pinnipeds Marine turtles European otter	No Impact Pathway	**OUT -** No evidence of magnetic sensitivity has been reported for pinnipeds (Ref 22.97). It is acknowledged that cetaceans use magnetic cues, such as the earth's geomagnetic field, to navigate. The mechanism for how this is achieved is still unknown (Ref 22.98). Calculations of EMF fields for the EGL 3 Project (same cable specification, configuration (bundled) and rating,	No Impact Pathway

Potential Impacts	Project Activities	Sensitive Receptors	Scoping Justification		
			Construction	Operation (including repair and maintenance)	Decommissioning
		Relevant designated sites		water depth and length) as the Project shows rapid attenuation of EMF to background levels within 20 m (Ref 22.48). This localised change in the magnetic field may temporarily affect sensitive species as they cross the cables or pass alongside their length and may temporarily reduce their navigational ability within the zone of effect. However, Gill (2005) (Ref 22.99) reports that there have been no impacts to the migration of cetaceans over existing interconnector cables and Walker (2001) (Ref 22.100) note harbour porpoise migration across the Basslink has been observed unhindered despite several crossings of operating sub-sea HVDC cables. Given the rapid attenuation of the magnetic field, the lack of evidence of effects on cetaceans, and the predominantly pelagic existence resulting in separation with the change in field, cetaceans have a relatively low likelihood of being affected by EMF. The impact pathway has been scoped 'out' of the EIA.	
Temperature increase	Presence of cables	Cetaceans Pinnipeds Marine turtles European otter Relevant designated sites	No Impact Pathway	**OUT -** During the operation of an HVDC cable heat losses occur because of the resistance in the cable / conductor. This can cause localised heating of the surrounding environment (i.e., sediment for buried cables, or water in the interstitial spaces of external cable protection). There are no specific regulatory limits applied to temperature changes in the seabed, although a 2 °C change between seabed surface and 0.2 m depth is used as a guideline in Germany.	No Impact Pathway

Potential Impacts	Project Activities	Sensitive Receptors	Scoping Justification		
			Construction	Operation (including repair and maintenance)	Decommissioning
				Calculations undertaken for the EGL 3 and EGL 4 Projects (Ref 22.48) concluded that seabed temperatures at 0.2 m immediately above the cables are estimated to be 13 - 14 °C, with the cables operating at maximum operating temperatures, in comparison to a seabed temperature of 12 °C. The actual system is unlikely to reach these temperatures as the system would have to operate at full load continuously for an extended period of time to meet these temperatures. In reality the system would not be at full load for this long and therefore the temperature would fluctuate and be unlikely to reach these maximums. Although thermal effects would be long-term and occurring continuously for the operational lifetime of the Project, the temperature increase is low level will be localised to the immediate environment surrounding the cable and undetectable against natural temperature fluctuations in the surrounding water column. No significant effects are predicted. This impact pathway has therefore been scoped 'out' of the EIA.	
Accidental Spills (Hydrocarbon & PAH contamination)	Presence of project vessels and equipment	Cetaceans Pinnipeds Marine turtles European otter	**OUT** - The Project's vessels and contractors will comply with the International Convention for the Prevention of Pollution from Ships (MARPOL) 73/78 which relate to pollution from oil from equipment, fuel tanks etc and release of sewage (black and grey water). It is a legal requirement that all vessels have a Shipboard Oil Pollution Emergency Plan (SOPEP). Compliance with Regulations will be sufficient to minimise the risk to the environment. Several management plans will be provided as outline management plans with the application for development consent, to be secured as a condition of the DML. These will		

Potential Impacts	Project Activities	Sensitive Receptors	Scoping Justification		
			Construction	Operation (including repair and maintenance)	Decommissioning
		Relevant designated sites	include an Outline CEMP and Outline MPCP These documents will outline measures to be implemented to comply with legislation (e.g., in relation to the prevention of oil and chemical spills) during all phases of the Project.		
Visual disturbance	Presence of project vessels and equipment	Cetaceans Pinnipeds European otter Marine turtles	**OUT -** The physical presence of the Project's vessels and equipment during all phases of the Project have the potential to disturb marine mammals. Pinnipeds are more sensitive to anthropogenic disturbance when hauled out. Wilson (2013) (Ref 22.101) presents a review of such studies, and concludes that as an overall generalisation, unless habituation has been established by frequent non-intrusive visits, a safe boat distance for harbour and grey seals (i.e., one at which there is a low risk of significant numbers of seals flushing) is about 200 m. There are no seal haul-out sites within 1 km of the Project. The nearest haul out site is Donna Nook which is 9.8 km away from the Project Scoping Boundary. The region is already used by large ships and ferries and animals are therefore habituated to a certain degree to the presence of vessels. The presence of the Project's vessels will be temporary and transient, restricted to discreet activities and periods and will not increase the shipping baseline other than briefly. Vessels will be moving slowly whilst within the Project Scoping Boundary. Therefore, no significant disturbance effects are predicted from the presence of Project' vessels and the impact pathway has been scoped 'out' of the EIA.		
Transboundary	All activities.	Cetaceans Pinnipeds Relevant designated sites	**OUT -** The Project lies wholly in UK waters. A separate application will be submitted to the relevant statutory authority for the Scottish Scheme. Where the English and Scottish Schemes meet, collaborative environmental assessments will ensure impacts are fully assessed. Given the distance from the Project to the UK EEZ there would be no direct impacts on Natura 2000 sites. Indirect impacts have been considered including animals moving from the Natura sites into the ZOI for the Project, however given the wide area available for foraging within the MUs the proposed activities will not have a likely significant effect on animals from transboundary Natura 2000 sites. It is proposed that transboundary impacts are scoped 'out' of the EIA.		

Table 22-11: Assessment to be provided for information only at request of SNCBs

Potential Impacts	Project Activities	Sensitive Receptors	Scoping Justification		
			Construction	Operation (including repair and maintenance)	Decommissioning
Underwater noise changes	UXO clearance	Cetaceans Pinnipeds Designated sites	**IN -** Following the UXO mitigation hierarchy if all options have been pursued and UXO clearance through detonation is necessary there is the potential for a significant impact on cetaceans and pinnipeds from the impulsive noise. At the request of the SNCBs a high-level impact assessment of injury and disturbance would be provided in the PEIR and ES with mitigation proposed.	**OUT** - Once the cables are installed there would be no requirement for seabed clearance activities and no requirement for UXO clearance.	
		Marine turtles	**OUT** - There are few records of marine turtles within the study area or wider Southern North Sea. Present is largely attributed to accidental occurrences. As the Project Scoping Boundary is not part of the normal foraging ranges for marine turtles it is proposed to scope this impact out of the EIA. Any mitigation proposed for cetaceans and pinnipeds would be effective for marine turtles if they were to be present.		
		European otter	**OUT** - There are very few records of otter being present near the proposed Landfall and Project. They are not known to use the intertidal area for foraging and their exposure to underwater noise would therefore be extremely limited. Given that the landfall will be constructed using a trenchless technique such as HDD it is highly unlikely that UXO clearance would be required within the intertidal area. Therefore, it is proposed to scope this impact 'out' for European otter. **Part 2, Chapter 6: Biodiversity** will consider potential impacts to otter above MLWS.		

22.7 Assessment Methodology

Further Data to be Gathered / Processed

Desk-based Assessments

22.7.1. Extensive contemporary and historic information is available regarding abundance and distribution of marine mammals and marine reptiles in the North Sea. No specific additional studies will be undertaken to inform the baseline characterisation for this receptor. However, the EIA will draw upon the findings of studies undertaken for other topics as relevant.

22.7.2. Underwater noise modelling has been undertaken to inform the EIA for the EGL 3 and EGL 4 Projects. The Project has the same cable specification, configuration (bundled) and rating, water depth and length as the EGL 3 Project. The two cable systems run parallel for most of the route in English waters. It is therefore proposed that the underwater noise modelling conducted for EGL 3 would be used to inform the EIA for the Project.

Surveys

22.7.3. Geophysical surveys were completed for the Project between April and June 2025 using uncrewed surface vehicles (USVs). Marine mammal mitigation pre-watches were carried out by marine mammal observers and Passive Acoustic Monitoring (PAM) from nearby support vessels prior to the USV sources being activated in compliance with the JNCC guidelines for minimising the risk of injury to marine mammals from geophysical surveys. Recorded sightings would be used to inform the baseline description in the PEIR and ES.

22.7.4. Additionally, geophysical surveys were undertaken for the EGL 3 Project between August 2023 and February 2024. Environmental DNA (eDNA) samples were also acquired which recorded the presence of harbour porpoise, white beaked dolphin, minke whale and northern bottlenose whale at multiple stations. These observations and results would be used to inform the baseline description for the Project in the PEIR and ES.

Assessment of Significance

22.7.5. The marine mammals and marine reptiles assessment for the EIA will follow the approach set out in **Part 1, Chapter 5: EIA Approach and Methodology** of this Scoping Report, using the project-wide assessment matrix. However, whilst this has informed the approach that would be used in the assessment, it is necessary to set out how this methodology would be applied, and adapted as appropriate, to address the specific needs of the marine mammals and marine reptiles assessment.

22.7.6. Results from other technical aspect chapters, such as Part 3, Chapter 18: Coastal and Marine Physical Processes, Chapter 19: Intertidal and Subtidal Benthic Ecology and Chapter 20: Fish and Shellfish would be used to establish the potential impacts on supporting habitat and prey species for marine mammals and marine reptiles.

22.7.7. The criteria for characterising the value and sensitivity and magnitude for marine mammals and marine reptiles are outlined in **Table 22-12** and **Table 22-13,** respectively.

22.7.8. The assessment of sensitivity will be made with consideration of the vulnerability of the receptor to an impact and its ability to recover and adapt. Vulnerability can differ between different groups and species of marine mammal and will also vary depending on the impact pathway. For example, seal species are more sensitive to visual disturbance than cetaceans, whilst sensitivity to underwater noise changes differs between cetacean species depending on their ability to hear and detect certain frequencies.

22.7.9. Cetaceans and otter are EPS, protected by the Habitats Regulations, and are therefore considered to be of very high importance. The two species of pinniped present in the UK are nationally protected and are also considered to be of high importance. Because of this the concept of value does not allow the assessment to differentiate between sensitivity, as such when considering Receptor value or sensitivity, sensitivity to the impact pathway has been used as the main differentiator in the assessment. It should be noted that due their importance, these species are also considered in HRA process as required by the Habitats Regulations.

22.7.10. The assessment of magnitude will be made with consideration of the extent of the area impacted, the duration and frequency of the impact and the scale of the change i.e., whether it has an effect at an individual or population level. When determining the magnitude of impacts the life history and ecology of the receptors is important. Factors such as seasonality of presence or whether specific areas are required for a certain life stage which the species may be unwilling or unable to move away from are considered.

22.7.11. The ecological impact assessment will use available evidence, professional judgement and knowledge of marine mammal ecology and behaviour to determine the level of impact.

22.7.12. Underwater noise impacts from geophysical survey and UXO clearance would assess the risk of permanent and temporary injury occurring and behavioural disturbance. The latest peer-reviewed impact thresholds reported in Southall et al. (2021) (Ref 22.18) and the National Marine Fisheries Service (NMFS) (2024) (Ref 22.17) would be used to provide a quantitative prediction of the number of animals at risk. This information will consider the best available scientific evidence on the movement and behaviour of marine mammals, both under baseline conditions and would calculate the probability of animals being exposed to sufficient noise levels to cause injury or behavioural disturbance.

22.7.13. The significance of an effect, either adverse or beneficial, would be determined using a combination of the magnitude of the impact and the sensitivity of the receptor. A matrix approach would be used throughout all topic areas to ensure a consistent approach within the assessment. This is described further in **Table 5-3** of **Part 1, Chapter 5: EIA Approach and Methodology.**

Table 22-12: Criteria for characterising the sensitivity of receptors

Receptor Sensitivity	Description
High	No tolerance and ability to adapt behaviour so that survival and reproduction rates are affected and the population cannot recover. Recovery will take longer than 10 years following the cessation of activity or will not occur. The licensable activity is taking place during a sensitive season.

Receptor Sensitivity	Description
Medium	Limited tolerance and ability to adapt behaviour so that survival and / or reproduction rates may be affected and / or limited ability for the animal to recover. Recovery to pre-impact conditions is possible between 5 and 10 years.
Low	Some tolerance such as ability to adapt behaviour or recover from any impact so that survival is not affected, and reproduction rates are not affected in the medium term. Recovery to pre-impact conditions between 1 and 5 years.
Negligible	Receptor is able to adapt behaviour so that survival and reproduction rates are not affected. Recovery expected to be relatively rapid, i.e., less than approximately six months following cessation of activity.

Table 22-13: Criteria for characterising the magnitude of impact

Impact Magnitude	Description
High	The impact will affect the behaviour and distribution of sufficient numbers of a species, that the favourable conservation status for the relevant management unit / population is adversely affected.
Medium	Temporary changes in behaviour and / or distribution of individuals during a key season such that it would result in potential reductions to reproductive success for the population. Permanent effects on individuals that my influence survival but not at a level that would affect the favourable conservation status of the population.
Low	Short-term and / or intermittent and temporary behaviour effects in a small proportion of the population. Survival and reproductive rates very unlikely to be impacted to the extent that population effects are measured.
Negligible	Very short term, recoverable effect on the behaviour and / or distribution in a very small proportion of the population.

Assessment of Cumulative Impacts and Effects

22.7.14. **Part 4, Chapter 30: Cumulative Effects** defines the methodology for the assessment of cumulative effects. The marine mammals and marine reptiles assessment of intra- and inter-project cumulative effects will be carried out and reported within the ES to be submitted with the application for development consent.

22.7.15. The ZOI for the inter-project cumulative effects assessment of marine mammals and marine reptiles will vary depending on the location being assessed. The largest zone of impact would be associated with underwater noise changes from the geophysical survey. A 5 km (radius) ZOI would be used in the assessment based on the effective deterrent range proposed by JNCC *et al.* (2020) (Ref 22.21). If the location of the activity is to occur outside of a site designated for a marine mammal feature, the search area for relevant projects would be 5 km either side of the English Offshore Scheme

Scoping Boundary. However, if the impact was to occur within a site designated for a marine mammal feature the 5 km buffer would be applied to the designated site and all projects within the designated site and buffer would be assessed as relevant.

22.7.16. A separate assessment would be provided for UXO clearance. This would take the same approach as described above but would use a 26 km ZOI, again based on the effective deterrence range proposed by JNCC *et al.* (2020) (Ref 22.21).

22.7.17. **Part 4, Chapter 30: Cumulative Effects** of the PEIR would present the long and short lists of 'other developments' which will be considered at the ES stage, and the methodology which allowed for the identification of these other developments, to allow consultation bodies to form a view and provide comment on the other developments included. The long list will be reviewed and if necessary, updated, in the lead up to the ES, as the Project design further evolves and in response to any comments raised at statutory consultation.

22.8 Assessment Assumptions and Limitations

22.8.1. The PEIR and ES would be collated based on publicly available data and information only. It is assumed that the data collected is accurate. However, there are limitations to the original marine mammal surveys used to inform the baseline. Namely that most marine mammals are wide ranging and uninhibited by anthropogenic borders. Those recorded within the study area are likely to be individuals from larger biological populations originating from other points along the UK coast, internationally or the High Seas. Therefore, each survey provides a synopsis of wider marine mammal populations in the North Sea and beyond. Data from the SCANS surveys used in the assessment is collected during the summer months (mainly July) of a given survey year, representing summer distributions of cetacean species only. Summer distributions are generally higher than winter, meaning the assessment is based upon a worst-case scenario of cetacean presence in the study area.

22.8.2. The data would not be supplemented by additional project specific marine mammal field surveys as the publicly available information collated as part of the desktop review was considered sufficient for the nature of the Project. However, where marine mammal observations have been undertaken e.g., as mitigation for the Project marine characterisation surveys, and the observations would be used to supplement the publicly available data.

22.8.3. In the absence of publicly available data, a precautionary approach would be taken based on experience of similar linear schemes and professional judgement, to inform the scope of the assessment.

22.8.4. It is assumed that the data available for existing literature, relevant surveys and the proposed assessments will provide an appropriate evidence base for marine mammals within the study area. It is recognised that there is limited data available on the behaviour and extent of some species, however, given the linear nature of the Project and the temporary nature of most potential impacts, it is not anticipated this limitation will adversely affect the assessment.

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23. Shipping and Navigation

23.1 Introduction

23.1.1. This chapter presents how the shipping and navigation assessment will consider the potentially significant effects that may arise from the construction, operation (including maintenance and repair) and decommissioning of the English Offshore Scheme (as described in **Part 1, Chapter 5: EIA Approach and Methodology**). This chapter of the Scoping Report describes the methodology to be used within the assessment, the datasets to be used to inform the assessment, an overview of the baseline conditions, the potential significant effects to be considered within the assessment and how the potential significant effects will be assessed for the purpose of an Environmental Impact Assessment (EIA).

23.1.2. The English Offshore Scheme Scoping Boundary is illustrated on **Volume 3, Figure 23-1 Study Area for Shipping and Navigation**.

23.1.3. This chapter should be read in conjunction and considered alongside the following chapters found in **Volume 1**:

- **Part 1, Chapter 4: The Project**;
- **Part 1, Chapter 5: EIA Approach and Methodology**;
- **Part 3, Chapter 24: Commercial Fisheries**; and
- **Part 3, Chapter 25: Other Marine Users**.

23.1.4. This chapter is supported by the following figures found in **Volume 3**:

- **Figure 23-1 Study Area for Shipping and Navigation**;
- **Figure 23-2 Key Navigational Features**; and
- **Figure 23-3 AIS Vessel Tracks and Density (2019)**.

23.2 Relevant Legislation, Planning Policy and Technical Guidance

23.2.1. This section identifies the relevant legislation, national and local policy and guidance which has informed the scope of the shipping and navigation assessment.

Legislation

23.2.2. A summary of the key legislation considered in, but not limited to, the scope of shipping and navigation effects is outlined in **Table 23-1**.

Table 23-1: Legislation relevant to shipping and navigation assessment

Legislation	Legislative context
United Nations Convention on the Law of the Sea (UNCLOS) (Ref 23.1).	The United Nations Convention on the Law of the Sea (UNCLOS) is considered the "constitution of the oceans" and represents the result of an unprecedented, and so far, never replicated, effort at codification and progressive development of international law.
Convention on the International Regulations for Preventing Collisions at Sea (COLREGs) (Ref 23.2).	The COLREGs was designed to update and replace the Collision Regulations of 1960 which were adopted at the same time as the 1960 SOLAS (Safety of Lives at Sea) Convention.
International Convention for the Safety of Life at Sea (SOLAS) Chapter V (Ref 23.3).	Generally regarded as the most important of all international treaties concerning the safety of merchant ships.
Marine and Coastal Access Act (MCAA) (2009), section 69 subsection (1)(c) (Ref 23.4).	The MCAA provides the legal mechanism to help ensure clean, healthy, safe and productive and biologically diverse oceans and seas and is the primary legislation relevant to marine development plans.
Submarine Telegraph Act (1885) (Ref 23.5).	The Act applies to cables in the United Kingdom (UK) waters and was most recently updated by the Merchant Shipping Act 1995. This Act is designed to protect cables by making it an offence to damage a cable and restricting vessels and fishing activities within certain distances of cables.

Planning Policy

23.2.3. A summary of the planning policies at both a national and local level relevant to the scope of shipping and navigation effects is outlined in **Table 23-2** and **Table 23-2**.

Table 23-2: National Planning Policy relevant to shipping and navigation assessment

Policy reference	Policy context
Overarching National Policy Statement for Energy (NPS EN-1) (Ref 23.6). Paragraph 4.4.8.	States "*Applicants for a Development Consent Order must take account of any relevant Marine Plans and are expected to complete a Marine Plan assessment as part of their project development, using this information to support an application for development consent*".
Draft Overarching National Policy Statement for Energy (NPS EN-1) (April 2025) (Ref 23.7). Paragraph 4.5.8.	The Government has published a draft update to NPS EN-1. The 2025 Draft NPS EN-1 is largely the same as the 2023 document, relevant section numbers will remain the same, however, paragraph numbers will be updated.
National Policy Statement for Renewable Energy Infrastructure (NPS EN-3) (Ref 23.8).	States "*To ensure safety of shipping, applicants should reduce risks to navigational safety to as low as reasonably practicable (ALARP)*".

Policy reference	Policy context
Paragraphs 2.8.179, 2.8.189, 2.8.195 and 2.8.184.	The NPS for Renewable Energy Infrastructure states that Applicants must undertake a Navigational Risk Assessment (NRA) , and states Applicants should "*engage with interested parties in the navigation sector early in the pre-application phase of the proposed offshore wind farm or offshore transmission to help identify mitigation measures to reduce navigational risk to ALARP, to facilitate proposed offshore wind development. This includes the Marine Management Organisation (MMO) or Natural Resources Wales (NRW) in Wales, Maritime and Coastguard Agency (MCA), the relevant General Lighthouse Authority, such as Trinity House, the relevant industry bodies (both national and local) and any representatives of recreational users of the sea, such as the Royal Yachting Association (RYA), who may be affected. This should continue throughout the life of the development including during the construction, operation and decommissioning phases*."
National Policy Statement for Renewable Energy Infrastructure (NPS EN-3) Consultation Draft (April 2025) (Ref 23.9). Paragraphs 2.8.154, 2.8.162, 2.8.166 and 2.8.184.	The Government has published a draft update to NPS EN-3. The 2025 Draft NPS EN-3 is largely the same as the 2023 document, relevant section numbers will remain the same, however, paragraph numbers will be updated.

Table 23-3: Local Planning Policy relevant to shipping and navigation report

Policy reference	Policy context
East Inshore and East Offshore Marine Plan 2014 (Ref 23.8) and North East Offshore Marine Plan 2021 (Ref 23.10).	Marine plans set out the priorities and direction for future planning within the plan area and provide guidance on activities to avoid or promote. A Marine Plan Assessment would be provided with the Preliminary Environmental Information Report (PEIR) and Environmental Statement (ES) that outlines how the English Offshore Scheme complies with the policies and objectives of the relevant marine plans.

Technical Guidance

23.2.4. A summary of the relevant technical guidance, specific to the shipping and navigation assessment, that has informed this Scoping Report and will inform the assessment within the PEIR and ES, is given in **Table 23-4**.

Table 23-4: Technical Guidance relevant to shipping and navigation assessment

Technical guidance document	Context
International Maritime Organisation (IMO) Revised Guidelines for Formal Safety Assessment (FSA) for Use in the Rule-Making Process (MSC-MEPC.2/Circ. 12/Rev.2) (Ref 23.11).	International guidelines detailing the recommended methodology for safety assessments considering life, health, the marine environment and property.
MCA MGN 654 (M+F) Offshore Renewable Energy Installations (OREI) safety response (Ref 23.12).	Guidance that highlights issues that need to be considered during assessments to impacts on navigational safety caused by OREIs (this guidance is used in the absence of any specific to the nature of the English Offshore Scheme).
The International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) Guideline G1162, Edition 1.1, The Marking of Offshore Man-Made Structures, Dec 2021 (Ref 23.13).	Establishes guidance and standards for the marking of man-made structures, with respect to improving the safety of navigation, protecting the structures themselves, and safeguarding the environment.
MCA MGN 661 (M+F) Navigation - safe and responsible anchoring and fishing practices (Ref 23.14).	Guidance which highlights the importance of considering presence of subsea cables and pipelines on the seabed specifically during anchoring and fishing activity.
Methodology for Assessing the Marine Navigational Safety Risks & Emergency Response of Offshore Renewable Energy Installations (Ref 23.15).	Methodology recommendations for assessing marine navigational safety risks for OREIs (this guidance is used in the absence of any specific to the nature of the English Offshore Scheme).

23.3 Consultation and Engagement

23.3.1. In respect of shipping and navigation, key consultees have been identified and focussed engagement (through both informal and formal consultation) will be undertaken and recorded throughout the pre-application stage of the project. Key consultees identified to date are:

- MCA;
- Chamber of Shipping;
- Trinity House;
- RYA;
- Cruising Association;
- Local sailing clubs (if required);
- Associated British Ports (ABP) Humber;
- Port of Tyne;
- Port of Sunderland;

- Seaham Harbour;
- Tees and Hartlepool Port Authority; and
- Port of Blyth.

23.3.2. Key areas of consultation are intended to include engagement on stakeholder concerns, in-depth information on particular navigational features, impact assessment conclusions and proposed mitigation. Discussions will also include consideration of possible shallow water crossings and the implications for shipping and navigational stakeholders.

23.3.3. Consultation sessions with key shipping and navigation stakeholders will be undertaken to help inform the NRA, taking the form of Marine Hazard Identification (HAZID) workshops on potential hazards.

23.3.4. Local or specialist groups will be contacted should the assessment process identify a need to engage further detailed local knowledge, or if requested during the statutory consultation process.

23.3.5. Between May and June 2025, the Project held a non-statutory consultation to seek views of the public and stakeholders. As part of the non-statutory consultation responses were received from the MCA and MoD which are of relevance to the shipping and navigation chapter which is summarised in **Table 23-5**.

Table 23-5: Non-Statutory Consultation Responses

Stakeholder	Non-Statutory consultation response	How responses have been considered
MCA	We would expect an NRA to be undertaken for this project. The NRA should include a baseline study and focus on any key shipping routes and / or anchorage / disposal areas and fishing activity in the vicinity of the project. With supporting marine traffic surveys, the NRA should establish how the phases of the project are managed where risk is reduced and considered to be 'As Low As Reasonably Practicable' (ALARP). The range of potential impacts on shipping and navigation and other marine users should be identified which could occur during all phases of the project. We would like to point the applicant in the direction of the IMO FSA methodology.	An NRA will be completed for the Project as submitted as part of the future Preliminary Environmental Information Report (PEIR) and ES. It will follow the IMO FSA methodology and be supported by nautical charts.
	We would highly recommend that nautical charts are used in the NRA to provide reassurance, clarity and contextual understanding of the navigational environment. We would also expect local consultation with marine users of the proposed works and recommend undertaking a HAZID workshop including local ports, harbours, wind farm developers, fishing federations among others.	HAZID workshops will be undertaken with other marine users.
	Cable Burial Risk Assessment (CBRA) should define the minimum depth cables must be buried to	A CBRA will be completed for the Project and will

Stakeholder	Non-Statutory consultation response	How responses have been considered
	protect them from external influences. The final target burial depth will be determined by the CBRA which will consider ground conditions, intensity of shipping and fishing activity. The CBRA should inform the ES and NRA.	inform the future ES and NRA.
	If cable protection measures are required, the MCA would be willing to accept a 5% reduction in surrounding navigable depths referenced to Chart Datum. Where not achievable, the applicant must discuss this further with the MCA. This is particularly relevant where depths decrease towards shore and at cable crossings.	Noted, the Applicant will continue to engage with the MCA on this matter once further detailed information is available.
	Potential effects on Electromagnetic Deviation of the high voltage cable route must be assessed to establish electromagnetic deviation affecting ship compasses and other navigating systems. The MCA would be willing to accept a three-degree deviation for 95% of the cable route and for the remaining 5% there must be no more than a 5-degree electromagnetic compass deviation. On receipt of the study, the MCA reserves the right to request a deviation survey of the cable route post installation which the applicant should provide to the UK Hydrographic Officer (UKHO) via a hydrographic note (H102) if required.	An Electromagnetic Deviation Study will be submitted alongside the future ES submission.
	The MCA would welcome any survey data being submitted as third-party data to the UKHO for the update of nautical charts and publications to improve safety.	Noted.
Ministry of Defence (MoD) / Defence Infrastructure Organisation (DIO).	Please note, there are other defence interests in the locality relating to maritime navigational interests that are not defined in the public domain. The MoD will be able to provide specific advice, as may be necessary, on the proposed cable installation when more detailed information becomes available.	Noted, the Applicant will continue to engage with the MoD / DIO on this matter once further detailed information is available.

23.3.6. The Applicant also held a meeting with the MCA, Chamber of Shipping and Trinity house on the 29th July 2025 to present a general overview of the project, project timelines and engagement approach.

23.4 Baseline Conditions

23.4.1. This section provides a summary of the baseline environment of the English Offshore Scheme for navigational features, vessel traffic and marine incidents.

Study Area

23.4.2. The shipping and navigation study area comprises a 5 nautical mile (NM) buffer (equivalent to an 9.26 km buffer) around the English Offshore Scheme Scoping Boundary, as shown in **Volume 3, Figure 23-1**. This study area is considered sufficient to capture the potential Zone of Influence of the Project and characterise the shipping and navigational baseline in respect to shipping and navigation receptors, while at the same time, remaining sufficiently specific to the region of interest, taking into account that the English Offshore Scheme is a subsea cable with no planned surface features. The study area considers the English Offshore Scheme only, from the border between English and Scottish waters to the Mean High-Water Springs (MHWS) at the Anderby Creek Landfall, Lincolnshire, England.

Data Gathering Methodology

23.4.3. Data sourced for the baseline characterisation will be presented in accordance with relevant guidance for the topic. Desk based review of publicly available data sources (literature and Geospatial Information System (GIS) mapping files) will be used to describe the baseline environment, supplemented by information gathered through stakeholder engagement.

23.4.4. The shipping and navigation scoping exercise is based on publicly available and historic data sources, as detailed in **Table 23-6**.

Table 23-6: Data sources

Name	Description	Source authority	Year(s)
MHWS (Ref 23.16).	Mean high water boundary.	OS Terrain 50 (scale 1:50 000).	2024
World Port Index (Ref 23.17).	Location of the world's ports.	National GeospatialIntelligence Agency.	2019
Automatic Identification System (AIS) data (Ref 23.18).	Historic anonymised vessel traffic tracks from AIS data.	MMO data, ABPmer.	2019
Marine Themes Vector Data (Ref 23.19).	Marine Themes Vector data tiles including anchorage areas, marine use areas, aquaculture, navigational lines, navigational routes, beacons and buoys.	OceanWise	2025
Admiralty Charts (Ref 23.20).	UKHO charts to provide context.	UKHO	-

Name	Description	Source authority	Year(s)
Cables (Ref 23.21).	Cables, power, telecom, anchor, cable route, cable corridor, other.	European Subsea Cables Association (ESCA).	2025
Offshore Renewables Lease Data (Ref 23.22).	GIS data from The Crown Estate (TCE) including wind farm lease areas and cable areas.	TCE	2024
Wrecks and Obstructions (Ref 23.23).	UK wrecks and obstructions data.	UKHO	2024
Oil and Gas Surface Structures and Pipelines Data (Ref 23.24).	Oil and gas surface installations and pipelines GIS data.	North Sea Transition Authority (NSTA).	2024
Marine Accident Investigation Branch (MAIB) Incident Data (Ref 23.25).	Maritime incidents reported to the MAIB within the Study Area.	MAIB	1992 - 2023
Royal National Lifeboat Institution (RNLI) Incident Data (Ref 23.26).	RNLI callouts data within the Study Area.	RNLI	2008 – 2021
Search and Rescue Helicopter (SARH) taskings data (Ref 23.27).	SARH taskings data within the Study Area.	Department for Transport, MCA.	2015 – 2024
Routeing Measures (Ref 23.28).	UK Exclusive Economic Zone (EEZ) Ships' Routeing Measures as approved by the IMO, and / or the MCA.	UKHO	2024
Minerals (aggregates) site agreements (Ref 23.29).	Mineral, mining, mine, evaporite, aggregate, site agreement.	TCE	2023
Dredge spoil disposal sites (Ref 23.30).	Licenced Disposal Sites.	Centre for Environment, Fisheries and Aquaculture Science (Cefas).	2025

Current Baseline

Navigational features

23.4.5. Key navigational features have been identified from a review of Admiralty Charts and the Marine Themes datasets. These features are presented alongside oil and gas surface infrastructure, pipelines, subsea cables, offshore renewable energy sites, charted wrecks and obstructions, IMO routeing measures, and aggregate extraction and dredge spoil disposal sites (**Volume 3, Figure 23-2**).

23.4.6. Key navigational features within the Study Area include charted wrecks and obstructions, which are distributed throughout the Study Area. These comprise 107 dangerous wrecks, 110 other wrecks, and 131 obstructions. A total of 36 charted wrecks and obstructions are located within the English Offshore Scheme Scoping Boundary, consisting of 15 dangerous wrecks, 10 non-dangerous wrecks, and 11 obstructions (**Volume 3, Figure 23-2**). For further details on charted wrecks refer to **Part 3, Chapter 26: Marine Archaeology**. It should be noted that the Study Area adopted in this chapter is 5 NM on each side of the English Offshore Scheme Scoping Boundary (equivalent to an 9.26 km buffer), whereas **Volume 2, Part 3, Chapter 26: Marine Archaeology** considers the English Offshore Scheme Scoping Boundary plus a 2 km buffer on each side.

23.4.7. The Study Area contains 12 NSTA surface infrastructure installations and is intersected by 53 pipelines (active, not in use, abandoned or proposed pipelines only). Of these, 23 also cross the English Offshore Scheme Scoping Boundary. Furthermore, from ESCA data the Study Area intersects 10 existing subsea cables, six of which are active, with the remaining decommissioned. There are six cables intersecting the English Offshore Scheme Scoping Boundary. **Part 3, Chapter 25: Other Marine Users** should be consulted for full details on other sea user features present, including oil, gas, and cables.

23.4.8. There are three offshore wind farms that intersect the Study Area: Lincs, Inner Dowsing, and Triton Knoll (all operational). In addition, the English Offshore Scheme Scoping Boundary crosses eight offshore wind cable agreements: four are operational (Hornsea 1, Hornsea Project 2, Triton Knoll, and Dogger Bank A), two are consented, one is in planning, and one is under construction (Dogger Bank B) (see **Volume 3, Figure 23-2**).

23.4.9. Several offshore aggregate extraction and dredge spoil disposal sites are situated within the Study Area, with a particular concentration near the Anderby Creek Landfall. Notably, the now-closed Spurn Head dredge spoil disposal site overlaps the English Offshore Scheme Scoping Boundary at the point where it aligns with the UK territorial sea limit. The English Offshore Scheme Scoping Boundary also overlaps, just to the northeast, an offshore oil and gas production area connecting the Amethyst platforms. An IMO routeing measure is also present within the Study Area, regulating vessel traffic in the approaches to the River Humber.

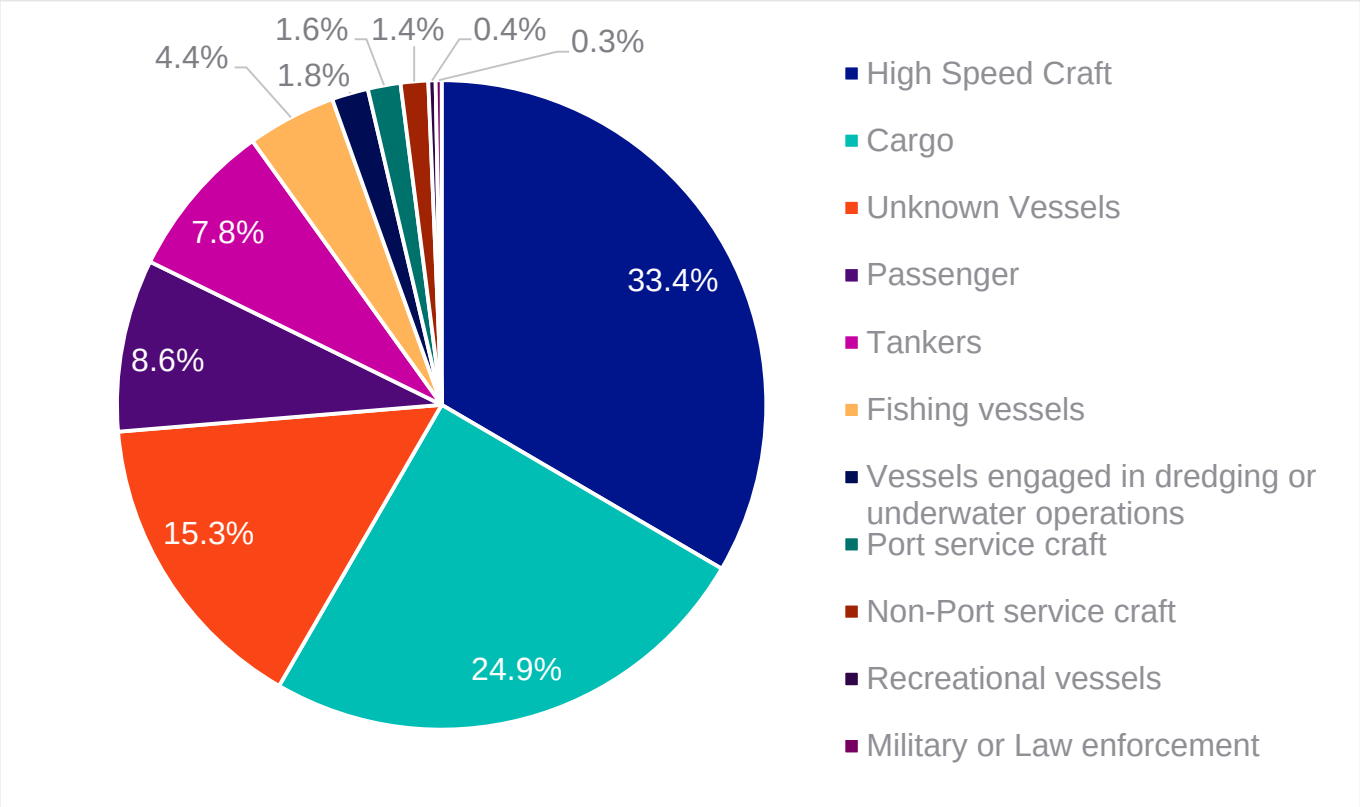
23.4.10. As identified from Marine Themes data, the Study Area contains 19 Aids to Navigation, including three beacons and 10 buoys, all of which fall within the UK territorial sea limit, with none overlapping the English Offshore Scheme Scoping Boundary. The majority of the Study Area is overlapped by Military Exercise Areas and Danger Areas (PEXAs), totalling 21 areas. The Humber Deep Water anchorage area overlaps with the Study Area near the IMO routeing measures.

23.4.11. The English Offshore Scheme Scoping Boundary Anderby Creek Landfall is located 43 km to the port of Grimsby, a major hub for the offshore wind industry and for fishing, and 41 km to the port of Boston.

Vessel traffic

23.4.12. In the 2019 Anonymised AIS Data, there were 236,714 total AIS vessel tracks recorded over the year in the Study Area, with an average of 648.5 tracks per day. In terms of vessel type, 'high speed craft" accounted for the largest share (33.4%) of the tracks in the Study Area, followed by 'cargo' vessels representing 24.9%. 'Unknown' vessels made up 15.3%, while 'passenger' and 'tanker' vessels represented 8.6% and 7.8% respectively, and 'fishing' vessels accounted for only 4.4% (Plate 23-1: Pie chart of vessel tracks by ship type group). The remaining vessel types in total accounted for only 5.5% of the total tracks in the Study Area.

Plate 23-1: Pie chart of vessel tracks by ship type group



23.4.13. An overview of the vessel activity within the Study Area based on MMO AIS track lines data from 2019 is shown in **Volume 3, Figure 23-3**.

23.4.14. **Volume 3, Figure 23-4** illustrates the geographic distribution of vessel tracks across the region, alongside the average annual shipping density within the English Offshore Scheme Scoping Boundary, mapped at a 2 km^2 grid resolution. Several route patterns are evident, crossing both the Study Area and the English Offshore Scheme Scoping Boundary, predominantly situated within or near the UK territorial sea limit in the vicinity of the Anderby Creek Landfall, and routeing to and from the River Humber.

23.4.15. The density grid reports similar patterns observed in the vessel tracks, ranging from a minimum of 2 vessel tracks per cell to a peak of 14,326, which is located near the

entrance to the River Humber. This peak area overlaps with the western section of the IMO routeing measures as displayed in **Volume 3, Figure 23-3**. The vast majority of grid cells (51.3%) exhibit low densities, averaging between 2 and 225 vessel tracks per cell. A further 30.6% of cells report between 226 and 1,000 tracks, and 15% of cells report between 1,001 and 4,500 tracks, while only 3.0% record over 4,500 tracks per cell.

