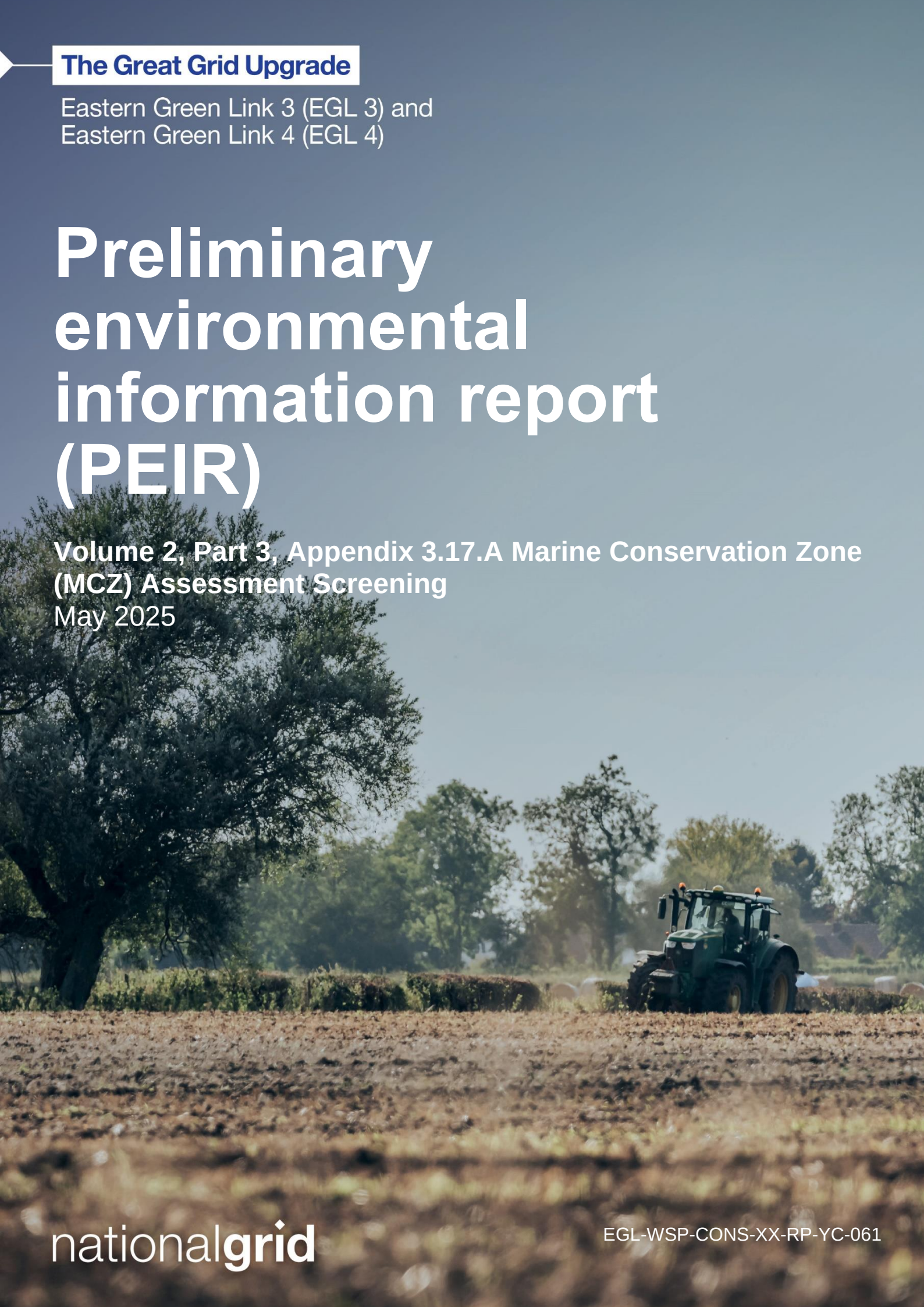
The Great Grid Upgrade

Eastern Green Link 3 (EGL 3) and
Eastern Green Link 4 (EGL 4)

Preliminary environmental information report (PEIR)

Volume 2, Part 3, Appendix 3.17.A Marine Conservation Zone (MCZ) Assessment Screening

May 2025



nationalgrid

EGL-WSP-CONS-XX-RP-YC-061

Contents

3.17.A Marine Conservation Zone (MCZ) Assessment Screening

3.17.A.1 Introduction

Scope of this Report

3.17.A.1.1 This report is part of National Grid Electricity Transmissions plc. (NGET) (the 'Applicant') Development Consent Order (DCO) application to the Secretary of State for the construction and operation of the proposed Eastern Green Link 3 (EGL 3) and Eastern Green Link 4 (EGL 4) electrical connections.

3.17.A.1.2 The EGL 3 Project and the EGL 4 Project are separate projects, independent of one another; however, in England they have a common landfall on the Lincolnshire coastline, a common connection point to the existing transmission network in Norfolk and they also follow the same onshore cable route for the majority of their length. Therefore, the EGL 3 Project and the EGL 4 Project (together, "the English Offshore Scheme") are being consented by a single Development Consent Order, as two co-ordinated and predominantly co-located projects in England. They are collectively referred to as 'the English Offshore Scheme' in this document.

3.17.A.1.3 As part of the DCO process, the Planning Inspectorate (on behalf of the Secretary of State) (in consultation with the Marine Management Organisation, MMO) is required to complete a Marine Conservation Zone (MCZ) Assessment process for the English Offshore Scheme under the Marine and Coastal Access Act (2009) (as amended) (MCAA), due to part of the Projects' interaction with an MCZ. At present, three pilot Highly Protected Marine Areas (HPMAs) have been designated in UK waters as a type of MCZ under the MCAA. One of these HPMAs, the Northeast of Farnes Deep HPMA, is located within the North Sea Region (the same region as the English Offshore Scheme) and is therefore included in the MCZ Assessment process. As the English Offshore Scheme extend to the boundary between English and Scottish waters, any Nature Conservation Marine Protected Areas (NCMPA) that could be impacted by the English Offshore Scheme must also be considered under the MCAA and The Marine (Scotland) Act (2010).This report aims to support the MCZ Assessment process and provide the necessary information to the Planning Inspectorate to assist them in making an informed decision on the likely impact of the English Offshore Scheme on MCZs, HPMAs and NCMPAs and their protected features. This document encompasses the screening stage of the MCZ Assessment process.

3.17.A.1.4 This report has been prepared during the pre-application stage, to accompany the Preliminary Environmental Information Report (PEIR). The report sets out the Applicants approach to the MCZ assessment process, and records the findings, reasoning and conclusions in relation to their screening of the English Offshore Scheme.

3.17.A.1.5 Where (and if) it is considered that the English Offshore Scheme is capable of affecting (other than insignificantly) the protected features of an MCZ or the ecological or geomorphological processes on which the protected features are

dependent, the site would be ‘screened in’ and would progress to the next stage in the MCZ assessment process (Stage 1). Where the English Offshore Scheme is not considered capable of affecting any of the protected features of an MCZ due to a lack of pathway, an assessment of the MCZ and associated features is not required.

3.17.A.1.6 The aim of the report is to seek agreement from the Planning Inspectorate, MMO and the statutory nature conservation bodies (SNCBs) Natural England (NE) and the Joint Nature Conservation Committee (JNCC)) on the screening assessment presented and the content of the MCZ Assessment to be submitted with the DCO application. Opinion is sought as to whether the Planning Inspectorate, MMO, NE and JNCC agree with the findings and conclusions of this report.

3.17.A.1.7 This MCZ screening assessment considers all phases of the English Offshore Scheme; construction, operation (including repair and maintenance) and decommissioning. All assumptions made with respect to the Project description are clearly outlined, and where engineering details are uncertain, maximum design parameters have been used to provide a worst-case assessment. The examination, analysis and evaluation of the relevant information that supported the Screening process conducted and documented in this report followed the precautionary principle throughout. Screening has been undertaken without the inclusion of mitigation measures.

Overview of the English Offshore Scheme

3.17.A.1.8 As detailed in **Volume 1, Part 1, Chapter 1: Introduction**, the English Offshore Scheme is sited within the English marine environment, through inshore and offshore waters, and up to Mean High Water Springs (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 Anderby Creek Landfall, along the Lincolnshire coastline. The key elements of the English Offshore Scheme are summarised below:

- EGL 3 is being developed by NGET and Scottish Hydro Electric – Transmission (SHE-T). The EGL 3 Project comprises a 2 gigawatt (GW) high voltage direct current (HVDC) system linking Peterhead in Scotland and Lincolnshire in England.
- EGL 4 is being developed by NGET and Scottish Power Transmission (SPT). The EGL 4 Project comprises a 2 GW HVDC system linking Fife in Scotland and Lincolnshire in England.

3.17.A.1.9 The location of the English Offshore Scheme is illustrated by the draft Order Limits in **Volume 3, Part 3, Figure 1-2 The Projects draft Order Limits**. The draft Order Limits encompass the English Offshore Scheme. Where the separation between the EGL 3 Project and the EGL 4 Project is greater than 500 m, these are shown with separate corridors of 500 m minimum width. Where the separation is less than 500 m, the corridor is shown as a single corridor. However, where the indicative cable alignment is within one combined corridor, a separation distance of approximately 1.5 km between the EGL 3 Project and the EGL 4 Project cables has been allowed for. At the Anderby Creek Landfall and nearshore approach (0-5 km from MHWS), the cables would converge and have a separation of approximately 150 - 200 m narrowing to 50 m at MHWS.

Structure of the Report

3.17.A.1.10 This report is structured into the following chapters to include information relating to the MCZ process, relevant designated sites (MCZs, HPMAs and NCMPAs) and the potential impacts. Specifically, the chapters of this report are as follows:

- Chapter 1: (this chapter): Introduction to the report;
- Chapter 2: Project Description (outlines the key aspects of the English Offshore Scheme relevant to the MCZ process);
- Chapter 3: Overview of the MCZ process (outlines key aspects of the MCZ process and sets the legislative context);
- Chapter 4: Screening Approach;
- Chapter 5: Identification of Relevant MCZs/HPMAs/NCMPAs;
- Chapter 6: Potential Impact Pathways;
- Chapter 7: Screening Assessment; and
- Chapter 8: Screening Conclusion.

Competent Experts

3.17.A.1.11 This report was prepared by the team at CEA and quality checked and approved by Anna Farley. Anna holds a BSc in Marine Geography and over a career spanning 19 years+ has undertaken multiple environmental assessments in the UK and Ireland under the Habitats and Environmental Impact Assessment (EIA) Directives for marine cable and offshore wind projects.

3.17.A.2 Project Description

English Offshore Scheme

3.17.A.2.1 A full description of the English Offshore Scheme is provided in **Volume 1, Part 1, Chapter 4: Description of the Projects**.

3.17.A.2.2 The EGL 3 Project and the EGL 4 Project each comprise a 2 GW HVDC submarine cable system that would run parallel to each other through English inshore and offshore waters up to MHWS in England. The most northerly elements 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 Anderby Creek Landfall. The English Offshore Scheme comprises:

- The EGL 3 Project: Approximately 436 km of subsea HVDC cable from the Anderby Creek Landfall, Lincolnshire, England to where it meets the marine boundary between English and Scottish waters. The submarine 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.
- The EGL 4 Project: Approximately 425 km of subsea HVDC cable from the Anderby Creek Landfall, Lincolnshire, England to where it meets the marine boundary between English and Scottish waters. The submarine 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.

3.17.A.2.3 The construction programme for the English Offshore Scheme is expected to take approximately 55 months, commencing in 2028/2029 for both the EGL 3 Project and the EGL 4 Project.

3.17.A.2.4 A summary of key maximum design parameters for the English Offshore Scheme are shown in **Table 3.17.A-1**.

Table 3.17.A-1 - Summary of the English Offshore Scheme key maximum design parameters

Parameter	Maximum design parameter for the EGL 3 Project	Maximum design parameter for the EGL 4 Project
Offshore HVDC submarine cable corridor width	Nominally 500 m The surveyed corridor for each scheme is 500 m wide but widens in certain sections to allow for future micro-routeing around seabed features such as sandwaves, challenging seabed conditions or sensitive habitats	Nominally 500 m The surveyed corridor for each scheme is 500 m wide but widens in certain sections to allow for future micro-routeing around seabed features such as sandwaves, challenging seabed conditions or sensitive habitats
Offshore HVDC submarine cable corridor total length in English Waters	436 km	425 km
HVDC cables configuration	Bi-pole (one cable per pole)	Bi-pole (one cable per pole)
HVDC cables number	2	2
HVDC cables operating voltage	525 kV	525 kV
HVDC cables transmission Capacity	2 GW	2 GW
HVDC cables outer diameter	150-190 mm	150-190 mm
Fibre optic cable number	1	1
Fibre optic cable outer diameter	20-30 mm	20-30 mm
Cable trench number	1	1
Cable trench maximum depth	3 m (below seabed level)	4 m (below seabed level)
Cable trench maximum width	5 m	5 m
Cable trench disturbed area	20 m	20 m
Separation distance between cable trenches	The EGL 3 Project and EGL 4 Project would be at least 500 m apart, narrowing as they approach	The EGL 4 Project and EGL 3 Project would be at least 500 m apart,

Parameter	Maximum design parameter for the EGL 3 Project	Maximum design parameter for the EGL 4 Project
	the Anderby Creek Landfall to 50 m as it crosses MHWS	narrowing as they approach the Anderby Creek Landfall to 50 m as it crosses MHWS
Maximum width of cable protection on seabed	10 m	10 m
Length of cable requiring boulder clearance using SCAR plough	232 km	125 km
Width of plough/cleared swathe	15m	15m
Total area of seabed disturbed by boulder plough	3.48 km^2	1.875 km^2
Depth of seabed disturbed by clearance plough	~10 cm (<2 m if trenching)	~10 cm (<2 m if trenching)
Length of cable requiring Pre-Lay Grapnel Run (PLGR)	436 km	425 km
Width of PLGR clearance corridor	30 m	30 m
Total area of seabed disturbed by PLGR	13.20 km^2	12.75 km^2
Length of cable requiring pre-sweeping (km)	11.34 km	8.28 km
Maximum pre-sweeping clearance width	20 m	20 m
Total area of seabed disturbed by pre-sweeping	0.23 km^2	0.17 km^2
Maximum volume of sediment disturbed by pre-sweeping	138,830.02 m^3	108,280.24 m^3
Total number of crossings required	60	61
Typical length of crossing	100 m (at some locations crossings may be combined due to proximity of infrastructure)	100 m (at some locations crossings may be combined due to proximity of infrastructure)
Maximum width of crossing	10 m	10 m

Parameter	Maximum design parameter for the EGL 3 Project	Maximum design parameter for the EGL 4 Project
Maximum height of rock berm	2 m	2 m
Maximum area of seabed covered by cable protection	0.915 km^2	1.135 km^2

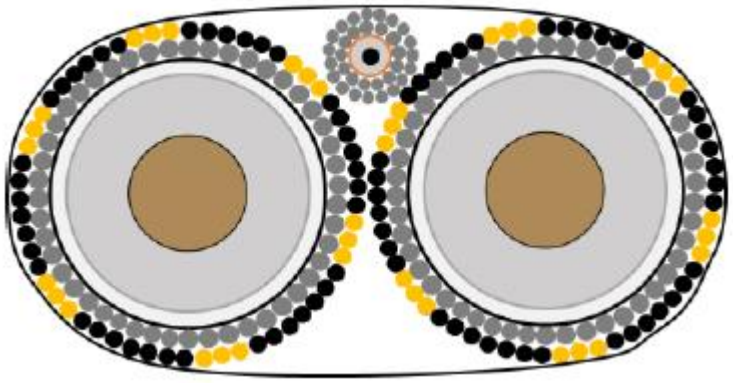
Cable Configuration

3.17.A.2.5 The offshore HVDC links for the EGL 3 Project and the EGL 4 Project would each comprise a bundle of two single core metallic conductors (one positive, one negative) and a fibre optic cable as illustrated in **Plate 3.17.A-1.** Separation between the EGL 3 Project and the EGL 4 Project at the Anderby Creek Landfall would be approximately 50 m.

3.17.A.2.6 The cables would likely be cross linked polyethylene cable (XLPE), which have been used in HVDC applications since 2000, and are proven to be reliable. 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.

3.17.A.2.7 The cables would have a nominal voltage of 525 kV and typically have an outer diameter of 150 to 190 mm. The cables would be non-draining, containing no free liquid or gases that could be released into the marine environment even in the event of severe mechanical damage to the cables.

Plate 3.17.A-1: Example Illustration of bundled HVDC cable with condition monitoring fibre optic cable



Pre-Construction Activities

3.17.A.2.8 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 (PLGR, boulder clearance, pre-sweeping, infrastructure crossing preparation) is expected to involve clearance activities to ensure the

proposed submarine cable corridor is clear of boulders, dropped object debris, and other obstacles.

3.17.A.2.9 Seabed surveys would be carried out prior to installation by the contractor to reconfirm existing geotechnical and geophysical information regarding seabed conditions, bathymetry, and other seabed features. Surveys may include the use of a multibeam echosounder; side-scan sonar, sub-bottom profiler or magnetometer. In addition, visual inspections may also be undertaken using a remotely operated vehicle or other visual inspection system. Pre-construction surveys may also include additional specialist studies, including geotechnical, benthic, and unexploded ordnance (UXO) investigations.

3.17.A.2.10 A UXO survey would be undertaken as part of the pre-construction surveys. The results of the survey would be used to identify potential UXO (pUXO). The English Offshore Scheme would seek to avoid pUXO 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, using a diver or ROV equipped with magnetometer, dredge pump and sonar. If a target is confirmed as UXO, clearance activities may be undertaken. It is assumed that UXO clearance would be undertaken under a separate Marine Licence application under the MCAA, subject to its own environmental assessments. Therefore, the consideration of UXO clearance is excluded from this DCO application and MCZ screening.

Construction Activities

Submarine Cable Installation

3.17.A.2.11 Submarine cable burial depth is typically 1.0-2.5 m below chart datum. The final target burial depth would be determined by a cable burial risk assessment which would take into consideration location specific factors such as ground conditions (i.e., ability to bury), intensity of shipping and fishing activity. The submarine cables would be buried into the seabed wherever feasible. It is not yet confirmed what subsea trenching equipment would be used to install 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;
- Conventional narrow share cable plough;
- Advanced cable ploughs (vertical injectors);
- Cutting; and
- Controlled Flow Excavation.

3.17.A.2.12 External cable protections may be required where there are exiting infrastructure crossings (i.e. existing cables), where cable burial is not feasible or areas where adequate protection of the cables cannot be achieved through burial. Options for providing external protection include:

- Rock Placement;
- Concrete Mattresses/Concrete Half Shells;
- Sand/Grout/Rock Bags;

- Tubular Protection Systems; and
- Imported sand placement.

Anderby Creek Landfall

3.17.A.2.13 The alignment of the onshore and offshore cables through the intertidal zone would be informed by considerations of technical, environmental, and other relevant criteria as well as the outputs from technical and engineering studies. The cable alignment across the landfall would also be dependent on the chosen alignment for the English Onshore Scheme, which would be informed by a range of technical and environmental factors. The submarine power cables would come onshore at landfall using a trenchless construction technique (horizontal directional drilling (HDD)).

3.17.A.2.14 The landfall would be constructed using a trenchless technique such as HDD. Four cable ducts (i.e. two ducts for the EGL 3 Project and two for the EGL 4 Project) would be installed from the transition joint bay, positioned above the MHWS mark, to a point below 0 m lowest astronomical tide (LAT). Within each cable duct there would be a fibre optic cable for monitoring purposes. The fibre optic cable would be both distributed temperature sensing and distributed acoustics sensing. The exact exit points for the HDD and the cable ducts would depend on further technical studies and design. The HDD would 'punch out' (exit the seabed) between the 3 m and 12 m LAT water depth contours. Depending on the final design and depth of the ducts there would be a 15 m separation between adjacent drill HDD exit points. HDD works broadly involves the following activities:

- Mobilisation and aligning the HDD Rig;
- Pilot hole drilling;
- Forward reaming;
- Excavation of HDD pits (if required);
- Punch Out;
- Installation of ducts;
- Demobilisation;
- Re-excavating the HDD pits (if required); and
- Pulling of cables.

Construction Vessels

3.17.A.2.15 A condition of the deemed Marine Licence could be for the Construction Contractor to confirm the number and types of vessels to be used during all phases of construction. **Table 3.17.A-2** provides an indication of the types of vessels to be used during construction based on experience on other projects. Vessels would typically transit in a linear manner along the English Offshore Scheme. However, their port of origins are unknown at this stage and would not be known until an installation contractor has been appointed.

Table 3.17.A-2 - Indicative vessel requirements per English Offshore Scheme

Construction activity	Indicative vessel requirements Per English Offshore Scheme
Preconstruction survey	2 x survey vessel
UXO identification	2 x construction support vessel (CSV)
Boulder clearance	1 x CSV
Sandwave pre-sweeping	1 x trailing suction hopper dredger (TSHD)
Crossing preparation	1 x CSV 1 x rock placement vessel
PLGR	1 x CSV
Anderby Creek Landfall enabling works	1 x jack up barge / multicat 1 x tug 1 x crew transfer vessel 4 x small workboats
Cable lay and Burial	1 x cable lay vessel 1 x CSV 2 x tug / anchor handler 10 x guard vessel

Operation and Maintenance

3.17.A.2.16 The English Offshore Scheme would be designed to minimise any maintenance requirements. Following installation, routine maintenance of the HVDC submarine cables is not anticipated, however the following activities may be periodically required during the operational phase.

- Inspection surveys;
- Cable repair (if required); and
- Reburial, remedial protection or maintenance and reinstatement of external cable protection features.

3.17.A.2.17 Geophysical surveys would be undertaken periodically to monitor cable burial and the status of external cable protection. If results of the survey show that parts of the cable are not at the required burial depth or have become exposed, remedial works could be undertaken. Additional surveys may be undertaken after a storm which exceeded the design conditions passed over the location of the cable. Geophysical survey techniques used would be the same as those outlined for pre-construction activities.

3.17.A.2.18 The types and number of vessels required for maintenance and repair would be dependent on the type of activities required and their location. It is expected that the same types of vessels as those used during construction would be used. However,

the number of vessels at any one time and the duration of their use would be less. As such the impact of maintenance activities is expected to be less than the construction phase.

Decommissioning

3.17.A.2.19 The minimum design life of the English Offshore Scheme subsea cables is 40 years, although with repairs, some cable systems last upwards of 60 years. The English Offshore Scheme would require a License or Lease from The Crown Estate. An Initial Decommissioning Plan would be written once the final route and construction methodology is chosen. This is a legal requirement necessary to secure The Crown Estate License.

3.17.A.2.20 The full environmental impact of works required to decommission the English Offshore Scheme would be assessed at the time of decommissioning. Removal of the marine subsea cable is a similar process to the installation of the cable, but in reverse. The environmental impact cannot therefore be fully assessed until the environmental conditions at the time of decommissioning are established.

3.17.A.2.21 There are currently no specific plans to decommission the English Offshore Scheme. 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. It is anticipated that rather than being decommissioned, parts would be replaced to extend the operational life of the English Offshore Scheme. A high level assessment of the impact of cable removal is provided in this document to provide a holistic overview of potential impacts.

3.17.A.3 Overview of the MCZ Assessment Process

Legislative Context

3.17.A.3.1 Section 126 (6) of the MCAA requires that applicants seeking to undertake an activity must satisfy the competent authority that there is no significant risk of the proposed activity hindering the achievement of the conservation objectives stated for the MCZ. At present, three pilot Highly Protected Marine Areas (HPMAs) have been designated in UK waters as a type of MCZ under the MCAA. Additionally, as the English Offshore Scheme extends to the boundary between English and Scottish waters, any Nature Conservation Marine Protected Areas (NCMPA) that could be impacted by the English Offshore Scheme must also be considered under the MCAA and The Marine (Scotland) Act (2010). There are three stages to the process for assessing the effects of a project on a MCZ/ HPMA/NCMPA, with the outcome of each staging informing whether the assessment progresses to the next stage, as follows:

- Screening: The process of identifying whether section 126 (6) should apply to the Project. Screening identifies whether the licensable activity is taking place within or near to a MCZ/HPMA/NCMPA; and identifies 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: This stage considers whether there is a significant risk of the licensable activity hindering the achievement of the conservation objectives stated for the MCZ/HPMA/NCMPA. If it is determined that there is significant risk

of the licensable activity hindering the achievement of the conservation objectives stated, then the Stage 1 Assessment would progress to a Stage 2 Assessment. It would be necessary to consider whether there are other means of proceeding which could create a substantially lower risk, this could be done either as part of the Stage 1 Assessment (if significant risks are identified) or it may be more appropriate as part of the Stage 2 Assessment.

- .Stage 2 assessment: This stage looks at whether there are benefits to the public of proceeding with the Project that clearly outweigh the damage to the environment and what measures the applicant would take to provide equivalent environmental benefit to compensate for the damage which the Project would have on the MCZ/HPMA/NCMPA.

3.17.A.3.2 The MCZ Assessment is undertaken by the competent authority, which in this instance is the Secretary of State, based on information provided by the Applicant, usually in the form of a MCZ Assessment Report.

3.17.A.4 Screening Approach

Approach

3.17.A.4.1 To determine whether Section 126 of the MCAA or section 83 of the Marine (Scotland) Act 2010 applies to any MCZs, HPMAs or NCMPAs, it is necessary to understand and assess whether the Protected Features of an MCZ/HPMA/NCMPA:

1. Can come into contact with the licensable activity; and

2. Are sensitive to the proposed activities i.e., the activity is capable of affecting (other than insignificantly) the protected feature or any ecological or geomorphological process on which the protected feature is dependant. (Ref 3.17.A.1)

3.17.A.4.2 Guidance recommends a risk-based approach when determining the ‘nearness’ of an activity with respect to MCZs, advocating the application of appropriate buffer zones to the protected feature(s) and consideration of risks of activities which lie further removed from features. The likelihood of an activity causing an effect, the magnitude of that effect should it occur and the potential of the effect to hinder the achievement of the conservation objectives for the protected feature should also be considered. To identify relevant MCZs, HPMAs and NCMPAs to include in this assessment the following approach has been adopted:

1. Identify potential impact pathways and zones of influence (the spatial extent over which the impact may be experienced by receptors and therefore an effect may occur) between the English Offshore Scheme and protected features using the source-pathway-receptor model.

2. Define search areas for protected features based on the ZOI of potential impact pathways.

3. Identify relevant MCZ, HPMA and NCMPA within the search areas.

4. Assessment of whether, in the absence of mitigation measures, the identified potential impact pathway is capable of affecting (other than insignificantly) the

protected feature or ecological or geomorphological process it is dependent on.

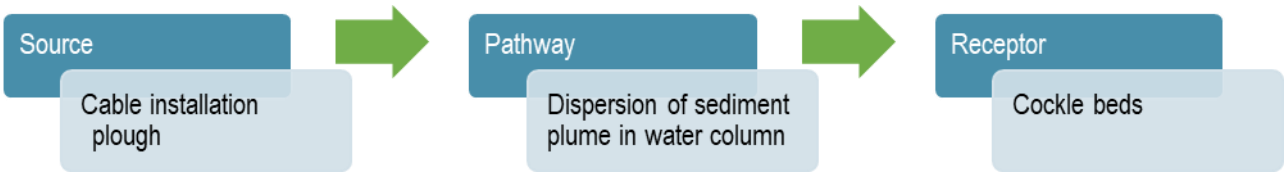
3.17.A.4.3 MCZs and NCMPAs are designated to conserve nationally important, rare, or threatened habitats and species and / or features of geological and geomorphological interest. HPMAs are designated for the protection and the recovery of marine ecosystems. Each of these features can be considered as receptors and can broadly be broken down into the following categories:

- Habitats;
- Benthic species;
- Fish & shellfish;
- Birds;
- Marine mammals;
- Geological interests; and
- Geomorphological interests.

Source-Pathway-Receptor Model

3.17.A.4.4 The potential for likely significant effects has been assessed using a source-pathway-receptor model. This approach identifies likely environmental effects resulting from the proposed licensable activities of the English Offshore Scheme. For instance, an activity (source) may entail a predicted change in environmental conditions affecting either directly or indirectly (the pathway) a specific component of the baseline environment (the receptor / protected feature). If the receptor / protected feature is sensitive to the change it could result in either a positive or adverse effect. **Plate 3.17.A-2** presents this model with a specific example to illustrate the concept.

Plate 3.17.A-2: Source-Pathway-Receptor model example



Guidance

3.17.A.4.5 The Screening has been undertaken according to the following Guidance:

- Marine Conservation Zones and Marine Licensing (Ref 3.17.A.1)
- Joint SNCB Guidance for assessing the significance of noise disturbance against Conservation Objectives of Harbour Porpoise SACs (Ref 3.17.A.2)
- Joint SNCB Interim Displacement Advice Note (Ref 3.17.A.3)
- Natural England Offshore Wind Cabling: ten years' experience and recommendations (Ref 3.17.A.4)

3.17.A.5 Identification of Relevant MCZs/HPMAs/NCMPAs

Search Areas

3.17.A.5.1 The principles outlined above in **Section 3.17.A.4** have been used in this Screening assessment to identify relevant MCZs/HPMAs/NCMPAs.

3.17.A.5.2 **Table 3.17.A-3** presents the search areas used to identify relevant MCZs, HPMAs and NCMPAs for the Screening assessment and the justification for the extent of the search areas from the draft Order Limits. For the purposes of the screening assessment, ocean quahog (*Arctica islandica)* are categorised as non-mobile benthic receptors as they are considered to have an extremely sedentary lifestyle and are not sensitive to impacts that typically affect other mobile species such as underwater noise, visual disturbance and collision risk (Ref 3.17.A.5).

3.17.A.5.3 As the EGL 3 Project and the EGL 4 Project are two separate projects, the distance between each relevant site and the draft Order Limits differ between the two cable routes. To ensure the search area encompasses all of the relevant sites, screening was conducted separately for the EGL 3 Project and the EGL 4 Project, with the distance to the draft Order Limits measured individually.

Table 3.17.A-3 - Search areas for relevant MCZs/NCMPAs

Interest Feature	Search Area	Justification
Habitats; Benthic Species; and Geomorphological Interests.	2 km from draft Order Limits	All direct impacts would be spatially limited and confined to the direct footprint of activities (e.g. seabed preparation, cable burial, external cable protection, remedial works and decommissioning). There is the potential for impacts from the suspension and deposition of finer sediments to occur outside of the immediate area of the activities. It has been predicted that 90% of sediments suspended during cable laying activities resettle within 1 km of the cable corridor (Ref 3.17.A.6). A precautionary search area of 2 km has therefore been proposed.
Fish & Shellfish	40 km from draft Order Limits	Vessels using dynamic positioning (DP) systems would be utilised during the construction, operation, and decommissioning phases of the English Offshore Scheme. Behavioural disturbance is observed in fish as a result of DP vessels at a distance of up to 1,359 m (Ref 3.17.A.13). Further to this, there is potential for underwater noise as a result of vessel activity and geophysical surveys to displace fish within the ZOI and impede migration (for migratory species). As such, a precautionary approach to the identification of relevant sites has been adopted which considers all MCZs/NCMPAs within 40 km of the draft Order Limits. While this is considered overly cautious in terms of capturing the ZOI from impacts such as underwater noise (e.g.,

Interest Feature	Search Area	Justification
		from geophysical surveys), it accounts for the potential movement of fish from nearby sites through the draft Order Limits. Since 40 km is typically used as a search area for migratory fish, it is considered to be suitable, (albeit highly precautionary) for non-migratory fish. There is considered to be no Source-Pathway-Receptor link which may have implications for the conservation objectives of MCZs/NCMPAs beyond this range (e.g., ability of fish to reach these sites). For the purposes of the screening assessment, ocean quahog (*Arctica islandica*) are categorised as non-mobile benthic receptors as they are considered to have an extremely sedentary lifestyle and are not sensitive to under water noise, (Ref 3.17.A.5). Consideration was given to shark species known for their large migratory ranges, which may potentially travel within the English Offshore Scheme's location. For instance, basking shark have been recorded traveling over 9,000 km (Ref 3.17.A.7; Ref 3.17.A.8). Species designated as features of MCZs/NCMPAs are basking shark, gulper shark, and leafscale gulper shark. However, these species are typically found off the west coast of Britain and Ireland (Ref 3.17.A.9; Ref 3.17.A.10; Ref 3.17.A.11) and are therefore unlikely to be present near the English Offshore Scheme. As a result, there is considered to be no Source-Pathway-Receptor link, and these species are not considered further in the assessment.
Cetaceans	Species specific management unit (MU)	In the United Kingdom (UK) the only cetacean species afforded protection through the designation of an MCZ/NCMPA are minke whale (*Balaenoptera acutorostrata*) and risso's dolphin (*Grampus griseus*). Most cetaceans are wide-ranging, and individuals encountered within UK waters form part of a much larger biological population whose range extends into adjacent jurisdictions. As a result, MUs have been outlined for the species by the Inter-Agency Marine Mammal Working Group (Ref 3.17.A.12) which comprises representative from the UK SNCBs i.e., NE, NatureScot, Natural Resources Wales and the Department of Agriculture, Environment and Rural Affairs. The boundaries of an MU do not necessarily reflect the full range of a species but instead shows areas within their territory where management of human activities is undertaken. These units were defined by considering several factors including the known population structure, movement and habitat

Interest Feature	Search Area	Justification
		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. The English Offshore Scheme lies within the Celtic and Greater North Seas (CGNS) MU for minke whale and risso's dolphin.
Birds	Based on maximum foraging ranges for priority species as identified in **Table 3.17.A-4**	All direct impacts would be spatially limited and confined to the direct footprint of activities, however, there is the possibility that species from distant sites may be foraging within or passing through the draft Order Limits s. Bird species that are designated features of MCZs/NCMPAs are black guillemot (*Cepphus grille*), common eider (*Somateria mollissima*) and razorbill (*Alca torda*). (The SNCB Joint Interim Advice., Ref 3.17.A.13) suggests that any species scoring 3 or more in either category 'Disturbance Susceptibility' or 'Habitat Specialisation' (as listed in **Table 3.17.A-4**) are priority species for the assessment of displacement effects. Therefore, common eider, guillemot and razorbill are all considered to be priority species. It is noted that this guidance relates specifically to offshore wind farm (OWF) developments (in relation to the wind farm arrays). However, it is recognised that these species are also likely to be sensitive to vessel presence and noise, leading to disturbance and displacement. MCZs/NCMPAs have been considered relevant if they have one or more of these priority species listed as a designated feature which could potentially be present within the draft Order Limits based on their maximum foraging ranges (as listed in **Table 3.17.A-4**). There is considered to be no Source-Pathway-Receptor link which may have implications for the conservation objectives of MCZs/NCMPAs beyond this range.