Marine incidents

23.4.16. An analysis was conducted of marine incidents within the Study Area, drawing on RNLI launches from 2008 to 2021, SARH taskings from 2015 to 2024, and MAIB incident data from 1992 to 2023. A total of 498 RNLI launches, excluding false alarms and hoaxes, were recorded within the Study Area, 19 of which occurred within the English Offshore Scheme Scoping Boundary. Of the total RNLI launches in the Study Area, 12.4% cited 'machine failure' as the reason for deployment.

23.4.17. A total of 85 SARH taskings were recorded within the Study Area, with eight taking place within the English Offshore Scheme Scoping Boundary. The majority of taskings (69; 81.2%) were categorised as 'rescue / recovery', while only three taskings (3.5%) were classified as 'search only'.

23.4.18. Regarding MAIB incidents, 205 were reported within the Study Area, of which 7 occurred within the English Offshore Scheme Scoping Boundary.

Future Baseline

23.4.19. Future developments which may impact the future baseline for shipping and navigation in the area include several offshore wind farm sites in the North Sea. This includes Ossian, Morven, Hornsea 3, Dogger Bank A, B, C, D and South, Outer Dowsing and Sofia offshore windfarms. In addition, other infrastructure such as Eastern Green Link (EGL) 3 and EGL 4, Viking Link, NU Link, Aminth and Continental Link interconnector projects and Viking and Endurance Carbon Capture and Storage (CCS) pipelines. Of note are the Ossian export cables and EGL 3 and EGL 4 electricity links which are planned to make landfall at Anderby Creek, Lincolnshire.

23.4.20. Dogger Bank South, Dogger Bank D, Outer Dowsing, and Hornsea Offshore Wind Farm (OWF) projects are planning artificial nesting structures (ANS) as part of compensation measures for potential adverse effects on seabird populations—particularly kittiwakes, guillemots, and razorbills—linked to the Flamborough and Filey Coast (FFC) and Farne Islands Special Protection Areas (SPAs). These projects have ANS search areas and in certain cases such as Dogger Bank South, have a preferred location for ANS, forming the primary measure for kittiwakes and a supplementary option for guillemots and razorbills. These search areas and sites fall within the Study Area, however, are likely to be limited to a single monopile on the seabed.

23.4.21. The potential for cumulative effects will be considered as part of the future EIA documents in accordance with the approach and guidance outlined within **Part 4, Chapter 30: Cumulative Effects**.

23.4.22. A more detailed future baseline will be considered as part of the NRA process involving a discussion of possible future shipping traffic.

23.5 Design and Control Measures

23.5.1. As set out in **Part 1, Chapter 5: EIA Approach and Methodology**, the environmental measures are characterised as design measures or control and management measures. A range of environmental measures would be implemented as part of the English Offshore Scheme and will be secured through the Deemed Marine Licence (DML) and in the Development Consent Order (DCO) as relevant.

23.5.2. Several management plans will be provided as Outline Management Plans with the application for development consent to support the DML. These will include an Outline Construction Environmental Management Plan (CEMP), and an Outline Marine Pollution Contingency Plan (MPCP). These documents will outline measures to be implemented to comply with legislation (e.g., in relation to the prevention of oil and chemical spills) during all phases of the English Offshore Scheme. Final management plans will be submitted in accordance with the DML to discharge the licence conditions. An Outline CEMP would be provided with the PEIR and ES.

23.5.3. In addition, design measures identified through the EIA process would be applied to avoid or reduce potential significant effects. Design measures included that are relevant to shipping and navigation are included below and would also be included in a Commitments Register to be provided with the PEIR and ES. Compliance with these measures will be secured by way of the DCO or DML.

23.5.4. The following measures are relevant to the shipping and navigation assessment:

- Careful route selection and siting of infrastructure and temporary works with consideration of marine features relevant to shipping and navigation (for example anchorage areas, marinas);
- For safety purposes, all vessels would be requested to maintain a minimum distance from construction vessels to prevent interactions;
- Procedures would be in place to minimise disruption near high density shipping areas (e.g., avoidance of anchoring near busy areas, passage planning of installation vessels, emergency response plan etc);
- As-built locations of cable and external protection would be supplied to UKHO (Admiralty) and Kingfisher (KIS-ORCA);
- Project vessels would comply with the COLREGs (Ref 23.2), regulations relating to the MARPOL Convention 73/78 with the aim of preventing and minimising pollution from ships and the SOLAS (Ref 20.3);
- Timely and efficient communication would be given to sea users in the area via Notices to Mariners (NtM), Kingfisher Bulletins, Radio Navigation Warnings Navigational Telex (NAVTEX and Navigational Areas (NAVAREA) warnings and / or broadcast warnings;
- All Project vessels would display appropriate marks and lights and will always broadcast their status on AIS;
- Temporary aids to navigation would be used as required to guide vessels around areas of installation activity;
- A compass deviation report would be produced prior to installation;

- Guard vessel(s), using RADAR with Automatic RADAR Plotting Aid (ARPA) to monitor vessel activity and predict possible interactions, would be employed to work alongside the installation vessel(s) during cable installation works;
- A Fisheries Liaison Officer (FLO) and fisheries working group(s) would be maintained throughout installation to ensure project information is effectively disseminated, dialogue is maintained with the commercial fishing industry and access to home ports is maintained during the main fishing season;
- Cable protection features (e.g., rock placement, mattresses and grout bags) would be installed only where considered necessary for the safe operation of the English Offshore Scheme. This includes the repair of cables due to accidental damage, where depth of lowering is not achieved and at infrastructure crossings;
- Cable jointing operations to be planned away from high shipping activity where possible;
- The intention is to bury the cables in the seabed, except in areas where burial is not possible e.g., where ground conditions do not allow sufficient cable burial depth or at infrastructure crossings; and
- A CBRA will be undertaken to identify appropriate target depth of burial based on geology, water depths and AIS data. This would reduce the chance of interaction with other marine users, and as per the CBRA, recommendations of a deeper burial or suitable cable protection would be implemented in areas of high shipping activity to further reduce this risk.

23.6 Scope of Assessment

Potential Sensitive Receptors

23.6.1. Potential sensitive shipping and navigation receptors which may be impacted by the Project Offshore Scheme include:

- All vessel types (commercial and recreational);
- Fishing vessels; and
- Navigational features (including ports, anchorage areas, pilot boarding stations and other marine navigational features).

Likely Significant Effects

23.6.2. A range of potential impacts on shipping and navigational features have been identified which may occur during the construction, operation (including maintenance and repair), and decommissioning phases of the Project.

23.6.3. A summary of the proposed scope of the assessment is provided in **Table 23-7**, describing the potential impacts identified and providing justification as to whether they will be scoped ‘in’ or ‘out’ of the EIA.

23.6.4. A precautionary approach has been taken and where there is no strong evidence base, or the significance is uncertain at this stage the impact has been scoped ‘in’ to the EIA. Where there is clear evidence that the effect from the impact will not be significant, either alone or in combination with other plans and projects, the impact has been scoped ‘out’ of the EIA

Table 23-7: Scoping assessment of impacts on shipping and navigation

Potential Impacts	Project Activities	Sensitive Receptors	Scoping Justification		
			Construction	Operation (including maintenance and repair)	Decommissioning
Third-party to project vessel collision.	Mobilising project vessels.	All vessel types.	**IN** - Presence of construction vessels could present a risk of collision. Construction vessels would be slow moving or stationary for periods of time, increasing the risk of collision. The collision risk is likely to be greater in higher density shipping areas, in particular within shipping channels.	**IN** - Maintenance and repair vessels presence could present risk of collision. Maintenance or repair vessels could be slow moving or stationary for periods of time, increasing the risk of collision. Maintenance works are likely to be of a shorter duration than construction and at specific locations rather than the whole cable route,.	**IN** - Decommissioning activities may involve the presence of project vessels, which could present a risk of collision. Decommissioning vessels may be slow moving or stationary for periods of time, increasing the risk of collision. Decommissioning may involve removal of all or part of the cable within 12 NM of land, depending on TCE requirements.
Deviation from established and identified vessel routes and areas.	Mobilising project vessels.	All vessel types Navigational features.	**IN** - Construction activities could cause disturbance to established vessel routes and areas. Project vessels could block navigational features (such as ports approach channels, pilot boarding stations, anchorage areas etc) causing disruption. Construction activities (including lights and noise)	**IN** - Maintenance or repair activities could cause disturbance to established vessel routes and areas. Project vessels could block navigational features (such as ports approach channels, pilot boarding stations, anchorage areas etc) causing disruption. Maintenance or repair activities (including lights	**IN** - Decommissioning activities may involve the presence of project vessels, which could cause disturbance to established vessel routes and areas. Project vessels could block navigational features (such as ports approach channels, pilot boarding stations, anchorage areas etc) causing disruption. Decommissioning may

Potential Impacts	Project Activities	Sensitive Receptors	Scoping Justification		
			Construction	Operation (including maintenance and repair)	Decommissioning
			could cause disruption to recreational vessels.	and noise) could cause disruption to recreational vessels.	involve removal of all or part of the cable within 12 NM of land, depending on TCE requirements. Decommissioning activities (including lights and noise) could cause disruption to recreational vessels.
Interaction with fishing gear.	Cable lay and protection Cable crossings.	Fishing vessels.	**IN** - During the construction phase, there could be accidental fishing gear snagging onto exposed subsea cable or cable protection measure.	**IN** - During operation phase, there could be accidental fishing gear snagging onto exposed subsea cable or cable protection measure. This could be of particular concern at cable crossing locations, which may expect to have additional cable protection measures.	**IN** - During decommissioning phase, there could be accidental fishing gear snagging onto exposed subsea cable or cable protection measure. Decommissioning may involve removal of all or part of the cable within 12 NM of land, depending on TCE requirements.
Interaction with vessel anchors and anchoring activity.	Cable lay and protection Cable crossings.	All vessel types.	**IN** - During the period between cable lay and burial / installation of cable protection measures, the uncovered cable is at a higher risk of interaction with other vessels through anchor strike or drag.	**IN** - Potential risk of anchor strike or drag onto cable or associated cable protection during the operational phase of the cable. This could be of particular concern at cable crossing locations.	**IN** - Decommissioning activities may include removal of the cable, during which the cable may be uncovered, and at a higher risk of interaction with other vessels through anchor strike or drag. Decommissioning may involve removal of all or part

Potential Impacts	Project Activities	Sensitive Receptors	Scoping Justification		
			Construction	Operation (including maintenance and repair)	Decommissioning
					of the cable within 12 NM of land, depending on TCE requirements.
Reduction in under keel clearance resulting from laid cable and associated protection.	Cable lay and protection Cable crossings.	All vessel types Navigational features.	**IN** - Possible reduction in under-keel clearance during construction phase, while cable and protection measures are installed.	**IN** - Cable protection measures may reduce navigable depth. Reduction in navigable depth may affect access to navigational features (such as ports approach channels, pilot boarding stations, anchorage areas etc)	**IN** - Decommissioning may involve leaving the cable in situ, which may represent a permanent reduction on under keel clearance. Decommissioning may involve removal of all or part of the cable within 12 NM of land, depending on TCE requirements.
Interference with marine navigational equipment.	Cable lay.	All vessel types.	**OUT** - No risk of electromagnetic forces from the cable causing magnetic compass deviations during construction phase.	**IN** - Interference with navigational equipment may be caused due to Electromagnetic Fields (EMF) from the cables.	**OUT** - No risk of electromagnetic forces from the cable causing magnetic compass deviations during decommissioning phase.

23.7 Assessment Methodology

Further Data to be Gathered / Processed

Desk-Based Assessments

Navigational Risk Assessment

23.7.1. A NRA shall be undertaken to understand and address the potential effects of the Project on shipping and navigation. The NRA will inform the shipping and navigation assessment chapter within the future stages of the EIA process including the PEIR and the ES. The NRA will comprise the following key components:

- Marine Traffic Survey (MTS);
- Consultation; and
- FSA.

23.7.2. The following data sources are proposed to be used to inform the assessment:

- A year of AIS data (purchased from supplier);
- Vessel Monitoring System (VMS) data from the MMO;
- Marine Themes Administrative theme data (OceanWise);
- Relevant sailing and pilot books;
- Admiralty charts (UKHO);
- Offshore renewables lease data (TCE);
- UK wrecks and obstructions data (UKHO);
- Oil and gas surface structures and pipelines data (NSTA);
- MAIB incident data (MAIB);
- RNLI incident data (RNLI);
- SARH taskings data (Dept for Transport & MCA);
- IMO routeing measures (UKHO);
- Minerals (aggregates) site agreements (TCE); and
- Dredge spoil disposal sites (Cefas).

Marine Traffic Study

23.7.3. To provide a detailed understanding of shipping activity in the Study Area, an MTS will be undertaken as part of the NRA and shall identify navigational features and patterns of vessel activity within the vicinity of the proposed cable, to establish baseline conditions to inform the subsequent FSA.

23.7.4. The MTS shall acquire detailed AIS data for the region, with the following temporal and spatial extent:

- A proposed time period of one year, based on the most recent AIS data covering the 365 days preceding the day before the acquisition date. For example if the acquisition date is 15 August 2025, the one-year period spans from 14 August 2024 at 00:00 to 13 August 2025 at 23:59; and
- A 5 NM wide buffer around the English Offshore Scheme Scoping Boundary.

23.7.5. The AIS data will be used to assess the patterns and intensity of shipping activity in the vicinity of the Project.

23.7.6. The IMO requires that; all ships of ≥ 300 gross tonnage engaged on international voyages, cargo vessels of ≥ 500 gross tonnage not engaged on international voyages, and all passenger ships regardless of size built on or after 1 July 2002, are fitted with an AIS. All European Union (EU) registered fishing vessels of length 15 m and above are required to carry AIS equipment by EU directive. Smaller fishing vessels (below 15 m) as well as recreational craft are not required to carry AIS but a proportion does so voluntarily, however these are likely to be under represented in the AIS data. Therefore, additional data sources including VMS data, the RYA Coastal Atlas, and consultation will be used to validate the findings of the AIS analysis.

23.7.7. Further analysis shall consider key navigational features which will be extracted from additional sources of data such as:

- Historic AIS vessel traffic data;
- Fishing vessel traffic data (VMS and AIS), noting that full information on fishing traffic will be available from the Commercial Fisheries assessment (**Part 3, Chapter 24: Commercial Fisheries**);
- Admiralty charts for the Study Area;
- Maritime incident data in the area (RNLI, SARH and MAIB);
- The RYA UK Coastal Atlas of Recreational Boating; and
- Sailing and Pilot books.

Surveys

23.7.8. No site-specific surveys are planned for this topic, as extensive information is readily available to characterise the shipping and navigation baseline of this region.

Assessment of Significance

23.7.9. The shipping and navigation EIA will broadly follow the assessment approach set out in **Part 1, Chapter 5: EIA Approach and Methodology**. However, whilst this has informed the approach that would be used in the shipping and navigation assessment, it is necessary to set out how this methodology would be applied, and adapted as appropriate, to address the specific needs of the shipping and navigation assessment.

23.7.10. The MCA MGN 654 - OREI Safety Response (Ref 23.12) specifies that impacts to shipping and navigation receptors must be assessed via a FSA process (Ref 23.11). Therefore, the FSA approach will be applied in this chapter and in future stages of EIA.

Formal safety assessment

23.7.11. The FSA process provides a systematic method for evaluating and controlling risk, within a structured framework. Baseline shipping patterns and navigational features along with stakeholder consultations provide the basis for establishing potential hazards, or impacts. These impacts are then characterised in their magnitude and likelihood, which ultimately provides for risk categorisation against a risk matrix.

23.7.12. Additional control or mitigation measures are then identified to provide a reduction in risk. The residual effects are assessed to determine risk acceptability in accordance with the principles of ALARP (As Low As Reasonably Practicable). Where necessary or appropriate, mitigation measures are assessed to determine / justify an ALARP position.

23.7.13. The FSA comprises the following components:

- Hazard identification;
- Risk assessment;
- Identification of additional mitigation measures;
- Cost-benefit analysis;
- Risk assessment table; and
- Cumulative effects and future case.

23.7.14. These components will be detailed in the following sections.

Hazard identification

23.7.15. Taking into account the Project components and activities, baseline information provided in the MTS, consultation responses and expert judgement / industry experience, a list of relevant impacts to marine navigation shall be compiled as a desktop exercise. The list shall be captured in a table and retained as an auditable hazard log. Hazards relating to separate Project phases shall be identified.

Risk assessment

23.7.16. The risk assessment process is implemented using a classic risk matrix approach. Each hazard / impact is individually evaluated against specific criteria and assigned categories for ‘severity of consequence’ (Magnitude) and ‘frequency of occurrence’ (Likelihood).

23.7.17. The risk assessment categorisations directly reflect the UK Health and Safety Executive (HSE) principles of ALARP. The approach is consistent with relevant marine guidance from the IMO (Ref 23.11) and the UK MCA MGN 654 (Ref 23.12). The definitions of the categories for outcome severity / magnitude and the frequency or likelihood are captured in **Table 23-8 and Table 23-9.**

23.7.18. The likelihood and consequence categories are combined for each hazard / impact using the risk matrix shown in **Table 23-10**, which is used to derive a risk tolerability level of either Unacceptable, Tolerable or Broadly Acceptable, with unacceptable or tolerable risks being considered to be significant in EIA terms. Definitions of each risk tolerability level are provided in **Table 23-11.**

Table 23-8: Indicative hazard outcome severity criteria

Severity / Magnitude	Criteria
High	Loss of a crew member, or multiple serious injuries. Major / Severe damage to infrastructure or vessel. Operations / activities halted indefinitely. Major commercial impact. Tier 3 response – national assistance needed.
Medium	Serious injury to person. Notable damage to infrastructure or vessel. Protracted operational delays. Moderate commercial impact. Tier 2 response – external assistance needed.
Low	Minor injury(s) to person. Minor / Local damage to equipment or vessel. Minor operational delays. Minor commercial impact. Tier 1 response – local assistance needed.
Negligible	No significant operational impacts. Minor environmental emissions, no spill response needed

Table 23-9: Indicative likelihood criteria

Definition	Indicative description
Remote	Never occurred during Company's activities but has been known to occur in the wider industry.
Unlikely	Has occurred in Company's activities in the past but as an isolated incident under exceptional circumstance.
Occasional	Has occurred on more than one occasion during Company's activities in the past.
Likely	Occurs regularly during Company's activities.

Table 23-10: Risk matrix

Frequency / Likelihood					
	Likely	Broadly Acceptable	Tolerable	Unacceptable	Unacceptable
	Occasional	Broadly Acceptable	Tolerable	Tolerable	Unacceptable
	Unlikely	Broadly Acceptable	Broadly Acceptable	Tolerable	Tolerable
	Remote	Broadly Acceptable	Broadly Acceptable	Broadly Acceptable	Tolerable
		Negligible	**Low**	**Medium**	**High**
	Severity of Consequence / Magnitude				

Table 23-11: Tolerability definitions

Tolerability	Definition
Broadly Acceptable (Low Risk - not significant).	Generally regarded as acceptable and adequately controlled. At these risk levels the opportunity for further reduction is limited.
Tolerable if ALARP (Moderate Risk - significant).	Typical of the risks from activities which people are prepared to tolerate to secure benefits. There is however an expectation that such risks are properly assessed, appropriate mitigation measures are in place, residual risks are ALARP and that risks are periodically reviewed to monitor if further controls are appropriate.
Unacceptable (High Risk - significant).	Generally regarded as unacceptable whatever the level of benefit associated with the activity. Significant risk mitigation or design modification required to reduce to tolerable (ALARP).

Identification of additional mitigation measures

23.7.19. Where risks are assessed as being unacceptable or tolerable (significant) after factoring in the embedded mitigation measures already identified, further additional risk mitigation measures are identified and considered.

Cost-benefit analysis

23.7.20. In order to formulate recommendations for decision-making, any additional risk mitigation measures identified are subjected to a qualitative cost-benefit comparison in order to justify the measure and establish a residual risk categorisation and basic ALARP position.

Risk assessment table

23.7.21. The Risk Assessment shall be captured in a table such that the hazards and impacts for each of the Project phases and the relevant embedded mitigation measures and any additional mitigation measures identified, are captured to provide an auditable hazards and effects register or log shown in **Table 23-12**.

Table 23-12: Hazard and effects register example

Hazard / Impact	Collision
Phase	Construction
Embedded Mitigation Measures	Notice to Mariners COLREGS.
Causes	Human Error
Consequence	High
Likelihood	Remote
Risk	Tolerable
Additional Mitigation Measures	Specific Procedures.
CBA	Measure Justified.
Residual Risk	ALARP

Assessment of Cumulative Impacts and Effects

23.7.22. **Part 4, Chapter 30: Cumulative Effects** defines the methodology for the assessment of cumulative effects. The shipping and navigation assessment of intra- and inter-project cumulative effects will be carried out and reported within the ES to be submitted with the application for development consent.

23.7.23. The PEIR will present the long and short lists of ‘other developments’ which will be considered at the ES stage, and the methodology which allowed for the identification of these other developments, to allow consultation bodies to form a view and provide comment on the other developments included. The long list will be reviewed and if necessary, updated, in the lead up to the ES, as the English Offshore Scheme design further evolves and in response to any comments raised at statutory consultation.

23.7.24. Cumulative effects and future case will be included in the FSA by review of future projects potentially affecting or influencing the Study Area and the wider general area, and with an assumption of a general future increase in traffic density.

23.8 Assessment Limitations and Assumptions

23.8.1. The baseline description collated in this chapter has been based on a range of publicly available data and information. It is assumed that the data collated is accurate. The data would be supplemented with additional information acquired as part of the stakeholder engagement process and through the additional studies identified in this chapter to inform the PEIR and ES.

23.8.2. The AIS data is likely to be under representative for smaller vessels due to legal requirements exempting vessels under 15 m in length. This is most likely to impact fishing vessels and recreational craft. To mitigate this limitation, VMS data will be incorporated into the next stages of assessment for smaller fishing vessels (over 12 m but under 15 m) and the RYA Coastal Atlas will be used to identify vessel density of recreational craft.

23.8.3. Variations and trends in vessel activity are an important aspect of the baseline assessment. Although statistics and consultation can identify past long-term trends, it is harder to predict future trends which may result from changes in market conditions, changes following the withdrawal of the UK from the European Union or global events such as conflict.

23.8.4. In the absence of data, a precautionary approach has been taken and professional judgement, based on experience of similar linear projects, have been used where required to inform the scope of the assessment.

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24. Commercial Fisheries

24.1 Introduction

24.1.1. This chapter of the EIA Scoping Report describes the potential impacts arising from the construction, operation and maintenance, and decommissioning of the English Offshore Scheme on commercial fisheries. Commercial fishers target pelagic fishes (species that live within the water column), demersal fishes (species that live and feed on or near the seabed), and shellfish (crustaceans and molluscs).

24.1.2. There may be interrelationships related to the potential effects on commercial fisheries and other disciplines. Therefore, please also refer to the following chapters of this EIA Scoping Report:

- **Part 3, Chapter 20 Fish and Shellfish**: due to the close association between the receptors and the potential for overlapping environmental measures.
- **Part 3, Chapter 23 Shipping and Navigation** - navigational impacts on fishing vessels such as reduction in under keel clearance, interference with marine navigational equipment, and snagging risks in relation to fishing operations would be assessed in this topic chapter.

24.1.3. This chapter is supported by the following figures in **Volume 3**:

- **Figure 24-1 Commercial Fisheries Study Area**
- **Figure 24-2 Pelagic trawl and seine and static gear effort within the Study Area**
- **Figure 24-3 Bottom seines and dredging effort within the Study Area**
- **Figure 24-4 Beam trawling and bottom otter trawl effort within the Study Area**
- **Figure 24-5 Surveillance sightings by vessel gear type during 2018 to 2023**
- **Figure 24-6 Surveillance sightings by vessel nationality during 2018 to 2023**
- **Figure 24-7 Commercial fisheries cumulative effects**

24.2 Relevant Legislation, Planning Policy and Technical Guidance

24.2.1. This section identifies the relevant legislation, national and local policy and guidance which has informed the scope of the commercial fisheries assessment.

Legislation

24.2.2. A summary of the key legislation considered in, but not limited to, the scope of commercial fisheries effects is outlined in **Table 24-1**.

Table 24-1: Legislation relevant to commercial fisheries assessment

Legislation	Legislative Context
The Planning Act 2008 (Ref 24.1)	An Act to establish the Infrastructure Planning Commission and make provision about its functions; to make provision about, and about matters ancillary to, the authorisation of projects for the development of nationally significant infrastructure.
The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (Ref 24.2)	This Act transposes European Union (EU) Directive 2011/92/EU (the EIA Directive) into UK law for nationally significant infrastructure projects, ensuring environmental safeguards while potentially streamlining the process.
The Marine Works (Environmental Impact Assessment) regulations 2007 (as amended) (Ref 24.3)	The Marine Works (EIA) Regulations 2007 require certain types of projects that have the potential to significantly affect the environment to submit an Environmental Impact Assessment before a Marine Licence decision is made.
Marine and Coastal Access Act 2009 (Ref 24.4)	This Act provides a framework for managing and protecting marine and coastal areas, promoting sustainable development, enhancing public access to the coast, and conserving marine biodiversity and habitats, including establishing marine protected areas and coastal access routes. The Act also establishes the Marine Management Organisation (MMO) as the authority responsible for the preparation and implementation of marine plans and enforcing fisheries and nature conservation regulations.

Planning Policy

24.2.3. A summary of the planning policies at both a national and local level relevant to the scope of commercial fisheries effects is outlined in **Table 24-2**.

Table 24-2: National Planning Policy relevant to commercial fisheries assessment

Policy Reference	Policy Context
Overarching National Policy Statement for Energy (NPS EN-1) (Ref 24.7) Paragraph 4.4.8	States "*Applicants for a Development Consent Order must take account of any relevant Marine Plans and are expected to complete a Marine Plan assessment as part of their project development, using this information to support an application for development consent*".
Overarching National Policy Statement for Energy (NPS EN-1) Consultation Draft	The Government has published a draft update to NPS EN-1. The 2025 Draft NPS EN-1 is largely the same as the 2023 document, relevant section numbers will remain the same, however paragraph numbers will be updated.

Policy Reference	Policy Context
(April 2025) (Ref 24.8) Paragraph 4.5.8	
National Policy Statement for Renewable Energy Infrastructure (NPS EN-3) (Ref 24.9) Paragraphs 3.8.167 – 3.8.179, 3.8.268 – 3.8.269 and 3.8.336 – 3.8.342	Provide a range of requirements in relation to the commercial fishing industry. Considers the impacts on commercial fisheries and fishing. Whilst much of the content relates to offshore wind (particularly the array areas), many of the principles can be applied to cable projects such as early engagement with the fishing industry, implementation of industry best practice for fisheries liaison, consideration of transboundary issues, and consultation with the fishing industry on mitigation proposals.
National Policy Statement for Renewable Energy Infrastructure (NPS EN-3) Consultation Draft (April 2025) (Ref 24.10) Paragraphs 2.8.135 – 2.8.142, 2.8.220 – 2.8.221 and 2.8.285 – 2.8.291	The Government has published a draft update to NPS EN-3. The 2025 Draft NPS EN-3 is largely the same as the 2023 document, relevant section numbers will remain the same, however paragraph numbers will be updated.
UK Marine Policy Statement 2011 (Ref 24.11) Paragraphs 2.3.15, 3.8.1 and 3.8.2	The UK Marine Policy Statement expresses support for the fishing sector, and regarding displacement advocates "*seeking solutions such as co-location of activity wherever possible*". The process of marine planning should "*enable the coexistence of compatible activities wherever possible*".

Table 24-3: Local Planning Policy relevant to commercial fisheries assessment

Policy Reference	Policy Context
East Inshore and East Offshore Marine Plan 2014 (Ref 24.12) and Northeast Offshore Marine Plan 2021 (Ref 24.13)	Marine plans set out the priorities and direction for future planning within the plan area and provide guidance on activities to avoid or promote. A Marine Plan Assessment would be provided with the Preliminary Environmental Information Report (PEIR) and Environmental Statement (ES) that outlines how the English Offshore Scheme complies with the policies and objectives of the relevant marine plans.

Technical Guidance

24.2.4. A summary of the relevant technical guidance, specific to the commercial fisheries assessment, that has informed this EIA Scoping Report and will inform the assessment within the PEIR and ES, is given in **Table 24-4**.

Table 24-4: Technical Guidance relevant to commercial fisheries assessment

Technical Guidance Document	Context
Best Practice Guidance for Offshore Renewables Developments: Recommendations for Fisheries Liaison (Ref 24.14)	Reference guidance commonly used on offshore projects to establish good relations between the fishing industry and offshore renewables sectors
Best Practice Guidance for Offshore Renewables Developments: Recommendations for Fisheries Disruption Settlements and Community Funds (Ref 24.15)	Reference guidance commonly used on offshore projects to establish good relations between the fishing industry and offshore renewables sectors
International Cable Protection Committee (ICPC) – Fishing and Submarine Cables Working together (Ref 24.17)	Reference report written by the ICPC about the cable and fishing industry working together
Guidelines for data acquisition to support marine environmental assessments of offshore renewable energy projects (Ref 24.18)	Reference report written by Cefas on best practices for data acquisition
European Subsea Cable Association (ESCA) Guideline 20 on vessels operating in the vicinity of subsea cables (Ref 24.19)	Reference report written by ESCA about vessels working close to subsea cables
Best Practice Guidance for Fishing Industry Financial and Economic Impact Assessments (Ref 24.20)	Reference guidelines based on outputs from a technical workshop organised by the UK Fisheries Economics Network

24.3 Consultation and Engagement

24.3.1. In respect of the commercial fisheries assessment, key consultees have been identified and focussed engagement (through both informal and formal consultation) will be undertaken and recorded throughout the pre-application stages of the Proposed Scheme. Key consultees identified to date are:

- Marine Management Organisation (MMO).
- National Federation of Fishermen's Organisations (NFFO).
- Inshore Fisheries and Conservation Authorities (IFCA) - Eastern, North-Eastern and Northumberland; and
- Local fisheries organisations and individual fishers as appropriate.

24.3.2. Key areas of consultation are intended to include engagement on fishing grounds, methods and seasons to supplement publicly available fisheries data and information, impact assessment conclusions and proposed mitigation, which will be detailed in the PEIR and ES.

24.3.3. Additional fisheries stakeholders will be contacted should they be identified as part of the data collection and assessment process, or if requested during the statutory consultation process.

24.3.4. Between May and June 2025, the Project held a non-statutory consultation to seek views of the public and stakeholders. As part of the non-statutory consultation, responses were received from the Eastern IFCA which are of relevance to the fish and shellfish assessment and are summarised in **Table 24-5** below.

Table 24-5: Non-Statutory Consultation Responses

Stakeholder	Non-Statutory Consultation Response	How Responses have been Considered
Eastern IFCA	The proposed installation has the potential to impact fish and shellfish populations due to abrasion and penetration of the seabed causing temporary smothering of shellfish populations and increased siltation, consequently having a detrimental effect on visual hunters such as bass. The applicant should consider these impacts and propose mitigation if necessary.	These impacts have been considered within **Part 3, Chapter 20: Fish and Shellfish** and will be considered further within the PEIR and ES where relevant.
	Spawning and nursery grounds of the following species have been identified in UK waters and should therefore be considered in the assessment: tope (*Galeorhinus galeus*), thornback, ray (*Raja clavata*), herring (*Clupea harengus*), cod (*Gadus morhua*), whiting (Merlangius merlangus), plaice (*Pleuronectes platessa*), sole (*Solea solea*), mullet (*Chelon labrosus*), European smelt (*Osmerus eperlanus*), and bass (*Dicentrarchus labrax*). The planned construction may impact spawning and nursery grounds due to the cable interacting with the seabed. The applicant should ensure the proposed construction area avoids spawning and nursery grounds and that habitat disturbance is minimised.	Spawning and nursery grounds will be considered further within the Fish and Shellfish chapters of the PEIR and ES.
	To ensure the proposed construction does not result in significant impacts to the local environment and aquatic ecosystems, direct liaison with affected fishery stakeholders is vital to understanding the extent of impacts on local fisheries and ensuring appropriate mitigation measures are implemented.	The Applicant will continue to engage with the IFCA's and other stakeholders.

24.3.5. The Applicant also held a meeting with the NFFO, Eastern, North-Eastern and Northumberland IFCA's on the 29th of July 2025 to present a general overview of the project, project timelines and engagement approach.

24.4 Baseline Conditions

Study Area

24.4.1. The Study Area for this receptor is shown in **Volume 3, Figure 24-1**. The Study Area is considered in relation to fisheries management rectangles set by the International Council for the Exploration of the Sea (ICES). The English Offshore Scheme Scoping Boundary intercepts 12 ICES rectangles: 35F0, 36F0, 36F1, 37F0, 38E9, 38F0, 39E9, 39F0, 40E9, 40F0, 41E9, and 42E9. These rectangles are further characterised from Section 24.2.2.

Data Gathering Methodology

24.4.2. Data sourced for the baseline characterisation will be presented in accordance with relevant guidance for the topic. Desk based review of publicly available data sources (literature and GIS mapping files) will be used to describe the baseline environment, supplemented by information gathered through stakeholder engagement. **Table 24-6** lists the key data sources which will be used in the assessment.

Table 24-6: Key publicly available data sources for commercial fisheries

Data Source	Description
Inshore Fisheries Conservation Authority (IFCA)	Website with information about fishing and the species in the different regional IFCAs
MMO (Ref 24.25)	UK Sea Fisheries annual statistics report 2023 and accompanying datasets which includes species catch list for the relevant ICES rectangles. The MMO publish new data every September for the previous year. The most recent data would be used for assessments.
Vessel Monitoring System (VMS) data	VMS data for the period 2019 - 2023 (Ref 24.44)
European Marine Observation and Data Network (EMODnet)	EMODnet Automatic Identification Systems (AIS) for period 2019-2023 (Ref 24.45)
Eastern Green Link 3 and 4 Marine Scheme	Scoping Report (Ref 24.22), and PEIR for the sections of the projects in English waters (Ref 24.23).
Cefas FiSMaDiM (Fisheries Sensitivity Mapping and Displacement Modelling)	Data and GIS maps which highlight areas of high importance for the fishing industry, which will be used to inform the PEIR (Ref 24.24).

Current Baseline

24.4.3. This section describes the key commercial fisheries along the English Offshore Scheme; the local fishing fleet; any fishing restrictions; and provides landings data to contextualise the value of the fishing industry in the region for the purposes of reviewing the proposed scope of the assessment and data collection approach that will be adopted in the EIA.

24.4.4. The section has been informed by the latest (year 2023) publicly available catch statistics available from the MMO (Ref 24.25), Automatic Identification System (AIS) and Vessel Monitoring System (VMS) data. Publicly available EIAs in proximity to the Project will be cross referenced to check for any relevant consultation with the fishing industry which may be applicable to the Project. AIS, VMS and landings data derived from MMO catch statistics only provide a general overview of fishing effort, and do not accurately reflect the effort in the region i.e., not all vessels will carry AIS, and smaller vessels do not directly report landings data to the MMO. However, the Applicant considers that the combination of data and consultation undertaken to inform the EIA would provide an appropriate characterisation of the receiving environment in which the English Offshore Scheme will be constructed, which is adequate for the purposes of the EIA.

24.4.5. In 2023, the number of (full-time and part-time) fishers working in the UK was 10,356 (Ref 24.25); a figure which has generally decreased over the last 10 years from 12,325 in 2013. The number of UK registered vessels has also decreased from 6,399 to 5,418, from 2013 to 2023 (Ref 24.27). In 2023, UK vessels landed 715,155 tonnes of sea fish with an overall value of £1.09 billion. This is an increase from the 627,536 tonnes landed in 2019, albeit a similar value (£1.01 billion in 2019), (Ref 24.25). Multiple factors have had an impact on fishing and landings which tend to fluctuate considerably over time. However, since 2020, the largest impact on sea fisheries has been the UK's departure from the EU, which impacted the stocks that the UK fleet had access to fish and affected import and export opportunities. (Ref 24.25).

24.4.6. Plate 24-1: UK 2023 Landing by species type by value (GBP) illustrates the overall 2023 landings value in Great British Pounds (GBP), which indicates that they are approximately shared equally between the three categories of species. Plate 24-2: UK 2023 Landing by species type by volume (t) illustrates the overall 2023 landing by weight in tonnes which shows that the pelagic species catch accounts for 60% but accounted for just under a third of the value. This is due to the lower price for pelagic species.

Plate 24-1: UK 2023 Landing by species type by value (GBP)

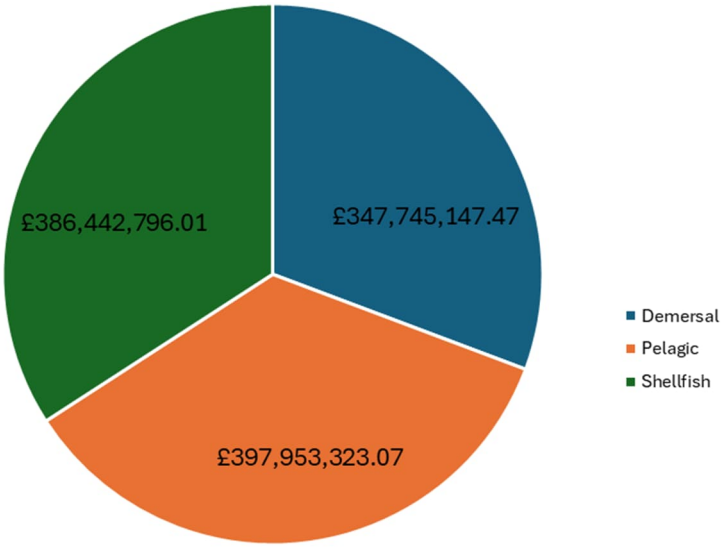
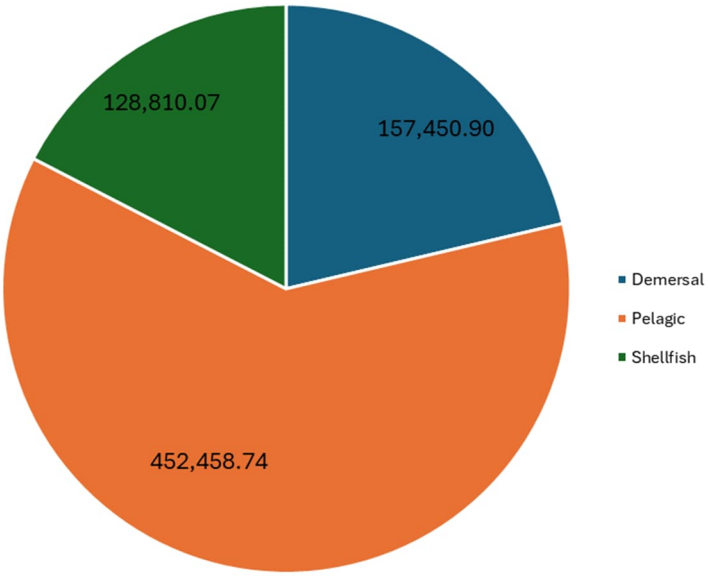


Plate 24-2: UK 2023 Landing by species type by volume (t)



Overview of Fisheries within the Study Area

24.4.7. The Study Area crosses 12 commercial fishing areas (ICES rectangles 35F0, 36F0, 36F1, 37F0, 38E9, 38F0, 39E9, 39F0, 40E9, 40F0, 41E9, and 42E9). These rectangles enable accurate monitoring of commercial fisheries and allow for more straightforward spatial fisheries management and policy decisions. Analysis of the fishing data for these 12 rectangles has been used as an indication of the commercial fish species caught in these regions.

24.4.8. The North Sea is home to important fishing grounds used not only by the local English fleet but also by international vessels from Belgium, the Netherlands, Denmark, France, Ireland, Spain and Germany. However, the majority of this occurs in ICES rectangles next to the Scoping Boundary further offshore.