Table 3.17.A-4 - Foraging ranges used to screen relevant MCZs/NCMPAs

Species Name	Disturbance Susceptibility *	Habitat Specialisation *	Foraging Ranges (km) ^	Confidence ^
Auks				
Razorbill (*Alca torda*)	3	3	88.7	Good
Black guillemot (*Cepphus grille*)	3	4	4.8	Moderate
Seaducks				
Common eider (*Somateria mollissima*)	3	4	21.5	Poor

* Joint SNCB Joint Interim Advice., (Ref 3.17.A.13)

^ Woodward *et al*., (Ref 3.17.A.14)

Key to confidence of data score:

- Highest > 5 direct studies; graphs and standard deviation suggest relatively low variability between sites and hence higher confidence that estimates are likely to be representative for unsampled sites.
- Good > 5 direct studies; graphs and standard deviation show wider variability between sites, hence lower confidence that estimates would be representative for all sites.

Moderate 2-5 direct studies

- Low Indirect measures or only 1 direct study
- Uncertain Survey-based estimates
- Poor Few survey estimates or speculative only

3.17.A.5.4 This report has been informed by a review of the publicly available datasets and the available literature that allowed the characterisation of the receiving environment and supported the identification and assessment of potential effects and their significance. The sources of the information used are cited throughout the report and listed in the Reference section.

3.17.A.5.5 The examination, analysis and evaluation of the relevant information that supported the Screening process conducted and documented in this report followed the precautionary principle throughout.

Relevant MCZs/HPMAs/NCMPAs

3.17.A.5.6 A Geographical Information System (GIS) and the JNCC, (Ref 3.17.A.15) marine protected area mapper[1], were used to identify relevant MCZs, HPMAs and NCMPAs. **Table 3.17.A-5** lists the designated sites selected for consideration for Screening, with their relevant site descriptions and conservation objectives outlined in **Appendix A**. Where a designated feature is outside the relevant search area as described in **Table 3.17.A-3** and **Table 3.17.A-4** it has not been considered further

in the Screening assessment as there is not considered to be a source-receptor pathway.

3.17.A.5.7 It should be noted that for the English Offshore Scheme there are no MCZs/NCMPAs that list mobile fish or shellfish within the 40 km search area. For the EGL 3 Project, there are no MCZs/NCMPAs within the search area for bird species (outlined in **Table 3.17.A-4**).

3.17.A.5.8 It should also be noted that Northeast of Farnes Deep MCZ overlaps entirely with the Northeast of Farnes Deep HPMA. However, they are two distinct designations and are assessed separately. **Table 3.17.A-3** To ensure a full, comprehensive assessment, and to avoid any confusion between the two designations, the Northeast of Farnes Deep MCZ and the Northeast of Farnes Deep HPMA are considered separately in Volume 1, Part 2, Chapter 7: Historic Environment.

Table 3.17.A-5 - Relevant MCZ/HPMA//NCMPA sites selected for consideration in the Screening

Site Name and ID	Country	Designated Features	The EGL 3 Project		The EGL 4 Project	
			Distance to the draft Order Limits (km)	Relevant Designated Features	Distance to the draft Order Limits (km)	Relevant Designated Features
Holderness Offshore MCZ UKMCZ0078 (Ref 3.17.A.16; Ref 3.17.A.17)	England	Geology: • North Sea glacial tunnel valleys Habitats: • Subtidal coarse sediment • Subtidal mixed sediments • Subtidal sand Species: • Ocean quahog	0.1	All designated features	Overlaps for 6.5 km^2	All designated features
Northeast of Farnes Deep HPMA UKEHPMA003 (Ref 3.17.A.18)	England	The marine ecosystem of the area which includes: All marine flora and fauna, all marine habitats and all geological or geomorphological interests, including all abiotic elements and all supporting ecosystem functions	5.1	The marine ecosystem of the area	0.5	The marine ecosystem of the area

Site Name and ID	Country	Designated Features	The EGL 3 Project		The EGL 4 Project	
			Distance to the draft Order Limits (km)	Relevant Designated Features	Distance to the draft Order Limits (km)	Relevant Designated Features
		and processes, in the seabed, water column and the surface of the sea.				
Northeast of Farnes Deep MCZ UKMCZ0024 (Ref 3.17.A.18; Ref 3.17.A.19)	England	Habitats: • Subtidal coarse sediment • Subtidal mixed sediments • Subtidal mud • Subtidal sand Species: • Ocean quahog	5.1	N/A	0.5	All designated features
Firth of Forth Banks Complex NCMPA EU555560478 (Ref 3.17.A.20; Ref 3.17.A.21)	Scotland	Geology: • Quaternary of Scotland: Moraines representative of the Wee Bankie Key Geodiversity Area Habitats:	50.0	N/A	1.8	All designated features

Site Name and ID	Country	Designated Features	The EGL 3 Project		The EGL 4 Project	
			Distance to the draft Order Limits (km)	Relevant Designated Features	Distance to the draft Order Limits (km)	Relevant Designated Features
		• Offshore subtidal sands and gravels • Shelf banks and mounds Species: • Ocean quahog				
Berwick to St Mary's MCZ UKMCZ0055 (Ref 3.17.A.22)	England	Species • Common eider	59.8	N/A	20.9	All designated features
Southern Trench NCMPA EU555703756 (Ref 3.17.A.23; Ref 3.17.A.24)	Scotland	Geology: • Quaternary of Scotland: Moraines • Quaternary of Scotland: Sub-glacial tunnel valleys • Submarine Mass Movement: Slide scars Habitats: • Burrowed mud • Fronts- large-scale feature (marine)	117.3	Minke whale	161.1	Minke whale

Site Name and ID	Country	Designated Features	The EGL 3 Project		The EGL 4 Project	
			Distance to the draft Order Limits (km)	Relevant Designated Features	Distance to the draft Order Limits (km)	Relevant Designated Features
		• Shelf deeps- large-scale feature (marine) Species: • Minke whale				
Sea of the Hebrides NCMPA EU555703754 (Ref 3.17.A.25; Ref 3.17.A.26)	Scotland	Geology: • Marine Geomorphology of the Scottish Shelf Seabed: Inner Hebrides Carbonate Production Area Habitats: • Fronts- large-scale feature (marine) Species: • Basking shark • Minke whale	339.3	Minke whale	275.4	Minke whale
North-east Lewis NCMPA EU555703753 (Ref 3.17.A.27; Ref 3.17.A.28)	Scotland	Geology: • Marine Geomorphology of the Scottish Shelf Seabed:	386.0	Risso's dolphin	363.6	Risso's dolphin

Site Name and ID	Country	Designated Features	The EGL 3 Project		The EGL 4 Project	
			Distance to the draft Order Limits (km)	Relevant Designated Features	Distance to the draft Order Limits (km)	Relevant Designated Features
		Longitudinal bedform field • Quaternary of Scotland: Glaciated channels/troughs • Quaternary of Scotland: Landscape of areal glacial scour • Quaternary of Scotland: Megascale glacial lineations Species: • Risso's dolphin • Sandeel				

3.17.A.6 Potential Impact Pathways

Identifying Potential Impacts

3.17.A.6.1 Impacts have been established by CEA based on industry experience and consultation with relevant stakeholders. Where applicable the list of marine pressures established by the JNCC Marine Pressures-Activities Database v1.5, (Ref 3.17.A.29) OSPAR Intercessional Correspondence Group on Cumulative Effects (ICG-C) (Ref 3.17.A.30) pressures and NE's advice on operations for relevant designated sites has been used to establish impacts to be screened. The pressures considered relevant for the installation, operation and decommissioning of subsea cables are presented in **Table 3.17.A-6**. Note that impacts are given in dark grey, bold text, while any corresponding JNCC pressures are provided underneath marked with '*' in the first column of **Table 3.17.A-6**.

Defining a Zone of Influence (ZOI)

3.17.A.6.2 The ZOI for each of the impacts associated with the English Offshore Scheme (**Table 3.17.A-6**) would be used during the screening assessment to determine whether there is likely to be a source-pathway-receptor between the English Offshore Scheme activities and MCZ/HPMA/NCMPA designated features. The ZOI is used to establish a refined search area for the screening process. The ZOI is defined as the spatial extent over which the pathway could affect the receptor, and has been established quantitatively where possible, or qualitatively based on evidence from analogous projects, post-construction monitoring data and literature reviews. Rationale for establishing the ZOI is provided in **Table 3.17.A-6**. Conservative estimates have been used when calculating the final ZOI for each impact to ensure that all potentially sensitive receptors are accounted for in the assessment process and that the 'worst-case scenario' is taken into consideration.

Table 3.17.A-6 - Potential impact pathways between pressures and receptors (C = construction, O&M = operation & maintenance, D = Decommissioning)

Potential Impact	Relevant Activities	Phase			Pathway Description	Initial Screening by Receptor						Maximum ZOI
		C	O&M	D		Habitats	Benthic species	Bird species	Geomorphological features	Marine mammals	Fish & shellfish	
1. **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*	• HDD • Anchoring • Pre-sweeping • PLGR • Boulder clearance • UXO Identification • Cable lay and burial • Cable repair • Cable removal • Temporary seabed deposits	ü	ü	ü	The laying of cables would lead to seabed abrasion and disturbance of the substrate on the surface of the seabed (Ref 3.17.A.30). Ploughing, trenching, the placement of temporary seabed deposits, anchor placement and pre-sweeping of sandwaves would all result in abrasion and disturbance. Depending on the installation method used, the footprint of the cable installation machinery could be up to 15 m wide per trench. Where pre-sweeping of sandbanks is required, the footprint of activity could be up to 20 m wide per trench as presented in **Volume 1, Part 1, Chapter 4: Description of the Projects.** Beyond this direct	ü	ü	û	ü	û	ü	Within the draft Order Limits

Potential Impact	Relevant Activities	Phase			Pathway Description	Initial Screening by Receptor						Maximum ZOI
		C	O&M	D		Habitats	Benthic species	Bird species	Geomorphological features	Marine mammals	Fish & shellfish	
					footprint, low intensity physical disturbance may also occur due to anchor handling inside the anchor corridor which may be up to 0.5–1 km from the vessel. Most activities from the English Offshore Scheme that penetrate the seabed would present a temporary impact and the seabed would be able to recover after the activity. Some activities would occur in the same footprint and would be separated by a couple of months e.g., PLGR followed by trenching. Abrasion and penetration could result in the localised loss or damage to habitats and benthic species within the direct footprint of this impact. There is also potential for this impact to affect demersal fish and							

Potential Impact	Relevant Activities	Phase			Pathway Description	Initial Screening by Receptor						Maximum ZOI
		C	O&M	D		Habitats	Benthic species	Bird species	Geomorphological features	Marine mammals	Fish & shellfish	
					shellfish by causing habitat loss or disrupting feeding habits. Geomorphological features could be permanently damaged by abrasion and penetration, particularly softer substrates such as chalk and clay beds. As such, this impact has been screened in for these receptors. This impact does not directly remove or disturb the habitats of birds and marine mammals. However, there may be an indirect effect on the availability of their prey species. Therefore, this impact is screened out for bird and marine mammal receptors and the indirect effects of changes in prey availability is considered under Impact 3.							

Potential Impact	Relevant Activities	Phase			Pathway Description	Initial Screening by Receptor						Maximum ZOI
		C	O&M	D		Habitats	Benthic species	Bird species	Geomorphological features	Marine mammals	Fish & shellfish	
2. Permanent habitat loss Physical change (to another seabed or sediment type*	Deposit of external cable protection	ü	ü	ü	This impact relates to the permanent change of one marine habitat type to another marine habitat type, through the change in substratum, including artificial material (e.g. concrete). This involves the permanent loss of one marine habitat type but the creation of another. Associated activities include the installation of infrastructure (e.g. surface laid cables) and the placement of cable and scour protection where soft sediment habitats are replaced by hard/coarse substratum habitats. Where external cable protection is required, the maximum width could be up to 15 m as presented in **Volume 1, Part 1, Chapter 4: Description of the Projects**. The	ü	ü	û	ü	û	ü	Within the draft Order Limits

Potential Impact	Relevant Activities	Phase			Pathway Description	Initial Screening by Receptor						Maximum ZOI
		C	O&M	D		Habitats	Benthic species	Bird species	Geomorphological features	Marine mammals	Fish & shellfish	
					materials used for external protection of cables such as concrete mattresses, rock placement, grout or rock bags, fronded concrete mattresses, etc. would result in a change of habitat type within the footprint of this activity. Permanent habitat loss is considered for all phases of the English Offshore Scheme as it is uncertain if external cable protection would be removed on decommissioning. The change of the seabed to another substrate would result in a permanent loss of habitat in locations where external cable protection is required – at cable crossings, in areas of insufficient burial or cable exposure. The placement of external protection may result in the mortality of							

Potential Impact	Relevant Activities	Phase			Pathway Description	Initial Screening by Receptor						Maximum ZOI
		C	O&M	D		Habitats	Benthic species	Bird species	Geomorphological features	Marine mammals	Fish & shellfish	
					benthic and epibenthic fauna and algae where directly disturbed. There is also the potential to impact demersal fish and shellfish populations due to direct habitat loss and disturbance. Due to the permanent nature of this impact, it has the potential to impact geomorphological features. As such, this impact has been screened in for these receptors. This impact does not directly remove or disturb the habitats of birds and marine mammals. However, there may be an indirect effect on the availability of their prey species. Therefore, this impact is screened out for bird and marine mammal receptors and the indirect effects of changes in prey availability is considered under Impact 3.							

Potential Impact	Relevant Activities	Phase			Pathway Description	Initial Screening by Receptor						Maximum ZOI
		C	O&M	D		Habitats	Benthic species	Bird species	Geomorphological features	Marine mammals	Fish & shellfish	
3. Changes in distribution of prey species	• Activities that lead to Impact 1. • Activities that lead to Impact 2.	ü	ü	ü	Changes in prey availability is a potential indirect impact which could arise during any phase of the English Offshore Scheme life cycle. Activities that lead to temporary or permanent habitat loss (as outlined under Impact 1 and Impact 2) affect seabed habitats which could affect the availability of prey. Temporary or permanent habitat loss during the spawning season for species 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 other fish, birds and marine mammals. As such, this impact has been screened in for these receptors. The indirect	û	û	ü	û	ü	ü	Within the draft Order Limits

Potential Impact	Relevant Activities	Phase			Pathway Description	Initial Screening by Receptor						Maximum ZOI
		C	O&M	D		Habitats	Benthic species	Bird species	Geomorphological features	Marine mammals	Fish & shellfish	
					effects of local temperature changes and electromagnetic fields (EMF) (as described in Impacts 6 and 7) could also reduce or affect the distribution and availability of prey for bird and marine mammal receptors. There is no source-pathway-receptor between changes in distribution of prey species and habitats, benthic species, and geomorphological interests. Therefore, this impact has been screened out for those receptors.							
4. **Temporary increase and deposition of suspended sediments** Changes in suspended solids (water clarity) *	• HDD • Anchoring • Pre-sweeping • PLGR • Boulder clearance	ü	ü	ü	This impact relates to changes in water clarity (or turbidity) due to changes in suspended sediment concentrations and smothering of seafloor habitats as a result of	ü	ü	ü	û	û	ü	2 km from the draft Order Limits (dependent on sediment composition and tidal

Potential Impact	Relevant Activities	Phase			Pathway Description	Initial Screening by Receptor						Maximum ZOI
		C	O&M	D		Habitats	Benthic species	Bird species	Geomorphological features	Marine mammals	Fish & shellfish	
Smothering and siltation rate changes*	• Cable lay and burial • Cable repair • Cable removal • Deposit of external cable protection • Temporary seabed deposits				settled-out suspended sediments. During cable installation sediment re-suspension would occur followed by subsequent re-deposition on the seabed. The siltation rates would depend on the hydrological conditions and the sediment particle size distribution. A greater sediment dispersion distance means the sediment would be more thinly dispersed over a wider area, whilst a smaller sediment dispersion distance gives a high deposition depth over a smaller distance (Ref 3.17.A.6). The dispersal rate is high in the vicinity of the English Offshore Scheme with mean tidal excursions along the proposed submarine cable corridor ranging from							excursion locally)

Potential Impact	Relevant Activities	Phase			Pathway Description	Initial Screening by Receptor						Maximum ZOI
		C	O&M	D		Habitats	Benthic species	Bird species	Geomorphological features	Marine mammals	Fish & shellfish	
					approximately 5 km to 10 km (ABPmer). This represents the maximum distance a particle could theoretically travel over the average tidal cycle. Though tidal ellipses determine the dispersal of sediment and the potential distance of travel, the range of excursion does not equate with the distance over which this impact may be exerted, rather, that is determined by a combination of factors including sediment particle size and mass and local hydrology. The findings of a separate study on the environmental impact of subsea trenching operation (Ref 3.17.A.31) suggested that the impacts on sediment disturbance vary depending on sediment particle size. Coarser sediments are likely to settle							

Potential Impact	Relevant Activities	Phase			Pathway Description	Initial Screening by Receptor						Maximum ZOI
		C	O&M	D		Habitats	Benthic species	Bird species	Geomorphological features	Marine mammals	Fish & shellfish	
					back in the very near-field (~ 100 m) with finer particles deposited further afield (1-2 km). As such, a maximum ZOI for this potential impact is set at 2 km. Increased sedimentation following construction, maintenance and decommissioning activities may impact benthic habitats by smothering them, reducing the availability of light and nutrients. This impact may also affect benthic species and shellfish which are often sessile or slow moving and unable to avoid the effects of increased sediment load. The deposition of suspended solids may also impact demersal fish and shellfish communities within the ZOI by decreasing levels of available light, impede							

Potential Impact	Relevant Activities	Phase			Pathway Description	Initial Screening by Receptor						Maximum ZOI
		C	O&M	D		Habitats	Benthic species	Bird species	Geomorphological features	Marine mammals	Fish & shellfish	
					foraging success and potentially affecting egg survival rates by decreasing intra-gravel flow velocities and oxygen concentrations (Ref 3.17.A.32). As such, these impacts have been screened in for these receptors. Indirectly this could lead to changes in prey availability (considered under Impact 3). Visually foraging birds particularly diving species, which depend on clear water to identify and catch potential prey can be affected by an increased turbidity by reducing their foraging capability (Ref 3.17.A.33). As such, this impact has been screened in for birds. Marine mammals typically inhabit turbid environments and don't rely solely on vision for detecting prey and							

Potential Impact	Relevant Activities	Phase			Pathway Description	Initial Screening by Receptor						Maximum ZOI
		C	O&M	D		Habitats	Benthic species	Bird species	Geomorphological features	Marine mammals	Fish & shellfish	
					navigation through the water column (i.e., echolocation in cetaceans). As a result, there is not considered to be a source-pathway-receptor, and this impact is screened out for marine mammals.							
5. Water flow (tidal current) changes, including sediment transport considerations	Deposit of external cable protection	ü	ü	ü	Structures placed in the marine environment immediately interact with the local current regime. The use of external cable protection which is elevated above the seabed can potentially result in localised changes in water flow resulting in turbulence (especially at peak flow) and the possible formation of scour pits around the structure. Though the impact of this is expected to be highly localised and negligible in magnitude there is a possibility that scour would result in localised	ü	ü	û	ü	û	ü	Within the draft Order Limits

Potential Impact	Relevant Activities	Phase			Pathway Description	Initial Screening by Receptor						Maximum ZOI
		C	O&M	D		Habitats	Benthic species	Bird species	Geomorphological features	Marine mammals	Fish & shellfish	
					degradation of soft sediment habitats and the associated benthic communities and shellfish. Changes in water flow may impact demersal fish and shellfish communities within the ZOI affecting egg survival rates by decreasing intra-gravel flow velocities and oxygen concentrations (Ref 3.17.A.32). A change in water flow may also impact geomorphological features. As such, this pressure has been screened in for these receptors. It is also considered for all phases of the English Offshore Scheme as it is uncertain if external cable protection would be removed on decommissioning. As marine mammals and birds are highly mobile and are not restricted to the							

Potential Impact	Relevant Activities	Phase			Pathway Description	Initial Screening by Receptor						Maximum ZOI
		C	O&M	D		Habitats	Benthic species	Bird species	Geomorphological features	Marine mammals	Fish & shellfish	
					seabed, there is not considered to be a source-receptor pathway. This impact is screened out for marine mammals and birds.							
6. Temperature changes – local	Operational cables	û	ü	û	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. Calculations have been undertaken for the EGL 3 Project and the EGL 4	û	û	û	û	û	û	Within the draft Order Limits

Potential Impact	Relevant Activities	Phase			Pathway Description	Initial Screening by Receptor						Maximum ZOI
		C	O&M	D		Habitats	Benthic species	Bird species	Geomorphological features	Marine mammals	Fish & shellfish	
					Project cable systems to determine the heat profile under full load and at maximum operating temperature (the worst-case scenarios). Calculations assumed a burial depth of 2m and a maximum operating temperature of the cables of 90 °C. Heat plots illustrating that heat rapidly dissipates from the cables which are presented in **Volume 1, Part 1, Chapter 4: Description of the Projects**. Seabed surface temperatures would not change from the predicted ambient temperature of 12 °C. Sediment temperature at 0.5m depth, immediately above the cables, is predicted to reach 20°C. It should be noted that the actual system is unlikely to reach these temperatures as the system would have to							

Potential Impact	Relevant Activities	Phase			Pathway Description	Initial Screening by Receptor						Maximum ZOI
		C	O&M	D		Habitats	Benthic species	Bird species	Geomorphological features	Marine mammals	Fish & shellfish	
					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. As the temperature changes would be localised to the immediate environment surrounding the cables and restricted to below 0.5 m and deeper (below the burrowing depth of most infauna) they would be within the fluctuations associated with natural temperature fluctuations. There would be no warming of the water column. Therefore, there is not considered to be a source-pathway-receptor for							

Potential Impact	Relevant Activities	Phase			Pathway Description	Initial Screening by Receptor						Maximum ZOI
		C	O&M	D		Habitats	Benthic species	Bird species	Geomorphological features	Marine mammals	Fish & shellfish	
					any receptors, and this impact has been screened out. As such, there would be no indirect impacts from temperature increase on prey species, which is considered under Impact 3.							
7. **Electromagnetic changes**	Operational cables	û	ü	û	The burial and bundling of cables help to reduce the strength of EMF when compared to surface laid cables. An EMF study was undertaken for the EGL 3 Project and the EGL 4 Project cable systems (**Volume 2, Part 1, Appendix 1.4.A: EGL 3 and EGL 4 Electromagnetic Field (EMF) Calculations**). It calculates that EMF fields on the seabed immediately above the cables would reach 123.8 µT (or 76.4 µT without the earth's magnetic field) and would attenuate to background levels within 20	û	ü	û	û	ü	ü	Within the draft Order Limits

Potential Impact	Relevant Activities	Phase			Pathway Description	Initial Screening by Receptor						Maximum ZOI
		C	O&M	D		Habitats	Benthic species	Bird species	Geomorphological features	Marine mammals	Fish & shellfish	
					m of the bundled cables when buried at 1 m below the seabed. Some species of mollusc and crustacean are able to detect electric and magnetic fields. As benthic invertebrates / shellfish are typically slow moving or sessile organisms that live on or within the seabed, they are exposed to the highest levels of EMF. However, the effects of EMF on invertebrates have not yet been well studied (Ref 3.17.A.34). Therefore, this impact has been screened in for benthic species and shellfish receptors. Indirect impacts from EMF changes on these receptors (prey species), which is considered under Impact 3.							

Potential Impact	Relevant Activities	Phase			Pathway Description	Initial Screening by Receptor						Maximum ZOI
		C	O&M	D		Habitats	Benthic species	Bird species	Geomorphological features	Marine mammals	Fish & shellfish	
					Although some bird species may use the earth's magnetic field for navigation during migration, this would not be impacted by EMF from subsea cables due to the range of impact being localised to the surrounding area of the cable underwater. There is not considered to be a source-pathway-receptor for birds, and they are not assessed further for this impact. 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 3.17.A.35). This localised change in the magnetic field may temporarily affect sensitive species as they cross the cables or pass alongside							

Potential Impact	Relevant Activities	Phase			Pathway Description	Initial Screening by Receptor						Maximum ZOI
		C	O&M	D		Habitats	Benthic species	Bird species	Geomorphological features	Marine mammals	Fish & shellfish	
					their length and may temporarily reduce their navigational ability within the zone of effect. Therefore, this impact has been screened in for marine mammal receptors. Some migratory fish species such as Atlantic salmon can use the earth's magnetic field for navigation and movements over subsea cables may result in a temporary change swimming direction or avoidance behaviour possibly leading to a delay to migration (Ref 3.17.A.36; Ref 3.17.A.37). Therefore, this impact has been screened in for fish receptors.							

Potential Impact	Relevant Activities	Phase			Pathway Description	Initial Screening by Receptor						Maximum ZOI
		C	O&M	D		Habitats	Benthic species	Bird species	Geomorphological features	Marine mammals	Fish & shellfish	
					Habitats and geomorphological features (for which there is no source-receptor pathway) have been screened out.							
8. Introduction or spread of marine invasive non-native species (MMINNS)	• Deposit of external cable protection • Presence of the English Offshore Scheme vessels	ü	ü	û	This impact refers to the direct or indirect introduction of non-native species, e.g., Chinese mitten crabs (*Eriocheir sinensis*), slipper limpets (*Crepidula fornicata*), Pacific oyster (*Crassostrea gigas*), and their subsequent spreading and out-competing of native species. Ballast water discharge, hull fouling and stepping stone effects from offshore structures may facilitate the spread of such species. The introduction of invasive non-native species (MINNS) (e.g., through discharge of ballast water from the English Offshore Scheme vessels) would be managed	û	û	û	û	û	û	Within the draft Order Limits

Potential Impact	Relevant Activities	Phase			Pathway Description	Initial Screening by Receptor						Maximum ZOI
		C	O&M	D		Habitats	Benthic species	Bird species	Geomorphological features	Marine mammals	Fish & shellfish	
					under the International Convention for the Control and Management of Ship's Ballast Water and Sediments. Vessel contractors would complete a biosecurity risk assessment prior to mobilisation. Best biosecurity practice for marine for commercial operations would be followed by all vessels associated with the English Offshore Scheme to minimise the risk of MINNS spread. All materials used for cable protection would be sufficiently sterilised prior to use and seabed deposits would be inert with no biologically active material. All materials used for remedial works would be procured from reputable sources. Nonetheless, there is potential for any external cable protection placed at							

Potential Impact	Relevant Activities	Phase			Pathway Description	Initial Screening by Receptor						Maximum ZOI
		C	O&M	D		Habitats	Benthic species	Bird species	Geomorphological features	Marine mammals	Fish & shellfish	
					cable crossings or during maintenance in areas of soft substrate to act as a stepping stone for MINNS that favour hard substrates. The placement of hard materials (such as rock protection) could introduce a new niche that increases connectivity with other natural or artificial hard habitats within the dispersal range of benthic species. However, taking into account the implementation of the control measures required to ensure legal compliance, the introduction or spread of MINNS is not anticipated. Therefore, this impact has been screened out for benthic species. There is not considered to be a source-pathway-receptor for habitats, birds, marine mammals or geomorphological features							

Potential Impact	Relevant Activities	Phase			Pathway Description	Initial Screening by Receptor						Maximum ZOI
		C	O&M	D		Habitats	Benthic species	Bird species	Geomorphological features	Marine mammals	Fish & shellfish	
					and has been screened out for these receptors.							
9. Barriers to species movement	• HDD • Anchoring • Pre-sweeping • PLGR • Boulder clearance • UXO Identification • Cable lay and burial • Cable repair • Cable removal • Temporary seabed deposits	ü	ü	ü	This impact pathway relates to the physical permanent obstruction of species movements and including local movements (within and between roosting, breeding, feeding areas) and regional/global migrations (e.g. birds and marine mammals). This includes movements across open waters from offshore wind farm, wave or tidal array devices, mariculture infrastructure or fixed fishing gears. The species affected are mostly birds, fish, and mammals (Ref 3.17.A.38). The English Offshore Scheme is the construction and operation of subsea power cables. Cables would be buried there would be no permanent structures	û	û	û	û	û	û	Within the draft Order Limits

Potential Impact	Relevant Activities	Phase			Pathway Description	Initial Screening by Receptor						Maximum ZOI
		C	O&M	D		Habitats	Benthic species	Bird species	Geomorphological features	Marine mammals	Fish & shellfish	
					obstructing species movements within the water column. Even if cable protection is required, this would be placed on the seabed and animals would be able to move over it. As such, no source-receptor has been identified for bird, fish & shellfish or marine mammal receptors. Temporary underwater noise changes generated by survey equipment and vessel movement is the main barrier for these receptors and is considered in Impact 10. There is not considered to be a source-pathway-receptor for habitats, benthic species and geomorphological features. Therefore, these receptors are screened out.							
10. Underwater noise changes	• Presence of the English Offshore	ü	ü	ü	Vessels and equipment for the English Offshore Scheme would generate	û	û	ü	û	ü	ü	5km (JNCC, 2020, 2)

Potential Impact	Relevant Activities	Phase			Pathway Description	Initial Screening by Receptor						Maximum ZOI
		C	O&M	D		Habitats	Benthic species	Bird species	Geomorphological features	Marine mammals	Fish & shellfish	
	Scheme vessels • Geophysical surveys				continuous underwater noise which may result in the temporary behavioural disturbance and displacement of marine mammals, and diving bird species such as sea ducks. There is no source-pathway-receptor between noise and habitats, benthic species, and geomorphological interests. Therefore, this impact has been screened out for those receptors. With respect to ornithological receptors, underwater noise directly influences water column feeders as these species are submerged for longer periods when diving in search for prey on the seabed (Ref 3.17.A.39). Therefore, this impact has been screened in for this receptor.							