Shellfish

24.4.9. According to landings data from the 12 ICES rectangles, the shellfish industry within the North Sea is significant and contributes to 97% of the catch values in the Study Area (Ref 24.25). Most shellfish caught uses static gear such as pots/creels and traps which target species such as crabs (*Cancer pagurus* and *Necora puber*), lobsters (*Homarus gammarus*) and whelks (*Buccinum undatum*).

24.4.10. Other shellfish species such as Nephrops (also known as langoustine, prawn, Dublin prawn, Norway lobster, and scampi) (*Nephrops norvegicus*), squid (numerous species, but commonly include *Alloteuthis subulata, Loligo forbesii, Loligo vulgaris* and *Illex coindetii*), and octopus (*Eledone cirrhosa*) are caught using demersal trawl gear. Fishers are required to have licenses to catch shellfish which is obtained from the MMO. Beam trawl gear is also used to target brown shrimp (*Crangon crangon*) and aesop shrimp (*Pandalus montagui*); primarily in ICES rectangle 35F0.

24.4.11. King scallop (*Pecten maximus*) is another highly targeted species within the Study Area which is caught using dredge gear. The scallop fishery is cyclical in nature with the production grounds rotating around the UK on a seven-to-eight-year cycle. The main landing port for scallops in the Study Area is Whitby.

24.4.12. Common cockle fishing (*Cerastoderma edule*) is an important and highly valuable sector of the commercial fishing industry in the region with highly productive cockle grounds located in The Wash. The main landing ports for cockles are at Boston and Kings Lynn. The Wash Cockle Fishery is regulated by the Eastern Inshore Fisheries and Conservation Authority (EIFCA) which has set times when cockle fishing is permitted, and strict Total Allowable Catch (TAC) set for the year (Ref 24.26). Permits are required to fish cockles in this area. They can be caught using various methods including dredge, other mobile gears and pots and traps, primarily in ICES rectangle 35F0.

24.4.13. **Table 24-7** summarises shellfish catch seasonality within the Study Area; cockle, crabs, scallop and whelk have wide high catch seasons, and whelk also have a distinct low catch season from late summer, through to early winter. On the other hand, cockle and crab have a lower catch season through spring but are otherwise caught all year round. ‘Squid’ is likely to cover multiple species which may have different life history characteristics. Further, as a phenotypically ‘plastic’ species, catch seasonality is likely to differ from year to year. Note that **Table 24-7** is generic for the UK, and there may be some seasonality variation depending on a species’ stock; i.e., the seasonality shown may differ slightly across the Study Area.

Table 24-7: Shellfish catch seasonality

Feature	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Brown Shrimp												
Cockle												
Crab												
Lobster												
Scallop												
Squid												
Whelk												

Feature	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Key	High Season		Low Season		Out of Season							

Source: Direct Seafoods (2023) (Ref 24.46)

24.4.14. Analysis of landings data from rectangles in the Study Area shows that the port of Bridlington lands the highest value of shellfish of any port within the Study Area. Landings peak during May, June, and November (Ref 24.25).

Demersal Fish

24.4.15. A variety of demersal (bottom contact) trawl gear methods are used in the North Sea to target demersal whitefish species such as whiting (*Merlangius merlangus*), haddock (*Melanogrammus aeglefinus*), halibut (*H. hippoglossus*), sole (*Solea solea*), cod (*Gadus morhua*), and plaice (*Pleuronectes platessa*). They are fished not only by the UK fleet but also by international vessels from Belgium, the Netherlands, Denmark, France, Ireland, Spain and Germany.

24.4.16. In the Study Area, beam trawling is used primarily for catching brown shrimp in the Wash, with beam trawling in the North Sea being predominantly for flatfish species by UK and non-UK fleets (primarily Belgian and Dutch vessels).. Fly seine netting is a more recent alternative to the traditional heavy beam trawling due to the depleted fish stocks. Bottom drift nets are now rarely used by the UK fleet with very limited catches using this gear type.

24.4.17. Analysis of landing data from rectangles in the Study Area (Ref 24.25) shows that the port of North Shields is the most important port for landings of demersal whitefish caught within the Study Area. Landings peak during the period from September to December in North Shields.

Pelagic Fish

24.4.18. The pelagic species caught within the Study Area are shoaling fish species such as herring (*Clupea harengus*), mackerel (*Scomber scombrus*) and horse mackerel (*Trachurus trachurus*). They are caught using demersal seine and demersal trawl gears, but primarily handlines (Ref 24.25). Many of the large catches of herring are landed in Norway and the Netherlands rather than UK ports (Ref 24.25).

UK Fishing Fleet

24.4.19. In 2023, the UK fishing industry was worth over £1 billion annually from a catch of over 719,000 tonnes (Ref 24.25), so is therefore as an important part of the economy. The MMO registers all UK vessels monthly and the fleet is split into two categories: vessels with a length 10 m and under, and vessels over 10.01 m in length. The UK registered fleet of vessels 10 m and under in length comprises 4,291 vessels as of December 2024 (Ref 24.25). Of the under 10 m vessels 2,575 vessels are registered as English with the remainder registered as Welsh, Scottish, Northern Irish, and Islands (Isle of Man, Guernsey, Jersey).

24.4.20. The UK registered fleet of vessels over 10 m in length comprises 1,127 vessels as of December 2024 (Ref 24.25). Of the vessels over 10 m, 463 are registered as English with the remainder registered as Welsh, Scottish, Northern Irish, or Islands.

24.4.21. **Table 24-8** shows the overall catch information for the UK in 2023, broken down by species type, of percentage of overall catch, weight and catch value.

Table 24-8: Overall catch information for the UK in 2023

Species Type	Percentage	Catch weight in tonnes	Catch value in GBP
Demersal	21.3 %	157,451	£347.7 million
Pelagic	61.2 %	452,459	£397.9 million
Shellfish	17.4 %	128,810	£386.4 million

24.4.22. The English fleet operates from ports across England, with the two key English ports being Brixham with a catch value of over £43 million, and Newlyn (£38 million), as well as Vlissengen (Netherlands), (£24 million), to which catch is landed.

24.4.23. **Plate 24-3** and **Plate 24-4** Reference source not found. show the top 5 ports to which fishing vessels land their catch, caught within the Study Area with catch values for vessels under 10 m and over 10 m in length, respectively.

Plate 24-3: Top five ports landed to from fishing activity within the Study Area for <10 m vessel catches (2023)

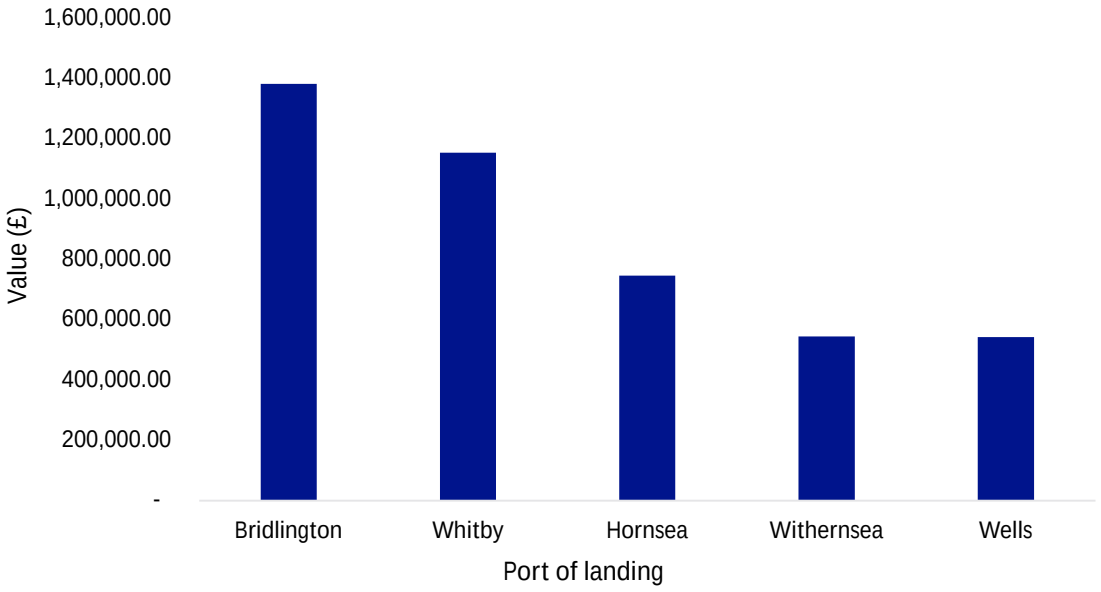
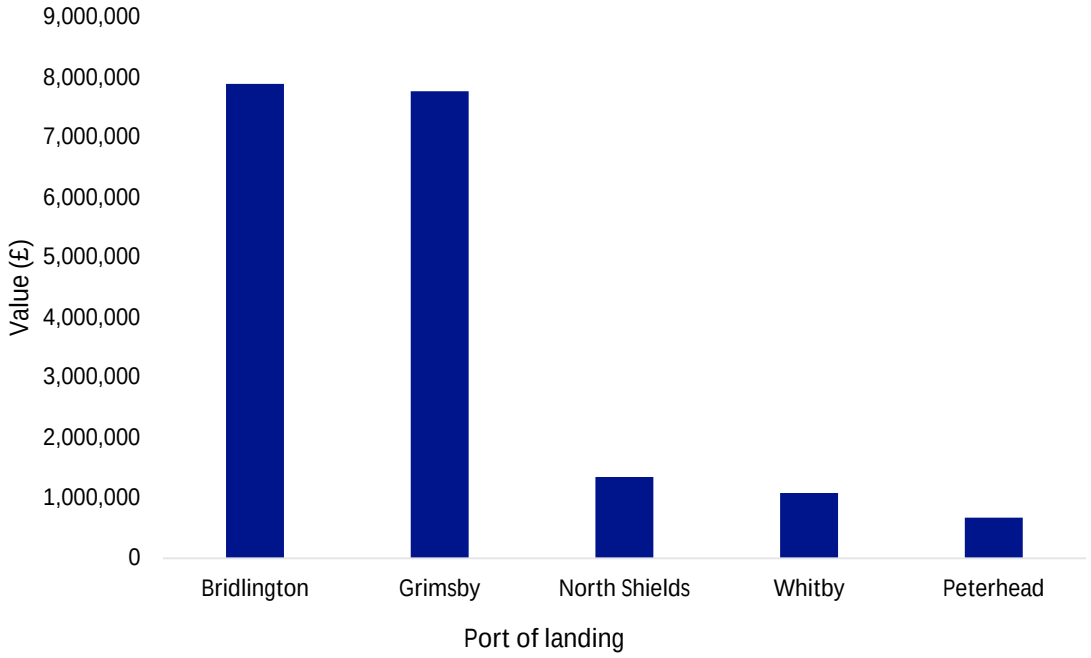


Plate 24-4: Top five ports landed to from fishing activity within the Study Area for >10 m vessel catches (2023)



Local Fishing Fleet

24.4.24. UK vessels of less than 17 m in length and with less than 300 hp (221 kW) are permitted to fish inside the 6 nautical mile (NM) fishery limit, with some fishing restrictions. Based on the MMO's UK Fishing Vessel Registry list from June 2025 (Ref 24.27), it is estimated that there are total of 948 registered and licensed fishing vessels operating in the vicinity of the Study Area which are registered at ports located in the north east of England.

24.4.25. 456 of the under 10 m vessels hold licenses to fish shellfish which accounts for 58% of the fleet. 341 vessels are over 10 m in length; 88 of these have shellfish licences, which is 25% of the fleet. Additionally, 74 vessels have licenses to dredge for scallops.

Landings Data within the Study Area

Overview

24.4.26. A high-level review of landings data from 2019 to 2023 across the 12 ICES rectangles relevant to the Study Area provided information on the economic importance of different commercial fish species.

24.4.27. Over the 5-year period (2019 to 2023), 71,500 tonnes of fish were landed with a value of over £148 million (**Table 24-9**). Of this value, £29.3 million was landed by the 10 m and under fleet, with the remaining £119.5 million landed by the over 10 m fleet. Approximately 94% of the total value of landings from all 12 rectangles were represented by shellfish. **Table 24-9** indicates annual variability between catch weight and value; this is reflected in the average value per tonne whereby up until 2022 the price had been steadily decreasing. In 2023, value per tonne had more than doubled the 2021 figure.

Table 24-9: Annual catch value from 2019 to 2023 for ICES Rectangles within the Study Area

Year	Live Weight (Tonnes) 10m or under	Live Weight (Tonnes) over 10m	Value (GBP) Under 10m	Value (GBP) Over 10m	Value per tonne (GBP/tonne)
2019	2,569	9,766	£6,090,758	£22,979,155	£2,357
2020	2,272	10,928	£4,463,236	£17,911,071	£1,695
2021	1,918	24,923	£6,622,919	£33,858,253	£1,508
2022	1,282	8,919	£5,857,934	£22,926,237	£2,822
2023	1,762	7,161	£6,315,535	£21,823,197	£3,154
Total for 5yr period	9,803	61,697	£29,350,382	£119,497,913	-
Average	1,961	12,339	5,870,076	23,899,583	**£2,307**

24.4.28. **Table 24-10** presents the annual catch value by gear type within the Study Area. This table indicates that the over the last five years catch from pots and traps have the greatest value, which demonstrates the importance of static gear fisheries in the Study Area. .

Table 24-10: Annual catch value (GBP) from 2019 to 2023 by Gear Type for ICES Rectangles within the Study Area

Year	2019	2020	2021	2022	2023	Total
Demersal Trawl	3,494,261	2,600,079	1,719,032	2,930,610	3,490,904	14,234,886
Pelagic Trawl	1,163,329	1,107,268	11,297,749	1,016,543	40,727.82	14,625,616
Pots and Traps	21,165,873	15,505,068	22,974,746	22,580,583	21,593,980	103,820,250
Dredge	2,611,701	1,325,047	2,920,893	1,552,007	1,911,529	10,321,177
Drift and Fixed Nets	10	4,016	1,991	14,756	1,536	22,310
Demersal seine	238,420	848,758	447,932	236,815	386,402	2,158,326
Pelagic Seine	-	-	47,448	14,704	-	62,152
Handlines	364	-	-	-	9,476	9,840
Longlines	6,613	5,803	515	-	15,018	27,949
Beam Trawl	126,435	313,288	148,513	158,147	171,589	917,973

Year	2019	2020	2021	2022	2023	Total
Other mobile gears	262,907	664,980	912,351	280,006	517,571	2,637,816

Fishing Intensity

24.4.29. Based on EMODNET, pelagic trawl and seine, and static gear effort within the Study Area is shown in **Volume 3, Figure 24-2**, bottom seines and dredging effort within the Study Area is shown in **Volume 3, Figure 24-3**, and beam trawling and bottom otter trawl effort within the Study Area is shown in **Volume 3, Figure 24-4** for years 2019-2023 (Ref 24.47). For clarity, only static gear activity by vessels 12 m and over are presented; as such, the small vessels operating inshore are not displayed.

24.4.30. Pelagic trawl and seine effort was highest in rectangle 37F0 and 40E9, though effort was visible throughout the Study Area and wider North Sea. **Volume 3, Figure 24-2** indicates areas of high intensity potting within the Study Area.

24.4.31. Intensity of bottom seine, and dredging throughout the Study Area was sparse, albeit with both gear types having notably higher intensities of fishing effort in rectangles 37F0 and 36F0.

24.4.32. Beam trawl effort was also sparse throughout the Study Area, with the greatest intensity occurring in the offshore waters of the central North Sea. Bottom otter trawl effort was distributed throughout the North Sea, though effort throughout the Study Area was low.

24.4.33. Surveillance sightings of gear types (during 2018 to 2023) revealed high numbers of long liner sightings throughout the Study Area (**Volume 3, Figure 24-5**), followed by potter/whelkers, scallop dredgers, hand liners, and stern trawlers. According to vessel nationality surveillance sightings (**Volume 3, Figure 24-6**), the majority of these vessels were from Great Britain, albeit with some sightings from France, Germany, and Belgium.

Landings by Weight and Value

24.4.34. In terms of annual landed weight in 2023 within the Study Area, shellfish is the largest target species representing ~77% of the overall catch volume (Ref 24.25). Demersal fishing only accounted for approximately 4.4% and pelagic fishing approximately 18.7% (Ref 24.25). However, in terms of catch value, shellfish account for approximately 94% with demersal and pelagic at 2% and 3.6% respectively (Ref 24.25).

24.4.35. **Table 24-11** shows the top five species caught within the Study Area. Of the 12 rectangles analysed, only rectangles 39F0, 40E9, and 42E9 had finfish as their most valuable species, rather than shellfish. In those rectangles, sprat, herring, and cod were the most valuable species, respectively.

Table 24-11: Top five landed species by value (GBP) in 2023 in ICES Rectangles within the Study Area

Landed Species	ICES Rectangles					
	35F0	**36F0**	**36F1**	**37F0**	**38E9**	**38F0**
1	Shrimp	Lobster	Crabs (edible/brown)	Crabs (edible/brown)	Lobsters	Crabs (edible/brown)
2	Crabs (edible/brown)	Crabs (edible/brown)	Lobster	Lobster	Crabs (edible/brown)	Lobsters
3	Cockles	Scallops	Whelk	Herring	Scallops	Nephrops
4	Whelks	Whelks	Scallops	Scallops	Nephrops	Halibut
5	Lobster	Velvet crab	Velvet crab	Squid	Monks and Anglers	Scallops
	39E9	**39F0**	**40E9**	**40F0**	**41E9**	**42E9**
1	Nephrops	Sprat	Herring	Nephrops	Crabs (edible/brown	Cod
2	Lobster	Nephrops	Nephrops	Crabs (edible/brown	Lobsters	Haddock
3	Crabs (edible/brown)	Herring	Crabs (edible/brown)	Monks and Anglers	Nephrops	Herring
4	Monks and Anglers	Crabs (edible/brown)	Lobsters	Haddock	Haddock	Whiting
5	Halibut	Halibut	Halibut	Whiting	Monks and Anglers	Nephrops

Temporal Trends

24.4.36. Despite a reduction in vessel numbers over the last decade and reductions in fish quotas for all EU member state fishing fleets (Ref 24.27), it is unlikely that there will be any significant change to fishing effort and activity in the North Sea fishing grounds and in the vicinity of the English Offshore Scheme in the near future.

24.4.37. Most of the local fishing fleet rely on pots and traps for shellfish (**Table 24-10**, Ref 24.25), and trawling for demersal and pelagic species (**Table 24-10**, Ref 24.25).

Restricted Fishing Areas

24.4.38. The Scoping Boundary near the Landfall intersects or is within proximity of areas which have fishing restrictions. These are either put in place by the regional IFCA or by the MMO and are as follows:

EIFCA Byelaw areas

24.4.39. Byelaw 3 – Molluscan Shellfish methods of Fishing which requires Fishers to request authorisation for a license to fish shellfish in these areas (Ref 24.28).

24.4.40. Byelaw XXIV: Humber Estuary Cockles Fishery - provisions of this Byelaw state no person shall take, remove or disturb any cockle unless that person holds a current permit issued by the Committee (Ref 24.29).

24.4.41. Whelk Permit Byelaw 2016 - The byelaw requires whelk fishers to have a permit to fish for whelks and to fish in accordance with flexible permit conditions. Whelk permits are issued annually and expire on the 31st of March each year, regardless of when fishers applied or received a permit (Ref 24.30).

North-Eastern IFCA (NEIFCA) Byelaw areas

24.4.42. Seine Net, Draw Net or 'Snurrevaad': Prohibition of. Byelaw IV - No person shall use in fishing for sea fish any seine net or any draw net of the kind known as the Danish seine or 'Snurrevaad'. (Ref 24.31).

24.4.43. Permit to Fish for Lobster, Crab, Velvet Crab and Whelk Byelaw XXII - No person shall fish for or take any of the following specified kinds of sea fish: lobster (*Homarus gammarus*), crab (*Cancer pagurus*), velvet Crab (*Necora puber*), or whelk (*Buccinum undatum*), within the area of the North Eastern Sea Fisheries Committee District except under a specified permit issued by the Committee (Ref 24.32).

Northumberland IFCA Byelaw areas

24.4.44. Prohibition of the use of mobile fishing gear within the English section of the Berwickshire and North Northumberland Coast Special Area of Conservation (SAC) (Ref 24.48).

24.4.45. Prohibition of the use of Mobile Fishing gear within the English section of the Berwickshire and North Northumberland Coast Special Area of Conservation (SAC) - A person must not operate a relevant fishing vessel using mobile fishing gear, within the English section of the Berwickshire and North Northumberland Coast Special Area of Conservation, except within any of the specified areas and only with the written authorisation by the Authority (Ref 24.48).

24.4.46. Seagrass Protection Byelaw within the English section of the Berwickshire and North Northumberland Coast Special Area of Conservation (SAC) – No person shall dig for, fish for or take any sea fisheries resources in or from the specified area where seagrass is situated (Ref 24.49).

MMO

24.4.47. Inner Dowsing Race Bank and North Ridge Special Area of Conservation (SAC) 2022 – Towing. Which says that the use of bottom towed fishing gear is prohibited within a specified reef or sandbank area (Ref 24.33).

24.4.48. Farne Deeps Fishing Restrictions – Which says vessels deploying demersal trawls and seines (except for beam trawls) are prohibited from fishing in the Farne Deeps. Mesh restrictions apply (Ref 24.34).

Future Baseline

24.4.49. The EIA process will consider the existing baseline conditions within the Study Area, and future baseline conditions (as far as reasonably practicable) in accordance with the methodology set out in **Part 1, Chapter 5 EIA Methodology and Approach** of the EIA Scoping Report.

24.4.50. Commercial fisheries trends are difficult to predict and vary season-by-season based on a range of natural and socio-economic factors including:

- Environmental management: Restrictions on the use of certain types of fishing gear or restrictions on species caught within certain areas (such as the Whelks Fisheries Management Plan to ensure the long-term sustainability of whelk stocks by developing a harvest strategy, (Ref 24.35)).
- Recent fish management plans introduced in December 2024 which introduced new minimum landing sizes for specific species in specific areas. This has been introduced to protect juveniles being caught before they have matured. (Ref 24.36)
- Fish stock abundance: Fluctuations of the number of individual species stocks due to recruitment, natural disturbances (such as weather conditions and sea temperature variations).
- Market prices: Commercial fishing fleets respond to the market prices and therefore may change focus on targeting the higher value species when the prices are high (such as whelk whose value has increased over recent years and are primarily exported to non-EU countries; the UK is un-restricted by EU measures on this shellfish since Brexit (Ref 24.37).
- Fishing gear: As with many industries the commercial fishing industry is trying to be more efficient and sustainable and therefore are using improved gear technology to reduce their operational costs. An example of this is the move away from using beam trawling to using demersal seine gear.
- Fisheries management: each year quotas are set by the government for specific fish species this is to avoid overfishing of specific species and therefore may mean a change in fishing effort in a particular area. Following the withdrawal from the EU, the UK and EU have agreed the Trade and Cooperation Agreement (TCA), which establishes a transitional period from 1 May 2021 until 30 June 2026. During the transitional period, 25% of the EU's fisheries quota in UK waters will be transferred to the UK. Based on these changes it is likely that up to 2026, a similar level of fishing activity will take place within UK territorial waters, but this effort will be undertaken by a greater proportion of UK than EU vessels. As of May 2025, this agreement was extended until 2038. EU vessels can access UK waters by applying for a foreign vessel licence. This licence allows EU vessels to fish within the UK EEZ (12 to 200 NM limit), UK 6 to 12 NM limit (ICES 4c, 7d-g) and Northern Ireland 0-6 NM (Ref 24.38). There are additional restrictions on EU vessels fishing in ICES 38E9, 39E9, 40E8 and 40E9 where there are restrictions on deploying demersal trawls and seine nets (Ref 24.39). The Government is currently proposing to extend the ban on bottom trawling in more marine protected areas (MPAs) which could affect 30,000 km^2 over 41 MPAs (Ref 24.50).
- Climate change: It is anticipated over time that global climate change will result in changes to the marine environment, which would include impacts on fish and shellfish populations of commercial importance (Ref 24.40, Ref 24.41). This may in turn result in changes to commercial fisheries practices to respond to any potential changes in species distribution abundance and/or seasonal trends.
- Future developments which may impact the future baseline for coastal and marine physical processes in the area include several offshore wind farm sites in the North Sea. This includes Ossian, Morven, Hornsea 3, Dogger Bank A, B, C, D and South, Outer Dowsing and Sofia offshore windfarms. In addition, other infrastructure such as Viking Link, NU Link, Aminth and Continental Link interconnector projects and Viking

and Endurance Carbon Capture and Storage (CCS) pipelines. Of note are the Ossian wind farm export cables and the EGL 3 and EGL 4 transmission reinforcement projects which are planned to make landfall at Anderby Creek, Lincolnshire.

24.4.51. The PEIR and ES will consider the above factors and consider future baseline conditions for the commercial fisheries topic. The potential for cumulative effects will be considered as part of the future EIA documents in accordance with the approach and guidance outlined within **Part 4, Chapter 30: Cumulative Effects.**

24.5 Design and Control Measures

24.5.1. As set out in **Part 1, Chapter 5: EIA Approach and Methodology**, the environmental measures are characterised as design measures or control and management measures. A range of environmental measures would be implemented as part of the English Offshore Scheme and will be secured through the Deemed Marine Licence and in the Development Consent Order as relevant.

24.5.2. Several management plans will be provided as Outline Management Plans with the application for development consent to support the Deemed Marine Licence. These will include an Outline Construction Environmental Management Plan (CEMP), an Outline Marine Pollution Contingency Plan and an Outline Fisheries Liaison and Coexistence Plan (FLCP). These documents will outline measures to be implemented to comply with legislation (e.g., in relation to the prevention of oil and chemical spills) during all phases of the English Offshore Scheme. Final management plans will be submitted in accordance with the Deemed Marine Licence to discharge the licence conditions. An Outline CEMP and Outline FLCP would be provided with the PEIR and ES.

24.5.3. In addition, design measures identified through the EIA process would be applied to avoid or reduce potential significant effects. Design measures included that are relevant to commercial fisheries are included below and would also be included in an Commitments Register to be provided with the PEIR and ES. Compliance with these measures will be secured by way of the Development Consent Order or Deemed Marine Licence.

24.5.4. The following environmental measures are relevant to the commercial fisheries assessment:

- A Fisheries Liaison Officer (FLO) and fisheries working group(s) would be maintained throughout installation to ensure project information is effectively disseminated, dialogue is maintained with the commercial fishing industry and access to home ports is maintained during the main fishing season. Details of the FLO will be included in the Construction Fisheries Liaison and Coexistence Plan. An outline FLCP will be prepared for the PEIR stage, which will be updated to the final FLCP post-consent.
- For safety purposes, all vessels would be requested to maintain a minimum distance from construction vessels to prevent interactions.
- As built locations of cable and external cable protection would be supplied to UKHO (Admiralty), The Crown Estate and Kingfisher (KIS-ORCA).
- Cut cable end locations and associated weights shall be accurately noted and charted and positions given to the FLO at the earliest opportunity for onward communication to the fishing industry.

- In the event that cable exposures are identified during routine surveys, the location of these would be shared with fisheries stakeholders and where necessary, additional temporary measures put in place (e.g., marker buoys, use of guard vessels, etc), until a repair or remediation can be implemented.
- Guard vessel(s), using RADAR with Automatic RADAR Plotting Aid (ARPA) to monitor vessel activity and predict possible interactions, would be employed to work alongside the installation vessel(s) during cable installation works and to protect any temporary cable exposures during installation.
- The intention is to bury the cables in the seabed, except in areas where trenching is not possible e.g. where ground conditions do not allow burial or at infrastructure crossings.
- Cable protection would only be installed where considered necessary for the safe operation of the English Offshore Scheme. This includes the repair of cables due to accidental damage, where depth of lowering is not achieved and at infrastructure crossings.
- Where rock protection is used for cable protection, consideration will be given to design that minimise the risk of fishing gear snagging (i.e., use of 1:3 profiles).
- A procedure for the claim of loss of/or damage to fishing gear would be developed and details included in the Outline Construction Fisheries Liaison and Coexistence Plan.
- Designated (and as minimal as possible) anchoring areas and protocols shall be employed during marine operations to minimise physical disturbance of the seabed.
- During cable route clearance, specific activities would be completed to remove items from the seabed.
- Where the English Offshore Scheme encounters Out of Service (OOS) cables, if deemed necessary, those OOS cables will be cut and their ends made safe with weights. Any cut cable lengths will be retrieved to the deck of the vessel for disposal onshore via conventional onshore waste channels. Any cut cable end locations and associated weights shall be accurately noted and charted and positions given to the FLO at the earliest opportunity for onward communication to the fishing industry.
- Timely and efficient communication would be given to sea users in the area via Notices to Mariners (NtM), Kingfisher Bulletins, Radio Navigation Warnings Navigational Telex (NAVTEX) and Navigational Areas (NAVAREA) warnings and /or broadcast warnings.
- All Project vessels would display appropriate marks and lights and would always broadcast their status on AIS if appropriate.
- Timings of any temporary areas of exclusion from fishing grounds would be clearly communicated via a notice to mariners and communicated by the Company FLO directly to local fishing associations and known fishers as required.

24.6 Scope of the Assessment

Potential Sensitive Receptors

24.6.1. The principal commercial fisheries receptors that have been identified as being potentially impacted by the English Offshore Scheme are:

- Static gear.
- Dredging.
- Demersal seine.
- Demersal trawl.
- Beam trawl.
- Pelagic seine; and
- Pelagic trawl.

Likely Significant Effects

24.6.2. A range of potential impacts on commercial fisheries have been identified which may occur during the construction, operation and maintenance, and decommissioning phases of the Project.

24.6.3. **Table 24-12** describes the potential impacts identified and provides justification as to whether they will be scoped ‘in’ or ‘out’ of the EIA.

24.6.4. A precautionary approach has been taken and where there is no strong evidence base, or the significance is uncertain at this stage the impact has been scoped ‘in’ to the EIA. Where there is clear evidence that the effect from the impact will not be significant, either alone or in combination with other plans and projects, the impact has been scoped ‘out’ of the EIA.

24.6.5. Potential impacts have been established based on the standard Source-Pathway-Receptor approach, industry experience and where applicable reference to the list of marine pressures established by the JNCC Marine Pressures-Activities Database v1.5 (2022). The relevant JNCC pressures that would be covered by the impact pathways identified are provided in italics in the potential impact column.

24.6.6. For clarity, where seabed preparation is mentioned in the project activity column this includes the following activities: boulder clearance, sandwave clearance (pre-sweeping), unexploded ordnance (UXO) identification, and pre-lay grapnel run (PLGR).

Table 24-12: Scoping assessment of impacts on commercial fisheries

Potential Impacts	Project Activities	Sensitive Receptors	Scoping Justification		
			Construction	Operation (including repair and maintenance)	Decommissioning
Temporary restricted access to fishing ground (including required static gear clearance)	Presence of project vessels and equipment	All gear types	**IN** - The implementation of advisory clearance distances around construction vessels may result in temporary loss or restricted access to fishing grounds. There would also be a requirement for fishing vessels that use static gear such as pots to clear their gear from within the English Offshore Scheme Boundary, or a part of it, in advance of any construction activities. The fishing industry will be consulted on the proposed construction programme and efforts made to ensure co-existence is feasible. Notices to Mariners will be issued in advance of the works.	**IN** - If the cable is installed correctly the likelihood of it requiring maintenance and repair is significantly reduced. However, there remains the potential that localised repair works, or remedial external cable protection may be required. In this case there would be advisory clearance zones put in place. The fishing industry would be advised in advance and efforts made to ensure co-existence. Notices to Mariners will be issued in advance of the works.	**IN** – The significance of the effect during decommissioning is similar or of lower magnitude than construction.
Temporary displacement of fishing activity into other areas	Presence of project vessels and equipment	All gear types	**IN** - Fishing activity may be temporarily displaced to other areas due to loss of or restricted access to fishing grounds because of the presence of Project vessels and advisory clearance distances. Established steaming routes	**IN** - If the cable is installed correctly the likelihood of it requiring maintenance and repair is significantly reduced. However, there remains	**IN** – The significance of the effect during decommissioning is similar or of lower

Potential Impacts	Project Activities	Sensitive Receptors	Scoping Justification		
			Construction	**Operation (including repair and maintenance)**	**Decommissioning**
			may also be disrupted increasing transit times to fishing areas. Although displacement will be temporary, due to the high level of construction activity in the North Sea there is the potential for cumulative impacts with other projects.	the potential that localised repair works may be required. In these circumstances the significance of the effect will be of lower magnitude than during construction.	magnitude than construction.
Permanent displacement of fishing activity	Installation of cable protection	Demersal fisheries (dredging, demersal trawl, beam trawl)	**IN** – External cable protection could result in long-term exclusion for demersal fishing methods in certain areas. Details on the volume and locations of external cable protection required for the Project are still to be determined, therefore this impact has been scoped in.		
Changes in distribution of target species	Seabed preparation Cable burial / trenching Installation of cable protection Cable removal	Commercial fisheries	**OUT** – **Chapter 20 Fish and Shellfish** will assess impacts on fish and shellfish regarding effects from temporary and permanent habitat loss, changes in suspended sediment concentrations, and temperature increase. If, impacts on fish and shellfish are not significant, no significant changes would occur in the distribution of target species which could affect commercial fisheries receptors. If impacts on fish and shellfish receptors are significant, this impact will be re-scoped in for commercial fisheries.		
Temporary increase and deposition of suspended sediments	Seabed preparation Cable burial / trenching	Commercial Shellfish Beds	**IN** - Seabed levelling i.e., during cable routeing, and certain construction activities such as cable trenching, has the potential to lead to localised and temporary increases in suspended sediments. The level and area of impact depend on several factors including localised hydrodynamics, source activity and seabed substrate. It has been estimated that the extent of potential effects arising from an increase in suspended sediment will be a maximum of 15 km due to tidal excursion. Increases in suspended sediment will be		

Potential Impacts	Project Activities	Sensitive Receptors	Scoping Justification		
			Construction	Operation (including repair and maintenance)	Decommissioning
(Changes in suspended solids (water clarity) *Smothering and siltation rate changes* *Hydrocarbon & Polycyclic Aromatic Hydrocarbon (PAH) contamination)*	Installation of cable protection Cable removal		temporary but have the potential to lead to smothering of sensitive receptors e.g., commercial shellfish beds. Given the proximity of the Project to sensitive shellfish waters the potential for significant impacts cannot be ruled out at this stage. Any potential for re-suspension of contaminated sediment to reach sensitive habitats will be investigated and will be informed by studies undertaken to inform the marine physical processes chapter of the EIA. If the cable is installed correctly, the likelihood of it requiring maintenance and repair is significantly reduced, though there remains the potential that localised repair works may be required which could cause a temporary increase and deposition of suspended sediments. This impact may also occur during decommissioning.		
	Seabed preparation Cable burial / trenching Installation of cable protection Cable removal	Mobile gear	**OUT -** A preliminary environmental assessment has been completed for EGL 3 and 4 Projects, which run parallel to the Project. The EGL 3 and 4 PEIR assessed impacts of temporary increase and deposition of suspended sediments on mobile gear receptors. This impact was not significant, as mobile gear is unlikely to be in one area long enough to have suspended sediment settle on it. As the Project is analogous (same proposed construction methods), impacts will not be significant, and it is proposed that this impact is scoped out.		

24.7 Assessment Methodology

Further Data to be Gathered / Processed

Desk-Based Assessments

24.7.1. A desk-based review of catch and effort statistics will be undertaken as part of the EIA. AIS data from UK and European fishing vessels over 15 m in length and VMS data from registered commercial fishing vessels over 12 m in length will also be obtained and interrogated to assess the distribution of fishing effort. Information will also be sought from the MMO; the PEIR will also consider MMO sightings data show vessel via nationality along the route over the most recent five-year period, to examine gear/nationality types used to ICES rectangle spatial resolution. Consultation with fisheries stakeholders is ongoing which will help reduce uncertainty in spatiotemporal dynamics of vessels under 12 m in length not currently using VMS.

Surveys

24.7.2. No site-specific surveys are planned for this topic, as extensive information is readily available to characterise the commercial fisheries of the North Sea. Such data are summarised in **Table 24-6**.

24.7.3. Consultation with local and regional fisheries stakeholders will be conducted to help inform the baseline and obtain data on fishing vessels operating in the area, types and sizes of vessels, fishing gear(s) used, fishing effort, target species, seasonality location of key grounds, etc.

Assessment of Significance

24.7.4. The commercial fisheries EIA will broadly follow the assessment approach set out in **Part 1, Chapter 5 EIA Approach and Methodology**, using the project-wide assessment matrix. However, whilst this has informed the approach that would be used in the commercial fisheries assessment, it is necessary to set out how this methodology would be applied, and adapted as appropriate, to address the specific needs of the commercial fisheries assessment.

24.7.5. The criteria for characterising the value and sensitivity and magnitude for commercial fisheries that would be used are outlined in **Table 24-13** and **Table 24-14**, respectively.

24.7.6. The sensitivity of the receptor is a function of its capacity to accommodate change and reflects its ability to recover if it is affected. The sensitivity of the receptor is therefore quantified via the following factors:

- Value - A measure of the receptor's importance, rarity and worth.
- Adaptability - The degree to which a receptor can avoid or adapt to an impact.
- Tolerance - The ability of a receptor to accommodate temporary or permanent change without a significant adverse impact.
- Recoverability - The temporal scale over an extent to which a receptor will recover following an impact.

24.7.7. Where receptors can adapt to, tolerate or recover from indirect impacts, these factors were incorporated into an assessment of their sensitivity.

24.7.8. The magnitude of an impact provides a useful initial measure of the likelihood of an environmental effect arising. Magnitude is defined for the purposes of assessment via four factors:

- Extent - The area over which an impact occurs.
- Duration - The time for which the impact occurs.
- Frequency - How often the impact occurs.
- Severity - The degree of change relative to the baseline level.

Table 24-13: Criteria for characterising the sensitivity of receptors

Receptor Sensitivity/Value	Definition
Very High	Receptor is very highly vulnerable to impacts and recoverability is long-term or not possible, e.g. no alternative fishing grounds available
High	Receptor is highly vulnerable to impacts and recoverability is long term or not possible. e.g. very limited alternative fishing grounds available
Medium	Receptor is generally vulnerable to the impacts and recoverability is slow or costly e.g., low levels of alternative fishing grounds are available, and/or the fishing fleet has a low operational range
Low	Receptor is somewhat vulnerable to impacts and moderate levels or recovery e.g., moderate levels of alternative fishing grounds available and/or fishing fleet has moderate operational range
Negligible	Receptor is generally not vulnerable to impacts and/or has high recoverability e.g., high levels of alternative fishing grounds available and/or fishing fleet has large operational range or adaptive to change

Table 24-14: Criteria for characterising the magnitude of an impact

Magnitude	Definition
High	Impact is of long-term duration (15+ years) and/or results in total loss of or major alteration to key elements (e.g., target fish or shellfish biological resource), or features (e.g., location of fishery) of the pre-project conditions, such that the post-project character or composition of the feature would be fundamentally changed. Substantial loss of economic value of commercial landings, that are nationally or regionally significant.
Medium	Impact is of medium duration (7-15 years) and/or results in loss of or alteration to key elements (e.g., target fish or shellfish biological resource), or features (e.g., location of fishery) of the pre-project conditions, such that the post-project character of the feature would be partially changed. Partial loss of economic value of commercial landings that is locally significant.

Magnitude	Definition
Low	Impact is of short duration (1-7 years) and/or is a minor alteration to key elements (e.g., target fish or shellfish biological resource), or features (e.g., location of fishery) of the pre-project conditions. Minor loss of economic value of commercial landings that is not locally significant.
Negligible	Impact is temporary (<1year) and/or is a slight loss of ability to carry out fishing activities or slight loss or target fish or shellfish biological resources. No or unquantifiable change to pre-project conditions. Minimal loss of economic value of commercial landings

Assessment of Cumulative Impacts and Effects

24.7.9. **Part 4, Chapter 30 Cumulative Effects** defines the methodology for the assessment of cumulative effects. The Commercial Fisheries assessment of intra- and inter-project cumulative effects will be carried out and reported within the ES to be submitted with the application for development consent.