Potential Impact	Relevant Activities	Phase			Pathway Description	Initial Screening by Receptor						Maximum ZOI
		C	O&M	D		Habitats	Benthic species	Bird species	Geomorphological features	Marine mammals	Fish & shellfish	
					Behavioural disturbance is observed in fish as a result of vessels using dynamic positioning at a distance of up to 1,359 m (Ref 3.17.A.2). Furthermore, fish species that have a swim bladder or other air bubble that is close to the ear can detect sound pressure as well as particle motion and are more likely to be affected by an increase in underwater noise than species without these structures (Ref 3.17.A.40). This impact has been screened in for fish and shellfish. With respect to marine mammals, the Oslo and Paris (Ref 3.17.A.6) Convention considered that sound associated with the installation, removal or operation of submarine cables is less harmful							

Potential Impact	Relevant Activities	Phase			Pathway Description	Initial Screening by Receptor						Maximum ZOI
		C	O&M	D		Habitats	Benthic species	Bird species	Geomorphological features	Marine mammals	Fish & shellfish	
					compared to impulsive sound activities such as seismic surveys, military activities or construction work involving pile driving. However, an increase in underwater noise may result in behavioural disturbance/displacement and therefore this impact has been screened in for marine mammals. A precautionary 5 km ZOI has been used. This is the effective deterrent range (EDR) for geophysical surveys as recommended by (Ref 3.17.A.2) for very high frequency cetaceans such as harbour porpoise. This has been used as a proxy for marine mammals, fish and shellfish and birds as it is deemed a worse case range. The effects from continuous underwater noise would be							

Potential Impact	Relevant Activities	Phase			Pathway Description	Initial Screening by Receptor						Maximum ZOI
		C	O&M	D		Habitats	Benthic species	Bird species	Geomorphological features	Marine mammals	Fish & shellfish	
					lower than this as detailed in **Volume 2, Part 3, Appendix 3.22.A: Underwater Noise Assessment**.							
11. **Visual / physical disturbance or displacement** Above water noise*	Presence of the English Offshore Scheme vessels and equipment.	ü	ü	ü	Vessels, vehicles and people movement can create visual stimuli which can evoke a disturbance response in mobile species such as seabirds. The magnitude of the impact would depend on the nature and scale/intensity of the activity (e.g., location and timing of operation). Diving species such as sea ducks are recognised as being highly sensitive to noise and visual disturbance, such as those caused by vessel traffic (Ref 3.17.A.41). Once flushed, they may not rapidly resettle. Therefore, SNCBs recommend a 4 km displacement buffer for	û	û	ü	û	ü	ü	4 km (MIG-Birds, 2022, 43)

Potential Impact	Relevant Activities	Phase			Pathway Description	Initial Screening by Receptor						Maximum ZOI
		C	O&M	D		Habitats	Benthic species	Bird species	Geomorphological features	Marine mammals	Fish & shellfish	
					divers and sea ducks (Ref 3.17.A.42). The physical presence of the English Offshore Scheme vessels and equipment during construction, maintenance and decommissioning have the potential to disturb marine mammals and fish. Therefore, birds, fish and shellfish and marine mammals are screened in for this impact. There is no source-pathway-receptor between visual disturbance and habitats, benthic species, and geomorphological interests. Therefore, this impact has been screened out for those receptors.							
12. Collision with project vessels	Presence of the English Offshore	ü	ü	ü	It is largely recognised that the key factors contributing to collision between marine	û	û	û	û	ü	û	Within the draft Order Limits

Potential Impact	Relevant Activities	Phase			Pathway Description	Initial Screening by Receptor						Maximum ZOI
		C	O&M	D		Habitats	Benthic species	Bird species	Geomorphological features	Marine mammals	Fish & shellfish	
	Scheme vessels and equipment				mammals and vessels are the presence of both in the same area and vessel speed (see (Ref 3.17.A.44) for review). Injuries to marine mammals from vessel strikes are species-dependent but generally are more severe at higher impact speeds (Ref 3.17.A.45). Given that the English Offshore Scheme vessels would be travelling at speeds no greater than 5 knots, or travelling within established shipping lanes, and that birds and migratory fish are highly mobile and more manoeuvrable than marine mammals, no pathway for effect is considered. There is no source-pathway-receptor between vessel collision and habitats, benthic species, shellfish and geomorphological							

Potential Impact	Relevant Activities	Phase			Pathway Description	Initial Screening by Receptor						Maximum ZOI
		C	O&M	D		Habitats	Benthic species	Bird species	Geomorphological features	Marine mammals	Fish & shellfish	
					interests. Therefore, this impact has been screened out for those receptors.							
13. Accidental Spills Hydrocarbon & PAH contamination*	Presence of the English Offshore Scheme vessels	ü	ü	ü	During construction, accidental spillage may occur directly into the water column. Materials spilled may disperse as a plume on the water surface, within the water column or fall directly to the seabed. The primary chemicals of environmental concern in vessel oil and fuel are polycyclic aromatic hydrocarbons (PAHs). Deliberate discharges of oil or oil/water mixtures from ships are prohibited within the Northwest European Waters Special Area, established by the International Maritime Organization under MARPOL Annex I in 1999. This includes all waters around the UK and its	û	û	û	û	û	û	Within the draft Order Limits

Potential Impact	Relevant Activities	Phase			Pathway Description	Initial Screening by Receptor						Maximum ZOI
		C	O&M	D		Habitats	Benthic species	Bird species	Geomorphological features	Marine mammals	Fish & shellfish	
					approaches. However, accidental discharges still occur. The English Offshore Scheme vessels would 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 waters). Compliance with International and National Regulations would be sufficient to minimise the risk to the environment and therefore, this impact has been screened out of the assessment.							
14. In-combination effects	All activities	ü	ü	ü	In-combination effects are likely to result where localised disturbance from more than one activity either occurring simultaneously	ü	ü	ü	ü	ü	ü	Within the draft Order Limits

Potential Impact	Relevant Activities	Phase			Pathway Description	Initial Screening by Receptor						Maximum ZOI
		C	O&M	D		Habitats	Benthic species	Bird species	Geomorphological features	Marine mammals	Fish & shellfish	
					resulting in a wider ZOI or consecutively within a restricted area resulting in an extension of the impact pathway. There is the possibility that the English Offshore Scheme could overlap, temporally and spatially with other projects in the region or would occur within short succession of another project.							

Identifying In-combination Impacts

3.17.A.6.3 The MMO guidelines state that for the competent authority to fully discharge its duties under section 69 (1) of the MCAA, in-combination and cumulative effects should be considered (Ref 3.17.A.1). Existing plans/projects that are built and operational prior to the construction phase of English Offshore Scheme are typically classified as part of the baseline conditions and are not considered by the in-combination assessment. However, if residual effects persist after construction such as habitat loss from infrastructure or external cable/crossing protection, these plans/projects are then included in the in-combination assessment. Plans/projects that are proposed or under construction at the same time, or subsequent to when the English Offshore Scheme is under construction would be considered in the in-combination assessment.

3.17.A.6.4 As such, the following activities would be considered for the potential to contribute in-combination impacts for MCZs/HPMAs/NCMPAs:

- Oil and gas structures and pipelines;
- Marine aggregate extraction sites;
- Offshore wind farms;
- Cable projects;
- Carbon capture and storage and natural gas storage;
- Tidal energy;
- Wave energy; and
- Marine licence applications.

3.17.A.6.5 Activities such as commercial fisheries, tourism and recreation, military practice areas and shipping and navigation, are sporadic or have continuous use of the region which are not necessarily licensable activities. However, they can exhibit pressure on MCZs which are considered by the condition assessments for MCZs. Whilst individual activities have not been identified, the pressure already exerted by these activities has been considered when assessing in-combination impacts.

3.17.A.6.6 To determine whether other plans/projects might interact with the licensable activities, common source-receptor pathways have been identified.

3.17.A.6.7 The search area for other projects and plans that may contribute to in-combination effects from potential impacts to MCZ/HPMA/NCMPA features is taken from the ZOI outlined for various receptors in **Table 3.17.A-6**, unless no source-pathway-receptor exists. The ZOI serves as the search area from the designated site to identify other plans or projects that may fall within that distance. For example, sites designated solely for habitats would have a maximum search area of 2 km (for suspended/deposited sediment impacts). The exception to this is when considering underwater noise from offshore wind farm construction, which can propagate further than underwater noise from other types of plans/projects. In this case, the search area for underwater noise remains within the 5 km EDR, except for offshore wind farm construction, which follows the JNCC's recommended 26 km EDR for piling (Ref 3.17.A.2).

3.17.A.6.8 Other plans and projects which may contribute to in-combination effects have been identified using GIS and the following publicly available data sources:

- The Crown Estate (TCE) Open Data Portal (Ref 3.17.A.46);
- The MMO Marine Licensing Portal (Ref 3.17.A.47);
- North Sea Transition Authority (NSTA) (Open Data, Ref 3.17.A.48); and
- Offshore Petroleum Regulator for Environment and Decommissioning (OPRED) Oil and gas: environmental submissions and determinations (Ref 3.17.A.49).

3.17.A.6.9 There are no tidal or wave energy projects within the maximum ZOI from any MCZs/HPMAs/NCMPAs and therefore would not be considered further.

Table 3.17.A-7 - Plans/Projects identified within the relevant search areas that may contribute to in-combination effects

Plan/Project	Plan/Project Status	Distance from MCZ	Potential Impact(s) Associated with the Plan/Project
Holderness Offshore MCZ			
Ossian Offshore Wind Farm Transmission Infrastructure	In planning	Scoping Boundary overlaps for an approximate area of 557.8 km^2 (Ref 3.17.A.56)	• Temporary habitat loss / seabed disturbance • Permanent habitat loss • Water flow (tidal current) changes, including sediment transport considerations • Temporary increase and deposition of suspended sediments
Eastern Green Link 5	In planning	Final route not confirmed. Preferred route could intersect for 4.8 km.	• Temporary habitat loss / seabed disturbance • Permanent habitat loss • Water flow (tidal current) changes, including sediment transport considerations • Temporary increase and deposition of

Plan/Project	Plan/Project Status	Distance from MCZ	Potential Impact(s) Associated with the Plan/Project
			suspended sediments
Viking Link Interconnector	Active	Intersects for approximately 17.03 km	• Temporary habitat loss / seabed disturbance • Permanent habitat loss • Water flow (tidal current) changes, including sediment transport considerations • Temporary increase and deposition of suspended sediments
Hornsea Project Four (Export Cable Corridor)	In planning	0.6 km (Ref 3.17.A.50).	• Temporary increase and deposition of suspended sediments
Northeast of Farnes Deep HPMA			
Morvern Hawthorn Pit Grid Connection Project	In planning	Final route not confirmed. Cable route could run along the eastern boundary of the MCZ for its entire length (25.1 km)	• Temporary increase and deposition of suspended sediments • Underwater noise changes • Visual / physical disturbance or displacement • Collision with project vessels
Eastern Green Link 2	In planning	3.1 km	• Underwater noise changes • Visual / physical disturbance or displacement • Collision with project vessels
Northeast of Farnes Deep MCZ			

Plan/Project	Plan/Project Status	Distance from MCZ	Potential Impact(s) Associated with the Plan/Project
Morvern Hawthorn Pit Grid Connection Project	In planning	Final route not confirmed. Cable route could run along the eastern boundary of the MCZ for its entire length (25.1 km)	• Temporary increase and deposition of suspended sediments
Firth of Forth Banks Complex NCMPA			
Morvern Hawthorn Pit Grid Connection Project	In planning	Final route not confirmed. Cable route could run along the eastern boundary of the MCZ for its entire length (25.1 km)	• Temporary increase and deposition of suspended sediments
Berwick Bank Cambois Connection Marine Scheme	In planning	Scoping Boundary overlaps for approximately 361.7 km^2 (SSE Ref 3.17.A.51),	• Temporary habitat loss / seabed disturbance • Permanent habitat loss • Water flow (tidal current) changes, including sediment transport considerations • Temporary increase and deposition of suspended sediments
Eastern Green Link 2	In planning	0.03 km from the Montrose Bank part of the NCMPA (Ref 3.17.A.52).	• Temporary increase and deposition of suspended sediments
Berwick to St Mary's			
Berwick Bank Cambois Connection Marine Scheme	In planning	Scoping Boundary overlaps for approximately 361.7 km^2 (Ref 3.17.A.51),	• Temporary increase and deposition of suspended sediments • Underwater noise changes • Visual / physical disturbance or displacement

Plan/Project	Plan/Project Status	Distance from MCZ	Potential Impact(s) Associated with the Plan/Project
Eastern Green Link 1	In planning	1.7 km	• Temporary increase and deposition of suspended sediments • Underwater noise changes • Visual / physical disturbance or displacement

3.17.A.6.10 It is noted that future use options are currently being considered for the Rough 47/8A to Easington 16 in Gas Line (PL26) (Ref 3.17.A.53). The pipeline is currently not in use and remains in situ within the boundaries of the Holderness Offshore MCZ. However, as there are currently no plans for decommissioning or works to the pipeline, it is not considered as part of this in-combination assessment.

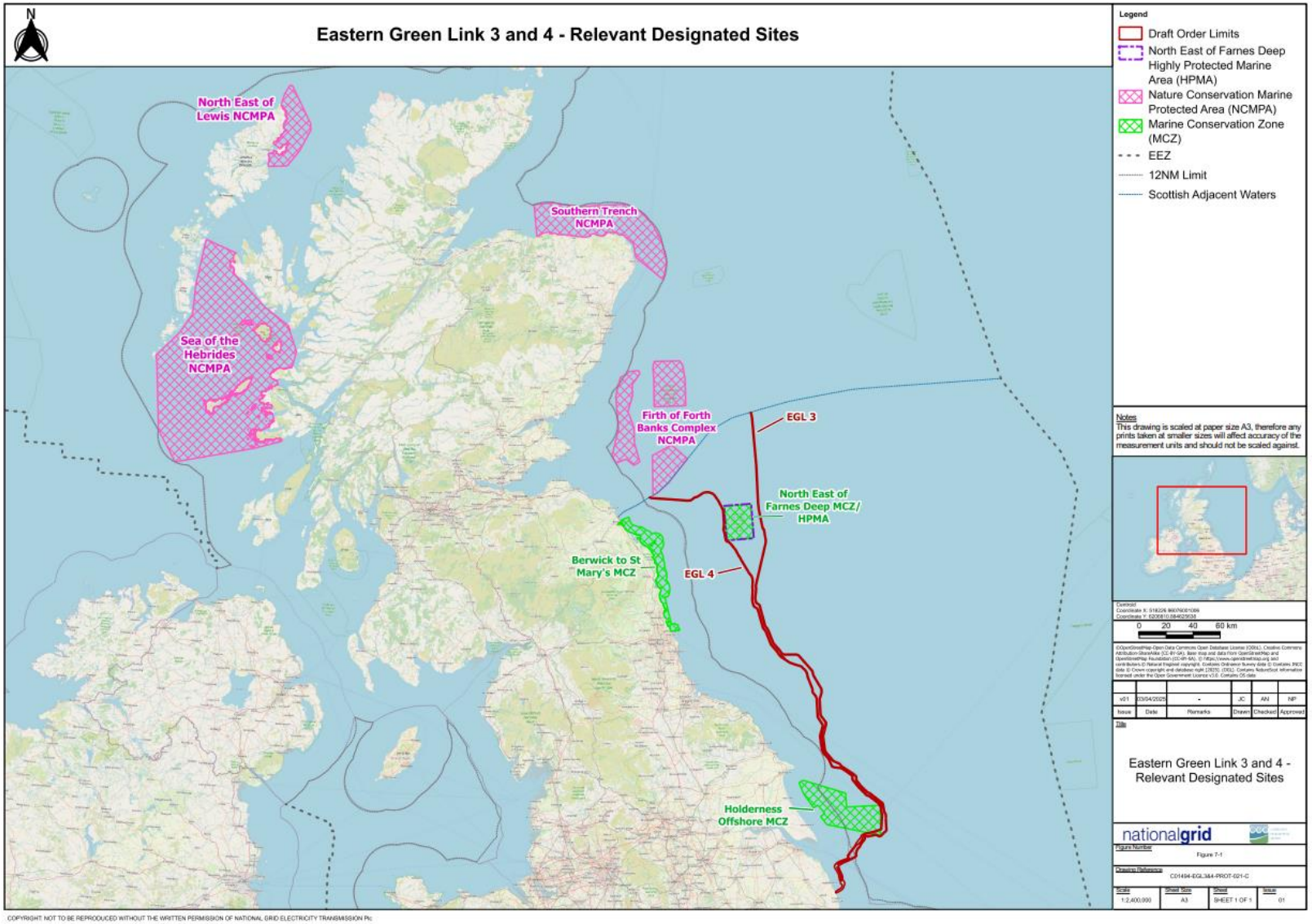
3.17.A.7 Screening Assessment

Overview

3.17.A.7.1 The schematic shown in **Plate 3.17.A-3** illustrates the location of the draft Order Limits in relation to the relevant designated sites included in the assessment.

3.17.A.7.2 The assessment is based on the precautionary principle and has been undertaken in the absence of mitigation. The Northeast of Farnes Deep HPMA is assessed in **Section Northeast of Farnes Deep HPMA Screening Assessment.**

Plate 3.17.A-3: Relevant Designated Sites



The EGL 3 Project MCZ / NCMPA Screening Assessment

3.17.A.7.3 The following four sites are included in the assessment for the EGL 3 Project:

- Holderness Offshore MCZ;
- Southern Trench NCMPA;
- Sea of the Hebrides NCMPA; and
- North-east Lewis NCMPA.