24.7.10. The zone of influence for the inter-project cumulative effects assessment of commercial fisheries would comprise Draft Order Limits, plus a buffer which extends into the North Sea from north Norfolk (to encompass the Wash SAC, up to the offshore waters off the Lincolnshire coast, out to 12 NM (**Volume 3, Part 3, Figure 24-7**). This is a precautionary maximum zone of influence that encompasses the worst-case scenario of potential impact pathways from temporary restricted access to fishing ground, and temporary displacement of fishing activity into other areas.

24.7.11. **Part 4, Chapter 30 Cumulative Effects** of the PEIR will present the long and short lists of 'other developments' which will be considered at the ES stage, and the methodology which allowed for the identification of these other developments, to allow consultation bodies to form a view and provide comment on the other developments included. The long list will be reviewed and if necessary, updated, in the lead up to the ES, as the Proposed Scheme design further evolves and in response to any comments raised at statutory consultation.

24.8 Assessment Assumptions and Limitations

24.8.1. The baseline description collated in this chapter has been based on a range of publicly available data and information. It is assumed that the data collated is accurate. The data would be supplemented with additional information acquired as part of the stakeholder engagement process and through the additional studies identified in this chapter to inform the PEIR and ES.

24.8.2. It is acknowledged that publicly available statistics will underrepresent the inshore fleet; fishing vessels, for example <12 m are not required to carry AIS. Landings data derived from the MMO catch statistics provide a general overview of fishing effort as fishers can sell catch directly in quantities <30 kg. Data will be supplemented with data received through consultation with the local fisheries stakeholders if available.

24.8.3. Variations and trends in commercial fisheries activity are an important aspect of the baseline assessment. Although statistics and consultation can identify past long-term trends, it is harder to predict future trends which may result from changes in market

conditions, changes following the withdrawal of the UK from the European Union or global events such as conflict. Given the period assessed, data may also reflect potential short-term changes in activity due to the 2020-2021 COVID pandemic, which temporarily affected market demand and supply chains.

24.8.4. In the absence of data, a precautionary approach has been taken and professional judgement, based on experience of similar linear projects, have been used where required to inform the scope of the assessment.

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25. Other Marine Users

25.1 Introduction

25.1.1. This chapter of the Scoping Report describes the potential impacts arising from the construction, operation and maintenance, and decommissioning of the Project on other marine users. This chapter considers the following marine users:

- Offshore Wind Farms (OWF);
- Other power and telecommunication cables;
- Carbon Capture and Storage (CCS) and natural gas storage sites;
- Disposal sites;
- Aggregate extraction sites;
- Chemical weapon and munitions disposal sites;
- Ministry of Defence (MoD) activities;
- Oil and gas operations;
- Recreational activities including bathing waters and scuba (note that recreational boating and commercial shipping is also covered in **Part 3, Chapter 23:Shipping and Navigation**); and
- Angling including chartered anglers (note that commercial fishing is also covered in **Part 3, Chapter 24: Commercial Fisheries**).

25.1.2. There may be interrelationships related to the potential effects on other marine users and other disciplines. Therefore, please also refer to the following chapters of this Scoping Report found in Volume 1:

- **Part 1, Chapter 5: EIA Approach and Methodology** which sets out the assessment approach of this Scoping Report, using the project-wide assessment matrix;
- **Part 3, Chapter 18: Coastal and Marine Physical Processes** impacts on the marine physical environment such as a temporary increase in suspended sediments and subsequent deposition will be assessed in this technical aspect chapter;
- **Part 3, Chapter 23: Shipping and Navigation** navigational impacts on vessels such as collision risk, reduction in under keel clearance and interference with marine navigational equipment, will be assessed in this technical aspect chapter; and
- **Part 3, Chapter 24: Commercial Fisheries** navigational impacts on fishing vessels such as reduction in under keel clearance, interference with marine navigational equipment, snagging risks will be assessed in this technical aspect chapter.

25.1.3. This technical aspect chapter is supported by the following figures found in Volume 3:

- **Figure 25-1: Scoping Boundary and Other Marine Users Study Area**
- **Figure 25-2: Offshore Wind Infrastructure**

- **Figure 25-3: Telecommunications Cables, Disposal Sites, Carbon Capture and Storage, and Aggregate Sites within the Study Area**
- **Figure 25-4: Military Areas within the Study Area**
- **Figure 25-5: Oil and Gas Infrastructure within the Study Area**
- **Figure 25-6: Bathing Waters, Sailing and Diving Clubs within the Study Area**

25.2 Relevant Legislation, Planning Policy and Technical Guidance

25.2.1. This section identifies the relevant legislation, national and local policy and guidance which has informed the scope of the other marine users assessment.

Legislation

25.2.2. A summary of the key legislation considered in, but not limited to, the scope of other marine users assessment is outlined in **Table 25-1**.

Table 25-1: Legislation relevant to the other marine users assessment

Legislation	Legislative Context
The Planning Act 2008 (Ref 24.1)	An Act to establish the Infrastructure Planning Commission and make provision about its functions; to make provision about, and about matters ancillary to, the authorisation of projects for the development of nationally significant infrastructure.
The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (Ref 24.2)	This Act transposes European Union (EU) Directive 2011/92/EU (the EIA Directive) into UK law for nationally significant infrastructure projects, ensuring environmental safeguards while potentially streamlining the process.
The Marine Works (Environmental Impact Assessment) regulations 2007 (as amended) (Ref 24.3)	The Marine Works (EIA) Regulations 2007 require certain types of projects that have the potential to significantly affect the environment to submit an Environmental Impact Assessment before a marine licence decision is made.
Marine and Coastal Access Act 2009 (Ref 24.4)	This Act provides a framework for managing and protecting marine and coastal areas, promoting sustainable development, enhancing public access to the coast, and conserving marine biodiversity and habitats, including establishing marine protected areas and coastal access routes. The Act also establishes the Marine Management Organisation (MMO) as the authority responsible for the preparation and implementation of marine plans and enforcing fisheries and nature conservation regulations.
United Nations Convention on the Law of the Sea (UNCLOS) – Article 79: Submarine cables and	Paragraph 5 protects submarine cables and pipelines and requires developers to have due regard for any existing cables or pipelines in position and not prejudice the possibilities of repair.

Legislation	Legislative Context
pipelines on the continental shelf (Ref 25.5)	
UNCLOS – Article 113: High Sea Areas (Ref 25.5)	This article states that if an existing submarine or power cable is broken or injured, this will be a punishable offence. If a cable or pipeline is broken during the laying or repairing of another cable, the developer will be subject to pay the repair costs.
The Submarine Telegraph Act 1885 (Ref 25.6)	This act protects submarine telegraph cables. The English Offshore Scheme has the potential to affect submarine cables and therefore the protection of these cables has been considered within the scope of this report.

Planning Policy

25.2.3. A summary of the planning policies at both a national and local level relevant to the scope of other marine users assessment is outlined in **Table 25-2** and **Table 25-3**.

Table 25-2: National Planning Policy relevant to the other marine users assessment

Policy Reference	Policy Context
Overarching National Policy Statement for Energy (NPS EN-1) (Ref 25.7) Paragraphs 5.5.35, 5.5.37 and 5.13.4	States "*that new energy infrastructure does not unacceptably impede or compromise the safe and effective use of any defence assets"* States "*Where the proposed development may affect the performance of civil or military aviation CNS[21], meteorological radars and/or other defence assets an assessment of potential effects should be set out in the ES".* *States "The applicant's assessment should consider all relevant socio-economic impacts, which may include….effects (positive and negative) on tourism and other users of the area impacted*"
Overarching National Policy Statement for Energy (NPS EN-1) Consultation Draft (April 2025) (Ref 25.8) Paragraphs 5.5.36, 5.5.37 and 5.13.4	The Government has published a draft update to NPS EN-1. The 2025 Draft NPS EN-1 is largely the same as the 2023 document, relevant section numbers will remain the same, however paragraph numbers will be updated.
National Policy Statement for Renewable Energy Infrastructure (NPS EN-3) (Ref 25.9)	States "*Applicants are encouraged to work collaboratively with those other developers and sea users on co-existence/co-location opportunities, shared mitigation, compensation and monitoring where appropriate. Where applicable, the creation of statements of common ground between developers is recommended*"

[21] Communication, Navigation or Surveillance (CNS)

Policy Reference	Policy Context
Paragraphs 2.8.48, 2.8.197 and 2.5.2	States "*Where a potential offshore wind farm is proposed close to existing operational offshore infrastructure or has the potential to affect activities for which a licence has been issued by government; the applicant should undertake an assessment of the potential effects of the proposed development on such existing or permitted infrastructure or activities"* States "*Proposals for renewable energy infrastructure should demonstrate good design, particularly in respect of landscape and visual amenity, opportunities for co-existence/co-location with other marine and terrestrial uses and in the design of the project…"*
National Policy Statement for Renewable Energy Infrastructure (NPS EN-3) Consultation Draft (April 2025) (Ref 25.10) Paragraphs 2.8.172, 2.8.173 and 2.5.2	The Government has published a draft update to NPS EN-3. The 2025 Draft NPS EN-3 is largely the same as the 2023 document, relevant section numbers will remain the same, however paragraph numbers will be updated.
UK Marine Policy Statement 2011 (Ref 25.11)	There are several paragraphs within the UK Marine Policy Statement of relevance to the other marine users assessment including paragraphs 3.2.9, 3.3.29 and 3.8.7 which focus on adequate consideration of Ministry of Defence (MoD), other sea users, existing cable and pipeline operators and fishing interests.

Table 25-3: Local Planning Policy relevant to the other marine users assessment

Policy Reference	Policy Context
East Inshore and East Offshore Marine Plan 2014 (Ref 25.12) and North East Offshore Marine Plans 2021 (Ref 25.13)	Marine plans set out the priorities and direction for future planning within the plan area and provide guidance on activities to avoid or promote. A Marine Plan Assessment would be provided with the Preliminary Environmental Information Report (PEIR) and Environmental Statement (ES) that outlines how the English Offshore Scheme complies with the policies and objectives of the relevant marine plans.

Technical Guidance

25.2.4. A summary of the relevant technical guidance, specific to the other marine users assessment, that has informed this Scoping Report and will inform the assessment within the PEIR and ES, is given in **Table 25-4**.

Table 25-4: Technical Guidance relevant to the other marine users assessment

Technical Guidance Document	Context
European Subsea Cable Association (ESCA) Guideline No. 6: The Proximity of Offshore Renewable Energy Installations & Submarine Cable Infrastructure in UK waters (Ref 25.14)	Provides guidance on the consideration required by all stakeholders in the development of projects requiring proximity agreements between OWF and subsea cables projects. The Guidelines address installation and maintenance constraints related to OWF structures, associated cables and other subsea cables, where such structures and subsea cables will occupy proximate areas of seabed.
ESCA Guideline No.19. Marine Aggregate Extraction Proximity Guidelines (Ref 25.15)	Provides guidance on the considerations that should be given by all stakeholders in the development of projects requiring proximity agreements between marine aggregate interests (planned applications or existing production licences) and submarine cable projects (planned or existing) in UK waters.
International Cable Protection Committee (ICPC) Recommendation No.13-2C. The Proximity of Offshore Renewable Wind Energy Installations and Submarine Cable Infrastructure in National Waters (Ref 25.16)	Various guidance documents covering recommendations for working within proximity to subsea cables, including recovery of Out of Service (OOS) cables, crossing of cables and pipelines and routeing of cables.
ICPC Recommendation No.3-10C. Telecommunications Cable and Oil Pipeline / Power Cables Crossing Criteria (Ref 25.17)	Provides guidance to those who are faced with the situation of cases of crossings between telecommunications cables, power cables and pipelines.
International Cable Protection Committee (ICPC) Recommendation No.2-12C. Recommended Routeing and Co-ordinating Criteria for Submarine Telecommunications Cables in Proximity to Other Such Cables (Ref 25.18)	Provides assistance to cable owners and those planning submarine cable systems that cross or are in close proximity to existing in-service cables. Owners of existing cables which may be crossed by a planned cable should also find assistance from this recommendation in reaching agreement on the manner of any proposed crossing or close approach by a new cable system.

25.3 Consultation and Engagement

25.3.1. In respect of the other marine users assessment, key consultees have been identified and focussed engagement (through both informal and formal consultation) will be undertaken and recorded throughout the pre-application stage of the Project. Key consultees identified to date are:

- British Marine Aggregate Producers Association (BMAPA);
- Energies UK (OEUK);
- Environment Agency;
- MMO;

- Maritime and Coastguard Agency (MCA);
- MoD & Defence Infrastructure Organisation (DIO);
- Natural England;
- North Sea Transition Authority (NSTA) Offshore;
- Offshore Petroleum Regulator for Environment and Decommissioning (OPRED);
- OWF owners;
- Royal Yachting Association (RYA);
- The Crown Estate (TCE); and
- Third-party asset owners (e.g., pipelines, power and telecommunication cables) which the English Offshore Scheme crosses.

25.3.2. Key areas of consultation are intended to include the engagement on any interactions with other sea users, impact assessment conclusions and proposed mitigation.

25.3.3. Local or specialist groups will be contacted should the assessment process identify a need to engage further detailed local knowledge, or if requested during the statutory consultation process.

25.3.4. Between May and June 2025, the Project held a non-statutory consultation to seek views of the public and stakeholders. As part of the non-statutory consultation responses were received from the MCA and MoD which are of relevance to the marine physical processes assessment which is summarised in **Table 25-5** below.

Table 25-5: Non-Statutory Consultation Responses

Stakeholder	Non-Statutory Consultation Response	How Responses have been Considered
MCA	We would expect a Navigation Risk Assessment (NRA) to be undertaken for this project. The NRA should include a baseline study and focus on any key shipping routes and/or anchorage/disposal areas and fishing activity in the vicinity of the project. With supporting marine traffic surveys, the NRA should establish how the phases of the project are managed where risk is reduced and considered to be 'As Low As Reasonably Practicable' (ALARP). The range of potential impacts on shipping and navigation and other marine users should be identified which could occur during all phases of the project. We would like to point the applicant in the direction of the International Maritime Organisation (IMO) Formal Safety Assessment (FSA) methodology.	A NRA will be completed for the Project as submitted as part of the future Preliminary Environmental Information Report (PEIR) and ES. It will follow the IMO FSA methodology and be supported by nautical charts.
	We would highly recommend that nautical charts are used in the NRA to provide	A marine hazard ID workshop will be

Stakeholder	Non-Statutory Consultation Response	How Responses have been Considered
	reassurance, clarity and contextual understanding of the navigational environment. We would also expect local consultation with marine users of the proposed works and recommend undertaking a Marine Hazard Identification workshop including local ports, harbours, wind farm developers, fishing federations among others.	undertaken with other marine users.
	Cable Burial Risk Assessment (CBRA) should define the minimum depth cables must be buried to protect them from external influences. The final target burial depth will be determined by the CBRA which will consider ground conditions, intensity of shipping and fishing activity. The CBRA should inform the Environmental Statement and NRA.	A CBRA will be completed for the Project and will inform the future ES and NRA.
	If cable protection measures are required, the MCA would be willing to accept a 5% reduction in surrounding navigable depths referenced to Chart Datum. Where not achievable, the applicant must discuss this further with the MCA. This is particularly relevant where depths decrease towards shore and at cable crossings.	Noted, the Applicant will continue to engage with the MCA on this matter once further detailed information is available
	Potential effects on Electromagnetic Deviation of the high voltage cable route must be assessed to establish electromagnetic deviation affecting ship compasses and other navigating systems. The MCA would be willing to accept a three-degree deviation for 95% of the cable route and for the remaining 5% there must be no more than a 5-degree electromagnetic compass deviation. On receipt of the study, the MCA reserves the right to request a deviation survey of the cable route post installation which the applicant should provide to the UKHO via a hydrographic note (H102) if required.	An Electromagnetic Deviation Study will be submitted alongside the future ES submission.
	The MCA would welcome any survey data being submitted as third-party data to the UK Hydrographic Officer (UKHO) for the update of nautical charts and publications to improve safety.	Noted
Ministry of Defence (MoD) / Defence	The route of the indicative cable corridor will cross through designated MoD Danger Areas. These are the Druridge Bay Danger Area	Noted, these Danger Areas have been identified in **Table 25-11** of this

Stakeholder	Non-Statutory Consultation Response	How Responses have been Considered
Infrastructure Organisation (DIO)	complex consisting of Danger Areas D513A, D513B and D513C as well as the Staxton Danger Area D412. These are primarily used to conduct military firing activities, primarily air to air gunnery training entailing projectiles and other items being dropped into the sea. This should be considered in finalising design proposals for the installation of cables and associated sub-sea infrastructure within these Danger Areas. Consideration should be given to the possible need for shielding to protect from impacts from items dropped during military firing activities. In addition, the potential for marine works or surveys to displace military training activities in these Danger Areas should be considered.	Scoping Report and will be considered within the EIA.
	The cable corridor passes through Danger Area D307 containing Donna Nook air weapon range on the Lincolnshire coast. This entails aircraft dropping practice ordnance and firing onto targets in the marine environment located within a surface Sea Danger Area (SDA) contained within D307	Noted, this SDA has been identified in **Table 25-11** of this Scoping Report and will be considered within the EIA.
	There is the potential for unexploded ordnance (UXO) to be present within the development area. The need to identify and address the presence of UXO before commencing intrusive works has been recognised by the Project.	Noted, a geophysical survey has been undertaken for the Project which will potentially identify UXO's along the survey route. A bespoke UXO survey will be undertaken prior to cable installation.
	Please note, there are other defence interests in the locality relating to maritime navigational interests that are not defined in the public domain. The MoD will be able to provide specific advice, as may be necessary, on the proposed cable installation when more detailed information becomes available.	Noted, the Applicant will continue to engage with the MoD/DIO on this matter once further detailed information is available

25.3.5. The Applicant also held a meeting with the MCA, Chamber of Shipping and Trinity House on the 29th July 2025 to present a general overview of the project, project timelines and engagement approach.

25.4 Baseline Conditions

Study Area

25.4.1. The Study Area for this receptor includes the English Offshore Scheme Scoping Boundary plus an additional 9.26 km (5 nautical miles (NM)) buffer either side. The Zone of Influence (ZOI) on the seabed is relatively small, limited to the physical footprint of the activities on the seabed. However, other marine users may also be impacted by the vessels associated with the construction, operation and decommissioning of the Project. As such, a precautionary approach has been taken and the Study Area is defined by the potential for the vessels associated with the construction, operation and decommissioning to interact with other sea users directly or indirectly. As the Study Area is defined by the vessel activity associated with the Project, this Study Area is consistent with the Study Area defined for **Part 3, Chapter 23: Shipping and Navigation**, which is deemed to be standard within industry.

25.4.2. The Study Area for intertidal and other marine users and its relation to the Project is presented in **Volume 3, Figure 25-1.**

Data Gathering Methodology

25.4.3. Data sourced for the baseline characterisation will be presented in accordance with relevant guidance for the topic. A desk-based review of publicly available data sources (literature and GIS mapping files) will be used to describe the baseline environment. **Table 25-6** lists the key data sources which will be used in the assessment.

Table 25-6: Key publicly available data sources for other marine users

Data Source	Description
Divemap (Ref 25.19)	Interactive map showing dive sites around the UK (Divemap) (2025)
Centre for Environment, Fisheries and Aquaculture Science (Cefas) (Ref 25.20)	Dredging and Disposal sites
EMODnet (2025) (Ref 25.21)	EMODnet is a consortium of organisations assembling European marine data, data products and metadata from diverse sources in a uniform way. In this chapter human activities data will be used such as aggregates, disposal, MoD Activities and OWF sites.
ESCA (Ref 25.22)	Information for developers on offshore renewable and submarine cable infrastructure (ESCA, 2025).
Fishbrain (2025) (Ref 25.23)	Information on fishing areas and catch logs around the world.
Gov.UK (2025) (Ref 25.24)	List of current bathing water classifications around the UK.
KIS-ORCA (Ref 25.25)	KIS-ORCA data is available free of charge to skippers and includes Northern European cables and UK renewable energy structures (KIS-ORCA, 2024)

Data Source	Description
Morven Offshore Wind Ltd (MvOWL) (Ref 25.26)	Morven Hawthorn Pit Grid Connection Scoping Report (MvOWL, 2025)
NGET and Scottish Hydro Electric Transmission plc. (Ref 25.27)	Eastern Green Link 2 (EGL 2) Environmental Appraisal Report (AECOM, 2022)
NGET (Ref 25.28)	Eastern Green Link 3 (EGL 3) and Eastern Green Link 4 (EGL 4) Preliminary Environmental Information Report: Volume 2, Part 3, Chapter 25 Other Marine Users (National Grid, 2025)
NSTA (Ref 25.29)	Hosts data on current and historical oil and gas infrastructure (NSTA, 2025)
Ossian Offshore Wind Farm Ltd (Ref 25.30)	Ossian Transmission Infrastructure Scoping Report: Part 2, All Chapters (Ossian Offshore Wind Farm Ltd, 2025)
RYA (Ref 25.31)	UK Coastal Atlas of Recreational Boating (RYA, 2019)
TCE (Ref 25.32)	OWF lease agreement areas, Marine Aggregate sites, Carbon Capture and Storage sites, Natural Gas Storage sites (The Crown Estate, 2025)

Current Baseline

25.4.4. The baseline characterisation sections include information on: aquaculture sites, OWFs, power and telecommunication cables, CCS and natural gas storage sites, dredge and spoil disposal sites, aggregate extraction sites, chemical weapon and munitions disposal sites, MoD activities , oil and gas operations and recreational activities.

Aquaculture Sites

25.4.5. A review of Geographical Information Systems (GIS) data sources did not identify any aquaculture sites within the Study Area.

Offshore Wind Farms

25.4.6. At the time of writing, three operational OWFs have been identified in proximity of the Project as shown in **Volume 3, Figure 25-2**. **Table 25-7** summarises the distance from the English Offshore Scheme Scoping Boundary to the OWFs within the Study Area.

Table 25-7: Distance from English Offshore Scheme Scoping Boundary to OWFs within the Study Area

OWF	Operator	Status	Distance from the English Offshore Scheme Scoping Boundary	Projects could cross OWF export cables
Lincs Offshore Wind Farm	Ørsted A/S, Equitix Ltd, Octopus Energy Generation & Corio Generation	Fully operational 2010	6.9 km	Yes (see **Table 25-7**)

OWF	Operator	Status	Distance from the English Offshore Scheme Scoping Boundary	Projects could cross OWF export cables
Triton Knoll Offshore Wind Farm	Triton Knoll Offshore Wind Farm Ltd, owner J-POWER/Electric Power Development Co. LTD, Kansai Electric Power Co., Inc	Fully operational 2022	7.9 km	Yes (see **Table 25-7**)
Inner Dowsing Offshore Wind Farm	BlackRock Investment Management (UK) Limited & Equitix Ltd	Fully operational 2009	8.5 km	Yes (see **Table 25-7**)

Source: TCE (2025) (Ref 25.32).

Power and Telecommunications Cables

25.4.7. At the time of writing, two operational interconnectors, one grid reinforcement power cable, export cables from eight OWFs and seven telecommunications cables have been identified within the Study Area. These cables are listed in **Table 25-8** and are illustrated in **Volume 3, Figure 25-3**.

Table 25-8: Distance from English Offshore Scheme Scoping Boundary to existing power or telecommunication cables within the Study Area

Cable Name and Developer	Type	Project Information	Distance from the English Offshore Scheme Scoping Boundary
EGL 2 [NGET]	Transmission reinforcement cable	In-construction	6.3 km
North Sea Link [National Grid and Statnett]	Interconnector	Fully operational	Crosses
Viking Link [Energinet DK and National Grid]	Interconnector	Fully operational	Crosses
Dogger Bank A OWF export cables [SSE]	Export cables (assumed 2)	Fully operational	Crosses
Dogger Bank B OWF export cables [SSE Renewables, Equinor and Vårgrønn]	Export cables (assumed 2)	Under construction	Crosses
Dogger Bank C OWF export cables	Export cables (assumed 3)	Under construction	Crosses

Cable Name and Developer	Type	Project Information	Distance from the English Offshore Scheme Scoping Boundary
[SSE Renewables, Equinor and Vårgrønn]			
Hornsea Project 1 & 2 OWF export cables [OFTO - Diamond Transmission Partners Hornsea One Ltd and Diamond Transmission Partners Hornsea TWO] Ltd	Export cables (6)	Fully operational	Crosses
Inner Dowsing OWF export cables [GLID Wind Farms]	Export cables (6)	Fully operational	8.6 km
Lincs OWF export cable [Ørsted]	Export cables (2)	Fully operational	7.5 km
Triton Knoll OWF export cable [Equitix and TEPCO Power Grid]	Two export cables	Fully operational	Crosses
Sofia OWF export cable [RWE]	Export cables (2)	Under construction	Crosses
CANTAT 3 F4 [Faroese Telecom]	Telecom	Decommissioned	Crosses
Havhingsten [Aquacomms]	Telecom	Active	Crosses
NO UK [Altibox]	Telecom	Active	Crosses
PANGEA NORTH [ASN]	Telecom	Active	Crosses
TATA NORTH EUROPE [EU Networks]	Telecom	Decommissioned	Crosses
UK-DENMARK 4 [BT]	Telecom	Decommissioned	Crosses
UK-GERMANY 6 [BT]	Telecom	Decommissioned	3.8 km

Source: EMODnet (2025) (Ref 25.21) and TCE (2025) (Ref 25.32).

Disposal Sites

25.4.8. At the time of writing eight closed and one open dredge and spoil disposal sites have been identified in proximity of the Project as illustrated in **Volume 3, Figure 25-3**. **Table 25-9** summarises the distance from the English Offshore Scheme Scoping Boundary to these sites.

Table 25-9: Distance from English Offshore Scheme Scoping Boundary to disposal sites within the Study Area

Disposal Site Name	Status	Distance from the English Offshore Scheme Scoping Boundary
Adjacent to South Basin Gas, HU115	Closed	1.2 km
Hornsea 2A, HU209	Closed	2.6 km
Hornsea 1, HU205	Open	3.8 km
Pickerhill Field, HU116	Closed	1 km
Sheringham Shoal Drillings, HU123	Closed	7 km
Spurn Head, HU100	Closed	Crosses
Triton Knoll, HU204	Closed	7.9 km
West of Inner Dowsing Bank, HU200	Closed	2.6 km
Wash Bank, HU114	Closed	8.6 km

Source: Cefas (2025) (Ref 25.20)

Aggregate Extraction Sites

25.4.9. At present, nine aggregate extraction sites have been identified in proximity of the English Offshore Scheme Scoping Boundary within the Study Area and are illustrated in **Volume 3, Figure 25-3**. **Table 25-10** summarises the distance from the English Offshore Scheme Scoping Boundary to these sites.

Table 25-10: Distance from English Offshore Scheme Scoping Boundary to aggregate extraction sites within the Study Area

Site Name and ID	Site owner	Status	Distance from the Scoping Boundary
Area 197	Tarmac Marine Ltd.	Active	2 km
Area 493/1, 493/2	Tarmac Marine Ltd.	Active	1 km and 1.2 km
Area 400	Hanson Aggregates Marine Ltd.	Active	2.3 km
Areas 106/1, 106/2, 106/3	Hanson Aggregates Marine Ltd.	Active	4 km, 6 km and 8.1 km

Site Name and ID	Site owner	Status	Distance from the Scoping Boundary
Areas 514/4	CEMEX UK Marine Ltd.	Active	1.8 km
Area 1805	Hanson Aggregates Marine Ltd.	Exploration	2.8 km

Source: EMODnet (2025) (Ref 25.21)

Chemical Weapons and Munitions Disposal Sites

25.4.10. There are no chemical weapon or munition disposal sites that lie within the Study Area. However, Unexploded Ordnance (UXO) munitions are frequently found in the North Sea. A pre-construction UXO study would be conducted to identify any potential UXO within the English Offshore Scheme Scoping Boundary, where identified, they would be avoided, lifted and shifted, or cleared (subject to a separate Marine Licence Application).

MoD Activities

25.4.11. PEXAs are sites available for training use primarily by the UK armed forces, but also those of overseas nations. They can be over land or water, or both, and may involve the firing of live ammunition. Military vessels operate in low densities (0.4%) around the Donna Nook Firing Range (Ref 25.28).

25.4.12. Surface danger areas or firing danger areas are used by the MoD for land-based practice firing of artillery and other projectiles. These danger areas typically form a small ‘cone’ with the base of the cone out to sea, creating a restricted zone to ensure that no vessels are inadvertently struck, Donna Nook is in this category.

25.4.13. Danger areas noted as Areas of Intense Aerial Activity (AIAA) overlie the Study Area. These are used for air combat and supersonic flight training. The Danger Areas form a three-dimensional ‘block’ of airspace with specific upper and lower height limits; the minimum flight altitude is approximately 5,000 ft. above mean sea level (AMSL) and extending up to approximately 66,000 ft. AMSL.

25.4.14. For those areas which are associated with aerial activity with a 5,000 ft. base height, it is expected that all aircraft using the Danger Area will not be operating below this height. There are therefore no activities proposed within the Study Area that could interact with aircraft using this airspace.

25.4.15. Currently, 14 MoD PEXA have been identified within the Study Area (**Table 25-11**) and are illustrated in **Volume 3, Figure 25-4**. It is not considered possible for the Project to avoid all of these.

Table 25-11: MoD PEXA within the Study Area

Name	Category	Information
D613D	AIAA	Authority: HQ Air; Minimum Flight Level: 10000 feet; Maximum Flight Level: 66000 feet
D307: DONNA NOOK	Surface danger area, firing danger area	Authority: DIO SD TRG; Maximum Altitude: 20000 0; Activity: F,B

Name	Category	Information
D323F	AIAA	Authority: HQ Air; Minimum Flight Level: 25000 feet; Maximum Flight Level: 66000 feet
D323C	AIAA	Authority: HQ Air; Minimum Flight Level: 5000 feet; Maximum Flight Level: 66000 feet
D323D	AIAA	Authority: HQ Air; Minimum Flight Level: 5000 feet; Maximum Flight Level: 66000 feet
D323B	AIAA	Authority: HQ Air; Minimum Flight Level: 5000 feet; Maximum Flight Level: 66000 feet
D323E	AIAA	Authority: HQ Air; Minimum Flight Level: 25000 feet; Maximum Flight Level: 66000 feet
D323A	AIAA	Authority: HQ Air; Minimum Flight Level: 5000 feet; Maximum Flight Level: 66000 feet
D323G	AIAA	Authority: HQ Air; Minimum Flight Level: 25000 feet; Maximum Flight Level: 66000 feet
D412: STAXTON	Surface danger area, firing danger area	Authority: HQ Air; Maximum Altitude: 100000; Activity: AAF
D513B: DRURIDGE BAY	Surface danger area, firing danger area	Authority: HQ Air; Maximum Altitude: 230000; Activity: F
D513: DRURIDGE BAY	Surface danger area, firing danger area	Authority: HQ Air; Maximum Altitude: 100000; Activity: F
D513A: DRURIDGE BAY	Surface danger area, firing danger area	Authority: HQ Air; Maximum Altitude: 230000; Activity: F
D513B	Firing danger area	Firing Practice Area

Source: EMODnet (2025) (Ref 25.21)

Oil & Gas Operations

25.4.16. At the time of writing 34 active pipelines have been identified which cross the Study Area. Seventeen more have been identified that are not in use or are abandoned and a further two are proposed. These pipelines are listed in **Table 25-12** and illustrated in **Volume 3, Figure 25-5**.

25.4.17. There are 158 abandoned wells within the Study Area, seven that are completed shut-in and 26 that are operational (Ref 25.29).

Table 25-12: Oil and Gas pipelines crossings within the Study Area

Name	Type	Status	Distance from the English Offshore Scheme Scoping Boundary
Amethyst A2D to Easington	Gas	Not in use	Crosses
Amethyst B1D to Amethyst A2D	Gas	Not in use	1.52 km
Amethyst C1D to Amethyst A1D	Gas	Not in use	Crosses
Apollo to Minerva	Gas	Active	3.02 km
Apollo AH1 to Apollo manifold	Gas	Active	7.34 km
Apollo AH2 to Apollo manifold	Gas	Active	7.33 km
Breagh 20IN gas pipeline - Part 1	Gas	Active	Crosses
Breagh 3IN MEG pipeline - Part 1	Chemical	Active	Crosses
CATS	Gas	Active	Crosses
Ceres to Mercury export	Gas	Active	1.34 km
Ceres Umbilical	Gas	Active	1.30 km
Cleeton CP to Dimlington	Gas	Active	Crosses
Cleeton CP to Ravenspurn A	Gas	Active	7.40 km
Cleeton to Minerva umbilical	Hydraulic	Active	Crosses
Cleeton to Whittle umbilical	Hydraulic	Active	3.29 km
Ekofisk 2/4J to Teesside	Oil	Active	Crosses
Eris to Murcury export	Oil	Active	1.34 km
Eris umbilical	Gas	Active	6.56 km
Helvellyn pipeline	Gas	Active	Crosses
Helvellyn control umbilical	Gas	Active	Crosses
Hyde to West Sole Bravo	Gas	Active	8.32 km
Juliet to Pickerill A gap Pipeline	Gas	Abandoned	8.33 km
Juliet to Pickerill A umbilical	Gas	Abandoned	8.33 km
Langled pipeline	Gas	Active	Crosses
LOGGS PP to Theddlethorpe gas line	Gas	Not in use	Crosses
LOGGS PP to Theddlethorpe MEOH line	Chemical	Not in use	Crosses
M1 to Minerva	Gas	Not in use	1.87

Name	Type	Status	Distance from the English Offshore Scheme Scoping Boundary
M5 to Minerva	Gas	Not in use	2.64
Mercury to Neptune	Gas	Active	Crosses
Minerva to Apollo umbilical	Gas	Active	3.03 km
Minverva to Cleeton gas export	Gas	Active	Crosses
Minverva to Cleeton PIGGY	Chemical	Active	Crosses
Minerva to M1 umbilical	Gas	Active	1.83 km
Minerva to M5 umbilical	Gas	Active	2.60 km
Neptune to Cleeton pipeline	Gas	Active	6.65 km
Neptune to Mercury pipeline	Gas	Active	Crosses
Pickerall A to Theddlethorpe	Chemical	Not in use	Crosses
Ravenspurn North export line	Gas	Active	7.38 km
Rose control umbilical	Chemical	Abandoned	0.49 km
Rose pipeline	Gas	Abandoned	0.45 km
Theddlethorpe to Murdoch MD	Gas	Not in use	Crosses
Theddlethorpe to Murdoch MD MEOH line	Methanol	Not in use	Crosses
Tolomount 12 IN Production Pipeline	Gas	Proposed	1.15 km
Tolomount 20 in gas export pipeline	Gas	Active	4.95 km
Tolomount 6 IN umbilical	Gas	Proposed	1.15 km
Tolomount 3 in methanol pipeline	Gas	Active	4.95 km
Viking AR to Theddlethorpe gas line	Gas	Not in use	Crosses
Viking AR to Theddlethorpe MEOH line	Chemical	Not in use	Crosses
West Sole to Easington 16 IN gas line	Gas	Active	Crosses
West Sole to Easington 24 IN gas line	Gas	Active	Crosses
Whittle to Cleeton	Gas	Active	3.31 km
Whittle to Wollaston umbilical	Gas	Active	0.72 km
Wollaston to Whittle	Gas	Active	0.76 km

Source: NSTA (2025) (Ref 25.29)

25.4.18. As well as the pipelines that are in the North Sea, there are 28 licensed oil and gas blocks within the Study Area, listed below:

- 41/5a
- 41/5b
- 42/1b
- 42/1a
- 42/12a
- 42/13a
- 42/27
- 42/28a
- 42/28b
- 42/28d
- 42/29a
- 42/2c
- 47/10b
- 47/3b
- 47/3c
- 47/3f
- 47/3h
- 47/3i
- 47/4a
- 47/4b
- 47/4c
- 47/5a
- 47/5c
- 47/8c
- 47/9b
- 47/9c
- 48/6a
- TF49

Recreational activities

Bathing Waters

25.4.19. There are six designated 'bathing waters' close to the proposed Landfall in the Study Area which are listed in **Table 25-13**, all of which were classified as having excellent bathing water status in 2024 (Ref 25.24). PINS response to EGL 3 and EGL 4 Scoping Request (Ref 25.28) stated that the entire stretch of beach should be considered bathing water (not just the designated bathing waters).

25.4.20. These bathing waters are illustrated in **Volume 3, Figure 25-6**.

Table 25-13: Bathing Waters within the Study Area

Bathing Water Name	Year of Designation	Classification (2024)	Distance from the English Offshore Scheme Scoping Boundary
Mablethorpe Town	1988	Excellent	7.3 km
Sutton-on-Sea	1988	Excellent	4.3 km
Hutton Marsh Yard (formerly Moggs Eye)	1988	Excellent	Within
Anderby	1988	Excellent	0.8 km
Chapel St Leonard's	1988	Excellent	4.9 km
Ingoldmells South	1988	Excellent	8.3 km

Source: Gov.uk, 2025 (Ref 25.24)

SCUBA Diving

25.4.21. There is evidence that recreational SCUBA diving takes place along the east and northeast coast of England, mainly associated with wrecks but also for marine environmental research. Divemap (Ref 25.19) indicates two wrecks off Spurn Head that may be popular dive sites, these lie just beyond the 12 NM limit and within the Study Area. Namely, these are the wrecks ‘Merchiston’ (15.3 NM from Spurn Head), and ‘Benmacdhui’ (14.8 NM from Spurn Head). Other dives sites indicated off the east coast all fall close to the coast and outside of the Study Area. No dive sites are indicated off the Lincolnshire coast in proximity to the Landfall.

Sailing and Cruising

25.4.22. The east and northeast coast of England is a popular area to sail, with many RYA sailing clubs along this coastline. The RYA Coastal Atlas (Ref 25.15) identifies the Study Area as being of low to medium use for recreational sailing. Further information on vessel activity is provided in **Part 3, Chapter 23: Shipping and Navigation** and **Chapter 24: Commercial Fisheries**. There are sailing clubs such as the RYA affiliated sailing club at Saltfleet Haven and further north into the Humber, however, these lie outside of the Study Area. As noted in **Part 3, Chapter 23: Shipping and Navigation**, recreational vessel activity is of low density and Automatic Identification System (AIS) data suggests that recreational vessels typically travel to and from the Humber within the nearshore.

Water Sports

25.4.23. The east and northeast coast of England have seasonal recreational water sports utilising its coastal waters including surfing, paddleboarding, canoeing, kite surfing, sailboarding, foiling and water skiing (Ref 25.19).

Angling

25.4.24. There are several chartered fishing vessels along the east and northeast coast which run fishing trips during the winter months aiming to catch cod, skate and whiting and in the spring, summer and autumn targeting cod, ling and pollock (Ref 25.23).

Future Baseline

25.4.25. As the UK is affected by the Net Zero target heading towards 2050, there are many developments planned within the vicinity of the English Offshore Scheme seeking to contribute toward meeting this target. The description within this section is based upon developments already in the planning system and those that have been granted consent but are not due to be constructed until after the English Offshore Scheme. UK offshore wind has doubled, based on 2010 figures, now providing almost 20% of the UK Electricity demand and is further anticipated to quadruple by 2030 (based on 2010 figures). The North Sea will see the majority of this expansion and could see up to 100 GW of offshore wind by 2050 (Ref 25.33). With offshore wind capacity due to increase over the next few years, along with energy security concerns, the UK has major infrastructure changes in planning, in addition to growth in CCS and a decrease in the Oil and Gas industry. The assessment assumes that all projects that are noted in the current baseline will have been constructed within the operational lifetime of the Project.

25.4.26. Within the Study Area there is a range of planned infrastructure as shown in **Volume 3, Figure 25-2, Volume 3, Figure 25-3** and listed in **Table 25-14** which is in planning that would form part of the future baseline if it was constructed. Two projects (one interconnector and one OWF) have been withdrawn or discontinued from planning but have been included and will be monitored in case they are re-submitted during the Project's development. It is anticipated that additional infrastructure would also be brought forward within the Study Area within the next 25-30 years, however, it is not possible at this stage to quantify this.