Table 3.17.A-8 - Screening assessment for the EGL 3 Project

Relevant Designated Feature	Potential Impact	Connectivity between EGL 3 and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
Holderness Offshore MCZ Distance from the EGL 3 Project draft Order Limits to the MCZ: 0.1 km				
Geology: • North Sea glacial tunnel valleys Habitats: • Subtidal coarse sediment • Subtidal mixed sediments • Subtidal sand Species: • Ocean quahog	Temporary habitat loss / seabed disturbance	**No**- The EGL 3 Project does not cross the boundary for this MCZ and is beyond the ZOI for the potential impact. Therefore, there is no source-pathway- receptor at any stage of the development.	**No**- There is no pathway between the EGL 3 Project and other projects and plans to interact with the MCZ at any stage of the development.	Screened out
	Permanent habitat loss	**No**- The EGL 3 Project does not cross the boundary for this MCZ and is beyond the ZOI for the potential impact. There would be no permanent habitat loss within the MCZ. Therefore, there is no source-pathway- receptor at any stage of the development.	**No**- There is no pathway between the EGL 3 Project and other projects and plans to interact with the MCZ at any stage of the development.	Screened out
	Water flow (tidal current) changes, including sediment transport considerations	**No**- The EGL 3 Project does not cross the boundary for this MCZ and is beyond the ZOI for the potential impact. It has been considered that permanent structures, such as cable protection outside the MCZ, could potentially impact water flow within the MCZ. Where cable protection is not required, the seabed level would remain unchanged or similar to its pre-installation condition, eliminating the potential for this impact to occur. Where cable protection is required, the height of the structures on	**No**- There is no pathway between the EGL 3 Project and other projects and plans to interact with the MCZ at any stage of the development.	Screened out

Relevant Designated Feature	Potential Impact	Connectivity between EGL 3 and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		top of the seabed would result in a highly localised change of a small magnitude, immediately around the area where cable protection is applied. As this MCZ is 0.1 km away from the EGL 3 Project, there is no source-pathway- receptor at any stage of the development on the features of the MCZ.		
Habitats: • Subtidal coarse sediment • Subtidal mixed sediments • Subtidal sand	Temporary increase and deposition of suspended sediments	**No-** The designated features are also known as sublittoral coarse sediment, sublittoral mixed sediment and sublittoral sands and muddy sands under the European Nature Information System (EUNIS) level 3 habitat classification. Using GIS, a 2 km buffer was applied to the MCZ, where the buffer overlapped with the draft Order Limits, benthic survey data from Benthic Solutions, (Benthic Solutions Ref 3.17.A.54) was referred to. The benthic survey data identified the following habitat classifications: sublittoral coarse sediment, sublittoral mixed sediment, sublittoral sands and muddy sands and circalittoral rock. Circalittoral rock would not be suspended and deposited by a sediment plume and is therefore disregarded for this impact. The other habitats identified are the same as those listed as designated features therefore, any sediment deposition as a result of the EGL 3 Project activities would not alter the structure, function or quality of habitats	**No-** There are three other subsea cable projects in planning within 2 km of the MCZ. The Offshore Scoping Boundary of the Ossian Offshore Wind Farm Transmission Infrastructure overlaps with the MCZ for an area of 557.8 km^2 (Ref 3.17.A.56). The exact cable route of the Eastern Green Link 5 project has not yet been confirmed; however, the preferred route currently intersects the MCZ for 4.8 km The Hornsea Project Four export cable corridor is located approximately 0.6 km at its nearest point (Ref 3.17.A.50). It is also acknowledged that existing activities particularly commercial	Screened out

Relevant Designated Feature	Potential Impact	Connectivity between EGL 3 and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		within this site as it would be the same type of sediment that is found within the MCZ. In regard to smothering as a result of sediment deposition, MarLIN categorise light smothering as the deposition of up to 5 cm of sediment in a discrete event. Light smothering would occur from several of the EGL 3 Project activities. The most significant contributors (relatively) would be from the sediment plume generated by cable trenching and pre-sweeping where a TSHD is used. Cable trenching within the EGL 3 Project could occur 0.1 km away from the southeast corner of the MCZ at its nearest point. Pre-sweeping would be carried out as part of the EGL 3 Project, located adjacent to the northeast corner of the MCZ. This activity could occur approximately 1.7 km away from the MCZ at its nearest point. **Volume 1, Part 3, Chapter 18: Coastal and Marine Physical Processes** states that only fine sands and silts would disperse beyond the draft Order Limits from both cable trenching and pre-sweeping activities. Therefore, coarse sediments won't affect the MCZ. After pre-sweeping, fine sediment may travel 11.7 km, and a plume may exceed concentrations of 10 mg/l for up to 7.1 km. After cable trenching, fine sediment may	fisheries, may already exert pressure on the site. The broadscale habitats identified within the MCZ are dominated by burrowing infauna which would not be affected by a change in water clarity, therefore only sediment deposition is considered in this assessment. As explained in the assessment for the EGL 3 Project alone, any deposition would be <2 mm of fine sediment, which would not be noticeable against natural background levels and suspended sediment concentrations would dilute and disperse. As a result, it is concluded that the EGL 3 Project would not contribute to any detectable in-combination effects. Due to the potential overlap with the MCZ, any significant impacts are more likely to arise from the Ossian Offshore Wind Farm Transmission Infrastructure and Eastern Green Link 5	

Relevant Designated Feature	Potential Impact	Connectivity between EGL 3 and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		travel between 1.6-12.9 km and 2.2-17.5 km with sediment concentrations exceeding 10 mg/l for up to 6.5 km, depending on peak flow speeds. However, a fine sediment plume from either activity would dilute and disperse whilst in suspension, with concentrations decreasing with distance and time from the activity. **Volume 1, Part 3**, **Chapter 18: Coastal and Marine Physical Processes** indicates that any deposition of fine sediment within the MCZ from either cable trenching or pre-sweeping would be <2 mm, which would not be noticeable against natural background levels. Furthermore, the Holderness Offshore MCZ is an unstable, dynamic environment, experiencing moderate wave energy at the seabed (Ref 3.17.A.55) which is likely to remove all light smothering (<5 cm) from sediment deposition. Given the transient nature of the construction, repair and decommissioning activities, the EGL 3 Project is expected to have no discernible effect on the structure, function, or quality of habitats within the site during any phase of development from this impact pathway.	projects in isolation or in-combination with each other, rather than from a combined effect with the EGL 3 Project.	
Species: • Ocean quahog	Temporary increase and deposition of	**No-** Ocean quahog is not recognised as being sensitive to changes in suspended sediments (water clarity) or smothering (light and heavy) (Ref 3.17.A.5).	**No**- Due to the insensitivity of ocean quahog to this impact, there is no source-pathway-receptor between	**Screened out**

Relevant Designated Feature	Potential Impact	Connectivity between EGL 3 and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
	suspended sediments	Therefore, there is no source-pathway-receptor at any stage of the development.	the EGL 3 Project and other projects and plans to interact with the MCZ at any stage of the development.	
	Electromagnetic changes	**No**- The EGL 3 Project is beyond the ZOI, therefore, there is no source-pathway-receptor at any stage of the development on the features of the MCZ.	**No**- There is no pathway between the EGL 3 Project and other projects and plans to interact with the MCZ at any stage of the development.	Screened out
Southern Trench NCMPA Distance from the EGL 3 Project draft Order Limits to the NCMPA: 117.3 km				
Species: • Minke whale	Changes in distribution of prey species	**No**- **Volume 1, Part 3, Chapter 20: Fish and Shellfish Ecology** concluded that the English Offshore Scheme would not have a significant adverse effect on fish and shellfish ecology. The permanent loss of habitat is extremely localised relative to the wider geographic areas available to prey species. No impact on stock recruitment is predicted. Therefore, there is no source-pathway- receptor at any stage of the development with the relevant designated feature of this NCMPA.	**No**- There is no pathway between the EGL 3 Project and other projects and plans to interact with the MCZ at any stage of the development.	Screened out
	Electromagnetic changes	**No-** Although the NCMPA is beyond the ZOI, mobile species such as minke whale may travel within the ZOI.	**No**- A high level of marine development is scheduled for the North Sea over the next ten years, particularly for the construction of	Screened out

Relevant Designated Feature	Potential Impact	Connectivity between EGL 3 and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		The burial and bundling of cables help to reduce the strength of induced electrical fields when compared to surface laid cables. An EMF study was undertaken for the EGL 3 and EGL 4 cable systems (**Volume 2, Part 1, Appendix 1.4.A: EGL 3 and EGL 4 Electromagnetic Field (EMF) Calculations**). It calculates that EMF fields on the seabed immediately above the cables would reach 123.8 µT (or 76.4 µT without the earth's magnetic field) and would attenuate to background levels within 20 m of the bundled cables. (Ref 3.17.A.57) reports that there have been no impacts to the migration of cetaceans over existing interconnector cables and (Ref 3.17.A.58) notes that harbour porpoise migration across the Basslink interconnector has been observed unhindered despite several crossings of operating sub-sea HVDC cables. Therefore, it can be assumed that minke whale would also not be significantly affected by 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 low likelihood of being affected by EMF. Furthermore, as the site is 117.3 km away from the draft Order	offshore wind and other cable projects. There is the potential for more than one project to be under construction at the same time as the EGL 3 Project or occurring consecutively, extending the duration of or widening the spatial extent of impacts. It is also acknowledged that existing activities such as commercial fisheries, tourism and recreation, military practice areas and shipping and navigation can be sporadic or have a continuous use of the region and may already exert pressure on the site. However, given the insignificant effects of the EGL 3 Project alone, the lack of evidence of effects on cetaceans, and the predominantly pelagic existence resulting in separation with the change in field and that minke whale have large MUs, minke whale have a low likelihood of being affected by EMF from cable	

Relevant Designated Feature	Potential Impact	Connectivity between EGL 3 and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		Limits, and that minke whale have a large MU, it is unlikely that individuals would be in the vicinity of the EGL 3 Project for a sustained period of time, reducing the likelihood and occurrence of any impact. In conclusion, the EGL 3 Project would not have a significant effect on individuals from this site during any phase of development from this impact pathway.	systems. It is considered that the EGL 3 Project would not act as a barrier to the site and would not affect the distribution or population of the species within the MU at any stage of the development. Therefore, it is concluded that there would be no detectable contribution to an in-combination effect resulting from this impact.	
	Underwater noise changes	**No**- The licensable activities for the EGL 3 Project would not involve any impulsive noise (UXO clearance would be the subject of a separate licence). Therefore, to calculate whether underwater noise from the EGL 3 Project would be considered significant the 5 km EDR for geophysical surveys recommended by the JNCC., (Ref 3.17.A.2) has been used as the ZOI. Although the NCMPA is beyond the ZOI, mobile species such as minke whale may travel within the ZOI. The effects of noise disturbance may be physical, physiological and / or behavioural. Disturbance is frequently a behavioural response to noise and may lead to animals being displaced from an affected area. The onset of a temporary threshold shift (TTS) can be referred to as	**No**- A high level of marine development is scheduled for the North Sea over the next ten years, particularly for the construction of offshore wind and other cable projects. There is the potential for more than one project to be under construction at the same time as the EGL 3 Project or occurring consecutively, extending the duration of or widening the spatial extent of impacts. It is also acknowledged that existing activities such as commercial fisheries, tourism and recreation,	Screened out

Relevant Designated Feature	Potential Impact	Connectivity between EGL 3 and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		the fleeing response. This is therefore a behavioural response, and animals exposed to these noise levels are likely to actively avoid injury as a result of a permanent threshold shift (PTS) by moving away from the area. According to (Ref 3.17.A.59) and (Ref 3.17.A.60), minke whale are categorised within the functional hearing group of low frequency cetacean. **Volume 2, Part 3, Appendix 3.22A: Underwater Noise Assessment** indicates that as low frequency cetaceans, the maximum potential impact range of a TTS for minke whale as a result of geophysical surveys using a sub-bottom profiler (SBP) is 41-90 m. Noise levels do not exceed the threshold for impacts for a PTS or a TTS from the EGL 3 Project vessels and equipment After reviewing the impact thresholds, the JNCC's advised 5 km EDR used in this assessment would be highly precautionary. Given the distance to the site, there would be no direct impacts on minke whale within the NCMPA. Indirect impacts have been considered including animals moving away from the site into the ZOI. However, given the wide area available for foraging for minke whale in the MU, and the fact that works would take place against a high level of shipping activity in the North Sea	military practice areas and shipping and navigation can be sporadic or have a continuous use of the region and may already exert pressure on the site. However, given the distance to the site, the transient and temporary nature of the EGL 3 Project activities and the insignificant effects of the EGL 3 Project alone, it is considered that the EGL 3 Project would not act as a barrier to the site and would not affect the distribution or population of the species within the MU at any stage of the development. Therefore, it is concluded that there would be no detectable contribution to an in-combination effect resulting from this impact.	

Relevant Designated Feature	Potential Impact	Connectivity between EGL 3 and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		(with vessel density in some areas of 100+ hours / km^2 per month in 2023 (REF, 61), the EGL 3 Project activities would not have a significant effect on individuals from the site during any phase of development from this impact pathway. In addition, the licensable activities would not act as a barrier to movement to or from the site.		
	Visual / physical disturbance or displacement	**No**- Although the NCMPA is beyond the ZOI (4 km EDR), mobile species such as minke whale may travel within the ZOI. Given the distance to the site and the large extent of the MU for minke whale and the transient and temporary nature of the construction, repair and decommissioning activities, it is unlikely that individuals would be in the vicinity of the EGL 3 Project vessels for a sustained period of time. Therefore, any visual disturbance would be temporary and not repeated over an extended period of time. As light levels within the water column decrease rapidly with depth, whales have evolved a sophisticated acoustic sensory system which helps them to navigate, find prey, communicate with each other and avoid potential predators (REF) It is therefore likely that any disturbance/displacement would first occur through underwater noise changes before the visual presence of the EGL 3 project vessels. In addition, the region is already	**No**- A high level of marine development is scheduled for the North Sea over the next ten years, particularly for the construction of offshore wind and other cable projects. There is the potential for more than one project to be under construction at the same time as the EGL 3 Project or occurring consecutively, extending the duration of or widening the spatial extent of impacts. It is also acknowledged that existing activities such as commercial fisheries, tourism and recreation, military practice areas and shipping and navigation can be sporadic or have a continuous use of the region and may already exert	Screened out

Relevant Designated Feature	Potential Impact	Connectivity between EGL 3 and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		used by large ships and ferries, with vessel density in some areas of 100+ hours / km^2 per month in 2023 (Ref 3.17.A.61), animals are therefore habituated to a certain degree to the presence of vessels. The EGL 3 Project would not have a significant effect on individuals from this site during any phase of development from this impact pathway.	pressure on the site. However, given the distance to the site, the transient and temporary nature of the EGL 3 Project activities and the insignificant effects of the EGL 3 Project alone, it is considered that the EGL 3 Project would not act as a barrier to the site and would not affect the distribution or population of the species within the MU at any stage of the development. Therefore, it is concluded that there would be no detectable contribution to an in-combination effect resulting from this impact.	
	Collision with project vessels	**No**- Although the NCMPA is beyond the ZOI, mobile species such as minke whale may travel within the ZOI. Given the distance to the site and the large extent of the MU for minke whale and the transient and temporary nature of the construction, repair and decommissioning activities, it is unlikely that individuals would be in the vicinity of the EGL 3 Project vessels for a sustained period of time, reducing the likelihood of collision. Individuals are likely to avoid the EGL 3 Project vessels to	**No**- A high level of marine development is scheduled for the North Sea over the next ten years, particularly for the construction of offshore wind and other cable projects. There is the potential for more than one project to be under construction at the same time as the EGL 3 Project or occurring consecutively,	Screened out

Relevant Designated Feature	Potential Impact	Connectivity between EGL 3 and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		prevent the onset of a TTS and PTS. Given that vessels involved in the EGL 3 Project are likely to be either stationary or travelling slowly (circa 5 knots) in predictable straight lines during construction, maintenance or decommissioning activities minke whale would be able to avoid collision with the EGL 3 Project vessels. The EGL 3 Project would not have a significant effect on individuals from this site during any phase of development from this impact pathway.	extending the duration of or widening the spatial extent of impacts. It is also acknowledged that existing activities such as commercial fisheries, tourism and recreation, military practice areas and shipping and navigation can be sporadic or have a continuous use of the region and may already exert pressure on the site. However, given the distance to the site, the transient and temporary nature of the EGL 3 Project activities and the insignificant effects of the EGL 3 Project alone, it is considered that the EGL 3 Project would not act as a barrier to the site and would not affect the distribution or population of the species within the MU at any stage of the development. Therefore, it is concluded that there would be no detectable contribution to an in-combination effect resulting from this impact.	

Relevant Designated Feature	Potential Impact	Connectivity between EGL 3 and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
Sea of the Hebrides NCMPA Distance from the EGL 3 Project draft Order Limits to the NCMPA: 339.3 km				
Species: • Minke whale	Changes in distribution of prey species	**No**- **Volume 1, Part 3, Chapter 20: Fish and Shellfish** concluded that the English Offshore Scheme would not have a significant adverse effect on fish and shellfish ecology. The permanent loss of habitat is extremely localised relative to the wider geographic areas available to prey species. No impact on stock recruitment is predicted. Therefore, there is no source-pathway- receptor at any stage of the development with the relevant designated feature of the NCMPA from this impact pathway.	**No**- There is no pathway between the EGL 3 Project and other projects and plans to interact with the NCMPA at any stage of the development.	Screened out
	Electromagnetic changes	**No-** Although the NCMPA is beyond the ZOI, mobile species such as minke whale may travel within the ZOI. The burial and bundling of cables help to reduce the strength of induced electrical fields when compared to surface laid cables. An EMF study was undertaken for the EGL 3 and EGL 4 cable systems (**Volume 2, Part 1, Appendix 1.4.A: EGL 3 and EGL 4 Electromagnetic Field (EMF) Calculations**). It calculates that EMF fields on the seabed immediately above the cables would reach 123.8 µT (or 76.4 µT without the earth's magnetic field)	**No**- A high level of marine development is scheduled for the North Sea over the next ten years, particularly for the construction of offshore wind and other cable projects. There is the potential for more than one project to be under construction at the same time as the EGL 3 Project or occurring consecutively, extending the duration of or widening the spatial extent of impacts. It is also acknowledged that existing	Screened out

Relevant Designated Feature	Potential Impact	Connectivity between EGL 3 and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		and would attenuate to background levels within 20 m of the bundled cables. Gill *et al*., (Ref 3.17.A.57) reports that there have been no impacts to the migration of cetaceans over existing interconnector cables and (Ref 3.17.A.58) notes that harbour porpoise migration across the Basslink interconnector has been observed unhindered despite several crossings of operating sub-sea HVDC cables. Therefore, it can be assumed that minke whale would also not be significantly affected by 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 low likelihood of being affected by EMF. Furthermore, as the site is 339.3 km away from the draft Order Limits, and that minke whale have a large MU, it is unlikely that individuals would be in the vicinity of the EGL 3 Project for a sustained period of time, reducing the likelihood and occurrence of any impact. In conclusion, the EGL 3 Project would not have a significant effect on individuals from this site during any phase of development from this impact pathway.	activities such as commercial fisheries, tourism and recreation, military practice areas and shipping and navigation can be sporadic or have a continuous use of the region and may already exert pressure on the site. However, given the insignificant effects of the EGL 3 Project alone, the lack of evidence of effects on cetaceans, and the predominantly pelagic existence resulting in separation with the change in field and that minke whale have large MUs, minke whale have a low likelihood of being affected by EMF from cable systems. It is considered that the EGL 3 Project would not act as a barrier to the site and would not affect the distribution or population of the species within the MU at any stage of the development. Therefore, it is concluded that there would be no detectable contribution to an in-	

Relevant Designated Feature	Potential Impact	Connectivity between EGL 3 and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
			combination effect resulting from this impact.	
	Underwater noise changes	**No**- The licensable activities for the EGL 3 Project would not involve any impulsive noise (UXO clearance would be the subject of a separate licence). Therefore, to calculate whether underwater noise from the EGL 3 Project would be considered significant the 5 km EDR for geophysical surveys recommended by the JNCC., (Ref 3.17.A.2) has been used as the ZOI. Although the NCMPA is beyond the ZOI, mobile species such as minke whale may travel within the ZOI. Although the NCMPA is beyond the ZOI mobile species such as minke whale may travel within the ZOI. The effects of noise disturbance may be physical, physiological and / or behavioural. Disturbance is frequently a behavioural response to noise and may lead to animals being displaced from an affected area. The onset of a TTS can be referred to as the fleeing response. This is therefore a behavioural response, and animals exposed to these noise levels are likely to actively avoid injury as a result of a PTS by moving away from the area. According to Southall *et al* (Ref 3.17.A.59) and NMFS (Ref 3.17.A.60), minke whale are categorised within the functional	**No**- A high level of marine development is scheduled for the North Sea over the next ten years, particularly for the construction of offshore wind and other cable projects. There is the potential for more than one project to be under construction at the same time as the EGL 3 Project or occurring consecutively, extending the duration of or widening the spatial extent of impacts. It is also acknowledged that existing activities such as commercial fisheries, tourism and recreation, military practice areas and shipping and navigation can be sporadic or have a continuous use of the region and may already exert pressure on the site. However, given the distance to the site, the transient and temporary nature of the EGL 3 Project activities and the insignificant effects of	Screened out

Relevant Designated Feature	Potential Impact	Connectivity between EGL 3 and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		hearing group of low frequency cetacean. **Volume 2, Part 3, Appendix 3.22.A: Underwater Noise Modelling Report** indicates that as low frequency cetaceans, the maximum potential impact range of a TTS on minke whale as a result of geophysical surveys using a SBP is 41-90 m. Noise levels do not exceed the threshold for impacts for a PTS or a TTS from the EGL 3 Project vessels and equipment.. After reviewing the impact thresholds, the JNCC's advised 5 km EDR used in this assessment would be highly precautionary. Given the distance to the site, there would be no direct impacts on minke whale within the NCMPA. Indirect impacts have been considered including animals moving away from the site into the ZOI. However, given the wide area available for foraging for minke whale in the MU, and the fact that works would take place against a high level of shipping activity in the North Sea (with vessel density in some areas of 100+ hours / km^2 per month in 2023 (Ref 3.17.A.61), the EGL 3 Project activities would not have a significant effect on individuals from the site during any phase of development from this impact pathway. In addition, the licensable activities would not act as a barrier to movement to or from the site.	the EGL 3 Project alone, it is considered that the EGL 3 Project would not act as a barrier to the site and would not affect the distribution or population of the species within the MU at any stage of the development. Therefore, it is concluded that there would be no detectable contribution to an in-combination effect resulting from this impact.	

Relevant Designated Feature	Potential Impact	Connectivity between EGL 3 and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
	Visual / physical disturbance or displacement	**No**- Although the NCMPA is beyond the ZOI (4 km EDR), mobile species such as minke whale may travel within the ZOI. Given the distance to the site and the large extent of the MU for minke whale and the transient and temporary nature of the construction, repair and decommissioning activities, it is unlikely that individuals would be in the vicinity of the EGL 3 Project vessels for a sustained period of time. Therefore, any visual disturbance would be temporary and not repeated over an extended period of time. As light levels light within the water column decrease rapidly with depth, whales have evolved a sophisticated acoustic sensory system which helps them to navigate, find prey, communicate with each other and avoid potential predators (Ref 3.17.A.87). It is therefore likely that any disturbance/displacement would first occur through underwater noise changes before the visual presence of the EGL 3 Project vessels. In addition, the North Sea is already used by large ships and ferries, with vessel density in some areas of 100+ hours / km^2 per month in 2023 (Ref 3.17.A.61), animals are therefore habituated to a certain degree to the presence of vessels. The EGL 3 Project would not have a significant effect on	**No**- A high level of marine development is scheduled for the North Sea over the next ten years, particularly for the construction of offshore wind and other cable projects. There is the potential for more than one project to be under construction at the same time as the EGL 3 Project or occurring consecutively, extending the duration of or widening the spatial extent of impacts. It is also acknowledged that existing activities such as commercial fisheries, tourism and recreation, military practice areas and shipping and navigation can be sporadic or have a continuous use of the region and may already exert pressure on the site. However, given the distance to the site, the transient and temporary nature of the EGL 3 Project activities and the insignificant effects of the EGL 3 Project alone, it is considered that the EGL 3 Project would not act as a	Screened out

Relevant Designated Feature	Potential Impact	Connectivity between EGL 3 and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		individuals from this site during any phase of development from this impact pathway.	barrier to the site and would not affect the distribution or population of the species within the MU at any stage of the development. Therefore, it is concluded that there would be no detectable contribution to an in-combination effect resulting from this impact.	
	Collision with project vessels	**No**- Although the NCMPA is beyond the ZOI mobile species such as minke whale may travel within the ZOI. Given the distance to the site and the large extent of the MU for minke whale and the transient and temporary nature of the construction, repair and decommissioning activities, it is unlikely that individuals would be in the vicinity of the EGL 3 Project vessels for a sustained period of time, reducing the likelihood of collision. Individuals are likely to avoid the EGL 3 Project vessels to prevent the onset of a TTS and PTS. Given that vessels involved in the EGL 3 Project are likely to be either stationary or travelling slowly (circa 5 knots) in predictable straight lines during construction, maintenance or decommissioning activities, minke whale would be able to avoid collision with the EGL 3 Project vessels. The EGL 3 Project	**No**- A high level of marine development is scheduled for the North Sea over the next ten years, particularly for the construction of offshore wind and other cable projects. There is the potential for more than one project to be under construction at the same time as the EGL 3 Project or occurring consecutively, extending the duration of or widening the spatial extent of impacts. It is also acknowledged that existing activities such as commercial fisheries, tourism and recreation, military practice areas and shipping and navigation can	Screened out

Relevant Designated Feature	Potential Impact	Connectivity between EGL 3 and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		would not have a significant effect on individuals from this site during any phase of development from this impact pathway.	be sporadic or have a continuous use of the region and may already exert pressure on the site. However, given the distance to the site, the transient and temporary nature of the EGL 3 Project activities and the insignificant effects of the EGL 3 Project alone, it is considered that the EGL 3 Project would not act as a barrier to the site and would not affect the distribution or population of the species within the MU at any stage of the development. Therefore, it is concluded that there would be no detectable contribution to an in-combination effect resulting from this impact.	
North-east Lewis NCMPA Distance from the EGL 3 Project draft Order Limits to the NCMPA: 386.0 km				
Species: • Risso's dolphin	Changes in distribution of prey species	**No**- **Volume 1, Part 3, Chapter 20: Fish and Shellfish** concluded that the English Offshore Scheme would not have a significant adverse effect on fish and shellfish ecology. The permanent loss of	**No**- There is no pathway between the EGL 3 Project and other projects and plans to interact with the	Screened out

Relevant Designated Feature	Potential Impact	Connectivity between EGL 3 and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		habitat is extremely localised relative to the wider geographic areas available to prey species. No impact on stock recruitment is predicted. Therefore, there is no source-pathway- receptor at any stage of the development with the relevant designated feature of the NCMPA from this impact pathway.	NCMPA at any stage of the development.	
	Electromagnetic changes	**No-** Although the NCMPA is beyond the ZOI, mobile species such as risso's dolphin may travel within the ZOI. The burial and bundling of cables help to reduce the strength of induced electrical fields when compared to surface laid cables. An EMF study was undertaken for the EGL 3 and EGL 4 cable systems (**Volume 2, Part 1, Appendix 1.4.A: EGL 3 and EGL 4 Electromagnetic Field (EMF) Calculations**). It calculates that EMF fields on the seabed immediately above the cables would reach 123.8 µT (or 76.4 µT without the earth's magnetic field) and would attenuate to background levels within 20 m of the bundled cables. Gill *et al*., (Ref 3.17.A.57) reports that there have been no impacts to the migration of cetaceans over existing interconnector cables and (Ref 3.17.A.58 notes that harbour porpoise migration across the Basslink interconnector has been observed unhindered despite several crossings of operating sub-sea HVDC	**No**- Given the insignificant effects of the EGL 3 Project alone, the lack of evidence of effects on cetaceans, and the predominantly pelagic existence resulting in separation with the change in field and that risso's dolphin have large MUs, risso's dolphin have a low likelihood of being affected by EMF from cable systems. It is considered that the EGL 3 Project would not act as a barrier to the site and would not affect the distribution or population of the species within the MU at any stage of the development. Therefore, it is concluded that there would be no detectable contribution to an in-	Screened out

Relevant Designated Feature	Potential Impact	Connectivity between EGL 3 and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		cables. Therefore, it can be assumed that risso's dolphin would also not be significantly affected by 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 low likelihood of being affected by EMF. Furthermore, as the site is 386.0 km away from the draft Order Limits, and that risso's dolphin have a large MU, it is unlikely that individuals would be in the vicinity of the EGL 3 Project for a sustained period of time, reducing the likelihood and occurrence of any impact. In conclusion, the EGL 3 Project would not have a significant effect on individuals from this site during any phase of development from this impact pathway.	combination effect resulting from this impact.	
	Underwater noise changes	**No**- The licensable activities for the EGL 3 Project would not involve any impulsive noise (UXO clearance would be the subject of a separate licence). Therefore, to calculate whether underwater noise from the EGL 3 Project would be considered significant the 5 km EDR for geophysical surveys recommended by the (Ref 3.17.A.2) has been used as the ZOI. Although the NCMPA is beyond the ZOI (5	**No**- A high level of marine development is scheduled for the North Sea over the next ten years, particularly for the construction of offshore wind and other cable projects. There is the potential for more than one project to be under construction at the same time as the EGL 3 Project or occurring consecutively,	Screened out

Relevant Designated Feature	Potential Impact	Connectivity between EGL 3 and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		km EDR), mobile species such as risso's dolphin may travel within the ZOI. The effects of noise disturbance may be physical, physiological and / or behavioural. Disturbance is frequently a behavioural response to noise and may lead to animals being displaced from an affected area. The onset of a TTS can be referred to as the fleeing response. This is therefore a behavioural response, and animals exposed to these noise levels are likely to actively avoid injury as a result of a PTS by moving away from the area. According to Southall *et al* (Ref 3.17.A.59) and NMFS, (Ref 3.17.A.60), risso's dolphin are categorised within the functional hearing group of high frequency cetacean. **Volume 2, Part 3, Appendix 3.22.A: Underwater Noise Assessment** indicates that as high frequency cetaceans, the maximum potential impact range of a TTS for risso's dolphin as a result of geophysical surveys using a SBP is 115-165 m. Noise levels do not exceed the threshold for impacts for a PTS or a TTS from the EGL 3 Project vessels and equipment. After reviewing the impact thresholds, the JNCC's advised 5 km EDR used in this assessment would be highly precautionary. Given the distance to the site there would be no direct impacts on risso's dolphin	extending the duration of or widening the spatial extent of impacts. It is also acknowledged that existing activities such as commercial fisheries, tourism and recreation, military practice areas and shipping and navigation can be sporadic or have a continuous use of the region and may already exert pressure on the site. However, given the distance to the site, the transient and temporary nature of the EGL 3 Project activities and the insignificant effects of the EGL 3 Project alone, it is considered that the EGL 3 Project would not act as a barrier to the site and would not affect the distribution or population of the species within the MU at any stage of the development. Therefore, it is concluded that there would be no detectable contribution to an in-combination effect resulting from this impact.	