25.4.27. There is uncertainty associated with long-term predictions for recreational boating, diving, water sports and fishing given there is limited reliable information on future trends on which assumptions can be made, however based on trends it is likely that uptake of these activities will increase in the future.

25.4.28. Dogger Bank South, Dogger Bank D, Outer Dowsing, and Hornsea OWF projects are planning artificial nesting structures (ANS) as part of compensation measures for potential adverse effects on seabird populations—particularly kittiwakes, guillemots, and razorbills — linked to the Flamborough and Filey Coast (FFC) and Farne Islands Special Protection Areas (SPAs). These projects have ANS search areas and in certain cases such as Dogger Bank South, have a preferred location for ANS, forming the primary measure for kittiwakes and a supplementary option for guillemots and razorbills. These search areas and sites fall within the Study Area, however, are likely to be limited to a single monopile on the seabed.

Table 25-14: Distance from English Offshore Scheme Scoping Boundary to planned marine infrastructure within the Study Area

Project and Developer	Type	Project Information	Distance from the English Offshore Scheme Scoping Boundary
Ossian Floating OWF - SSE Renewables Limited (SSER), Marubeni Corporation (Marubeni), and Copenhagen Infrastructure Partners (CIP) (the Project Partners)	OWF	Array submitted Section 36 Application to Scottish Government July 2024.	1.06 km
	Export cables (assumed x 3)	Transmission infrastructure submitted Scoping to PINs and Scottish Government in February 2025.	Potentially crosses
Morven OWF - bp and EnBW Energie Baden-Württemberg AG	OWF	Submitted Scoping to Scottish Ministers February 2025.	3.02 km
Aminth	Interconnector	Landfall at Mablethorpe. Connection between UK and Denmark.	Potentially crosses

Project and Developer	Type	Project Information	Distance from the English Offshore Scheme Scoping Boundary
[Copenhagen Infrastructure Partners]		The project is expected to reach a final investment decision in 2026 and the start of operations between 2030 and 2032 (Offshore Energy, 2023a). Ofgem licence granted 2023.	
EGL 3 and EGL 4 [NGET]	Transmission reinforcement projects	In Planning – PEIR published June 2025.	Potentially crosses
Nu-Link / SENECA [Nu-Link Consortium – Frontier Power]	Interconnector	Connection agreement at Mablethorpe Substation. Connection between UK and Netherlands (Offshore Energy, 2023). Ofgem licence granted 2023.	Potentially crosses
Continental Link Multi-Purpose Interconnector [National Grid Ventures]	Interconnector	Project withdrawn from Planning. Connection between UK and Norway.	Potentially crosses
Dogger Bank South [RWE]	Export cables (assumed x 2)	In Planning. Application submitted in Q1 2024, examination to close July 2025.	Potentially crosses
Dogger Bank D [SSE and Equinor]	Export cables (assumed x 2)	Pre – Application. Application is expected to be submitted in Q3 2026.	Potentially crosses
Hornsea Project 4 OWF cables [Orsted]	Export cables (assumed x 3)	Development Consent Order (DCO) application approved in July 2023 but discontinued in its current form by Orsted in May 2025.	Potentially crosses if re-started

Source: EMODnet (2025) (Ref 25.21) and TCE (2025) (Ref 25.32).

CCS and Natural Gas storage

25.4.29. At the time of writing, two CCS projects have been identified within the Study Area. These projects are the Viking CCS project led by Harbour Energy, awarded a DCO in April 2025, and Endurance which is a partnership of BP, Eni, National Grid, Shell and Total. The UK Government plans for many more CCS sites to be implemented within the North Sea region.

25.4.30. The proposed Endurance carbon storage facility pipeline would link an onshore facility in Teesside to a permanent storage facility offshore.

25.4.31. The Viking CCS project comprises an onshore facility and pipeline that links to the permanent storage site within depleted gas reservoirs beneath the Southern North Sea within the Viking oil field. The transportation of carbon dioxide between Theddlethorpe and the offshore storage site would be via the existing Lincolnshire Offshore Gas Gathering System (LOGGS) pipeline, and a newly installed spur pipeline. Consent for the additional spur pipeline has not yet been submitted.

25.5 Design and Control Measures

25.5.1. As set out in **Part 1**, **Chapter 5: EIA Approach and Methodology**, the environmental measures are characterised as design measures or control and management measures. A range of environmental measures would be implemented as part of the English Offshore Scheme and will be secured through the Deemed Marine Licence (DML) and in the DCO as relevant.

25.5.2. Several management plans will be provided as Outline Management Plans with the application for development consent to support the DML. These will include an Outline Construction Environmental Management Plan (CEMP) and Outline Marine Pollution Contingency Plan. These documents will outline measures to be implemented to comply with legislation (e.g., in relation to the prevention of oil and chemical spills) during all phases of the English Offshore Scheme. Final management plans will be submitted in accordance with the DML to discharge the licence conditions. An Outline CEMP would be provided with the PEIR and ES.

25.5.3. In addition, design measures identified through the EIA process would be applied to avoid or reduce potential significant effects. Design measures included that are relevant to Other Marine Users are included below and would also be included in an Commitments Register to be provided with the PEIR and ES. Compliance with these measures will be secured by way of the DCO or DML.

25.5.4. The following environmental measures are relevant to the other marine users assessment:

- Crossing and / or proximity agreements will be agreed with aggregate extraction, cable and pipeline owners. The crossing agreement describes the rights and responsibilities of the parties and also the design of the crossing. Crossing design will be in line with industry standards, using procedures and techniques agreed with the cable and pipeline owners.
- Client Representation onboard Project vessels, ensuring compliance with crossing design and communications with Asset Owners.
- UXO survey and removal and / or charting of confirmed UXO targets, highlighting known risks to other marine users.
- All project vessels must comply with the International Regulations for Preventing Collisions at Sea (1972) (Ref 25.34), International Convention for the Prevention of Pollution from Ships (the MARPOL Convention 73/78) (Ref 25.35) with the aim of preventing and minimising pollution from ships and the International Convention for the Safety of Life at Sea (SOLAS) (1974) (Ref 25.36).
- Existing shipping lanes will be utilised for vessel transiting routes to avoid additional disturbance, where practicable.

- Timely and efficient communication will be given to sea users in the area via Notices to Mariners (NtM), Kingfisher Bulletins, Radio Navigation Warnings, Navigational Telex (NAVTEX) and Navigational Areas (NAVAREA) warnings and / or broadcast warnings.
- As-built locations of cable and external protection will be supplied to the United Kingdom Hydrographic Office (UKHO) (Admiralty), The Crown Estate and Kingfisher (KIS-ORCA).

25.6 Scope of the Assessment

Potential Sensitive Receptors

25.6.1. The principal other marine users receptors that have been identified as being potentially impacted by the English Offshore Scheme are:

- OWFs;
- Other power and telecommunication cables;
- CCS and natural gas storage sites;
- Disposal sites;
- Aggregate extraction sites;
- Chemical weapon and munitions disposal sites;
- MoD Practice Exercise Areas;
- Oil and gas operations; and
- Recreational activities.

Likely Significant Effects

25.6.2. A range of potential impacts on other marine users have been identified which may occur during the construction, operation and maintenance, and decommissioning phases of the Project. **Table 25-15** describes the potential impacts identified and provides justification as to whether they will be scoped in or out of the EIA. A precautionary approach has been taken and where there is no strong evidence base, or the significance is uncertain at this stage the impact has been scoped ‘in’ to the EIA. Where there is clear evidence that the effect from the impact will not be significant, either alone or in combination with other plans and projects, the impact has been scoped ‘out’ of the EIA.

25.6.3. It is recognised that traffic associated with the other marine users will be transiting between their licensed areas and ports. However, potential impacts on vessel movements have been assessed in **Part 3, Chapter 23: Shipping and Navigation**.

25.6.4. For clarity, where seabed preparation is mentioned in the project activity column of **Table 25-15** this includes the following activities: boulder clearance, sandwave clearance (pre-sweeping), UXO identification, and pre-lay grapnel run (PLGR).

25.6.5. Potential impacts resulting from temporary increases in suspended sediment and changes to water quality in relation to designated bathing waters will be considered in the Coastal and Marine Physical Processes topic.

Table 25-15: Scoping assessment of impacts on other marine users

Potential Impacts	Project Activities	Sensitive Receptors	Scoping Justification		
			Construction	Operation (including repair and maintenance)	Decommissioning
Damage to existing infrastructure or assets	Seabed preparation Cable burial and trenching Anchoring / jack-up legs Cable removal	Oil and Gas Power and telecommunication cables OWF CCS	**OUT** - Damage to both active and inactive cables, pipelines and other seabed infrastructure could arise during construction, operation (including repair and maintenance) and decommissioning. Pre-works surveys will be undertaken to locate all existing infrastructure. Following analysis of this information appropriate plans will be put in place to avoid or to cross existing subsea cables or pipelines with the use of external cable protection. Individual crossing agreements will be set up with cable and pipeline owners following guidance from the ICPC and ESCA. If new infrastructure is identified crossing agreements would need to be reached between the parties ahead of works taking place. Therefore, it is proposed that this impact is scoped out due to the legal measures in place that would ensure effects are not significant.		
Occupancy of seabed – Below or on seabed	Presence of cables and cable protection	Oil and Gas Aggregates Disposal sites Power and telecommunication cables OWF CCS	No Impact Pathway	**IN** - The presence of the cables below or on the seabed may disrupt the placement of future infrastructure / offshore activities.	**OUT** – If kept in situ, the Project would be treated as an out of service cable by other infrastructure/offshore activities and avoided or cut and removed.
Restricted access to recreational areas	Seabed preparation Cable burial and trenching	Recreational Users	**IN** - During the construction phase, there is the potential for recreational users to be displaced, or access	**IN** - If any repair or maintenance work is required during the operational phase there is the potential for recreational users to be	**IN** - During the decommissioning phase, there is the potential for recreational users to be displaced, or

Potential Impacts	Project Activities	Sensitive Receptors	Scoping Justification		
			Construction	Operation (including repair and maintenance)	Decommissioning
	Anchoring / jack-up legs Cable removal		restricted to their usual recreational areas.	displaced, or access restricted to their usual recreational areas.	access restricted to their usual recreational areas.
Visual effects	Seabed preparation Cable burial and trenching Anchoring / jack-up legs Cable removal and decommissioning activities	Recreational vessels	**OUT** - The presence of vessels associated with the construction, maintenance, or decommissioning phases of the Project is not anticipated to result in a noticeable change to the existing maritime traffic profile within the Study area. Analysis of AIS data indicates that the Study Area is characterized by generally low vessel traffic density. Of the vessels identified through AIS tracking, recreational vessels, along with port service vessels, other service vessels, and dredging vessels, collectively account for less than 5.5% of total recorded traffic. Given the low baseline levels of vessel activity and the relatively small proportion of traffic represented by vessels similar in type or function to those expected to be used for the Project, any temporary increase in vessel presence is unlikely to result in a significant or discernible change in the visual environment for recreational sea users. The incremental contribution of Project-associated vessels would therefore not materially alter existing visual conditions or interfere with the typical user experience of the area. Furthermore, during cable installation, operations would be moving away from the Landfall and not static and so impacts are likely to be localised and short-term in duration. On this basis, potential visual impacts to recreational sea users from Project-related vessel activity are considered to be negligible and not significant. It is therefore appropriate to scope out this receptor from further detailed assessment.		
Interaction with aircraft using PEXA	All vessel related activities	MoD	**OUT** – The activities associated with construction, operation and decommissioning of the Project (i.e., standard vessels, no cranes) will not provide a pathway for interaction with low flying military aircraft utilising the airspace above the English Offshore Scheme.		

Potential Impacts	Project Activities	Sensitive Receptors	Scoping Justification		
			Construction	Operation (including repair and maintenance)	Decommissioning
Damage to existing infrastructure or assets Occupancy of seabed – Below or on seabed Visual effects	Seabed preparation Cable burial and trenching Anchoring / jack-up legs Cable removal and decommissioning activities	Aquaculture Sites	**OUT** – No aquaculture sites have been identified within the Study Area.		
Transboundary	Seabed preparation Cable burial and trenching Anchoring / jack-up legs Cable removal	Oil and Gas Power and telecommunication cables OWF CCS	**OUT** - During all Project phases there is the potential for transboundary infrastructure operators to have restricted access to their assets. Individual crossing agreements will be set up with cable and pipeline owners following guidance from the ICPC and ESCA. However, there remains the potential that activities could affect any new or existing infrastructure. If new infrastructure is identified crossing agreements would need to be reached between the parties ahead of works taking place. Therefore, it is proposed that this impact is scoped out due to the legal measures in place that would ensure effects are not significant.		

25.7 Assessment Methodology

Further Data to be Gathered / Processed

Desk-Based Assessments

25.7.1. The assessment will be established through desk-based review of literature and GIS mapping files and consultation with relevant stakeholders.

Surveys

25.7.2. No site-specific surveys are planned for this technical aspect, as extensive information is readily available to characterise the other marine users of the North Sea. Such data are summarised in **Table 25-6**.

Assessment of Significance

25.7.3. The other marine users EIA will follow the assessment approach set out in **Part 1**, **Chapter 5: EIA Approach and Methodology** of this Scoping Report, using the project-wide assessment matrix. The assessment of potential effects will be established using the standard Source-Pathway-Receptor approach.

25.7.4. The criteria to be used for characterising sensitivity and magnitude in the other marine users assessment are outlined in **Table 25-16** and **Table 25-17** respectively.

25.7.5. The sensitivity of the receptor is a function of its capacity to accommodate change and reflects its ability to recover if it is affected. The sensitivity of the receptor is therefore quantified via the following factors:

- Value - A measure of the receptor's importance, rarity and worth;
- Adaptability - The degree to which a receptor can avoid or adapt to an impact;
- Tolerance - The ability of a receptor to accommodate temporary or permanent change without a significant adverse impact; and
- Recoverability - The temporal scale over an extent to which a receptor will recover following an impact.

25.7.6. Where receptors are capable of adapting to, tolerating or recovering from indirect impacts, these factors were incorporated into an assessment of their sensitivity.

25.7.7. The magnitude of an impact provides a useful initial measure of the likelihood of an environmental effect arising. Magnitude is defined for the purposes of assessment via four factors:

- Extent - The area over which an impact occurs;
- Duration - The time for which the impact occurs;
- Frequency - How often the impact occurs; and
- Severity - The degree of change relative to the baseline level.

Table 25-16: Criteria for characterising the sensitivity of receptors

Receptor Sensitivity / Value	Definition
High	Receptor is economically valuable and / or has low / no capacity to return to pre-impact conditions, e.g., low tolerance to change and low recoverability, such as loss of access with no alternatives or the impact will have major financial consequences for the receptor.
Medium	Receptor is of intermediate economic value and / or is tolerable to change, e.g., acceptable alternatives with minor financial consequences.
Low	May affect behaviour but is not a nuisance to the user, with acceptable financial consequences, e.g., short-term, reversible changes.
Negligible	The receptor is tolerant to change with no effect on its character.

Table 25-17: Criteria for characterising the magnitude of an impact

Magnitude	Definition
High	Total loss of, or major alteration to key elements or features of the pre-project conditions, such that the post-project character or composition of the feature would be fundamentally changed.
Medium	Loss of or alteration to key elements or features of the pre-project conditions, such that the post-project character of the feature would be partially changed.
Low	Minor alteration from pre-project conditions.
Negligible	No or unquantifiable change to pre-project conditions.

25.7.8. The significance of an effect, either adverse or beneficial, would be determined using a matrix approach through a combination of the magnitude of the impact and the sensitivity of the receptor. This is described within Table 5-3, **Part 1, Chapter 5: EIA Approach and Methodology**.

Assessment of Cumulative Impacts and Effects

25.7.9. **Part 4, Chapter 30: Cumulative Effects** defines the methodology for the assessment of cumulative effects. The other marine users assessment of intra- and inter-project cumulative effects will be carried out and reported within the ES to be submitted with the application for development consent.

25.7.10. The zone of influence for the inter-project cumulative effects assessment of other marine users would comprise the Draft Order Limits, plus an additional 9.5 km buffer each side. This is a precautionary maximum zone of influence that encompasses the worst-case scenario of potential impact pathways from increased suspended sediment concentrations, as calculated in **Part 3, Chapter 18: Marine Physical Environment**.

25.7.11. The PEIR will present the long and short lists of ‘other developments’ which will be considered at the ES stage, and the methodology which allowed for the identification of these other developments, to allow consultation bodies to form a view and provide comment on the other developments included. The long list will be reviewed and if necessary, updated, in the lead up to the ES, as the English Offshore Scheme design further evolves and in response to any comments raised at statutory consultation.

25.8 Assessment Assumptions and Limitations

25.8.1. The baseline description collated in this technical aspect chapter has been based on a range of publicly available data and information. It is assumed that the data collated is accurate. The data would be supplemented with additional information acquired as part of the stakeholder engagement process and through the additional studies identified in this chapter to inform the PEIR and ES.

25.8.2. In the absence of data, a precautionary approach has been taken and professional judgement, based on experience of similar linear projects, have been used where required to inform the scope of the assessment.

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26. Marine Archaeology

26.1 Introduction

26.1.1. This chapter of the Scoping Report outlines the potential impacts arising from the construction, operation and maintenance, and decommissioning of the English Offshore Scheme on marine archaeology receptors.

26.1.2. Marine archaeology receptors located within the Study Area for the topic will be considered against the following categories:

- Submerged prehistory: including palaeolandscapes and palaeolandscape forms, palaeoenvironmental remains and prehistoric artefacts and sites;
- Maritime and intertidal archaeology: broadly comprising vessel remains, wreckage/debris, cargo and sites/structures within the intertidal and marine zones (below Mean High Water Springs (MHWS)); and
- Aviation archaeology: comprising all military and civilian aircraft crash sites and related wreckage.

26.1.3. The chapter summarises the methodology for the marine archaeology assessment, describes the datasets that have been / will be used to inform the assessment as the Project progresses and sets out a preliminary review of baseline conditions within the Study Area.

26.1.4. There may be interrelationships related to the potential effects on marine archaeology and other disciplines. Therefore, please also refer to the following chapters of this Scoping Report found in **Volume 1**:

- **Part 3, Chapter 18: Marine Physical Processes**: impacts on the marine physical environment such as a temporary increase in suspended sediments and subsequent deposition will be assessed in this topic chapter; and
- **Part 2, Chapter 7**: **Cultural Heritage**: a crossover in the scope of the cultural heritage and marine archaeology study areas (down to Mean Low Water Springs in the former and up to MHWS in the latter) creates an overlap where interrelationships between effects may occur.

26.1.5. This chapter is supported by the following figures found in **Volume 3**:

- **Part 3, Figure 26-1 Marine Archaeology Study Area**;
- **Part 3, Figure 26-2 Asset Point Records up to 12 NM**; and
- **Part 3, Figure 26-3 Asset Point Records within the Study Area**.

26.2 Relevant Legislation, Planning Policy and Technical Guidance

26.2.1. This section identifies the relevant legislation, national and local policy and guidance which has informed the scope of the marine archaeology assessment.

Legislation

26.2.2. A summary of the key legislation considered in, but not limited to, the scope of marine archaeology is outlined in **Table 26-1**.

Table 26-1: Legislation relevant to marine archaeology assessment

Legislation	Legislative Context
The World Heritage Convention (1972) (Ref 26.1)	The Convention defines the concepts of nature conservation and the preservation of cultural properties, recognising the way in which people interact with nature and the need for balance between nature and culture. Signatories are required to preserve World Heritage Sites defined by the Convention and to identify and preserve national heritage through suitable planning programmes and measures.
Protection of Wrecks Act (1973) (Ref 26.2)	The Protection of Wrecks Act 1973 was enacted to safeguard wreck sites in United Kingdom (UK) territorial waters that are of historical, archaeological, or artistic importance, or pose a danger to navigation or public safety. The Act is divided into two key sections; Section 1 – Protection of sites of historic wrecks[22] and Section 2 – Prohibition on approaching dangerous wrecks[23]. The Act provides a legal mechanism for managing and preserving wreck sites *in situ* in alignment with international heritage principles (e.g., the United Nations Convention on the Law of the Sea (1982) and UNESCO Convention on the Protection of Underwater Cultural Heritage (2001)).
Ancient Monuments and Archaeological Areas Act (1979) (Ref 26.3)	Enshrines the protection and preservation of remains with high archaeological or historical interest. Operations or activities with the potential to disturb or damage the remains within the boundaries of the protected area may be permitted following the granting of Scheduled Monument Consent from the Secretary of State but any unlicenced operations that may disturb the site are illegal.
United Nations Convention on the Law of the Sea (1982) (UNCLOS) (Ref 26.4)	The Convention establishes rules governing the use of the oceans and outlines both the traditional legal framework and introduces new additions. Provisions relating to the marine historic environment state how remains should be treated and that ownership of remains lay with the state of origin. The Convention is intended to apply to "…*the area of the seabed and ocean floor and the subsoil thereof, beyond the limits of national jurisdiction, as well as its*

[22] Section 1 of the Protection of Wrecks Act 1973 outlines the definition of sites of historic wrecks, conditions for the application of the Act, authorisation for activities within protected sites and activities which breach protections.

[23] Section 2 of the Protection of Wrecks Act 1973 outlines the definition of dangerous wrecks and associated prohibited areas, conditions and activities which breach protections and exemptions.

Legislation	Legislative Context
	resources…", encompassing both territorial waters and high seas.
Protection of Military Remains Act (1986) (Ref 26.5)	Provides protection for the wreckage of military aircraft and certain military wrecks. Designations can be either as a Controlled Site[24] or Protected Place[25] where access may be permitted but any operations that may disturb the site are illegal, unless licenced by the Ministry of Defence (MoD). All military aircraft are automatically protected under this legislation; however, vessels must be designated individually.
Merchant Shipping Act (1995) (Ref 26.6)	The Act stipulates that the 'Receiver of Wreck' administers and is responsible for processing incoming reports of wreck and cargo.
International Council of Monuments and Sites Charter on the Protection and Management of Underwater Cultural Heritage (1996) (the Sofia Charter) (Ref 26.7)	The Sofia Charter is intended to encourage the protection and management of underwater cultural heritage in inland and inshore waters, shallow seas and deep oceans. The Sofia Charter should be read as a supplement to the International Council on Monuments and Sites Charter for the Protection and Management of Archaeological Heritage (1990), which defines "…*archaeological heritage*…" as that part of the material heritage in respect of which archaeological methods provide primary information, comprising all vestiges of human existence and consisting of places relating to all manifestations of human activity, abandoned structures and remains of all kinds, together with all the portable cultural material associated with them.
United Nations Educational, Scientific and Cultural Organisation (UNESCO) Convention on the Protection of Underwater Cultural Heritage (2001) (Ref 26.8)	The Convention provides a framework on how to better identify, research and protect underwater heritage while ensuring its preservation and sustainability.
European Convention on the Protection of Archaeological Heritage (revised) (1992) (the Valletta Convention) (Ref 26.9)	The Convention sets out conservation and enhancement of archaeological heritage, both terrestrial and marine, as a goal of planning policy and sets guidelines for the funding of physical investigation and research, publication of research findings, public access and awareness and constitutes an institutional framework for pan-European cooperation on archaeological heritage.

[24] A "*controlled site*" under the Protection of Military Remains Act 1986 means an area designated as such under Section 1 of the Act, particularly aircraft or vessels sunk, stranded or crashed whilst in military service to the UK (exemptions applicable).

[25] A "*protected place*" under the Protection of Military Remains Act 1986 means such a place as defined in accordance with Section 1(6) of the Act: the remains or substantial part of an aircraft or vessel (falling under the Act) and on or within the seabed or place or immediate vicinity of the place of crash, sinking or stranding.

Legislation	Legislative Context
European Landscape Convention (2000) – adopted in the UK in 2007 (Ref 26.10)	The Convention introduced a Europe-wide concept centring on the quality of landscape protection, management and planning and covering the entire territory, not just outstanding landscapes. Through its approach and broader scope, it complements the Council of Europe's and UNESCO's heritage conventions. This Chapter has derived its definition of "*seascape*" from the Convention, also used by the UK Marine Policy Statement (2011).
Marine and Coastal Access Act (2009) (MCAA) (Ref 26.11)	The Marine and Coastal Access Act (2009) forms key legislature underpinning the activities of the Marine Management Organisation (MMO), who are responsible for overseeing balanced and considerate marine development in English waters. The Act also sets out powers to designate Marine Conservation Zones (MCZs).

Planning Policy

26.2.3. A summary of the planning policies at both a national and local level relevant to the scope of marine archaeology are outlined in **Table 26-2** and **Table 26-3**, respectively.

Table 26-2: National Planning Policy relevant to marine archaeology assessment

Policy Reference	Policy Context
National Planning Policy Framework (NPPF) (2024) (Ref 26.12)	The National Planning Policy Framework (2024) sets out planning policy for England and their application. Section 16 of the NPPF (2024) explains the importance and application of conservation and enhancement of the historic environment through planning, underpinning the key principles of sustainable development with regard to this resource.
Overarching National Policy Statement for Energy (NPS EN-1) (Ref 26.13) Section 5.9	The National Policy Statement for Energy (NPS EN-1) sets out the Government's planning policy for Nationally Significant Infrastructure Projects (NSIPs) in the energy sector, policies for assessment in applications and outlines generic impacts arising from the development of energy infrastructure. Outlines the importance of the management and assessment of the historic environment during application for development consent, in line with current legislation and other policy in England. It also underpins the case for mitigation and the decision-making process in weighing applications with the potential to impact the historic environment.

Policy Reference	Policy Context
Overarching National Policy Statement for Energy (NPS EN-1) Consultation Draft (April 2025) (Ref 26.14) Section 5.9	The Government has published a draft update to NPS EN-1. The 2025 Draft NPS EN-1 is largely the same as the 2023 document, none of these relate to Section 5.9: Historic Environment.
National Policy Statement for Renewable Energy Infrastructure (NPS EN-3) (Ref 26.15)	NPS-EN3, together with NPS-EN1, provides the basis for decisions on applications for Development Consent Orders (DCOs) for nationally significant renewable energy infrastructure projects.
Paragraphs 3.8.180 – 3.8.192, 3.8.270 – 3.8.275 and 3.8.91	Pertains to the marine historic environment, outlining potential receptors, impacts and approaches to this resource for the consideration of applications. Outlines the preference for avoidance and protection *in situ* of heritage assets in the marine environment, using exclusion zones and micro-siting. States the requirement for the DCO submission to be accompanied by an Outline Written Scheme of Investigation (WSI), to be updated post-consent in consultation with Historic England.
National Policy Statement for Renewable Energy Infrastructure (NPS EN-3) Consultation Draft (April 2025) (Ref 26.16) Paragraphs 2.8.143 - 2.8.152, 2.8.222 - 2.8.225 and 2.8.71	The Government has published a draft update to NPS EN-3. The 2025 Draft NPS EN-3 is largely the same as the 2023 document, however paragraph numbers will be updated. Notably, the updated draft further highlights the importance of an Outline WSI to be submitted along with the application, to rapidly manage unforeseen circumstances relating to marine archaeology (also highlighted in paragraph 2.8.71).
UK Marine Policy Statement (MPS) (2011) (Ref 26.17)	The UK Marine Policy Statement (2011, updated 2020) sets out high-level objectives for the marine space, including achieving a sustainable marine economy, and identifies a wide range of relevant marine uses. The Policy requires use of the marine environment and its resources to maximise sustainable activity, prosperity and opportunities for all. The Marine Policy Statement (2011) represents one of the key documents underpinning the principle of sustainable development in the UK, informing consideration of marine archaeology in marine development.

Table 26-3: Local Planning Policy relevant to marine archaeology assessment

Policy Reference	Policy Context
East Inshore and East Offshore Marine Plan 2014 (Ref 26.18) and Northeast Inshore and Offshore Marine Plan 2021 (Ref 26.19)	Marine plans set out the priorities and direction for future planning within the plan area and provide guidance on activities to avoid or promote. A Marine Plan Assessment will be provided with the Preliminary Environmental Information Report (PEIR) and Environmental Statement (ES) that outlines how the English Offshore Scheme complies with the policies and objectives of the relevant marine plans.

Technical Guidance

26.2.4. A summary of the relevant technical guidance, specific to the marine archaeology assessment, that has informed this Scoping Report and will inform the assessment within the PEIR and ES, is given in **Table 26-4**.

Table 26-4: Technical Guidance relevant to marine archaeology assessment

Technical Guidance Document	Context
Aircraft Crash Sites at Sea (Ref 26.20)	Guidance regarding the management and understanding of sites that include aviation remains within marine environments
Archaeological Written Schemes of Investigation for Offshore Wind Farm Projects (Ref 26.21)	Guidance on the range of archaeological methodologies that may be required as part of the initial investigation stages or the mitigation phase of offshore projects (not exclusive to offshore wind projects).
Assessing Boats and Ships 1860-1950 (Ref 26.22)	Guidance on the assessment of shipwrecks from the mid-19th to mid-20th centuries.
Code of Practice for Seabed Development (Ref 26.23)	The Code provides guidance to developers relating to risk management and legislative implications of developing within the marine environment in the UK. It also outlines the responsibility of developers in protecting the UK's marine heritage.
Conservation principles, policies and guidance for the sustainable management of the historic environment (Ref 26.24)	This guidance emphasises the importance of understanding and preserving the significance of heritage assets. It advocates for inclusive participation, transparent decision-making, and informed change that sustains cultural, historical, aesthetic, and communal values.
COWRIE Historic Environment Guidance for	A generic guidance note on the survey, and appraisal and monitoring of the historic environment during the development of offshore renewable energy projects in the UK. The guidance is applicable to the marine environment and the coastal

Technical Guidance Document	Context
the Offshore Renewable Energy Sector (Ref 26.25)	environment adjacent to any development, encompassing the inter-tidal area, coastal margin and those areas further inland likely to be affected by offshore renewable energy developments.
COWRIE Guidance for Assessment of Cumulative Impacts on the Historic Environment from Offshore Renewable Energy (Ref 26.26)	A guidance note on the assessment of cumulative effects on the historic environment during the development of offshore renewable energy projects in the UK. The guidance is applicable to the marine environment and the coastal environment adjacent to any development, encompassing the inter-tidal area, coastal margin and those areas further inland likely to be affected by offshore renewable energy developments.
Guidance on Heritage Impact Assessments for Cultural World Heritage Properties (Ref 26.27)	The guidance provides a structured framework for evaluating how proposed changes, such as development, may affect the Outstanding Universal Value (OUV) of cultural World Heritage properties. Rooted in the principles of the World Heritage Convention, the guidance emphasises the need for early, informed, and transparent decision-making to ensure that heritage values are preserved amid change. The guidance serves as a vital tool for balancing conservation with sustainable development.
Managing Significance in Decision-Taking in the Historic Environment (Ref 26.28)	This document provides practical guidance to support the implementation of national heritage policy within the planning system. It emphasises the importance of understanding the significance of heritage assets as a foundation for informed and proportionate decision-making. The document outlines best practices for assessing significance, engaging appropriate expertise, using Historic Environment Records (HERs), and considering the impact of development proposals. It encourages early engagement, structured analysis, and transparent justification of any changes, aiming to conserve heritage assets in a manner appropriate to their value while allowing for sustainable development.
Marine Geophysics: Data Acquisition, Processing, and Interpretation: Guidance Note (Ref 26.29)	Guidance on the archaeological requirements for the acquisition, processing and interpretation of geophysical and hydrological data.
Military Aircraft Crash Sites (Ref 26.30)	Guidance document relating to the identification and management of aircraft crash sites.
Offshore Geotechnical Investigations and Historic Environment Analysis:	A guidance note on the aims of offshore geotechnical investigations and the resulting analysis undertaken during the development of offshore renewable energy projects in the UK. The guidance is applicable to the marine environment and the

Technical Guidance Document	Context
Guidance for the Renewable Energy Sector (Ref 26.31)	coastal environment adjacent to any development, encompassing the inter-tidal area, coastal margin and those areas further inland likely to be affected by offshore renewable energy developments.
Protocol for Archaeological Discoveries: Offshore Renewables Projects (Ref 26.32)	Guidance document relating to the reporting procedure of archaeological discoveries in the offshore environment.
Standard and Guidance for Historic Environment Desk-Based Assessment (Ref 26.33)	A generic guidance note on the assessment of the historic environment during the development projects in the UK. The Code of Conduct guides the practices and standards for archaeological assessment both onshore and offshore.
Statements of Heritage Significance: Analysing Significance in Heritage Assets (Ref 26.34)	This advice note provides clear guidance on how to assess and articulate the significance of heritage assets in support of planning and heritage consent applications. The document outlines a staged approach to decision-making, where significance is assessed prior to design development, ensuring that proposals are informed and proportionate.

26.3 Consultation and Engagement

26.3.1. The English Offshore Scheme has been previously consulted on through an initial, Stage 1 consultation undertaken by National Grid Electricity Transmission (NGET). Responses received regarding the Stage 1 consultation, where appropriate, will inform how potential effects upon marine archaeology receptors may be mitigated as the Project progresses.

26.3.2. In respect of the marine archaeology assessment, key consultees have been identified and focussed engagement (through both informal and formal consultation) will be undertaken and recorded throughout the pre-application stages of the English Offshore Scheme. Key consultees identified to date are:

- Marine Management Organisation (MMO);
- Historic England (HE); and
- Lincolnshire County Council (LCC).

26.3.3. Key areas of consultation are intended to include the engagement on any interactions with other sea users, impact assessment conclusions and proposed mitigation.

26.3.4. Local or specialist groups will be contacted should the assessment process identify a need to engage further detailed local knowledge, or if requested during the statutory consultation process.

26.3.5. The programme of ongoing stakeholder engagement and consultation will be structured around key milestones in the design development and assessment process, thereby providing the opportunity to update and consult stakeholders on the evolving design and

decision-making process. Further details and responses from stakeholder consultation will be included in the Marine Archaeology chapter of the Environmental Impact Assessment (EIA).

1.1.1 The Applicant held a meeting with Historic England on the 24th March 2025 to introduce the Project, confirming the Project description, proposed Landfall location, proposed consenting strategy and approach to engagement.

26.4 Baseline Conditions

Study Area

26.4.1. The Study Area for marine archaeology comprises a 2 kilometre (km) zone measured from the Scoping Boundary, illustrated by **Volume 3, Part 3, Figure 26-1**. The marine archaeology Study Area extends for 200 m above MHWS at the Landfall, as illustrated by **Volume 3, Part 3, Figure 26-2**. This Study Area is considered suitable for characterising the marine archaeological resource of the English Offshore Scheme, as it will examine assets potentially susceptible to direct and/or indirect impacts, therefore adhering to best practice[26].

26.4.2. The same approach to defining the Study Area scope was initially proposed for the EGL 3 and EGL 4 projects and agreed through consultation with relevant stakeholders, including Historic England. A large extent of crossover is exhibited between the EGL 3 and EGL 4 projects and the English Offshore Scheme for EGL 5.

26.4.3. Should further information demonstrate a potential for impacts to offshore heritage assets beyond this Study Area, this may be amended in agreement with the Applicant and key stakeholders.

26.4.4. Reference to onshore heritage assets is included in the discussion where these fall within the Study Area (i.e., above MHWS <200 metres (m)). Such assets also feature in the assessment presented by **Part 2, Chapter 7: Cultural Heritage**.

Data Gathering Methodology

Publicly Available Data

26.4.5. The baseline for marine archaeology was informed by a range of publicly available data sources, with key sources listed in **Table 26-5**. The data sources and approach to data gathering reflect those proposed for the EGL 3 and EGL 4 projects; approved through consultation with stakeholders. Ongoing consultation will ensure that best practice and guidance is followed.

[26] The scope of a marine archaeology Study Area is not defined by policy nor legislation, rather it is determined on a project-by-project basis. Industry guidance recommends agreement in the scope between the party undertaking the assessment and the "…*local authority's historic environment advisor…*" prior to data collection (Chartered Institute for Archaeologists, 2020).

Table 26-5: Key publicly available data sources for marine archaeology

Data Source	Description
British Geological Survey (BGS) (Ref 26.35)	Data, reports and projects relevant to submerged prehistory such as sea level modelling studies and projects mapping onshore and offshore palaeolandscape features.
BGS GeoIndex (Ref 26.36)	Data and Geographic Information System (GIS) maps which provide existing geological, geophysical, and geotechnical information relevant to submerged prehistory.
BRITICE Glacial Mapping Project (Ref 26.37)	The BRITICE project brings together published information regarding the geomorphology (landforms) of the last British-Irish ice sheet. Spatial data is displayed in an interactive map or as downloadable data.
North Sea Palaeolandscapes Project (Ref 26.48)	Provides an assessment of the North Sea palaeolandscapes based on legacy seismic and other data.
United Kingdom Hydrographic Office (UKHO) (Ref 26.38)	Spatial data and records relating to charted wrecks and other seabed obstructions that are considered navigational hazards.
Historic England (HE) National Record of the Historic Environment (NRHE) (Ref 26.39)	Spatial data and records for WHSs, Protected Wrecks, Scheduled Monuments, Listed Buildings, Registered Battlefields, Registered Parks and Gardens, and Conservation Area and non-designated heritage asset records for England
National Record of the Historic Environment (Canmore) (Ref 26.40)	Spatial data and information on archaeological and historic environment records for offshore heritage assets near to Scottish waters
Lincolnshire Historic Environment Record (LHER) (Ref 26.41)	Archaeological and historic environment records and spatial data for onshore and offshore heritage assets in Lincolnshire
CITiZAN (Coastal and Intertidal Zone Archaeological Network) Coastal Map (Ref 26.42)	An interactive coastal map with a combined dataset of sites and features from a variety of sources such as HE (Rapid Coastal Zone Assessments), selected HERs, the National Trust and local archaeology groups.
His Majesty's (HM) Government Map of planning data for England (Ref 26.43)	List and mapping data of wrecks designated under the Protection of Wrecks Act 1973, the Ancient Monuments and Archaeological Areas Act 1979 and the Protection of Military Remains Act 1986.

Data Source	Description
	https://www.planning.data.gov.uk/dataset/protected-wreck-site
European Marine Observation and Data Network (EMODnet) (Ref 26.44)	Interactive reference website which maps data relevant to submerged prehistoric archaeology and landscapes. https://emodnet.ec.europa.eu/en/human-activities

26.4.6. All spatial data utilised in forming the marine archaeological baseline was converted to and presented in Universal Transverse Mercator (UTM) Zone 30 North projected from a European Terrestrial Reference System (ETRS) 1989 datum.

26.5 Current Baseline

Introduction

26.5.1. The baseline summary for submerged prehistory is based on a preliminary review of geological mapping of seabed sediments and solid geology from published BGS sources, enhanced by the high-level and localised results of regional and national archaeological and geoarchaeological studies.

26.5.2. The baseline of known marine archaeology receptors within the Study Area was formed through preliminary review of data obtained from the UKHO and historic environment data archives.

Overview

Submerged Prehistory

26.5.3. The North Sea contains prehistoric submarine archaeological remains which date back to almost one million years ago, encompassing the known chronology of hominid activity in the British Isles. The earliest dated remains of hominid activity in Britain, dating to *c.* 970,000 Before Present (BP), were recovered from the intertidal Site 3 of archaeological investigations at Happisburgh, Norfolk (Ref 26.45), c. 90 km southeast from the proposed Landfall. Investigation of this site and others in the vicinity place them in a Middle Pleistocene palaeolandscape characterised by grassland, conifer forest, braided river systems and megafauna (Ref 26.46). A range of regional studies, both geologically and archaeologically focussed, have been undertaken over the past 60 years to develop understanding of the palaeogeography and how humans may have interacted with the palaeolandscapes of the North Sea (Ref 26.47).

26.5.4. These studies have shown that the coastline along the northeast of England has the potential for the presence of as-yet undiscovered *in situ* prehistoric sites, artefacts and deposits of palaeoenvironmental interest, located within the inundated nearshore and offshore palaeogeography. Palaeolandscape features such as lake deposits, tunnel valleys, palaeochannels, submerged peat and submerged forests have the potential to contain palaeoenvironmental and archaeological remains. A detailed review of geological units identified within the English Offshore Scheme (by site-specific geophysical and geotechnical surveys) and their inherent archaeological and palaeoenvironmental potential will be undertaken to inform the DBA for the EIA.

26.5.5. Records from sources consulted to inform this EIA Scoping Report that are considered relevant to submerged prehistory within the Study Area are summarised in the Baseline Characterisation section below.

Maritime and intertidal archaeology

26.5.6. Maritime archaeological sites comprise two broad categories: the remains of vessels that have been lost by stranding, foundering, collision, enemy action and other causes, and those sites that consist of vessel-related material. Vessel-related material can include (but is not limited to): equipment lost overboard or deliberately jettisoned, such as fishing gear, ammunition and anchors; or the only surviving remains of a vessel, such as its cargo or a ballast mound. Shipwrecks on the seabed provide an insight on the types of vessels used in the past, the nature of shipping activity in the wider area and the changing usage of the marine environment through different periods. Such remains are considered more likely to survive in sediments which promote the preservation of wreck sites (e.g., finer grained sediments that are not subject to high levels of mobility).

26.5.7. No designated heritage assets are recorded within the Study Area. The Study Area includes numerous records relating to non-designated archaeological and heritage assets in England. A non-exhaustive illustration of their distribution is presented by **Volume 3, Part 3, Figure 26-2** and **Volume 3, Part 3, Figure 26-3**.

26.5.8. Non-designated marine assets representing or possibly representing wrecks within the Study Area comprise:

- Ninety-seven (97) UKHO wreck records;
- Five wreck records held in the Canmore database;
- Twelve (12) NRHE maritime records; and
- One wreck record recorded in the CITiZAN coastal map resource.

26.5.9. Non-designated heritage assets within the intertidal and onshore extent of the Study Area can be summarised as follows:

- Twenty one NRHE records for onshore/intertidal heritage assets;
- Fourteen LHER records for onshore/intertidal heritage assets; and
- Sixty five records for onshore/intertidal heritage assets documented in the CITiZAN coastal map resource.

26.5.10. A summary of the assets outlined above is provided in the Baseline Characterisation section below. In several cases, records from various data sources may correlate with others for the same site or findspot. Any such instances will be highlighted by the DBA and the resultant total sum of heritage and wreck records would be less than indicated above.

Aviation archaeology

26.5.11. Offshore aviation archaeology assets comprise the remains, or associated remains, of military and civilian aircraft that have been lost at sea. Evidence is divided into three primary time periods, based on major technological advances in aircraft design:

- Pre-1939;

- 1939-1945; and
- Post-1945.

26.5.12. A preliminary review of data found no records indicating the possible location of aircraft remains within the Study Area.

26.5.13. Maritime aircraft crash sites can retain a significant amount of material and, although these can be difficult to identify and remains may be dispersed and/or buried, there is a possibility that aircraft material may be present within the Study Area. Any aircraft remains would be automatically protected under the Protection of Military Remains Act 1986.

Submerged prehistory

26.5.14. The EMODnet geological database (Ref 26.44) maps a series of tunnel valleys and fluvial channels both intersecting and in the vicinity of the southern extent of the Study Area, beyond the 12 nautical Miles (NM) from the Lincolnshire/Norfolk coast. Sub-glacial tunnel valleys in this location have also been identified in the BRITICE project (Ref 26.37). A tunnel valley is also mapped EMODnet geological database in the northern extent of the Study Area, *c*. 54 km south of the Scottish waters boundary and *c.* 100 km east-northeast of Berwick-upon-Tweed. The presence of these features illustrates the impact and aftereffects of glacial ice on the subsea landscape within the Study Area.

26.5.15. Beyond the Study Area and further inland in the vicinity of the proposed Landfall, the BRITICE project maps moraines; an accumulation of unconsolidated debris deposited by a glacier (and sometimes referred to as glacial till). As above, these deposits are indicative of the impact and aftereffects of glacial ice on the subsea landscape within and around the Study Area.

26.5.16. The North Sea Palaeolandscapes Project (Ref 26.48) utilised geophysical data to reconstruct the Mesolithic palaeolandscape of part of the Southern North Sea, from *c.* 12 NM from the Lincolnshire/Norfolk coast to Doggerbank. The results placed a southern part of the Study Area in a palaeolandscape characterised by a large valley some 65 km northeast of the proposed Landfall, the slopes of which were crossed by numerous watercourses. Other notable Holocene landscape features within the Study Area documented by the North Sea Palaeolandscapes Project include a former tunnel valley inundated to form a lake, some 50 km northeast of the proposed Landfall. EMODnet data holds a record for submerged forest remains at Anderby (dated to *c.* 5,150 years BP) within the Study Area. Submerged forests are also recorded in the EMODnet data beyond the Study Area at Trusthorpe and Sutton on Sea (*c.* 5.7 and 3.8 km north-northwest of the proposed Landfall) and Wolla Bank and Chapel Point (*c.* 2 km and 4 km south-southeast of the proposed Landfall). Further records in the EMODnet data beyond the Study Area include submerged peat, *c.* 0.5 km and 3 km south of the Study Area respectively (Chapel 6 Marshes and Chapel St. Leonards).

26.5.17. Prehistoric coastline modelling by Brooks *et al.*(Ref 26.49) suggests the Study Area up to *c.* 12 NM in English waters remained sub-aerially exposed until *c.* 8,000 BP.

26.5.18. The NRHE holds three records of prehistoric date within the Study Area, comprising two findspots of Palaeolithic and Neolithic date and peat deposit of Palaeolithic date. The CITiZAN coastal map largely correlates with the NRHE data and holds four records of prehistoric date within the Study Area, including findspots and peat deposits of

Palaeolithic and Neolithic date. Three records of prehistoric date are held by the LHER, comprising findspots of Palaeolithic, Neolithic and Iron Age date.

Maritime and intertidal archaeology (up to 12 NM)

26.5.19. No records within the Study Area up to 12 NM relate to remains or sites that are subject to statutory protection as Scheduled Monuments, Protected Wrecks, Historic Marine Protected Areas or under the Protection of Military Remains Act 1986.

26.5.20. The UKHO holds nine records within the Study Area within 12 NM off the coast of Lincolnshire (**Table 26-6; Volume 3, Part 3, Figure 26-2**). Of these, two are listed as 'lifted'. Three records are listed as 'dead', indicating that they have not been detected by repeated surveys. The NRHE and CITiZAN coastal map record five and one wrecks respectively within the Study Area up to the 12 NM limit.

26.5.21. An additional 21 records are recorded by the NRHE within the onshore and intertidal zones of the Study Area (**Volume 3, Part 3, Figure 26-2**). Those relevant to marine archaeology include enclosures thought to be associated with oyster beds or fish farming, clay pits, salt works, possible landing sites and the site of a signal staff). Findspots of isolated finds are also recorded in the Study Area, dating from the Palaeolithic to the medieval periods.

26.5.22. A further 65 records are held by the CITiZAN coastal map within the intertidal and onshore extent of the Study Area (**Volume 3, Part 3, Figure 26-2**). Those relevant to marine archaeology largely correlate with the NRHE records, with the addition of records relating to former WWII coastal defences.

26.5.23. The Lincolnshire HER holds 14 records within the onshore and intertidal zones of the Study Area (**Volume 3, Part 3, Figure 26-2**). Those relevant to marine archaeology include a medieval sea bank, a former coastguard station of post-medieval/modern origin, WWII coastal defences and a range of findspots dating from the Palaeolithic to medieval periods.

26.5.24. In several cases, records from various data sources may correlate with others for the same site or findspot. Any such instances will be highlighted by the DBA and the resultant total sum of heritage and wreck records would be less than indicated above.

Maritime archaeology (beyond 12 NM)

26.5.25. There are currently no records within the Study Area (beyond 12 NM) that are subject to statutory protection as Scheduled Monuments, Protected Wrecks, Historic Marine Protected Areas or under the Protection of Military Remains Act 1986.

26.5.26. A total of 88 wreck / obstruction records are held by the UKHO within English waters of the Study Area beyond 12 NM (**Table 26-6**; **Volume 3, Part 3, Figure 26-3**). Of these, 43 are recorded as 'dead' and one as 'lifted'. A further five records are documented in the Canmore dataset, four of which appear to correlate with UKHO records.

26.5.27. The NRHE holds seven records in the Study Area beyond the 12 NM limit, comprising six wreck records and one record for a recorded loss i.e. a documented shipping loss where the loss location has been arbitrarily set or is only known approximately.

26.5.28. As above, records from various data sources may correlate with others for the same site or findspot. Any such instances will be highlighted by the DBA and the resultant total sum of heritage and wreck records would be less than indicated above.

Table 26-6: UKHO records within the Study Area

UKHO ID	Name	Type	Description	Latitude	Longitude	Source
Up to 12 NM						
8637	STAR	sailing vessel	Non-dangerous wreck; dead	53 20.12 N	0 22.696 E	UKHO
8640	-	-	Dangerous wreck; lifted	53 20.8 N	0 23.1 E	UKHO
8661	HMS CORFIELD	steam ship	Dangerous wreck	53 26.94 N	0 18.899 E	UKHO
8664	LIZZIE CARTER	sailing vessel	Dangerous wreck; dead	53 27.136 N	0 18.696 E	UKHO
8667	FRYKEN	steam ship	Dangerous wreck	53 27.651 N	0 26.136 E	UKHO
8676	RAVONIA (PART) (POSSIBLY)	steam ship	Dangerous wreck	53 29.347 N	0 24.507 E	UKHO
8997	-	-	Non-dangerous wreck; dead	53 23.269 N	0 24.429 E	UKHO
9181	-	-	Lifted	53 17.52 N	0 19.296 E	UKHO
94757	-	-	Dangerous wreck	53 16.319 N	0 19.833 E	UKHO
Beyond 12 NM						
3196	BOGO	steam ship	Non-dangerous wreck	56 17.997 N	0 21.11 W	UKHO
4572	-	-	Non-dangerous wreck	55 8.158 N	0 0.507 W	UKHO
4575	-	-	Non-dangerous wreck; dead	55 9.493 N	0 2.567 W	UKHO
4596	-	-	Non-dangerous wreck; dead	55 18.96 N	0 5.6 W	UKHO
4601	KIA-ORA (POSSIBLY)	fishing vessel	Non-dangerous wreck; dead	55 24.004 N	0 10.108 W	UKHO
4602	-	Fisherman's Fastener	Dead	55 24.077 N	0 6.233 W	UKHO
4604	-	Fisherman's Fastener	Dead	55 24.543 N	0 10.35 W	UKHO
4611	-	Fisherman's Fastener	Dead	55 27.979 N	0 9.462 W	UKHO
4616	-	Fisherman's Fastener	Dead	55 29.077 N	0 11.733 W	UKHO
4623	-	Fisherman's Fastener	Dead	55 33.027 N	0 8.35 W	UKHO
4624	-	Fisherman's Fastener	Dead	55 33.493 N	0 11.017 W	UKHO
4649	-	Fisherman's Fastener	Dead	55 31.26 N	0 9.083 W	UKHO
4651	-	Fisherman's Fastener	Dead	55 29.427 N	0 10.567 W	UKHO
4667	-	Fisherman's Fastener	Dead	55 17.743 N	0 6.3 W	UKHO
4668	-	Fisherman's Fastener	Dead	55 17.943 N	0 4.933 W	UKHO

UKHO ID	Name	Type	Description	Latitude	Longitude	Source
4670	-	Fisherman's Fastener	Dead	55 14.793 N	0 4.983 W	UKHO
4699	GAPERN	carrier	Non-dangerous wreck	55 3.407 N	0 4.641 E	UKHO
4706	-	Fisherman's Fastener	Dead	55 11.293 N	0 0.1 E	UKHO
4720	-	Fisherman's Fastener	Dead	55 3.25 N	0 5.267 E	UKHO
6464	CYNTHIA	trawler	Non-dangerous wreck; dead	54 0.965 N	0 33.291 E	UKHO
6487	JOSEPH AND WILLIAM	sailing vessel	Non-dangerous wreck; dead	54 6.914 N	0 25.792 E	UKHO
6488	APHELION	trawler	Non-dangerous wreck; dead	54 6.914 N	0 29.091 E	UKHO
6489	ALBATROSS	trawler	Non-dangerous wreck; dead	54 6.914 N	0 29.091 E	UKHO
6508	KENNINGTON	steam ship	Non-dangerous wreck; dead	54 11.597 N	0 20.892 E	UKHO
6510	AGNES	steam ship	Non-dangerous wreck	54 13.06 N	0 20.927 E	UKHO
6516	-	-	Non-dangerous wreck; dead	54 16.513 N	0 16.892 E	UKHO
6520	STRALSUND	motor vessel	Non-dangerous wreck	54 28.977 N	0 18.342 E	UKHO
6524	CONDOR (POSSIBLY)	trawler	Non-dangerous wreck	54 34.103 N	0 16.783 E	UKHO
6535	-	Fisherman's Fastener	Dead	54 49.708 N	0 10.141 E	UKHO
6540	-	Fisherman's Fastener	Dead	54 54.208 N	0 9.391 E	UKHO
6542	-	Fisherman's Fastener	Dead	54 54.508 N	0 10.891 E	UKHO
6544	-	Fisherman's Fastener	Dead	54 55.008 N	0 6.891 E	UKHO
6545	-	Fisherman's Fastener	Dead	54 55.008 N	0 8.891 E	UKHO
6546	-	Fisherman's Fastener	Dead	54 55.608 N	0 7.391 E	UKHO
6547	-	Fisherman's Fastener	Dead	54 57.007 N	0 7.891 E	UKHO
6597	KIELDRECHT (POSSIBLY)	steam ship	Non-dangerous wreck	54 5.281 N	0 27.326 E	UKHO
6603	-	-	Non-dangerous wreck	54 3.299 N	0 36.591 E	UKHO
6652	-	-	Dead	54 29.711 N	0 16.475 E	UKHO
6666	-	-	Non-dangerous wreck	54 19.608 N	0 15.745 E	UKHO
6688	-	-	Non-dangerous wreck	54 7.162 N	0 21.855 E	UKHO
6689	-	-	Non-dangerous wreck	54 8.964 N	0 25.925 E	UKHO
6706	RENATE S (POSSIBLY)	motor vessel	Non-dangerous wreck	54 40.276 N	0 16.116 E	UKHO

UKHO ID	Name	Type	Description	Latitude	Longitude	Source
6714	-	-	Non-dangerous wreck	54 30.787 N	0 17.4 E	UKHO
6720	-	-	Non-dangerous wreck	54 29.132 N	0 19.477 E	UKHO
8691	BEELSBY	sailing vessel	Dangerous wreck; dead	53 31.019 N	0 31.394 E	UKHO
8726	SCHIELAND (POSSIBLY)	steam ship	Dangerous wreck	53 32.761 N	0 37.162 E	UKHO
8730	STYLIANOS CHANDRIS	steam ship	Dangerous wreck	53 32.599 N	0 30.838 E	UKHO
8759	LANCASTER	trawler	Dangerous wreck; dead	53 33.519 N	0 34.294 E	UKHO
8852	ROYSTON	steam ship	Dangerous wreck	53 37.534 N	0 39.488 E	UKHO
8854	SCOTIA (POSSIBLY)	trawler	Dangerous wreck	53 38.639 N	0 43.601 E	UKHO
8856	CECIL (POSSIBLY)	sailing vessel	Dangerous wreck	53 38.216 N	0 39.55 E	UKHO
8858	SILVER QUEEN	sailing vessel	Dangerous wreck; dead	53 38.851 N	0 51.723 E	UKHO
8860	CATFORD	steam ship	Dangerous wreck	53 38.948 N	0 41.154 E	UKHO
8868	NORFOLK (POSSIBLY)	sailing vessel	Dangerous wreck	53 40.329 N	0 51.895 E	UKHO
8879	KEYNES	steam ship	Dangerous wreck	53 42.107 N	0 44.821 E	UKHO
8888	-	-	Dead	53 43.817 N	0 47.29 E	UKHO
8903	LARCHWOOD (POSSIBLY)	steam ship	Dangerous wreck	53 41.718 N	0 54.539 E	UKHO
8913	AJAX	trawler	Non-dangerous wreck; dead	53 46.017 N	0 51.89 E	UKHO
8915	PILSUDSKI	liner	Dangerous wreck	53 46.265 N	0 45.554 E	UKHO
8918	REBONO (PROBABLY)	trawler	Dangerous wreck	53 47.834 N	0 54.774 E	UKHO
8940	LISMORE	trawler	Non-dangerous wreck; dead	53 52.316 N	0 42.74 E	UKHO
8953	ROCHESTER (POSSIBLY)	trawler	Non-dangerous wreck	53 53.283 N	0 42.207 E	UKHO
8966	TWO BROTHERS	trawler	Non-dangerous wreck	53 55.416 N	0 37.924 E	UKHO
8994	LANCASTER (POSSIBLY)	trawler	Dangerous wreck	53 32.172 N	0 32.295 E	UKHO
8995	-	-	Non-dangerous wreck; dead	53 30.485 N	0 31.461 E	UKHO
9030	-	trawler	Dangerous wreck	53 39.064 N	0 40.369 E	UKHO
9040	-	steam ship	Dangerous wreck	53 41.968 N	0 54.639 E	UKHO
9041	-	trawler	Dangerous wreck	53 41.934 N	0 54.923 E	UKHO
9043	-	-		53 43.201 N	0 51.074 E	UKHO
9044	VEREINGTE (POSSIBLY)	steam ship	Dangerous wreck	53 45.917 N	0 43.441 E	UKHO
9058	-	-	Dangerous wreck	53 51.233 N	0 39.891 E	UKHO
9067	-	-	Dead	53 37.235 N	0 45.575 E	UKHO

UKHO ID	Name	Type	Description	Latitude	Longitude	Source
9091	STRATON (POSSIBLY)	trawler	Non-dangerous wreck; dead	53 38.302 N	0 43.359 E	UKHO
9105	-	-	Non-dangerous wreck	53 53.883 N	0 42.424 E	UKHO
9135	-	-	Non-dangerous wreck; dead	53 45.634 N	0 45.59 E	UKHO
9145	SCOTIA (POSSIBLY)	-		53 37.599 N	0 47.341 E	UKHO
9159	-	-	Dead	53 34.01 N	0 36.485 E	UKHO
9160	-	-	Dead	53 33.985 N	0 36.993 E	UKHO
67163	SCHIELAND	steam ship	Lifted	53 32.185 N	0 33.726 E	UKHO
67187	-	-	Non-dangerous wreck; dead	53 43.017 N	0 46.89 E	UKHO
72954	-	-	Non-dangerous wreck	55 49.555 N	0 15.842 W	UKHO
78151	-	-	Non-dangerous wreck	54 7.152 N	0 22.165 E	UKHO
81021	-	-	-	53 50.732 N	0 48.383 E	UKHO
86593	-	-	-	53 39.655 N	0 54.364 E	UKHO
87269	-	-	Dangerous wreck	53 38.897 N	0 43.92 E	UKHO
93000	-	-	Dangerous wreck	53 40.889 N	0 40.925 E	UKHO
93002	-	-	Dangerous wreck	53 39.277 N	0 51.165 E	UKHO
103434	-	-	Dangerous wreck	53 37.86 N	0 37.86 E	UKHO

Aviation archaeology

26.5.29. A preliminary review of data found no records indicating the possible location of aircraft remains within the Study Area. However, there is also the potential for the discovery of previously unknown aircraft-related debris to exist on the seafloor within the Study Area, with a higher potential for material dating to the Second World War.

26.5.30. Lincolnshire has been home to an extensive aviation industry from the early 20th century and was the home of Bomber Command during the Second World War. Numerous airbases situated throughout the county hosted flight training and combat missions to the European mainland.

Future Baseline

26.5.31. The existing environment for marine archaeology has been shaped by a combination of factors, with the most prevalent being changes in global sea levels and associated climatic and environmental conditions. These conditions have and would continue to affect the burial and preservation of remains.

26.5.32. Marine physical processes, including the cycle of burial and exposure due to storm events, have an ongoing effect on the preservation of archaeological material. Sediment cover provides protection from physical marine processes, reducing the risk of erosion and degradation. It is not possible to assess the effect of this impact upon individual heritage assets as this would be dependent on the nature of the exposed heritage asset and site-specific conditions. The potential increase and violence of storm activity

because of climate instability may exacerbate the effects of the burial and exposure cycle on affected assets.

26.5.33. Underwater cultural heritage is also under threat from warming waters caused by climate change. As the sea levels rise, the impact of the tidal activity on heritage assets within and adjacent to the intertidal zone would increase. In addition, warming waters result in the northward migration of invasive species and may include the blacktip shipworm (*Lyrodus pedicellatus*) and great shipworm (*Teredo navalis*). These species are a major threat to wooden wrecks and other wooden structures within the offshore environment.

26.5.34. Future developments which may impact the future baseline for coastal and marine physical processes in the area include several offshore wind farm sites in the North Sea. This includes Ossian, Morven, Hornsea 3, Dogger Bank A, B, C, D and South, Outer Dowsing and Sofia offshore windfarms. In addition, other infrastructure such as Viking Link, NU Link, Aminth and Continental Link interconnector projects and Viking and Endurance Carbon Capture and Storage (CCS) pipelines. Of note are the Ossian wind farm export cables and the EGL 3 and EGL 4 transmission reinforcement projects which are planned to make landfall at Anderby Creek, Lincolnshire.

26.5.35. The above projects within the region will all have the potential to cause adverse impacts on heritage assets or contribute to beneficial impacts. This includes large-scale enhanced understanding of the archaeological resource through large area geophysical/geotechnical survey data released to the public domain or the enhanced knowledge of key characteristics, features or elements derived from site-specific survey and investigations. This is particularly relevant to the study of submerged palaeolandscapes, which may experience limited overall impacts from seabed development on a project-by-project basis but benefit from the accumulation and analysis of geotechnical data and subsequent geoarchaeological review from a range of projects.

26.5.36. There is the potential for loss or disturbance of possible historic wreck sites arising from discovery and other offshore infrastructure projects, however, these are routinely protected from likely impacts by robust, industry-standard mitigation strategies.

26.5.37. The potential for cumulative effects will be considered as part of the future EIA documents in accordance with the approach and guidance outlined within **Part 4, Chapter 30: Cumulative Effects**.

26.6 Design and Control Measures

26.6.1. As set out in **Part 1**, **Chapter 5: EIA Approach and Methodology**, the environmental measures are characterised as design measures or control and management measures. A range of environmental measures will be implemented as part of the English Offshore Scheme and will be secured through the Deemed Marine Licence (DML) and in the DCO, as relevant.

26.6.2. Several management plans will be provided as Outline Management Plans with the application for development consent to support the DML. These will include an Outline Construction Environmental Management Plan (CEMP), an Outline Marine Pollution Contingency Plan and an Outline Fisheries Liaison and Coexistence Plan (FLCP). These documents will outline measures to be implemented to comply with legislation (e.g., in relation to the prevention of oil and chemical spills) during all phases of the English Offshore Scheme. Final management plans will be submitted in accordance

with the DML to discharge the licence conditions. An Outline CEMP and Outline FLCP will be provided with the PEIR and ES.

26.6.3. In addition, design measures identified through the EIA process would be applied to avoid or reduce potential significant effects. Design measures included that are relevant to marine archaeology are included below and will also be included in a Commitments Register to be provided with the PEIR and ES. Compliance with these measures will be secured by way of the DCO or DML.

26.6.4. The following environmental measures are relevant to the marine archaeology assessment:

- Written Scheme of Investigation (WSI): implementation of a protocol for avoiding, mitigating and managing finds of archaeological interest, following the guidance for the Protocol for Archaeological Discoveries (PAD) (Ref 26.32);
- Archaeological input into specifications for and archaeological analysis of any further pre-construction surveys, including (but not limited to) Unexploded Ordnance (UXO), Remotely Operated Vehicle (ROV), diver, geophysical and geotechnical surveys;
- Mitigation of unavoidable direct impacts on known sites of archaeological significance. Options include i) preservation by record; ii) stabilisation; and iii) detailed analysis and safeguarding of otherwise comparable sites elsewhere;
- Archaeologists to be consulted in the preparation of site preparation activities or other pre-construction operations and, if appropriate, to carry out archaeological monitoring of such work;
- Implementation of Archaeological Exclusion Zones (AEZs) or Temporary Archaeological Exclusion Zones (TAEZs) around identified known or potential Marine Archaeology receptors;
- Implementation of a protocol for recording finds of archaeological interest, following the guidance for the PAD;
- Obtaining geotechnical cores for archaeological review and implementation of a staged process of geoarchaeological works, as necessary; and
- Operational awareness of the location of geophysical/magnetic anomalies identified as having a low archaeological potential. Reporting through the PAD will be undertaken should material of potential archaeological interest be encountered.

26.7 Scope of the Assessment

Potential Sensitive Receptors

26.7.1. The marine archaeology receptors that have been identified as being potentially impacted by the English Offshore Scheme are:

- Submerged prehistory: including palaeolandscapes and palaeolandscape forms, palaeoenvironmental remains and prehistoric artefacts and sites;
- Maritime and intertidal archaeology: broadly comprising vessel remains, wreckage/debris, cargo and sites/structures within the intertidal and marine zones (below MHWS); and

- Aviation archaeology: comprising all military and civilian aircraft crash sites and related wreckage.

Likely Significant Effects

26.7.2. This section describes the potential impacts on marine archaeology receptors which might potentially occur from the pre-construction, construction, operation and maintenance and decommissioning of the Project. This assessment considers the methods described within **Part 1, Chapter 4: The Project**. A summary of project phases and the source of potential impacts is summarised in **Table 26-7**, below.

26.7.3. The potential for and assessment of cumulative effects to marine archaeology receptors arising will be included within the EIA, as outlined in **Part 1, Chapter 4**: **The Project** and **Part 4, Chapter 30: Cumulative Effects**.

26.7.4. For clarity, where seabed preparation is mentioned in the project activity column of **Table 26-7** this includes the following activities: boulder clearance, sandwave clearance (pre-sweeping), unexploded ordnance (UXO) identification, and pre-lay grapnel run (PLGR).

Table 26-7: Scoping assessment of impacts on marine archaeology

Potential Impact	Project Activities	Sensitive Receptors	Scoping Justification		
			Construction	Operation (including maintenance)	Decommissioning
Direct impacts to marine archaeology assets, resulting in damage and/or loss	Seabed preparation, Third-party asset crossings – preparation, Unexploded Ordinance (UXO) identification and clearance, etc.); Cable burial and trenching; Placement of external cable protection; Horizontal Directional Drilling (HDD) drive path and entry/exit pits; Anchoring/jack-up foundations; Cable/cable protection repair/replacement; Removal of infrastructure	Sub-seabed and seabed marine archaeology receptors, including known and potential submerged prehistoric remains and known and potential maritime and aviation assets.	**IN**: Any disturbance of the seabed during preparation and construction activities could directly impact marine archaeology receptors. These effects are likely to be localised, but should they occur, they could lead to adverse and irreversible damage to known or previously undiscovered heritage assets. Where asset locations are already known, embedded mitigation measures will be adopted to avoid and preserve assets, including the application of Archaeological Exclusion Zones (AEZs) and micro-siting.	**IN**: Localised repair/replacement works to cables or remedial external cable protection may be required. Although assets may have been identified prior to or during pre-construction and construction, further assets may remain undetected. Where operation and maintenance activities extend beyond the footprint of previous works, undetected assets may	**IN**: The significance of the effect during decommissioning is likely to be similar or of lower magnitude than during the construction phase. However, where decommissioning activities extend beyond the footprint of previous activities, hitherto undetected assets have the potential to experience impacts.

Potential Impact	Project Activities	Sensitive Receptors	Scoping Justification		
			Construction	Operation (including maintenance)	Decommissioning
				experience impacts.	
Indirect impacts to marine archaeology assets, resulting in damage, loss, relocation and/or destabilisation	Material deposition; Sediment removal; Scour around installations, anchors.	Sub-seabed and seabed marine archaeology receptors, including known and potential submerged prehistoric remains and known and potential maritime and aviation assets.	**IN**: Seabed preparation and construction activities have the potential to destabilise or compress assets, through sediment removal and deposition. Altered hydrodynamic processes may occur around infrastructure and vessel anchors, potentially resulting in the removal of deposits of palaeo-environmental interest and destabilising nearby assets (which may lead to subsequent harm). The EIA will be informed by an assessment on marine physical processes to determine the likely extent, duration and frequency and resultant significance of impact on	**IN**: Indirect impacts similar to the construction phase may be experienced by receptors. Unlike direct impacts, the significance of indirect impacts would likely be lesser in consideration of the footprint of activities.	**IN**: Indirect impacts similar to the construction phase may be experienced by receptors. Unlike direct impacts, the significance of indirect impacts would likely be lesser in consideration of the footprint of activities.

Potential Impact	Project Activities	Sensitive Receptors	Scoping Justification		
			Construction	Operation (including maintenance)	Decommissioning
			marine archaeological receptors.		

26.8 Assessment Methodology

Further Data to be Gathered / Processed

Desk-Based Assessments

26.8.1. The desk-based assessment (DBA), which will be undertaken as part of the EIA, will include further, detailed examination of the data sources used for the baseline summary, as outlined above. The data collection will be completed in line with the Chartered Institute for Archaeologists' (CIfA) *Standard and guidance for historic environment desk-based assessment* (Ref 26.33).

26.8.2. Assessment of these data will be supplemented by the review of a range of relevant published academic articles, books and grey literature reports to further inform the baseline. Where applicable and accessible, reports relating to the archaeology of nearby offshore developments will also be reviewed during the DBA.

26.8.3. The character and potential of submerged prehistoric landscapes and remains will be based on a review of geological mapping of seabed sediments, solid geology and bathymetry from published BGS sources. This will be enhanced by the geoarchaeological review of geotechnical and geophysical datasets gathered for the English Offshore Scheme (see below).

26.8.4. In addition to the receptors examined for the baseline characterisation of this EIA Scoping Report, the EIA will examine the Historic Seascape Characterisation (HSC) of the Study Area. Any impacts to the HSC will be identified within the DBA.

26.8.5. To define the scope of the marine archaeology receptors, liaison between key stakeholders and Archaeological Curators may be required. Key consultees are listed outlined above in the **Consultation and Engagement** section of this chapter.

Site-specific Survey Data

26.8.6. Primary data will be obtained from geophysical and geotechnical surveys covering the English Offshore Scheme (see Preconstruction Activities outlined in **Part 1, Chapter 4: The Project**). This will be collected and assessed following best practice professional guidance for marine archaeology including, but not limited to:

- *Offshore Geotechnical Investigations and Historic Environment Analysis: Guidance for Renewable Energy Sector* (Ref 26.31); and.
- *Marine Geophysics: Data Acquisition, Processing and Interpretation Guidance Notes* (Ref 26.29).

26.8.7. The aim of archaeological assessment of the survey data is to inform understanding of the marine archaeology resource upon and within the seabed. This understanding will help to identify marine archaeology receptors for the impact assessment of the EIA and appropriate mitigation.

26.8.8. The geophysical survey specification and approach will follow the example set out by the EGL 3 and EGL 4 projects, which has been shared and agreed with HE. Liaison with relevant stakeholders will continue throughout the EIA process to ensure approval of survey specifications regarding marine archaeology requirements.

26.8.9. An intertidal walkover survey will be undertaken at the proposed landfall to ground truth previously recorded marine archaeology receptors and to identify any new sites, deposits or artefacts of archaeological interest that may be of relevance to the assessment and to feed the results into the DBA. The intertidal survey will be jointly staffed by representatives for marine archaeology and (onshore) cultural heritage, ensuring a seamless approach within the intertidal zone. This methodology was implemented and approved by HE during the EGL 3 and EGL 4 projects.

Assessment of Significance

26.8.10. Following the identification of marine archaeology receptors within the Study Area, the EIA will attribute a significance of effect to each receptor, in correlation to the project-related activity which results in a direct or indirect impact. The significance of effect will be determined by identifying the sensitivity and magnitude of change for each receptor. These terms and the proposed assessment methodology to be applied are described within this Section.

26.8.11. Both sensitivity and magnitude of change are influenced by the value, or significance, of a receptor as a heritage asset, which will be defined prior to the assessment of impact significance. Assignation of a level of significance will be guided by appropriate industry advice, including HE's *Conservation Principles, Policies and Guidance for the Sustainable Management of the Historic Environment* (Ref 26.24), *Managing Significance in Decision-Taking in the Historic Environment* (Ref 26.28) and *Statements of Heritage Significance: Advice Note 12* (Ref 26.34).

Value

26.8.12. The UK MPS (Ref 26.13) describes a heritage asset (including archaeological receptors) as holding a degree of significance (value) meriting consideration, where significance relates to the heritage interest of an asset and the value they hold for present and future generations.

26.8.13. Both designated and non-designated heritage assets can hold heritage value. Value considers whether the receptor is rare, has protected status or has importance at a local, regional, national or international level. Designated assets, such as Protected Wreck Sites have been assigned the highest level of value. The value of non-designated heritage assets can be determined through professional interpretation of the values or characteristics of the asset.

26.8.14. HE's *Conservation Principles, Policies and Guidance for the Sustainable Management of the Historic Environment* (Ref 26.24) defines the significance of a heritage asset as "*the diverse cultural and natural heritage values that people associate with it, or which prompt them to respond to it*". HE recommend use of the following valuation criteria to determine heritage significance:

- Evidential value: the potential of an asset to yield evidence about past human activity;
- Historical value: the ways in which past people, events and aspects of life can be connected through an asset to the present, tending to be illustrative or associative;
- Aesthetic value: the ways in which people draw sensory and intellectual stimulation from an asset; and

- Communal value: the meanings of an asset for the people who relate to it, or for whom it figures in their collective experience or memory. Communal values are closely bound up with historical (particularly associative) and aesthetic values but tend to have additional and specific aspects.

26.8.15. Within the EIA, identified assets will be assigned value alongside the relevant regional guidance documents and terminology (i.e., HE guidance for assets in England). Although the terminology may vary, the similarity of the valuation criteria will result in equivalent attributed levels of significance.

26.8.16. The value of known archaeological assets will also be assessed on a five-point scale, using professional judgement informed by criteria provided in **Table 26-8**.

Table 26-8: Criteria to assess the heritage value of marine archaeology receptors

Value	Definition
High	Internationally or nationally important. Within a marine or intertidal context, high value heritage assets can include: • World Heritages Sites and assets of acknowledged international importance or that can greatly contribute to international research objectives; • Sites designated under national legislation, i.e. Scheduled Monuments, Protected Wreck Sites, etc. • Buildings designated under the Planning (Listed Buildings and Conservation Areas) Act 1990 (England); and • Additionally, any remains which are not currently designated but have equivalent significance to a designated asset are considered to be of high value.
Medium	Within a marine or intertidal context, medium value assets include: • Heritage assets that are not designated and that do not meet the criteria for designation, but display notable values or characteristics; and • Heritage assets, groups of assets or landscapes that contribute to regional research objectives.
Low	Within a marine or intertidal context, low value assets include: • Heritage assets displaying limited values or characteristics; and • Heritage assets, or groups of assets, that contribute to a limited degree to regional research objectives.
Negligible	Within a marine or intertidal context, negligible value assets include: • Heritage assets with very little or no surviving archaeological interest and little or no heritage value or characteristics; and • Heritage assets or groups of assets that cannot appreciably contribute to regional research objectives.

Value	Definition
Uncertain	Assets for which the importance of the resource has not been or cannot be ascertained.

26.8.17. While a designation (e.g., as a Scheduled Monument, Listed Building, etc.) indicates that a receptor has been identified as being of high value, non-designated archaeological assets are not necessarily of lesser value. Non-designated receptors that can be demonstrated to be of equivalent value to designated sites would be of equivalent significance, as included within **Table 26-8**.

26.8.18. The nature of the marine archaeological resource is such that there is a high level of uncertainty concerning remains on the seabed. Often data regarding the nature and extent of assets are limited or out of date and the precautionary principle will be applied to all aspects of archaeological impact assessment in the EIA.

Sensitivity

26.8.19. The sensitivity of a receptor is a function of its capacity to accommodate change and reflects its ability to recover if it is affected. Sensitivity is determined by consideration of the value, adaptability, tolerance and recoverability of a receptor. These criteria are determined through professional judgement and relevant experience and are described further below:

- Value: a measure of the receptor's heritage significance (criteria and specific assessment methodology detailed above);
- Adaptability: the ability of a receptor to adapt to or avoid an external factor;
- Tolerance: the susceptibility (ability to be affected or unaffected) of a receptor to an external factor; and
- Recoverability: the ability of a receptor to return to a state close to that which existed before the activity or event caused change within a specific period of time.

26.8.20. The guidelines presented in **Table 26-9** will be adopted in the EIA to define the sensitivity of a receptor.

Table 26-9: Criteria for characterising the sensitivity of receptors

Receptor Sensitivity	Definition
High	Receptor has very limited capacity to avoid, adapt to, accommodate or recover from the anticipated impact. Historic environment assets of high sensitivity are typically associated with the highest value, i.e., as assets of national or international importance. Such assets in England include World Heritage Sites, Scheduled Monuments, Grade I or II* Listed Buildings, Registered Parks and Gardens, Registered Battlefields,

Receptor Sensitivity	Definition
	Protected Wreck Sites, some Conservation Areas and non-designated assets that meet the criteria for designation (in the opinion of the assessor). Grade II Listed Buildings may also be considered of high value, where the existing designation does not adequately reflect their value (in the opinion of the assessor).
Medium	Receptor has limited capacity to avoid, adapt to, accommodate or recover from the anticipated impact. Historic environment assets of medium sensitivity are typically valued at a regional level. Such assets in England include Grade II Listed Buildings, some Conservation Areas and non-designated assets of similar value (in the opinion of the assessor).
Low	Receptor has some tolerance to avoid, adapt to, accommodate or recover from the anticipated impact. Historic environment assets of low sensitivity are typically valued at a local level. Such assets in England include some Grade II Listed Buildings, some Conservation Areas and non-designated assets (in the opinion of the assessor).
Negligible	Receptor is generally tolerant to and can accommodate or recover from the anticipated impact. Historic environment assets of negligible sensitivity are typically of limited to no value or archaeological/historical interest.

26.8.21. The National Planning Policy Framework (NPPF) (Ref 26.12) states that heritage assets should be recognised as "…*an irreplaceable resource…*" and to "…*conserve them in a manner appropriate to their significance*".

26.8.22. Marine archaeology receptors cannot typically adapt, tolerate or recover from direct impacts resulting in material damage or loss caused by development. Consequently, the sensitivity of each receptor is predominantly quantified only by their value. Where receptors can adapt to, tolerate or recover from indirect impacts, these factors will be incorporated into an assessment of their sensitivity as part of the EIA.

26.8.23. In some instances, the value of a receptor is recognised by means of designation and the 'value' element recognises and gives weight in the assessment to that designation. However, irrespective of the recognised value, all receptors will exhibit a greater or lesser degree of sensitivity to the potential changes brought about by the Project. The assessment of sensitivity is a matter of judgement applied using professional expertise, based on the receptors and impacts identified within the Study Area.

Magnitude of an Impact

26.8.24. The magnitude of an impact is defined by the level of alteration to a receptor resulting from project-related impacts, as measured from that receptor's baseline state and condition, alongside environmental factors and natural variability. The assessment of magnitude will consider both positive and negative changes to a receptor.

26.8.25. The criteria to be used in assessed are set out in **Table 26-10**. Definitions have been established with reference to key documentation, including the MPS (Ref 26.17).

Table 26-10: Criteria for characterising the magnitude of an impact

Magnitude	Description	
	Positive change (beneficial)	**Negative change (adverse)**
High	• Large scale improvement of asset or attribute quality; and/or • extensive restoration or enhancement.	• Substantial loss or harm to the heritage asset and/or integrity of the heritage asset or severe damage to key characteristics, features or elements, such that the heritage asset is lost or its significance is totally altered; and/or • Permanent/irreplaceable change which is certain to occur.
Medium	• Improvement to, or addition of, key characteristics, features or elements of the resource; and/ or • Improvement to attribute quality.	• Loss of, or alteration to, key characteristics, features or elements; and/or • Measurable change in significance, attributes, quality or vulnerability, such that the heritage asset and its significance is altered.
Low	• Minor improvement to, or addition of, one or a small number of characteristics, features or elements; and/or • Very minor improvement to attribute quality.	• Minor loss of, or small alterations to, one or a small number of characteristics, features or elements; and/or • Noticeable change in attributes, quality or vulnerability.
Negligible	No change or unquantifiable change to the receptor and its significance.	

Significance of Effect

26.8.26. The significance of an effect on a marine archaeology receptor, whether a direct or indirect effect, is determined by correlating the sensitivity of the archaeological receptor (**Table 26-9**) and the magnitude of an impact (**Table 26-10**). The effect will be presented as of major, moderate, minor or negligible significance and can be positive (beneficial) or negative (adverse). The matrix in **Table 26-11** provides a guide to the

assessment but is not a substitute for professional judgement and interpretation, particularly where the sensitivity or effect magnitude levels are not clear or are borderline between categories.

Table 26-11: Significance of Effect Matrix

Sensitivity or value	Magnitude of an impact			
	High	Medium	Low	Negligible
High	Major	Major	Moderate	Minor
Medium	Major	Moderate	Minor	Minor
Low	Moderate	Minor	Minor	Negligible
Negligible	Minor	Minor	Negligible	Negligible

26.8.27. **Table 26-12** provides further rationalisation of the implications and definition of each level of significance of effect set out in **Table 26-11**, in relation to historic assets.

Table 26-12: Significance of effect definitions for marine archaeology receptors

Significance of effect	Definition	
	Beneficial	Adverse
Major	Development will deliver a highly positive contribution and/or better reveal the value of a heritage asset of recognised national or international value, such that an application should be treated very favourably.	Substantial harm or total loss of the value of a designated heritage asset (or asset worthy of designation), such that development should not be consented unless substantial public benefit is delivered by the development.
Moderate	Development will deliver a positive contribution and/or better reveal the value of a designated heritage asset (or asset worthy of designation), such that an application should be treated favourably.	Less than substantial harm or total loss of the value of a designated heritage asset or an asset of designable quality, such that the harm should be weighed against the public benefit delivered by the development to determine consent. Harm to a non-designated heritage asset of a greater degree than that perceived of as minor adverse, which should be considered in determining an application.
Minor	Development will deliver a positive contribution and/or better reveal the value of a non-designated heritage asset.	Less than substantial harm to the value of a designated heritage asset, of a lesser degree than that perceived as moderate adverse, but which should still be weighed against the public

Significance of effect	Definition	
	Beneficial	Adverse
		benefit delivered by the development to determine consent. Harm to a non-designated heritage asset that can be adequately compensated through the implementation of a programme of industry standard mitigation measures.
Negligible	No discernible change to the receptor and its significance.	

Mitigation

26.8.28. Impacts to both known and potential marine archaeological receptors will be addressed through the application of embedded mitigation. In line with current policy and guidance, mitigation aims first to avoid adverse impacts on historic assets, minimise impacts where they cannot be avoided or mitigate impacts where they cannot be minimised.

26.8.29. Known receptors (identified through the assessment) will be avoided through the application of Archaeological Exclusion Zones (AEZs), Temporary Archaeological Exclusion Zones (TAEZs) and subsequent micro-siting of infrastructure on the seabed, as necessary.

26.8.30. Unavoidable impacts to potential receptors will be addressed through a series of agreed mitigation measures to manage discoveries once identified. These measures would be set out in a project-specific WSI, as part of the ES, which will clarify the methodologies to address unavoidable impacts associated with the worst-case scenario (Project Design Envelope), in accordance with model clauses for archaeological WSIs (Ref 26.21).

26.9 Assessment of Cumulative Effects

26.9.1. **Part 4, Chapter 30: Cumulative Effects** defines the methodology for the assessment of cumulative effects. The marine archaeology assessment of intra- and inter-project cumulative effects will be carried out and reported within the ES to be submitted with the application for development consent.

26.9.2. The zone of influence for the inter-project cumulative effects assessment of marine archaeology will comprise the Draft Order Limits, plus an additional 2 km buffer each side (i.e. the Study Area for the baseline assessment). This is a precautionary maximum zone of influence that encompasses the common worst-case scenario of potential impact pathways from increased suspended sediment concentrations. This buffer may be revised for the PEIR, following final assessments of **Part 3, Chapter 18: Coastal and Marine Physical Processes**, should the zone of influence be calculated as larger than 2 km.

26.9.3. **Part 4, Chapter 30: Cumulative Effects** of the PEIR will present the long and short lists of ‘other developments’ which will be considered at the ES stage and the methodology which allowed for the identification of these other developments, to allow

consultation bodies to form a view and provide comment on the other developments included. The long list will be reviewed and if necessary, updated, in the lead up to the ES, as the Proposed Scheme design further evolves and in response to any comments raised at statutory consultation.

26.10 Assessment Assumptions and Limitations

26.10.1. The baseline description collated in this chapter has been based on a range of publicly available data and information. It is assumed that the data collated is accurate as of the time of acquisition from public sources. The data will be supplemented with additional information acquired as part of the stakeholder engagement process and through the additional studies identified in this chapter to inform the PEIR and ES.

26.10.2. In the absence of data, a precautionary approach has been taken and professional judgement, based on experience of similar linear projects, have been used where required to inform the scope of the assessment.

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27. English Offshore Scheme Scoping Summary

27.1.1. The scope of assessment described within the technical aspect chapters (**Part 3, Chapters 18 to 26**) is summarised in **Table 27-1**.

Table 27-1: Summary Scope of the Assessment

Technical Aspect	Scope of Assessment
Chapter 18: Coastal and Marine Physical Processes	**Construction** • Disturbance of sub-tidal seabed morphology - Seabed preparation and subsea cable installation activities have the potential to directly disturb the seabed morphology. However, the proposed subsea cable corridor has been routed to avoid seabed features such as sandbanks, sandwaves and notable bathymetric depressions. There remains the potential for some pre-sweeping and deposits of external cable protection in some areas. • Temporary increase and deposition of suspended sediments (changes in suspended solids and water clarity) - Seabed preparation and subsea cable installation activities have the potential to raise SSC through the liberation of sediment into suspension within the water column, just above the seabed and subsequent deposition once material re-settles to the seabed. **Operation** • Temporary increase and deposition of suspended sediments (changes in suspended solids and water clarity) – If the cable is installed correctly the likelihood of it requiring maintenance and repair is significantly reduced. However, there remains the potential that localised repair works, or remedial external cable protection may be required. • Modifications to tidal and wave regimes and associated impacts to morphological features. **Decommissioning** • Disturbance of sub-tidal seabed morphology - Once the Project has reached the end of its life, it is anticipated that the cables and cable protection would be removed unless it is demonstrated that it is preferable for them to remain in situ or it is not technically or environmentally feasible for them to be removed. The seabed would be returned where reasonably possible and practical to baseline conditions. Potential impacts of decommissioning are likely to be of a lower magnitude than construction.

Technical Aspect	Scope of Assessment
	• Temporary increase and deposition of suspended sediments (changes in suspended solids and water clarity) – There is the potential for temporary increases in deposition of suspended sediments. Although the significance of the effect of removing the cable during decommissioning is expected to be of lower magnitude than construction. • Modifications to tidal and wave regimes and associated impacts to morphological features.
Chapter 19: Intertidal and Subtidal Benthic Ecology	**Construction** • Temporary habitat loss / seabed disturbance, from seabed preparation, due to: – Abrasion / disturbance of the substrate on the surface of the seabed; and – Penetration and / or disturbance of the substratum below the surface of the seabed, including abrasion. • Permanent habitat loss from deposit of external cable protection, due to: – Physical change to another seabed type or sediment type – Water flow (tidal current) changes including sediment transport considerations. • Temporary increase and deposition of suspended sediments, due to construction activities, causing the following: – Changes in suspended solids (water clarity). – Smothering and siltation rate changes; and – Hydrocarbon and Polycyclic Aromatic Hydrocarbons (PAH) contamination. • Introduction or spread of marine invasive non-native species from vessels, cable protection or cables. **Operation** • Temporary habitat loss / seabed disturbance, from seabed preparation, due to: – Abrasion / disturbance of the substrate on the surface of the seabed; and – Penetration and / or disturbance of the substratum below the surface of the seabed, including abrasion. • Permanent habitat loss from deposit of external cable protection, due to: – Physical change to another seabed type or sediment type; and

Technical Aspect	Scope of Assessment
	– Water flow (tidal current) changes including sediment transport considerations. • Temporary increase and deposition of suspended sediments, due to maintenance activities, causing the following: – Changes in suspended solids (water clarity). – Smothering and siltation rate changes; and – Hydrocarbon and Polycyclic Aromatic Hydrocarbons (PAH) contamination. • Introduction or spread of marine invasive non-native species from vessels, cable protection or cables. **Decommissioning** • Temporary habitat loss / seabed disturbance, from sea-bed preparation, due to: – Abrasion / disturbance of the substrate on the surface of the seabed; and – Penetration and / or disturbance of the substratum below the surface of the seabed, including abrasion. • Permanent habitat loss from deposit of external cable protection, due to: – Physical change to another seabed type or sediment type; and – Water flow (tidal current) changes including sediment transport considerations. • Temporary increase and deposition of suspended sediments, due to decommissioning activities, causing the following: – Changes in suspended solids (water clarity). – Smothering and siltation rate changes; and – Hydrocarbon and Polycyclic Aromatic Hydrocarbons (PAH) contamination. • Introduction or spread of marine invasive non-native species from vessels, cable protection or cables.
Chapter 20: Fish and Shellfish	**Construction** • Temporary habitat loss / seabed disturbance, from construction activities, due to: – Abrasion / disturbance of the substrate on the surface of the seabed; and – Penetration and / or disturbance of the substratum below the surface of the seabed, including abrasion.

Technical Aspect	Scope of Assessment
	• Permanent habitat loss from deposit of external cable protection, due to: – Physical change to another seabed type or sediment type; and – Water flow (tidal current) changes including sediment transport considerations. • Temporary increase and deposition of suspended sediments, due to sandwave clearance and other construction activities, causing the following: – Changes in suspended solids (water clarity). – Smothering and siltation rate changes. – Hydrocarbon and Polycyclic Aromatic Hydrocarbons (PAH) contamination; and – Impacts to herring spawning grounds. **Operation** • Temporary habitat loss / seabed disturbance, from maintenance activities, due to: – Abrasion / disturbance of the substrate on the surface of the seabed; and – Penetration and / or disturbance of the substratum below the surface of the seabed, including abrasion. • Permanent habitat loss from deposit of external cable protection, due to: – Physical change to another seabed type or sediment type; and – Water flow (tidal current) changes including sediment transport considerations. • Electromagnetic changes / barrier to species movement caused by the presence of cables. • Temperature increase caused by the presence of cables. **Decommissioning** • Temporary habitat loss / seabed disturbance, from decommissioning activities, due to: – Abrasion / disturbance of the substrate on the surface of the seabed; and – Penetration and / or disturbance of the substratum below the surface of the seabed, including abrasion. • Permanent habitat loss from deposit of external cable protection, due to:

Technical Aspect	Scope of Assessment
	– Physical change to another seabed type or sediment type; and – Water flow (tidal current) changes including sediment transport considerations. • Temporary increase and deposition of suspended sediments, due to sandwave clearance and other decommissioning activities, causing the following: – Changes in suspended solids (water clarity). – Smothering and siltation rate changes. – Hydrocarbon and Polycyclic Aromatic Hydrocarbons (PAH) contamination; and – Impacts to herring spawning grounds.
Chapter 21: Intertidal and Offshore Ornithology	**Construction** • Temporary increase and deposition of suspended sediments, due to construction activities, causing changes in suspended solids (water clarity), potentially impacting on: – Divers, grebes, and mergansers. – Terns, gulls, kittiwakes, and gannets; and – Auks. • Changes in distribution of prey species from the deposit of external cable protection. • Visual / physical disturbance or displacement due to the presence of project vessels and equipment for the following: – Divers, grebes, and mergansers. – Seaducks, geese and swans – Terns, gulls, kittiwakes, and gannets. – Auks; and – Harriers and waders. **Operation** • Temporary increase and deposition of suspended sediments, due to maintenance activities, causing changes in suspended solids (water clarity), potentially impacting on: – Divers, grebes, and mergansers. – Terns, gulls, kittiwakes, and gannets; and – Auks.

Technical Aspect	Scope of Assessment
	• Changes in distribution of prey species from the deposit of external cable protection. • Visual / physical disturbance or displacement due to the presence of project vessels and equipment for the following: — Divers, grebes, and mergansers. — Seaducks, geese and swans — Terns, gulls, kittiwakes, and gannets. — Auks; and — Harriers and waders. **Decommissioning** • Temporary increase and deposition of suspended sediments, due to decommissioning activities, causing changes in suspended solids (water clarity), potentially impacting on: — Divers, grebes, and mergansers. — Terns, gulls, kittiwakes, and gannets; and — Auks. • Visual / physical disturbance or displacement due to the presence of project vessels and equipment for the following: — Divers, grebes, and mergansers. — Seaducks, geese and swans. — Terns, gulls, kittiwakes, and gannets. — Auks; and — Harriers and waders.
Chapter 22: Marine Mammals and Marine Reptiles	**Construction** • Changes in supporting habitat and prey availability due to construction activities for cetaceans, pinnipeds, and relevant designated sites. • Underwater noise changes caused by geophysical surveys and UXO clearance, impacting on cetaceans, pinnipeds, and relevant designated sites. **Operation** • Changes in supporting habitat and prey availability due to maintenance activities for cetaceans, pinnipeds, and relevant designated sites. • Underwater noise changes caused by geophysical surveys, impacting on cetaceans, pinnipeds, and relevant designated sites.

Technical Aspect	Scope of Assessment
	Decommissioning • Changes in supporting habitat and prey availability due to decommissioning activities for cetaceans, pinnipeds, and relevant designated sites. • Underwater noise changes caused by geophysical surveys, impacting on cetaceans, pinnipeds, and relevant designated sites.
Chapter 23: Shipping and Navigation	**Construction** • Third-party to project vessel collision. • Deviation from established and identified vessel routes and areas for project vessels. • Interaction with fishing gear from cable lay and protection and cable crossings. • Interaction with vessel anchors and anchoring activity from cable lay and protection and cable crossings. • Reduction in under keel clearance resulting from laid cable and associated protection from cable lay and protection and cable crossings. **Operation** • Third-party to project vessel collision. • Deviation from established and identified vessel routes and areas for project vessels. • Interaction with fishing gear from cable lay and protection and cable crossings. • Interaction with vessel anchors and anchoring activity from cable lay and protection and cable crossings. • Reduction in under keel clearance resulting from laid cable and associated protection from cable lay and protection and cable crossings. • Interference with marine navigational equipment from cable lay. **Decommissioning** • Third-party to project vessel collision. • Deviation from established and identified vessel routes and areas for project vessels. • Interaction with fishing gear from cable lay and protection and cable crossings. • Interaction with vessel anchors and anchoring activity from cable lay and protection and cable crossings.

Technical Aspect	Scope of Assessment
	• Reduction in under keel clearance resulting from laid cable and associated protection from cable lay and protection and cable crossings.
Chapter 24: Commercial Fisheries	**Construction, Operation and Decommissioning** • Temporary restricted access to fishing ground (including required static gear clearance) due to presence of project vessels and equipment. • Temporary displacement of fishing activity into other areas due to presence of project vessels and equipment. • Temporary increase and deposition of suspended sediments from seabed preparation, cable burial / trenching, installation of cable protection and cable removal.
Chapter 25: Other Marine Users	**Construction** • Restricted access to recreational areas from seabed preparation, cable burial and trenching, anchoring or cable removal. **Operation** • The presence of the cables below or on the seabed may disrupt the placement of future infrastructure / offshore activities. • Restricted access to recreational areas from seabed preparation, cable burial and trenching, anchoring or cable removal. **Decommissioning** • Restricted access to recreational areas from seabed preparation, cable burial and trenching, anchoring or cable removal.
Chapter 26: Marine Archaeology	**Construction** • Direct impacts to marine archaeology assets from construction activities, resulting in damage and / or loss. • Indirect impacts to marine archaeology assets from construction activities, resulting in damage, loss, relocation, and / or destabilisation. **Operation** • Direct impacts to marine archaeology assets from maintenance activities, resulting in damage and / or loss. • Indirect impacts to marine archaeology assets from maintenance activities, resulting in damage, loss, relocation, and/or destabilisation. **Decommissioning**

Technical Aspect	Scope of Assessment
	• Direct impacts to marine archaeology assets from decommissioning activities, resulting in damage and / or loss. • Indirect impacts to marine archaeology assets from decommissioning activities, resulting in damage, loss, relocation, and / or destabilisation.

PART FOUR
PROJECT WIDE

28. Greenhouse Gases

28.1 Introduction

28.1.1. The greenhouse gases (GHG) assessment will consider the potentially significant effects from the construction and operation of the Project on GHGs.

28.1.2. This chapter of the Scoping Report sets out the relevant legislation, planning policy context and technical guidance used to inform the scope of the assessment and summarises any consultation and engagement in relation to GHG undertaken to date. It provides an overview of the baseline conditions relevant to the Project Scoping Boundary (**Volume 3, Figure 1-5**), the measures which will be incorporated into the Project to mitigate GHG emissions, the likely significant effects to be considered within the assessment, and how these likely significant effects will be assessed for the purpose of an Environmental Impact Assessment EIA.

28.2 Relevant Legislation, Planning Policy and Technical Guidance

28.2.1. This section identifies the relevant legislation, national and local policy and guidance which has informed the scope of the GHG assessment.

Legislation

28.2.2. A summary of the key legislation considered, but not limited to, in the scope of GHG effects is outlined in **Table 28-1**.

Table 28-1*:* Legislation relevant to Greenhouse Gases

Legislation	Legislative Context	Section Considered
United Nations Framework Convention on Climate Change (1992) (Ref 28.1)	The UK is a member of the United Nations Framework Convention on Climate Change ('UNFCCC') which drives international action on climate change. The UK has pledged to reduce emissions under the 'Paris Agreement' in 2015, as a part of a joint pledge by members of the EU. This provides an overarching commitment by the UK. In December 2020, the UK communicated its Nationally Determined Contribution (NDC) to the UNFCCC in line with Article 4 of the Paris Agreement. In its NDC, the UK commits to reducing economy-wide greenhouse gas emissions by at least 68% by 2030, compared to 1990 levels.	Section 28.7 Assessment Methodology

Legislation	Legislative Context	Section Considered
Intergovernmental Panel on Climate Change (IPCC) Special Report - Global Warming of 1.5 degrees Celsius 2018 (Ref 28.2)	The IPCC has confirmed the need for global carbon emissions to follow a pathway that will prevent global warming exceeding 1.5 degrees Celsius. In its global emission pathways, the IPCC outlines the role of carbon capture and storage and how it can contribute to negative emissions, driving reductions in the energy sector. The IPCC's Synthesis Report for the Sixth Assessment (Summary for Policymakers) Report (Ref 12.11) reports that: 'All global modelled pathways that limit warming to 1.5 degrees Celsius with no or limited overshoot, and those that limit warming to 2 degrees Celsius involve rapid and deep and, in most cases, immediate greenhouse gas emissions reductions in all sectors this decade'. The report further highlights the need for carbon dioxide (CO_2) removal to stay within the bounds of 1.5 degrees Celsius warming trajectory.	Section 28.7 Assessment Methodology
The Climate Change Act (2008) (2050 Target Amendment) Order 2019 (Ref 28.3)	Sets UK Government overall targets for GHG reduction and net zero target for 2050.	Section 28.7 Assessment Methodology
Climate Change Committee (CCC): The Sixth Carbon Budget The UK's path to Net Zero (Ref 28.4)	As part of the CCC's recommendation for the UK's Sixth Carbon Budget (which will run from 2033 to 2037), it is noted that investments in transmission networks will be key to accommodate higher levels of low carbon generation such as offshore wind. Upgrades in distribution networks to accommodate electric vehicles and use of heat pumps are also noted as important.	Section 28.7 Assessment Methodology
Infrastructure Carbon Review (2013) (Ref 28.5)	In 2013, the UK government published the Infrastructure Carbon Review, aiming to "release the value of lower carbon solutions and to make carbon reduction part of the DNA of infrastructure in the UK". Major infrastructure owners, operators and developers across the communication, energy, transport, waste and water sectors were invited to endorse it, become signatories and make commitments under the Review. The Review provided increased emphasis on 'capital carbon' (GHG emissions associated with raw materials, activities and transport for construction, repairs, replacement, refurbishment and de-construction of infrastructure) while acknowledging that 'operational carbon' (associated with energy consumption for the operation and use of	Section 28.7 Assessment Methodology

Legislation	Legislative Context	Section Considered
	infrastructure) will continue to dominate overall emission to 2050 and beyond. The Review highlighted the importance of assessing GHG emissions early in the lifecycle of an infrastructure scheme, when there is the greatest carbon reduction potential. The Review also led to the publication of a Publicly Available Specification (PAS) on Infrastructure Carbon Management (PAS 2080:2016).	
The Clean Growth Strategy (2017) (Ref 28.6)	Within this strategy is an ambition to deliver clean, smart, flexible power. It notes the continued need for additional renewable energy generation, including offshore wind, and therefore investment required in infrastructure supporting the transmission and distribution of power.	**Part 1, Chapter 1: Introduction**, Section 1.3 Background to and need for the Project

Planning Policy

28.2.3. A summary of the planning policies at both a national and local level relevant to the scope of GHG effects is given in **Table 28-2** and **Table 28-3**.

Table 28-2*:* National Planning Policy relevant to Greenhouse Gases

Policy reference	Policy context	Section considered
National Policy		
Overarching National Policy Statement for Energy (EN-1) (2024) (Ref 28.7)		
Paragraph 5.3.4	*"All proposals for energy infrastructure projects should include a GHG assessment as part of their ES."*	Section 28.7 Assessment Methodology
Paragraph 5.3.5	*"A GHG assessment should be used to drive down GHG emissions at every stage of the proposed development and ensure that emissions are minimised as far as possible for the type of technology, taking into account the overall objectives of ensuring our supply of energy always remains secure, reliable and affordable, as we transition to net zero."*	Section 28.7 Assessment Methodology

Policy reference	Policy context	Section considered
Overarching Draft National Policy Statement for Energy (EN-1) (2025) (Ref 28.8)		
Paragraph 5.3.4 and 5.3.5	The Government has published a draft update to the Overarching National Policy Statement for Energy. For GHG, the 2025 Draft NPS EN-1 is largely the same as in the 2024 document, with paragraph numbers remaining the same.	
National Policy Statement for Energy Networks Infrastructure (EN-5) (2024) (Ref 28.9)		
Paragraph 2.10.1	The avoidance/minimisation of environmental impacts both onshore and offshore should be addressed at an early stage in the development process.	Section 28.7 Assessment Methodology
Paragraph 2.10.14	The climate-warming potential of Sulphur Hexafluoride[27] (SF_6) is such that applicants should, as a rule, avoid the use of SF_6 in new developments.	Section 28.7 Assessment Methodology
Paragraph 2.10.15	*"Where no proven SF_6-free alternative is commercially available, and where the cost of procuring a bespoke alternative is grossly disproportionate, the continued use of SF_6 is acceptable, provided that emissions monitoring and control measures compliant with the F-gas Regulation and/or its successors are in place."*	Section 28.7 Assessment Methodology
Draft National Policy Statement for Energy Networks Infrastructure (EN-5) (2025) (Ref 28.10)		
Paragraph 2.10.1, 2.10.14 and 2.10.15	The Government has published a draft update to the Overarching National Policy Statement for Energy. For GHG, the 2025 Draft NPS EN-5 is largely the same as in the 2024 document, with paragraph numbers remaining the same.	
East Inshore and East Offshore Marine Plan (2014) (Ref 28.11)		
Policy CC2	*"Proposals for development should minimise emissions of greenhouse gases as far as is appropriate. Mitigation measures will also be encouraged where emissions remain following minimising steps. Consideration should also be given to emissions from other activities or users affected by the proposal."*	Section 28.7 Assessment Methodology

[27] Sulphur Hexafluoride is a gas used in some designs of electrical switchgear.

Policy reference	Policy context	Section considered
Northeast Offshore Marine Plan (2021) (Ref 28.12)		
Policy NE-AIR-1	*"Proposals must assess their direct and indirect impacts upon local air quality and emissions of greenhouse gases. Proposals that are likely to result in increased air pollution or increased emissions of greenhouse gases must demonstrate that they will, in order of preference:* *a) avoid* *b) minimise* *c) mitigate -air pollution and/or greenhouse gas emissions in line with current national and local air quality objectives and legal requirements."*	Section 28.7 Assessment Methodology

Table 28-3*:* Local Planning Policy relevant to Greenhouse Gases

Local Authority Plan / Strategy	**Summary of Relevant Policies**	**Section Considered**
East Lindsey District Council: East Lindsey Local Plan Core Strategy, (2018) (Adopted 2018) (Ref 28.13)	SP27 – Renewable and Low Carbon Energy: *"Large-scale renewable and low carbon energy development, development for the transmission and interconnection of electricity, and infrastructure required to support such development, will be supported where their individual or cumulative impact is, when weighed against the benefits, considered to be acceptable in relation to:* *a) residential amenity;* *b) surrounding landscape, townscape and historic landscape character, and visual qualities;* *c) the significance (including the setting) of a historic garden, park, battlefield, building, conservation area, archaeological site or other heritage asset;* *d) sites or features of biodiversity or geodiversity importance, or protected species;* *e) the local economy;* *f) highway safety; and* *g) water environment and water quality"*	**Part 2, Chapter 3: Consideration of Alternatives** and English Onshore Scheme technical aspect chapters (**Part 2, Chapter 6** to **Chapter 16**).

Lincolnshire County Council (Ref 28.14)	There is a need for the Project to be consistent with the Guiding Principles set out in the Green Masterplan.	The design of the English Onshore Scheme is described in **Part 2, Chapter 4: The Project**. Future design development will take policy such as this into account as described in Section 28.5 Design and Control Measures.

Technical Guidance

28.2.4. The following relevant guidance, specific to the GHG assessment, has informed this Scoping Report and will inform the assessment within the PEIR and ES:

- Ministry of Housing Communities and Local Government (2019). *National Planning Policy Guidance* (NPPG) (Ref 28.15) – Explains the processes and tools that can be used through the planning system in England. The guidance highlights the importance of and advises how to identify suitable climate change mitigation and adaptation measures in the planning process. This would require the implementation of appropriate measures by the local planning authorities.
- Institute of Environmental Management and Assessment (IEMA) Guidance: Assessing Greenhouse Gas Emissions and Evaluating their Significance (2022) (Ref 28.16) – The aim of this guidance is to assist practitioners with addressing GHG emissions assessment and mitigation in statutory and non-statutory EIA. It complements IEMA's earlier guide on Climate Change Resilience and Adaptation and builds on the Climate Change Mitigation and EIA overarching principles. The requirement to consider this topic has resulted from the 2014 amendment to the EIA Directive.
- The Greenhouse Gas Protocol (Ref 28.17) – GHG Protocol establishes comprehensive global standardised frameworks to measure and manage GHG emissions from private and public sector operations, value chains and mitigation actions.
- Publicly Available Specification (PAS) 2080:2023 (Ref 28.18) – Is a standard for managing carbon in building and infrastructure. It looks at the whole value chain and aims to reduce carbon and cost through intelligent design, construction and use.
- IPCC Guidelines for National Greenhouse Gas Inventories (Ref 28.19) – The 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories was adopted and accepted during the 49th Session of the IPCC in 2019. It was prepared by the Task Force on National Greenhouse Gas Inventories (TFI) in accordance with the decision taken at the 44th Session of IPCC in Bangkok, Thailand, in 2016.

- Royal Institution of Chartered Surveyors (RICS) Whole life carbon assessment for the built environment (2023) (Ref 28.20) – This standard addresses all element and component categories that make up a built asset, across every life cycle stage: from extracting the raw materials and manufacturing construction products, through construction and operation, to recovery or disposal at end of life. It also separately assesses the potential loads and benefits beyond the system boundary in the next life cycle.

28.3 Consultation and Engagement

28.3.1. To date no engagement been undertaken with specific regard to GHGs. It is anticipated that feedback in relation to this topic and the scope of works will be gained following consultation on this Scoping Report. Further engagement with relevant stakeholders will be ongoing up to the submission of the Development Consent Order (DCO) as required to ensure agreement of the approach to the assessment.

28.3.2. Liaison with the design team will ensure that all activities within construction and operation of the Project will be captured within this assessment.

28.4 Baseline Conditions

Study Area

28.4.1. The assessment of GHG emissions is not restricted by geographical area, instead focussing on any increase or decrease in emissions as a result of the Project, wherever that may be. This includes:

- Construction emissions from the Project footprint but also relating to the transport of materials to and from site and their manufacture. This may be distant from the Project location, for example, GHG emissions associated with the manufacture of concrete in terms of embodied carbon and energy in the production process.
- Operation emissions (increase or reduction) which result from the operation of the Project and any shifts in energy usage that may occur. In this case, GHG emissions include those for embodied emissions arising from materials and waste for the operation of the Project, operational energy and water use.

Data Gathering Methodology

28.4.2. The following information has been considered in drafting the Scoping Report and will be subject to further analysis during the EIA process for those matters scoped into the assessment:

- Emission factors will be obtained from suitable sources, such as the Department for Energy Security and Net Zero (DESNZ) (Ref 29.21) and the Inventory of Carbon and Energy database (Ref 28.22).
- Activity data, including forecast construction and operational energy data, will be sourced from the Project during design development. .

Current Baseline

28.4.3. In the baseline, GHG emissions occur constantly and widely as a result of natural and human activity, including land use and land use change, energy consumption (e.g., fossil fuels, purchased energy from the grid and / or other sources) and industrial processes. The GHG assessment would only consider the scenario in which the Project results in additional or avoided emissions in comparison to the baseline. The baseline conditions therefore focus on those sources of emissions subject to change between the baseline and the Project.

28.4.4. The latest summary of GHG emissions for Lincolnshire, East Midlands, and the UK for 2023 (Ref 28.23) are presented in **Table 28-4.** The emissions sources are a subset of the total emissions for each region, chosen for their relevance to the Project, with the grand total for all emissions sources provided. These emissions have only been provided for context and are not the baseline emissions for this assessment. The baseline involves no construction activities and no development of the Project and therefore the construction baseline is zero emissions.

Table 28-4*:* UK and regional GHG emissions (2023)

Emissions Source	Lincolnshire ($ktCO_2e$)*	East Midlands ($ktCO_2e$)	UK ($ktCO_2e$)
Industry Electricity	112	730	8,959
Industry Gas	101	1,151	12,571
Large Industrial Installations	12	3,460	24,931
Industry ‘Other’	104	931	10,214
Industry Total	**328**	**6,272**	**56,675**
Commercial Electricity	155	1,043	15,762
Commercial Gas	89	906	11,270
Commercial ‘Other’	24	189	2,559
Commercial Total	**267**	**2,138**	**29,590**
Public Sector Electricity	25	207	3,003
Public Sector Gas	55	448	6,151
Public Sector 'Other'	10	74	1,225
Public Sector Total	**90**	**729**	**10,380**
Domestic Electricity	216	1,262	17,625
Domestic Gas	510	3,892	50,657
Domestic 'Other'	182	513	8,615
Domestic Total	**908**	**5,667**	**76,897**

Road Transport (A-roads)	814	4,353	43,809
Road Transport (Motorways)	0	1,647	23,588
Road Transport (Minor roads)	489	3,582	40,977
Diesel Railways	35	210	1,703
Transport 'Other'	28	232	3,230
Transport Total	**1,366**	**10,025**	**113,307**
Landfill	119	1,244	14,450
Waste 'Other'	68	396	5,388
Waste Total	**188**	**1,639**	**19,838**
Other Total (LULUCF and Agriculture)**	**1,900**	**3,883**	**49,407**
Grand Total***	**5,048**	**30,353**	**356,094**

*" ktCO2e " stands for kilo tonnes of carbon dioxide equivalent. Carbon dioxide equivalent (CO2e) is a metric measure used to compare the emissions of different greenhouse gases (GHGs) based on their global warming potential (GWP) relative to CO2.

**Land Use, Land-Use Change and Forestry

***Note: individual emission entries have been rounded, so rounding errors may occur in combined totals.

Future Baseline

28.4.5. The future baseline relates to known or anticipated changes to the current baseline in the future which would be assessed as part of the Project in the PEIR and ES.

28.4.6. It is recognised that there are a number of other proposed and committed developments within the surrounding area that could alter the future baseline in the absence of the Project. The potential for cumulative effects will be considered as part of the future EIA documents in accordance with the approach and guidance outlined within **Part 1, Chapter 5: EIA Approach and Methodology** and outlined within **Part 4, Chapter 30: Cumulative Effects** of the PEIR and ES.

28.5 Design and Control Measures

Construction Phase

28.5.1. Relevant design, mitigation and enhancement measures will be identified in the ES, and these may include:

- Design optimisation to reflect the carbon reduction hierarchy (detailed below and found in clause 6.1.4 of PAS 2080:2023) (Ref 28.18):
  - Minimise the material requirements for the components during the Project's development phase;
  - reduce the requirement for construction materials by smart design;

  - substitute-in and use alternative raw materials and resources (e.g., using low temperature asphalt) with lower embodied carbon; and
  - efficient construction processes, such as embracing design for manufacture and assembly.
- Maximising the opportunity to use more sustainable materials by specifying, in procurement documentation, that materials and products with reduced embodied carbon emissions, and materials / resources featuring recycled content (where safe and of sufficient integrity for engineering), supported with eco- and carbon labels or verified Environmental Product Declarations (EPD) are favoured and should be used.
- Applying the waste hierarchy to seek re-use and recycling or re-purposing of materials in preference to use of virgin materials. Use of waste management protocols to segregate waste arisings and enable effective resource use.
- Designing, specifying and constructing the Project with a view to maximise the operational lifespan and minimise the need for maintenance and refurbishment (and thus reducing the frequency of releasing associated GHG emissions).
- Specifying efficient ancillary infrastructure and equipment (such as lighting and telecommunications) that is long-lasting and chosen for its durability and energy efficiency credentials.
- Using locally sourced materials where available and practicable to minimise the distance materials are transported from source to site.
- Using more modern and efficient construction plant and delivery vehicles, and / or those powered by electricity from alternative / lower carbon fuels.
- Suitably experienced Environmental Manager(s) will be appointed for the duration of the construction phase. In addition, qualified and experienced Environmental Clerk of Works (EnvCoW) will be available during the construction phase to advise, supervise and report on the delivery of the mitigation methods and controls in the Construction Environmental Management Plan (CEMP) (developed in accordance with the Outline CEMP). The EnvCoW(s) will monitor the works proceed in accordance with relevant environmental DCO requirements and adhere to the required good practice and mitigation measures.
- Construction workers will undergo training to increase their awareness of environmental issues as applicable to their role on the Project. Topics will include but not be limited to:
  - Location and protection of sensitive environmental sites and features;
  - Adherence to protected environmental areas around sensitive features;
  - Working hours, and noise and vibration reduction measures; and
  - Agreed traffic routes, access points, etc.

Operational Phase

28.5.2. A range of standard measures for the Project are likely to be adopted in order to reduce GHG effects throughout the duration of the operational phase, these measures will be inherent in the evolving design of the Project. A summary of these measures is detailed below (which is not an exhaustive list):

- Maximising the operational effectiveness to minimise transmission losses;
- Maximising the operational lifespan and minimising the need for maintenance and refurbishment (and all associated emissions); and
- Operating, maintaining and refurbishing the project, as required, using energy efficient equipment.

28.6 Scope of the Assessment

Potential Sensitive Receptors

28.6.1. The impacts of GHG emissions relate to their contribution to global warming and climate change. These impacts are global and cumulative in nature, with every tonne of GHG emissions contributing to impacts on natural and human systems. GHG emissions result in the same global effects wherever and whenever they occur and, therefore, the sensitivity of different human and natural receptors is not considered.

28.6.2. It is not considered that the Project, as electricity transmission infrastructure and a boundary reinforcement, will be the direct or indirect cause of either upstream electricity generation or downstream electricity consumption. Hence, the Project will not be the direct or indirect cause of emissions from upstream or downstream activities. The Project will facilitate the transport of electricity on the network in response to an identified projected increase in demand. The mix of electricity generation sources cannot be known at the time of undertaking the EIA and will likely change over time, especially in relation to government policy on decarbonisation of the energy sector. In addition, sources of electricity entering the network will likely be varied and subject to their own carbon assessments.

28.7 Likely Significant Effects

Construction

28.7.1. In relation to the PAS 2080:2023 (Ref 28.18) lifecycle stages, the potential likely significant effects associated with the construction phase include those elements set out in **Table 28-5**.

Table 28-5*:* Key emission sources in the Construction Phase

Lifecycle Stage Impacts (with codes as per PAS 2080:2023)	Potential Sources of Emissions (not exhaustive)
Product stage (manufacture and transport of raw materials to suppliers) (A1-3)	Embodied emissions associated with extraction and manufacturing of the required raw materials.
Transport of materials to site (A4)	Emissions from fuel and electricity used in vehicles(onshore and offshore) transporting materials to site.
Plant and equipment use in construction (A5)	Emissions from fuel and electricity used in plant and equipment onsite.

Lifecycle Stage Impacts (with codes as per PAS 2080:2023)	Potential Sources of Emissions (not exhaustive)
Transport of waste (A5)	Emissions from fuel and energy used in vehicles transporting waste materials from construction, demolition and excavation to destinations away from site.

Operation

28.7.2. In relation to the PAS 2080:2023 (Ref 28.18) lifecycle stages, the potential likely significant effects associated with the operation phase include those elements set out in **Table 28-6.**

Table 28-6*:* Key emission sources in the Operation Phase

Lifecycle Stage Impacts (with codes as per PAS 2080:2023)	Potential Sources of Emissions (Not Exhaustive)
Operation (B1)	Leakage of SF_6 from switchgear or circuit-breakers[28]. There are no other significant additional sources of emissions from process use of the Project.
Maintenance, Repair, Replacement, Refurbishment (B2-5)	Embodied emissions and emissions from transport(onshore and offshore) and plant associated with maintenance, repair, replacement, and refurbishment.
Operational Energy Use (B6)	There is no significant operational energy use.
Operational Water Use (B7)	There is no significant operational water use.

Impacts scoped in or out of further assessment

28.7.3. With reference to all PAS 2080:2023 (Ref 28.18) lifecycle stages, the impacts scoped in or out for GHGs are as follows in **Table 28-7**:

Table 28-7*:* Greenhouse Gases - Scoped In or Out of Further Assessment

Impacts	Phase	Justification	Scope of Assessment
Product Stage (manufacture and transport of raw	Construction	Raw materials required for the Project would result in embodied emissions that have the potential to be large.	Scoped In

[28] The potential impact of SF_6 is scoped in to reflect a worst case scenario in terms of environmental effects. However, it is noted that NGET Policy Statement PS(T) 005 notes no further procurement of 275 kV/400 kV switchgear or circuit-breakers containing SF_6 from 2024 and 2026 respectively. This is in advance of construction of the Project commencing.

Impacts	Phase	Justification	Scope of Assessment
materials to suppliers) (A1-3)			
Transport of Materials to Site (A4)	Construction	Construction phase emissions from fuel / energy consumption due to the delivery of material to site have the potential to be large.	Scoped In
Plant and Equipment Use during Construction (A5)	Construction	Emissions from the plant, construction vessels and equipment used during construction of the Project have the potential to be large.	Scoped In
Transport of Waste (A5)	Construction	Emissions from fuel / energy consumption due to the transport of waste materials have the potential to be large.	Scoped In
Disposal of Waste (A5)	Construction	Emissions from the disposal of waste materials is not expected to be large as it will predominantly comprise inert waste.	Scoped Out
Land use, Land Use Change and Forestry (A5)	Construction	Emissions from the change in land use from existing agricultural land may be significant	Scoped In
Operation (B1)	Operation	Leakage of SF_6 from switchgear or circuit-breakers.[28]	Scoped In
Maintenance, Repair, Replacement, Refurbishment (B2-5)	Operation	The English Onshore Scheme is not designed with the expectation of any significant plant maintenance and repair activities, or refurbishment being required, and therefore emissions due to these activities are expected to be minimal. The English Offshore Scheme is not designed with the expectation of routine operational maintenance or repair requirements, and therefore emissions due to these activities are minimal.	Scoped Out
Operational Energy Use (B6)	Operation	The Project is not designed with the expectation of any significant operational energy use and therefore emissions due to these activities are expected to be minimal.	Scoped Out
Operational Water Use (B7)	Operation	The Project is not designed with the expectation of any significant operational water use and therefore	Scoped Out

Impacts	Phase	Justification	Scope of Assessment
		emissions due to these activities are expected to be minimal.	
Land Use, Land Use Change and Forestry (B8)	Operation	The reduction in carbon sequestration due to the land use change from the Project may be significant.	Scoped In
End-user Emissions (B9/D)	Operation	The Project is not designed with the expectation of any significant end user emissions and therefore emissions due to these activities are expected to be minimal.	Scoped Out
Decommissioning Process (C1)	End of life	The potential effects of the decommissioning phase of the Project has been scoped out. This is due to uncertainties around the fate of infrastructure at this stage (40 years in future).	Scoped Out
Transport and Disposal of Materials (C2-4)	End of life	The potential effects of the decommissioning phase of the Project has been scoped out. This is due to uncertainties around the fate of infrastructure at this stage (40 years in future).	Scoped Out

28.8 Assessment Methodology

Further Data to be Gathered / Processed

28.8.1. The assessment approach considers the likely magnitude of GHG emissions (or avoided emissions) in comparison to the baseline without the Project. It considers emissions throughout the lifecycle of the Project addressing:

- Construction phase - e.g., embodied emissions associated with materials, transportation of materials to site and waste / arisings from site, and the construction process; and
- Operation phase - e.g., maintenance and replacement of original materials.

28.8.2. For all PAS 2080:2023 (Ref 28.18) lifecycle stages and sub-stages of the Project, the assessment will include the following:

- collection of available data / information on the scale of GHG emitting activities (e.g., tonnes of concrete, litres of fuel, kWh of electricity) and GHG capturing activities for the baseline and for the Project. In each case this will cover the whole study period (minimum design life of 40 years); and
- calculation of the GHG emissions by applying a suitable emissions factor (per unit of emissions generating or capturing activity).

28.8.3. Emissions calculations will focus on emissions annually and throughout the Project lifecycle. Values will be reported as tonnes of CO_2 equivalents (tCO_2e).

28.8.4. The assessment of construction and operation impacts will be undertaken in line with the following guidance:

- PAS 2080:2023 (Ref 28.18);
- ISO 14064-1:2018 (Ref 28.19);
- GHG Protocol (Ref 28.17); and
- IPCC Guidelines for National Greenhouse Gas Inventories (Ref 28.20).

Significance of Effect Criteria

28.8.5. Any magnitude of emitted or avoided GHG emissions makes a cumulative contribution to climate change (positive or negative).

28.8.6. Significance of GHG impacts is assessed in line with IEMA guidance (Ref 28.16); *"a development's emissions should be based on its net impact over its lifetime, which may be positive, negative or negligible. The evaluation of significance should not just focus on GHG emissions, or the magnitude of those emissions, but whether the Projects contribute to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050."*

28.8.7. To provide context to the GHG emissions, and as set out in the IEMA guidance, the estimated GHG emissions arising from the Project will be compared with the respective UK carbon budget (Ref 28.21), shown in **Table 28-8**, which have been set by the UK Government covering 2023 to 2037.

28.8.8. Further contextualisation on more local or sector carbon budgets will also be considered as well as any cumulative impacts on GHG emissions.

Table 28-8*:* UK Carbon Budgets

Carbon Budget Period	UK Carbon Budget ($MtCO_2e$)
Fourth (2023 – 2027)	1,950
Fifth (2028 – 2032)	1,725
Sixth (2033 – 2037)	965

28.9 Assessment Limitations and Assumptions

28.9.1. The following limitations and assumptions have been identified:

- There is limited detail available for non-road mobile machinery (NRMM) during the construction and maintenance phases and regarding the potential use of diesel generators at this stage. It is assumed that emissions would be temporary and transient in nature and therefore negligible in terms of air quality impacts and significance, however this will be confirmed in the PEIR and ES once further information is available.

- Details in the assessment will be based on all available design information. Given the nature of the Project, where there are limitations or elements of this that are unknown or limited in extent of detail this will be noted.
- The assessment of significance will be based, in part, on professional judgement.
- For the purposes of this assessment, it will be assumed that the Project would be operational for 40 years, which is the average lifespan for this type of development.
- Some small emissions sources have been excluded as emissions from these sources are not considered likely to be large and therefore not material to the assessment.

28.10 Bibliography

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29. Scoped Out Aspects

29.1 Introduction

29.1.1. This chapter of the Scoping Report discusses the environmental aspects which it is considered can be scoped out from detailed assessment in the Environmental Statement (ES) as significant effects are not considered likely as a result of the Project.

29.2 Materials and Waste

Materials

29.2.1. The Project would require the use of new materials during the construction stage. The main material products used by the Project will be identified in the Preliminary Environmental Information Report (PEIR) and the ES.

29.2.2. The material sources are unlikely to be identified until the detailed design stage of the Project, which would happen post-consent. Due to the nature of the Project, this means it will be difficult to use secondary sources during the construction stage as it can impact the operation and design life of the Project. NGET has existing processes in place to source materials from sustainable sources and to use recycled materials where these do not compromise the required design standards and operational life of the Project.

29.2.3. Temporary materials such as those used for haul routes and site compounds, works cabins and security fencing would be required during construction. As is standard on large scale construction projects, it is assumed these would be reused at other construction projects after completion of the Project.

29.2.4. Due to existing processes that NGET has in place to source and manage materials, this element is therefore scoped out of the EIA as a separate environmental aspect chapter.

Waste

29.2.5. Waste materials would be produced by the Project. NGET will adopt good construction and management practices to ensure waste is minimised as far as possible and that the storage, transport and eventual disposal of waste have no significant environmental effects. National Grid (in its entirety) has committed to achieving zero waste to landfill across key areas of waste by 2026 (Ref 29.1), and in 2024 diverted 99.4% of construction waste from landfill (Ref 29.2). The management and collection of waste arisings will be carried out under the requirements of the UK waste regulatory regime.

29.2.6. Furthermore, the contractor would be required to produce and secure a Site Waste Management Plan (SWMP) prior to construction which would be informed by the Outline SWMP prepared to accompany the ES. This would ensure that the principles of the waste management hierarchy are adopted and set out the measures to reduce the generation of waste in the first place and appropriate measures to reuse and recycle materials where practicable. It would also identify appropriate waste facilities to dispose of materials.

29.2.7. Any surplus soil gained from excavation of the cable trenches or foundations would be reused within the site. The exception would be where the soil was contaminated, in which case the soils would be managed in an appropriate manner, as will be set out in the good practice measures within the Outline Construction Environmental Management Plan (CEMP) and the Outline SWMP.

29.2.8. As waste and waste management will be addressed in the above documents and appropriate mitigation would be in place, it is therefore proposed that waste will not be the subject of a separate environmental aspect chapter and it will be scoped out of the EIA. Furthermore, the effects of any waste related development will be addressed as part of the relevant environmental aspects and associated strategies, for example the transport effects from the management of waste arisings will be considered in **Part 2, Chapter 12: Traffic and Transport** where appropriate.

29.3 **Electric and Magnetic F**ields (EMFs)

29.3.1. All equipment that generates, distributes or uses electricity produces EMFs. The UK power frequency is 50 Hz (hertz) which is therefore the principal frequency of the EMFs produced, which are also known as Extremely Low Frequency (ELF) EMFs.

29.3.2. Electric fields depend on the operating voltage of the equipment producing them and are measured in V/m (volts per metre). The voltage applied to equipment is a relatively constant value. Magnetic fields depend on the electrical currents flowing, which vary according to the electrical power requirements at any given time and are measured in µT (microteslas). Both fields diminish rapidly with distance from the source and are present in all areas where electricity is in use (e.g., office and homes), arising from electric cabling and equipment in the area.

29.3.3. Whilst there are no statutory regulations in the UK that limit the exposure of people to power-frequency electric or magnetic fields, responsibility for implementing appropriate measures for the protection of the public from EMFs lies with the UK Government. In 2004, the Government adopted guidelines published in 1998 (Ref 29.3) by the International Commission on Non-Ionizing Radiation Protection (ICNIRP) in the terms of the 1999 EU recommendation (Ref 29.4) on public exposure to EMFs. This policy of compliance with guidelines was reaffirmed in 2009, when one additional precautionary policy relating to high-voltage power lines, optimum phasing, was introduced. NPS EN-5 also repeats these two policies, and the Department of Energy and Climate Change (DECC) has published two Codes of Practice (Ref 29.5, Ref 29.6) which have been agreed between the Energy Network Association and the Government, which specify how compliance with these exposure guidelines and with the policy on optimum phasing will be determined. It is National Grid's policy to comply, as a minimum, with the relevant EMF guidelines in all of its operations.

29.3.4. When, as is the case for all NGET assets and operations, and in particular as is the case for the Project, the EMFs comply with the relevant exposure guidelines as specified by Government and with the additional precautionary policies, there are no likely significant effects from EMFs. Therefore, EMFs are scoped out of the ES for the English Onshore Scheme, which deals with issues where there are likely to be significant effects on the environment.

29.3.5. However, NGET recognises the extent of public concern regarding EMFs and therefore wishes to provide all the relevant information on EMFs as part of the application. Further, NPS EN-5 requires the provision of specified information to demonstrate compliance with the exposure guidelines and other policies. Therefore, comprehensive

information on EMFs as they relate to this application will be provided in a separate document which will be submitted alongside the ES as part of this application. The information provided will include evaluations of the EMFs that will be produced, performed according to the provisions of the DECC Code of Practice, and satisfying the requirements of NPS EN-5, as well as background information on EMFs and the scientific evidence relating to them.

29.4 Major Accidents and Disasters

Introduction

29.4.1. This Section provides consideration and high-level assessment of the likely effects of the English Onshore Scheme on the environment deriving from the vulnerability of the English Onshore Scheme to risks of relevant major accidents and disasters (MA&D). A number of considerations for the offshore environment have been considered within **Chapter 23: Shipping and Navigation** and are not repeated here.

29.4.2. Based on professional judgement, major accidents or disasters are events or situations that have the potential to affect the English Onshore Scheme causing immediate or delayed serious damage to one or more of the following: human health, welfare, and the environment. The assessment considers the risks of major accidents and disasters during construction and operation of the English Onshore Scheme caused by natural hazards or manmade hazards (including operational failure).

29.4.3. The starting list of potential MA&D event categories and types to which the English Onshore Scheme may be at risk of vulnerability during construction and operation phases are listed in **Table 29-1**.

Table 29-1: MA&D Event Categories and Types

Category	Type
Natural	Geophysical
	Hydrological
	Climatological and Meteorological
	Biological
Technological or Manmade Hazards	Societal
	Industrial and Urban Accidents
	Transport Accidents
	Pollution Accidents
	Utility Failures
	Malicious Attacks
	Engineering Accidents and Failures

29.4.4. This section should be read in conjunction with technical aspect chapters (**Part 2 Chapters 6 to 16**) to provide a broader environmental context on the risks associated

with these MA&D event types. These sections also outline the proposed measures to prevent or mitigate significant effects and details of the preparedness for, and proposed response to emergencies.

Study Area

29.4.5. The study area for MA&D has been developed based on professional judgement as there is no specific regulatory guidance nor significant precedent or standardised methodology. The following factors and associated distances were adopted for setting the study area in order to capture internal and external influencing factors which may have high adverse consequences on the Project:

- Manmade features including:
  - Airports and airfields within 13 km of the English Onshore Scheme Scoping Boundary (the legal distance of the safeguarding zone for licensed airports in the UK);
  - Control of Major Accident Hazard (COMAH) facilities within 3 km (distance to furthest COMAH installation centre point whose consultation zone (CZ) overlaps the English Onshore Scheme);
  - Major accident hazard pipelines within 1 km (distance to furthest Major Accident Hazard (MAH) pipeline whose CZ overlaps the English Onshore Scheme);
  - Fuel retail sites (including liquified natural gas, liquified petroleum gas) within 1 km;
  - Rail infrastructure within 500 m; and
  - Transmission (gas, electrical, oil / fuels) crossing the English Onshore Scheme Scoping Boundary.
- Natural features with the potential to create risks within:
  - 3 km (chiefly hydrological and geological, for example dam failure and seismic activity respectively); and
  - 1 km (chiefly hydrological and geological, for example flood risk and unstable ground conditions respectively).

Baseline

29.4.6. The baseline conditions described for major events are derived from the following desk study sources:

- National Risk Register of Civil Emergencies (Ref 29.7);
- British Geological Survey 'Onshore GeoIndex' (Ref 29.8);
- Tsunamis Hazard Map (Ref 29.9);
- The International Disaster Database (Ref 29.10);
- Health and Safety Executive's Planning Advice Web App (Ref 29.11);
- Health and Safety Executive's COMAH 2015 Public Information Search (Ref 29.12);
- Google aerial and street view maps covering Study Area (Ref 29.13); and

- Technical aspect chapters (**Part 2 Chapters 6 to 16)**.

Receptors

29.4.7. In accordance with Schedule 4 of the EIA Regulations 2017 (Ref 29.14) the following receptors have been considered:

- Members of the public and local communities;
- Infrastructure and the built environment;
- The natural environment, including ecosystems, land and soil quality, air quality, surface and groundwater resources and landscape;
- The historic environment, including archaeology and built heritage; and
- The interaction between the factors above.

Potential Vulnerability to Major Accident and Disaster Risks

29.4.8. A long list of possible MA&D groups, categories and types has been prepared in **Volume 2, Appendix 29-A** which shows the potential vulnerability of the English Onshore Scheme to the risk of a MA&D events at the type level.

29.4.9. **Table 29-A-1** in **Volume 2, Appendix 29-A** concludes that the risk of MA&D can be scoped out from further assessment in the ES as, based on the information currently available, it is considered that the risks are anticipated to be as low as reasonably practicable.

29.5 Climate Resilience

29.5.1. The greenhouse gases (GHG) assessment will consider the potentially significant effects from the Project on GHG during construction and operation. This is presented in **Part 4, Chapter 28: Greenhouse Gases**.

29.5.2. Climate resilience considers the potentially significant effects of a changing climate on the Project.

29.5.3. In terms of vulnerability of the Project to climate change, specifically in relation to the English Onshore Scheme above ground infrastructure such as the converter station are designed to withstand extreme weather conditions, such as high winds and ice formation on the wires. With regards to the HVDC and HVAC elements of the Project, by virtue of the fact that these elements are underground, they will not be exposed to weather extremes and therefore not considered vulnerable to the potential effects of climate change.

29.5.4. At the landfall, the position of the transition joint bay (TJB) and the trajectory of the horizontal direction drills (or other trenchless technique) will be designed taking into consideration coastal erosion and beach drawdown predictions for the lifetime of the Project. This is to ensure that the cable ducts are not exposed due to changes in coastal morphology.

29.5.5. The vulnerability of the Project to future flooding will be considered as part of the flood risk assessment and associated analysis presented in **Part 2, Chapter 9: Water Environment**.

29.5.6. Due to the nature of the Project no further significant effects on them are anticipated as a result of future climate change. On this basis, no further assessment of the Project's vulnerability to climate change is required in the ES, therefore the below aspects of climate change assessments have been scoped out:

- In–Combination Climate Change Impact (ICCI) Assessment – combined impact of the Projects and future climate change on the receiving environment; and
- Climate Change Resilience (CCR) Assessment – the resilience of the Project to the potential impacts of climate change.

29.6 Bibliography

Ref 29.1 National Grid (2024) Environmental Action Plan 2021-2026

Ref 29.2 National Grid (2024) Annual Environmental Report 2024

Ref 29.3 International Commission on Non Ionising Radiation Protection (1998) Guidelines for Limiting Exposure to Time-Varying Electric, Magnetic and Electromagnetic Fields, Health Physics

Ref 29.4 EU Council (1999) Recommendation of 12 July 1999 on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz) (1999/519/EC)

Ref 29.5 Department of Energy and Climate Change (2012) Power Lines: Demonstrating compliance with EMF public exposure guidelines - A voluntary Code of Practice

Ref 29.6 Department of Energy and Climate Change (2012) Optimum Phasing of high voltage double-circuit Power Lines. A voluntary Code of Practice

Ref 29.7 HM Government. (2025). 'National Risk Register 2025 edition'. Available at: https://www.gov.uk/government/publications/national-risk-register-2025 (Accessed June 2025).

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30. Cumulative Effects

30.1 Introduction

30.1.1. This chapter sets out the approach to assessing cumulative effects which may arise as a result of the construction and operation of the Project.

30.1.2. The Environmental Impact Assessment (EIA) Regulations require that, in assessing the effects of a particular development, consideration should also be given to the cumulative effects that may arise from the Project in conjunction with other existing and / or approved developments.

30.1.3. The ES will assess the potential for significant cumulative effects as a result of the Project in the form of a Cumulative Effects Assessment (CEA). The CEA will be presented as a standalone chapter of the Environmental Statement (ES).

30.1.4. In line with Schedule 4, paragraph 5(e) of the EIA Regulations (Ref 30.1) the ES will consider *"the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources"*. Furthermore, it will address Schedule 4, paragraph 5 of the EIA Regulations (Ref 30.1) which states *"the description of the likely significant effects on the factors specified in regulation 4(2) should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the development. This description should take into account the environmental protection objectives established at Union or Member State level which are relevant to the project, including in particular those established under Council Directive 92/43/EEC and Directive 2009/147/EC"*.

30.1.5. Cumulative effects may arise because of several different factors and combined changes. According to IEMA cumulative impacts can be defined as *"the additional changes caused by a Proposed Development in conjunction with other similar developments as the combined effect of a set of developments, taken together, in practice 'effects' and 'impacts' are used interchangeably"*.

30.1.6. The following types of cumulative effects will be considered in the ES (Ref 30.2):

- Intra-project effects – the interaction and combination of different residual environmental effects of the Project affecting the same receptor. For example, visual and noise effects during construction affecting users of a nearby Public Right of Way (PRoW).
- Inter-project effects – the residual environmental effects of the Project combining and interacting with the residual environmental effects of other, committed development(s), affecting the same receptor. For example, effects upon users of the local road network because of traffic flows from the Project and a nearby industrial development or impacts on marine species from offshore construction activities from multiple projects.

30.1.7. This chapter should be read in conjunction with **Part 2, Chapter 3: Consideration of Alternatives** and given the interface with other technical aspects, considered alongside the following technical chapters in **Volume 1**:

- **Part 2, Chapter 6: Biodiversity**
- **Part 2 Chapter 16: Health and Wellbeing**
- **Part 3, Chapter 18: Marine Physical Processes – Chapter 26: Marine Archaeology**.

30.2 Relevant Legislation, Planning Policy and Technical Guidance

30.2.1. This section identifies the legislation, national and local policy and guidance relevant to the assessment of cumulative effects which have been considered when developing this chapter.

Legislation

30.2.2. A summary of the key legislation considered, but not limited to, in the scope of cumulative effects is outlined in **Table 30-1**.

Table 30-1: Legislation relevant to cumulative effects

Legislation	Legislative Context	Section Considered
The Infrastructure Planning (Environmental Impact Assessment) Regulations (2017) (Ref 30.1).	The EIA Regulations cover the process of EIA in the context of Nationally Significant Infrastructure Projects. They apply the amended EU Directive 2014/52/EU. Schedule 4, paragraph 5(e), and Regulation 5(2) (see paragraphs 21.1.3 and 2.1.4 above) are of relevance to cumulative effects.	Section 30.4 Assessment Methodology

Planning Policy

30.2.3. A summary of the planning policies at both a national and local level relevant to the scope of cumulative effects is given in **Table 30-2** and **Table 30-3**. The policies outlined in **Table 30-2** underpin this scoping chapter as a whole and have most notably informed the development of **Section 30.4 Assessment Methodology**.

Table 30-2: National and Local Planning Policy relevant to cumulative effects

Policy Reference	Policy Context
National Policy	
Overarching National Policy Statement for Energy (EN-1) (2025) (Ref 30.3)	
Paragraph 4.1.5	EN-1 states that, in considering any proposed development, in particular when weighting its adverse impacts against its benefits, the SoS should take into account:

Policy Reference	Policy Context
	"its potential adverse impacts, including on the environment, and including any long-term and cumulative adverse impacts, as well as any measures to avoid, reduce, mitigate or compensate for any adverse impacts, following the mitigation hierarchy"
Paragraph 4.2.12	Notes that applications for critical national priority infrastructure should set out how residual impacts of a proposed development will be compensated for and that cumulative impacts of multiple developments with residual impacts should also be considered.
Paragraph 4.3.3	EN-1 acknowledges the requirements of the EIA Regulations, noting that: *"The Regulations require an assessment of the likely significant effects of the proposed project on the environment, covering the direct effects and any indirect, secondary, cumulative, transboundary, short, medium, and long-term, permanent and temporary, positive and negative effects at all stages of the project, and also of the measures envisaged for avoiding or mitigating significant adverse effects"*
Sections 4.4, 4.9, 4.11, 4.12, 5.5, 5.8, 5.9, 5.10, 5.13, 5.14, 5.16	The following sections of EN-1 all state a requirement to include cumulative impacts in the assessment of a proposed development and/or that cumulative impacts should be considered as part of the SoS decision making process. • Health • Carbon Capture and Storage • Network Connection • Pollution Control and Other Environmental Regulatory Regimes • Civil and Military Aviation and Defence Interests • Flood Risk • Historic Environment • Landscape and Visual • Socio-Economic Impacts • Traffic and Transport • Water Quality and Resources
Draft Overarching National Policy Statement for Energy (EN-1) (April 2025) (Ref 30.4)	
Paragraph 4.1.5, 4.2.12, 4.3.3 Sections 4.4, 4.9, 4.11, 4.12, 5.5, 5.8, 5.9, 5.10, 5.13, 5.14, 5.16.	The Government has published a draft update to the Overarching National Policy Statement for Energy. For CEA, the 2025 Draft NPS EN-1 is largely the same as in the 2024 document, relevant paragraph numbers will remain the same, however section numbers will be updated.

Policy Reference	Policy Context
National Policy Statement for Electricity Networks Infrastructure (EN-5) (2024) (Ref 30.5)	
Paragraph 2.7.1.	Supports EN-1 by providing guidance on new electricity networks infrastructure to ensure it is well designed. It states *"EN-1 explains in Section 4.10 that the Planning Act 2008 aims to create a holistic planning regime, such that the cumulative effects of the same project can be considered together. Co-ordinated applications typically bring economic efficiencies and reduced environmental impact".*
Draft National Policy Statement for Electricity Networks Infrastructure (EN-5) (April 2025) (Ref 30.6)	
Paragraph 2.7.1	The Government has published a draft update to the Overarching National Policy Statement for Energy. For CEA, the 2025 Draft NPS EN-5 is largely the same as in the 2024 document, relevant paragraph numbers will remain the same, however section numbers will be updated.
National Planning Policy Framework (2024) (Ref 30.7)	
Paragraph 191	The NPPF sets out the Government's planning policies for England and how these should be applied, with the following paragraphs relating to cumulative effects: Paragraph 191: *"Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development".*
UK Marine Policy Statement (2011) (Ref 30.8)	
Paragraph 2.3.2.1	The UK MPS states "*When considering potential benefits and adverse effects, decision makers should also take into account any multiple and cumulative impacts of proposals, in the light of other projects and activities*"
Paragraph 2.4.3	Notes that "*The marine plan authority will need to consider the potential cumulative impact of activities and, using best available techniques, whether for example:* • The cumulative impact of activities, either by themselves over time or in conjunction with others, outweigh the benefits: • A series of low impact activities would have a significant cumulative impact which outweighs the benefit • An activity may preclude the use of the same area/resource for another potentially beneficial activity".

Policy Reference	Policy Context
Local Policy	
East Lindsey District Council: East Lindsey Local Plan Core Strategy, (2018) (Ref 30.9)	
Strategic Policy 28 (SP28) – Infrastructure and S106 Obligations	SP28 states *"Infrastructure schemes should be accompanied by an impact assessment that shows how the proposal impacts on the landscape or local setting of the area, including individual and cumulative effects. It should identify what steps have been taken to minimize its effects and the alternative options that have been considered".*
Strategic Policy 11 (SP 11) – Historic Environment	SP11 states *"Proposals will be supported where they: Do not have a harmful cumulative impact on heritage assets".*
Strategic Policy 27 (SP27) – Renewable and Low Carbon Energy	SP27 states *"Large-scale renewable and low carbon energy development, development for the transmission and interconnection of electricity, and infrastructure required to support such development, will be supported where their individual or cumulative impact is, when weighed against the benefits, considered to be acceptable in relation to:* *a) residential amenity;* *b) surrounding landscape, townscape and historic landscape character, and visual qualities;* *c) the significance (including the setting) of a historic garden, park, battlefield, building, conservation area, archaeological site or other heritage asset;* *d) sites or features of biodiversity or geodiversity importance, or protected species;* *e) the local economy;* *f) highway safety; and* *g) water environment and water quality".*
Strategic Policy 28 (SP28) – Infrastructure and S106 Obligations	SP28 states *"Infrastructure schemes should be accompanied by an impact assessment that shows how the proposal impacts on the landscape or local setting of the area, including individual and cumulative effects. It should identify what steps have been taken to minimize its effects and the alternative options that have been considered".*
East Inshore and East Offshore Marine Plan (2014) (Ref 30.10)	
Policy ECO1	ECO1 states "*Cumulative impacts affecting the ecosystem of the East marine plans and adjacent areas (marine, terrestrial) should be addressed in decision-making and plan implementation*".
Policy MPA1 Paragraph 227	States that "*The importance of the areas for future marine development, in addition to current activities, may present risks to implementing a coherent network, e.g. from potential cumulative effects".*

Policy Reference	Policy Context
Policy GOV1 Paragraph 262	States that "*Public authorities must assess the potential positive and negative impacts, on both the marine and terrestrial environments, of development proposals in a collective and cumulative manner…".*
Policy GOV3 Paragraph 270	States that "*The current focus on cumulative effects is on those affecting the environment. However, achievement of sustainable development will require balanced assessment of environmental, social and economic cumulative effects. The assessment of cumulative effects and mitigation measures must be proportionate and achievable on a practical level".*
Policy PS2 Paragraph 362	States "*There is also a need to consider possible cumulative effects that may arise as a result of growing numbers of Offshore Wind Farm projects due to be developed over time".*
Paragraph 378	States "*Dredging proposals should be considered in line with any cumulative impacts which may affect the ecosystem of the East marine plan areas..".*
Paragraph 413	States "*Consideration will need to be given to activities outside of areas where cables are currently laid that may prevent any expansion of cable networks in the future, as well as the cumulative effects of these activities on cabling installation".*
North East Offshore Marine Plan (2021) (Ref 30.11)	
NE-CE-1	States "*Proposals which may have adverse cumulative effects with other existing, authorised, or reasonably foreseeable proposals must demonstrate that they will, in order of preference:* *a) Avoid* *b) Minimise* *c) Mitigate* • Adverse cumulative and/or in-combination effects so they are no longer significant".

Technical Guidance

30.2.4. A summary of technical guidance documents relevant to the scope of cumulative effects which has informed this Scoping Report and will inform the assessment within the PEIR and ES, is provided in **Table 30-3**.

Table 30-3: Guidance relevant to cumulative effects

Technical guidance	Summary of relevant guidance relating to cumulative effects
Demystifying Cumulative Effects, Impact Assessment Outlook Journal 2020 (Ref 30.12)	The EIA process requires the consideration of cumulative effects to be undertaken. However, guidance on this area of practice is often lacking, and a variety of methodologies are adopted by different practitioners. Volume 7 of the Impact Assessment Outlook Journal brings together a selection of articles, thought and opinion pieces on CEA in EIA.

Technical guidance	Summary of relevant guidance relating to cumulative effects
Planning Inspectorate Advice Note 17: Cumulative Effects Assessment (Ref 30.13)	This Advice Note identifies the nature of projects (referred to as 'Other Developments') that should be considered in a CEA. It advises that a pragmatic approach should be used, in respect of what is feasible and reasonable, where there is a lack of information to identify impacts and assess effects. Planning Inspectorate Note 17 specifies that statutory definitions of EIA screening thresholds can be of assistance when considering whether the scale and nature of developments identified in Zone of Influence (ZOI) are likely to interact with the proposed project development and to result in a cumulative effect.
A Strategic Framework for Scoping Cumulative Effects (Ref 30.14)	This guidance from the Marine Management Organisation provides a high level approach to scoping cumulative effects in the marine environment. It has partly been superseded by PINS Advice Note 17 but still provides a framework which can be of assistance when considering CEA in the marine environment.

30.3 Consultation and Engagement

30.3.1. To date no consultation and engagement has been undertaken in relation to cumulative effects. However, in advance of the PEIR and ES, engagement would be undertaken with the following key stakeholders relevant to cumulative effects whereby the long-list (see **Section 30.4** for further information) will be sent to the relevant local planning authorities for comment and agreement will be sought prior to progressing to Stage 2 of the Inter-project Effects stage (see **Section 30.4** for further information):

- Lincolnshire County Council; and
- East Lindsey District Council.

30.3.2. In addition, other key consultees such as the Marine Management Organisation, Natural England and the Joint Nature Conservation Committee will be engaged with as necessary.

30.4 Assessment Methodology

30.4.1. There is no widely accepted methodology or best practice for the assessment of cumulative effects. However, various guidance documents exist, including Advice Note 17 (Ref 30.13) which will inform the approach to both Intra-project effects and Inter-project effects assessments. The chosen approach will draw upon professional expertise, considering the specific receptors under evaluation and the nature of the Project.

30.4.2. The assessment methodology will primarily be qualitative and based on the available information. In cases where feasible, partially quantitative assessments may be conducted, particularly for aspects like traffic-related effects. In instances where information is not available, assumptions will be made, employing a reasonable worst-case scenario approach based on professional judgment. All assumptions will be clearly stated alongside any associated uncertainties as part of the Intra-project effects and Inter-project effects assessments.

Intra-project Effects

30.4.3. The assessment of Intra-project effects will be based on the information and study areas within the technical aspect chapters (**Part 2, Chapter 6: Biodiversity to Chapter 16: Health and Wellbeing** and **Part 3, Chapter 18: Coastal and Marine Physical Processes** to **Chapter 26: Marine Archaeology**). This assessment considers any residual effects that are reported as non-negligible (or equivalent) within the technical chapters. Minor effects, while not significant, are considered in the assessment on the basis that multiple minor effects may interact to result in a significant effect. Negligible residual effects reported in the technical chapters are considered unlikely to accumulate to the extent that a potential significant Intra-project effect would occur.

30.4.4. The methodology for assessing Intra-project effects will encompass the following key stages.

Stage 1 – Screening of Sensitive Receptors

30.4.5. A screening process will be conducted for sensitive receptors, as identified within each topic chapter, to ascertain if any may encounter multiple types of residual effects. This evaluation spans both individual technical aspect assessments and potential overlaps across multiple assessments, encompassing both the construction and operational phases of the Project. These identified sensitive receptors, termed 'common receptors,' will progress to Stage 2 of the assessment.

Stage 2 – Determine Common Receptor's Residual Effects

30.4.6. Of the common receptors identified in Stage 1, those that have two or more non-negligible residual effects will be identified and taken forward to Stage 3 of the assessment.

Stage 3 – Assessment of Intra-project Effects

30.4.7. An assessment of the overall significance of the Intra-project effects on common receptors identified at Stage 2 will be undertaken. The assessment will be based on information provided within the technical aspect assessments, as well as professional judgement.

Significance Criteria

30.4.8. While there is no standard approach to the assessment of Intra-project effects, it should be carried out with reference to guidance and professional judgement. Professional judgement will be used to determine the potential for cumulative effects, with effects identified as significant or not. If significant residual Intra-project effects are identified, additional mitigation measures will be considered and reported in the ES.

Inter-project Cumulative Effects

30.4.9. The methodology for assessing Inter-project effects will entail identifying incremental changes to baseline conditions anticipated from other pertinent projects in conjunction with the Project. This process will encompass the following key stages.

Stage 1 – Identification and Evaluation of Developments for Consideration

30.4.10. Stage 1 of the approach outlined in Advice Note 17 (Ref 30.13) requires the identification of a ZOI for each technical aspect (derived from the study areas in **Part 2, Chapter 6: Biodiversity to Chapter 16: Health and Wellbeing and Part 3, Chapter 18: Coastal and Marine Physical Processes** to **Chapter 26: Marine Archaeology**) considered within the ES for the Project, with other, reasonably foreseeable developments identified within those ZOI, which are termed 'Other Developments'.

30.4.11. 'Other Developments' will be identified through an initial search conducted within the designated ZOI. This search will encompass the planning registers of local planning authorities, the Planning Inspectorate's planning register, the Marine Management Organisation's (MMO) Marine Case Management System (MCMS) public register, Offshore Petroleum Regulator for Environment and Decommissioning (OPRED) environmental submissions and determinations and relevant development plans. Employing professional judgment, the initial search will cover the largest practicable ZOI search area identified in the technical chapters. This process will generate a 'long-list' of 'Other Developments' for consideration, aligning with Stage 1 as outlined in Advice Note 17 (Ref 30.13).

30.4.12. Table 2 of Advice Note 17 also outlines criteria for assessing the level of certainty associated with each of the 'Other Developments' being considered. **Table 30-4** has been adapted from Table 2 of Advice Note 17 (Ref 10.13). The criteria are organised in descending order from Tier 1 (indicating the highest level of certainty) to Tier 3 (representing the lowest level of certainty). These tiers reflect a decreasing degree of certainty that can be attributed to each 'Other Development'.

Table 30-4: Assigning Certainty to 'Other Developments' adapted from Advice Note 17 (Ref 30.13)

Tier	Certainty
Tier 1	Under construction; Permitted application(s), whether under the Act or other consent regimes, but not yet implemented; and Submitted application(s), whether under the Act or other consent regimes, but not yet determined.
Tier 2	Projects on the Planning Inspectorate's Programme of Projects or MCMS public register where a Scoping Report has been published.
Tier 3	Projects on the Planning Inspectorate's Programme of Projects or MCMS public register where a Scoping Report has not been submitted. Identified in the relevant Development Plan (and emerging Development Plans – with appropriate weight being given as they move closer to adoption) recognising that there will be limited information available on the 'Other Development'. Identified in other plans and programmes (as appropriate) which set the framework for future development consents / approvals, recognising that there will be limited information available on the 'Other Development'.

30.4.13. In line with Advice Note 17, which advises that statutory definitions of major development and EIA screening thresholds may be of assistance when considering issues of scale, all development classified as 'major development' under the Town and Country Planning (Development Management Procedure) (England) Order 2015 and meets the criteria in **Table 30-4** will be considered in the Long-List. However, with respect to urban development projects, the thresholds and criteria from schedule 2 of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 will be applied as follows:

- The development includes more than 1 hectare of urban development which is not dwellinghouse development;
- The development includes more than 150 dwellings; or
- The overall area of the development exceeds 5 hectares.

30.4.14. All 'Other Developments' which meet the criteria in **Table 30-4** will be considered against this criteria.

30.4.15. For the selection of 'Other Developments' the following criteria will also be considered ahead of inclusion in the Long-List:

- The development is under construction but is not yet completed;
- The development has been permitted within the last five years but is yet to be constructed/implemented;
- Submitted application(s) for a development that are yet determined, or refused, but are subject to appeal procedures not yet determined;
- Identified in relevant development plans (and emerging development plans) which would have the characteristics of 'other developments'; and
- Other plans and programmes (as appropriate) which set out the framework for future development consents/approvals, where such development is reasonably likely to come forward and would likely be 'Other Developments'.

30.4.16. The long-list will be submitted to the relevant local planning authorities and the MMO for their input, and consensus will be sought before advancing to Stage 2. A draft long-list will be formulated during the PEIR stage, undergoing review and updated during the ES stage. This process ensures that the identification of 'Other Developments' remains as up-to-date as practicable before proceeding to Stage 2.

Stage 2 – Identify a Short-List of 'Other Developments'

30.4.17. Following the data collection in Stage 1, the long-list will undergo refinement into a short-list. This will be achieved by assessing each of the 'Other Developments' identified against the following criteria:

- Is there a concurrent construction or operation phase between the 'Other Development' and the Project?
- Is there potential that the 'Other Development' shares some of the same Sensitive Receptors with the Project?
- Those 'Other Developments' that have no, or insufficient, environmental assessment information will, typically, not be considered as it will not be possible to accurately identify shared Sensitive Receptors or Inter-project effects.

Stage 3 – Identification of Information for the ‘Other Developments’

30.4.18. Details regarding ‘Other Developments’ included within the short-list will be collected from accessible third-party sources within the public domain.

30.4.19. The gathered information should encompass, but not necessarily be restricted to:

- Proposed design and site boundary information;
- Proposed programme of construction and operation; and
- Technical information that sets out baseline data and effects arising from the other development on common receptors.

Stage 4 – Assessment of Inter-Project Effects

30.4.20. The assessment of Inter-project effects will examine deviations from baseline conditions at common receptor(s) resulting from changes induced by the Project in conjunction with one or more ‘Other Developments’ in the short-list. This phase aligns with Stage 4 of Advice Note 17 (Ref 30.13).

30.4.21. Inter-project effects assessment will be based on residual effects identified in the technical aspect assessments of the ES, as well as available environmental information for the ‘Other Developments’.

30.4.22. The assessment of Inter-project effects will encompass the following considerations:

- Combined magnitude of change;
- Sensitivity / value / importance of the receptor to change; and/or
- Duration and reversibility of effect.

30.4.23. By integrating the qualitative assessment outlined in the ES with the environmental data accessible for ‘Other Developments’, conclusions will be reached regarding the probability of significant Inter-project effects i.e. those over and above, or different to, those identified for the Project on its own.

30.4.24. In the event that significant residual Inter-project effects are identified, mitigation measures deemed necessary will be proposed in the ES.

Significance Criteria

30.4.25. The assessment of Inter-project effects will encompass the examination of potential significant residual effects, for which appropriate additional mitigation measures will be proposed. The determination of effect significance is formulated by considering the environmental value / sensitivity of a Sensitive Receptor or resource and the magnitude of impact from the Project. This approach is consistent with Advice Note 17 (Ref 30.13), which emphasises, "The significance criteria used to assess likely cumulative effects should consider the capacity of environmental resources and receptors to accommodate changes that are likely to occur. The terminology used to determine significance should be explicit and ensure a clear understanding of the outcome of the CEA".

30.5 Assessment Limitations and Assumptions

30.5.1. The following limitations and assumptions have been identified:

- The assessment of Intra-project effects resulting from the Project will concentrate on residual effects during the construction and operation phases, post-implementation of mitigation measures mandated by DCO requirements or other mechanism.
- The assessment of Inter-project effects will be based on the interpretation and assessment of publicly available data and limited by the level of information available.
- There may be instances where ‘Other Developments’ screened into the short-list provide information for some technical aspects but not for others. In such cases, the Inter-project effects assessment for the respective ‘Other Developments’ may be limited to only those topics with sufficient information available. However, wherever feasible, attempts will be made to conduct an assessment based on available information, supplemented by assumptions and professional judgment. Such instances will be stated in the ES as appropriate.
- While information may be accessible for ‘Other Developments’, its compatibility may be limited due to differences in assessment methodologies or criteria used in the technical topic assessments. In cases where such discrepancies hinder or prevent the Inter-project effects assessment, it will be clearly stated in the ES.

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