Relevant Designated Feature	Potential Impact	Connectivity between EGL 3 and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		within the NCMPA. Indirect impacts have been considered including animals moving away from the site into the ZOI. However, given the wide area available for foraging for risso's dolphin in the MU, and the fact that works would take place against a high level of shipping activity in the North Sea (with vessel density in some areas of 100+ hours / km^2 per month in 2023 (Ref 3.17.A.61), the EGL 3 Project activities would not have a significant effect on individuals from the site during any phase of development from this impact pathway. In addition, the licensable activities would not act as a barrier to movement to or from the site.		
	Visual / physical disturbance or displacement	**No**- Although the NCMPA is beyond the ZOI (4 km EDR), mobile species such as risso's dolphin may travel within the ZOI. Given the distance to the site and the large extent of the MU for risso's dolphin and the transient and temporary nature of the construction, repair and decommissioning activities, it is unlikely that individuals would be in the vicinity of the EGL 3 Project vessels for a sustained period of time. Therefore, any visual disturbance would be temporary and not repeated over an extended period of time. As light levels within the water column decrease rapidly with depth, dolphins have evolved a sophisticated acoustic sensory	**No**- A high level of marine development is scheduled for the North Sea over the next ten years, particularly for the construction of offshore wind and other cable projects. There is the potential for more than one project to be under construction at the same time as the EGL 3 Project or occurring consecutively, extending the duration of or widening the spatial extent of impacts. It is also acknowledged that existing	Screened out

Relevant Designated Feature	Potential Impact	Connectivity between EGL 3 and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		system which helps them to navigate, find prey, communicate with each other and avoid potential predators (Ref 3.17.A.87). It is therefore likely that any disturbance/displacement would first occur through underwater noise changes before the visual presence of the EGL 3 Project vessels. In addition, the North Sea is already used by large ships and ferries, with vessel density in some areas of 100+ hours / km^2 per month in 2023 (Ref 3.17.A.61), and animals are therefore habituated to a certain degree to the presence of vessels. The EGL 3 Project would not have a significant effect on individuals from this site during any phase of development from this impact pathway.	activities such as commercial fisheries, tourism and recreation, military practice areas and shipping and navigation can be sporadic or have a continuous use of the region and may already exert pressure on the site. However, given the distance to the site, the transient and temporary nature of the EGL 3 Project activities and the insignificant effects of the EGL 3 Project alone, it is considered that the EGL 3 Project would not act as a barrier to the site and would not affect the distribution or population of the species within the MU at any stage of the development. Therefore, it is concluded that there would be no detectable contribution to an in-combination effect resulting from this impact.	
	Collision with project vessels	**No**- Although the NCMPA is beyond the ZOI mobile species such as risso's dolphin may travel within the ZOI. Given the distance to the site and the large extent of	**No**- A high level of marine development is scheduled for the North Sea over the next ten years, particularly	Screened out

Relevant Designated Feature	Potential Impact	Connectivity between EGL 3 and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		the MU for risso's dolphin and the transient and temporary nature of the construction, repair and decommissioning activities, it is unlikely that individuals would be in the vicinity of the EGL 3 Project vessels for a sustained period of time, reducing the likelihood of collision. Individuals are likely to avoid the EGL 3 Project vessels to prevent the onset of a TTS and PTS. Given that vessels involved in the EGL 3 Project are likely to be either stationary or travelling slowly (circa 5 knots) in predictable straight lines during construction, maintenance or decommissioning activities, risso's dolphin would be able to avoid collision with the EGL 3 Project vessels. The EGL 3 Project would not have a significant effect on individuals from this site during any phase of development from this impact pathway.	for the construction of offshore wind and other cable projects. There is the potential for more than one project to be under construction at the same time as the EGL 3 Project or occurring consecutively, extending the duration of or widening the spatial extent of impacts. It is also acknowledged that existing activities such as commercial fisheries, tourism and recreation, military practice areas and shipping and navigation can be sporadic or have a continuous use of the region and may already exert pressure on the site. However, given the distance to the site, the transient and temporary nature of the EGL 3 Project activities and the insignificant effects of the EGL 3 Project alone, it is considered that the EGL 3 Project would not act as a barrier to the site and would not affect the distribution or population of the species within the MU at any stage	

Relevant Designated Feature	Potential Impact	Connectivity between EGL 3 and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
			of the development. Therefore, it is concluded that there would be no detectable contribution to an in-combination effect resulting from this impact.	

The EGL 4 Project MCZ / NCMPA Screening Assessment

The following seven sites are included in the assessment for the EGL 4 Project:

- Holderness Offshore MCZ;
- Northeast of Farnes Deep MCZ;
- Firth of Forth Banks Complex NCMPA;
- Berwick to St Mary's MCZ;
- Southern Trench NCMPA;
- Sea of the Hebrides NCMPA; and
- North-east Lewis NCMPA.

Table 3.17.A-9 - Screening assessment for the EGL 4 Project

Relevant Designated Feature	Potential Impact	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
Holderness Offshore MCZ Distance from the EGL 4 Project draft Order Limits to the MCZ: Overlaps for 6.5 km^2				
Geology: • North Sea glacial tunnel valleys Habitats: • Subtidal coarse sediment • Subtidal mixed sediments • Subtidal sand Species: • Ocean quahog	Temporary habitat loss / seabed disturbance	**Yes**- There is the potential for seabed preparation and cable laying activities to result in temporary habitat loss / seabed disturbance within the MCZ. This is screened in for all phases of the development including maintenance and operation (when remedial works may occur) and decommissioning if the cables are removed.	**Yes-** The EGL 4 Project has the potential to interact with two other subsea cable projects that are currently in planning. The Offshore Scoping Boundary of the Ossian Offshore Wind Farm Transmission Infrastructure overlaps with the MCZ for an area of 557.8 km^2 (Ref 3.17.A.56). The exact cable route of the Eastern Green Link 5 project has not yet been confirmed; however the preferred route currently intersects the MCZ for 4.8 km. Additionally, existing activities particularly commercial fisheries that use bottom trawling fishing methods may already exert pressure on this site. There is considered to be the potential for an in-combination effect from this impact on the designated features of the MCZ. Therefore, this impact has been	Screened in (alone and in-combination)

Relevant Designated Feature	Potential Impact	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
			screened into the Stage 1 Assessment.	
	Permanent habitat loss	**Yes**- There is the potential for external cable protection to result in permanent habitat loss at all phases of the development including decommissioning if the cable protection is left in-situ.	**Yes-** The EGL 4 Project has the potential to interact with two other subsea cable projects that are currently in planning. The Offshore Scoping Boundary of the Ossian Offshore Wind Farm Transmission Infrastructure overlaps with the MCZ for an area of 557.8 km^2 (Ref 3.17.A.56). The exact cable route of the Eastern Green Link 5 project has not yet been confirmed, however the preferred route currently intersects the MCZ for 4.8 km. Viking Link Interconnector is an existing project which intersects the MCZ for approximately 17.03 km which may contribute to an in-combination affect where external cable protection is required. Additionally, other infrastructure present within the MCZ that has caused habitat loss would be assessed in the Stage 1 Assessment. Additionally, existing activities particularly commercial fisheries that use bottom trawling fishing	Screened in (alone and in-combination)

Relevant Designated Feature	Potential Impact	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
			methods may already exert pressure on this site. Therefore, there is considered to be the potential for an in-combination effect from this impact on the designated features of the MCZ. As a result, this impact has been screened into the Stage 1 Assessment.	
	Water flow (tidal current) changes, including sediment transport considerations	**Yes**- There is the potential for external cable protection to result in localised water flow changes at all phases of the development including decommissioning if the cable protection is left in-situ.	**Yes-** The EGL 4 Project has the potential to interact with two other subsea cable projects that are currently in planning. The Offshore Scoping Boundary of the Ossian Offshore Wind Farm Transmission Infrastructure overlaps with the MCZ for an area of 557.8 km^2 (Ref 3.17.A.56). The exact cable route of the Eastern Green Link 5 project has not yet been confirmed; however, the preferred route currently intersects the MCZ for 4.8 km. There is considered to be the potential for an in-combination effect from this impact on the designated features of the MCZ. Therefore, this impact has been	Screened in (alone and in-combination)

Relevant Designated Feature	Potential Impact	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
			screened into the Stage 1 Assessment.	
Habitats: • Subtidal coarse sediment • Subtidal mixed sediments • Subtidal sand	Temporary increase and deposition of suspended sediments	**Yes**- There is the potential for seabed preparation and cable laying activities to result in a temporary increase and deposition of suspended sediments within the MCZ as it is within the 2 km ZOI. Prior to cable burial, pre-sweeping may be required immediately adjacent to the northeast corner of the MCZ (outside of the MCZ boundary). In regard to smothering as a result of sediment deposition, MarLIN categorise light smothering as the deposition of up to 5 cm of sediment in a discrete event. Light smothering would occur from several of the EGL 4 Project activities. The most significant contributors (relatively) would be from the sediment plume generated by cable trenching and pre-sweeping where a TSHD is used. **Volume 1, Part 3, Chapter 18: Coastal and Marine Physical Processes** states that only fine sands and silts would disperse beyond the draft Order Limits. Therefore, light smothering from fine sediment may occur as a result of pre-sweeping activities adjacent to the MCZ as well as light smothering from coarse sediment in the immediate area	**Yes-** The EGL 4 Project has the potential to interact with three other subsea cable projects that are currently in planning. The Offshore Scoping Boundary of the Ossian Offshore Wind Farm Transmission Infrastructure overlaps with the MCZ for an area of 557.8 km^2 (Ref 3.17.A.56). The exact cable route of the Eastern Green Link 5 project has not yet been confirmed; however, the preferred route currently intersects the MCZ for 4.8 km. The Hornsea Project Four export cable corridor is located approximately 0.6 km at its nearest point (Ref 3.17.A.50). Additionally, existing activities particularly commercial fisheries that use bottom trawling fishing methods may already exert pressure on this site. There is considered to be the potential for an in-combination effect from this impact on the designated features of the MCZ. Therefore, this impact has been	Screened in (alone and in-combination)

Relevant Designated Feature	Potential Impact	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		surrounding the cable following trenching activities within the MCZ. Cable trenching and pre-sweeping would also cause increased suspended sediment concentrations within the MCZ. If a temporary increase and deposition of suspended sediments alters the type, quality or composition of habitats it could undermine the conservation objectives of the MCZ. Therefore, this impact is screened in for all phases of the development including maintenance and operation (where remedial works may occur) and decommissioning (where the cables are removed).	screened into the Stage 1 Assessment.	
Species: • Ocean quahog	Temporary increase and deposition of suspended sediments	**No-** Ocean quahog is not recognised as being sensitive to changes in suspended sediments (water clarity) or smothering (light and heavy) (Ref 3.17.A.5). Therefore, there is no source-pathway- receptor at any stage of the development on the features of the MCZ.	**No**- Due to the insensitivity of ocean quahog to this impact, there is no source-pathway-receptor between the EGL 4 Project and other projects and plans to interact with the MCZ at any stage of the development.	Screened out
	Electromagnetic changes	**No**- The effects of EMF on invertebrates have not yet been well studied (Ref 3.17.A.34). However, studies on other bivalve species, such as the blue mussel and Mediterranean	**No**- Two other subsea cable projects are currently in planning that could potentially overlap with the MCZ. The Offshore Scoping Boundary of	Screened out

Relevant Designated Feature	Potential Impact	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		mussel, suggest that EMF does not induce physiological changes at levels below 300 µT (Ref 3.17.A.62; Ref 3.17.A.63; Ref 3.17.A.64; Ref 3.17.A.65). Therefore, it is reasonable to assume that ocean quahog (also a bivalve mollusc) may respond similarly to EMF. The burial and bundling of cables help to reduce the strength of induced electrical fields when compared to surface laid cables. An EMF study was undertaken for the EGL 4 cable system (**Volume 2, Part 1, Appendix 1.4.A: EGL 3 and EGL 4 Electromagnetic Field (EMF) Calculations**). It calculates that EMF fields on the seabed immediately above the cables would reach 123.8 µT (or 76.4 µT without the earth's magnetic field) and would attenuate to background levels within 20 m of the bundled cables. As ocean quahog would be exposed to EMF levels well below 300 µT, it is unlikely that any physiological changes would occur, and the population composition would not be affected. Furthermore, **Volume 1, Part 3, Chapter 19: Intertidal and Subtidal Benthic Ecology** identified that the closest presence of ocean quahog within the Holderness Offshore MCZ to the draft Order Limits is 18 km.	the Ossian Offshore Wind Farm Transmission Infrastructure overlaps with the MCZ for an approximate area of 557.8 km^2 (Ref 3.17.A.56). The exact cable route of the Eastern Green Link 5 project has not yet been confirmed; however, the preferred route currently intersects the MCZ for 4.8 km Furthermore, a high level of marine development is scheduled for the North Sea over the next ten years, particularly for the construction of offshore wind and other cable projects. There is the potential for more than one project to be under construction at the same time as the EGL 4 Project or occurring consecutively, extending the duration of or widening the spatial extent of impacts. It is also acknowledged that existing activities such as commercial fisheries, tourism and recreation, military practice areas and shipping and navigation can be sporadic or have a continuous use of the region and may already exert pressure on the site. However, an EMF study was undertaken	

Relevant Designated Feature	Potential Impact	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		Therefore, the EGL 4 Project is not considered to have a significant effect on ocean quahog from this site during any phase of development on the features of the MCZ from this impact pathway.	for the EGL 4 cable system (**Volume 2, Part 1, Appendix 1.4.A: EGL 3 and EGL 4 Electromagnetic Field (EMF) Calculations**). It calculates that EMF fields on the seabed immediately above the cables would reach 123.8 µT (or 76.4 µT without the earth's magnetic field) and would attenuate to background levels within 20 m of the bundled cables. Studies on other bivalve species, such as the blue mussel and Mediterranean mussel, suggest that EMF does not induce physiological changes at levels below 300 µT (Ref 3.17.A.62; Ref 3.17.A.63; Ref 3.17.A.64; Ref 3.17.A.65). Given that ocean quahogs, also a bivalve mollusc, are likely to respond similarly to EMF, and they would be exposed to levels well below 300 µT from the EGL 4 Project, physiological changes would not occur, and the population composition would not be affected. Furthermore, **Volume 1, Part 3, Chapter 19: Intertidal and Subtidal Benthic Ecology** identified that the closest	

Relevant Designated Feature	Potential Impact	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
			presence of ocean quahog within the Holderness Offshore MCZ to the draft Order Limits is 18 km. As such, EMF from the EGL 4 Project cannot affect ocean quahog within the MCZ. Therefore, there is no potential for an in-combination effect.	
Northeast of Farnes Deep MCZ Distance from the EGL 4 Project draft Order Limits to the MCZ: 0.5 km				
Habitats: • Subtidal coarse sediment • Subtidal mixed sediments • Subtidal mud • Subtidal sand Species • Ocean quahog	Temporary habitat loss / seabed disturbance	**No**- The EGL 4 Project does not cross the boundary for this MCZ and is beyond the ZOI for the potential impact. Therefore, there is no source-pathway- receptor at any stage of the development on the features of the MCZ.	**No**- There is no pathway between the EGL 4 Project and other projects and plans to interact with the MCZ at any stage of the development.	Screened out
	Permanent habitat loss	**No**- The EGL 4 Project does not cross the boundary for this MCZ and is beyond the ZOI for the potential impact. There would be no permanent habitat loss within the MCZ. Therefore, there is no source-pathway- receptor at any stage of the development on the features of the MCZ.	**No**- There is no pathway between the EGL 4 Project and other projects and plans to interact with the MCZ at any stage of the development.	Screened out
	Water flow (tidal current) changes, including sediment	**No**- The EGL 4 Project does not cross the boundary for this MCZ and is beyond the ZOI for the potential impact. It has been considered that	**No**- There is no pathway between the EGL 4 Project and other projects and plans to	Screened out

Relevant Designated Feature	Potential Impact	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
	transport considerations	permanent structures, such as cable protection outside the MCZ, could potentially impact water flow within the MCZ. Where cable protection is not required, the seabed level would remain unchanged or similar to its pre-installation condition, eliminating the potential for this impact to occur. Where cable protection is required, the height of the structures on top of the seabed would result in a highly localised change of a small magnitude, immediately around the area where cable protection is applied. As this MCZ is 0.5 km away from the EGL 4 Project, there is no source-pathway-receptor at any stage of the development on the features of the MCZ.	interact with the MCZ at any stage of the development.	
Habitats: • Subtidal coarse sediment • Subtidal mixed sediments • Subtidal mud • Subtidal sand	Temporary increase and deposition of suspended sediments	**No-** There is the potential for cable laying activities to result in a temporary increase and deposition of suspended sediments within the MCZ as it is within the 2 km ZOI. There is no pre-sweeping required near the MCZ and therefore, only the effects of cable trenching have been considered. In regard to smothering as a result of sediment deposition, MarLIN categorise light smothering as the deposition of up to 5 cm of sediment in a discrete event. Light smothering	**No**- There is one other subsea cable project currently in planning within 2 km of the MCZ. The exact route of the Morvern Hawthorn Pit Grid Connection Project has not yet been confirmed; therefore, this assessment considers the worst-case scenario, assuming the cable route runs along the eastern boundary of the MCZ for its entire length (25.1 km).	Screened out

Relevant Designated Feature	Potential Impact	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		would occur from several of the EGL 4 Project activities. The most significant contributor (relatively) would be from the sediment plume generated by cable trenching. Using GIS, a 2 km buffer (the ZOI for this impact) was applied to the MCZ, where the buffer overlapped with the draft Order Limits, benthic survey data from Benthic Solutions (Ref 3.17.A.66) was referred to. In summary, the survey identified habitats containing, sand, muddy sand, coarse sediment and moderate energy rock. Rock would not be suspended and deposited by a sediment plume and is therefore disregarded for this impact. **Volume 1, Part 3, Chapter 18: Coastal and Marine Physical Processes** states that only fine sands and silts would disperse beyond the draft Order Limits from cable trenching activities. Therefore, coarse sediments would not affect the MCZ. Based on estimates from ABPmer, the peak flow speed during spring tides around the MCZ is approximately 0.5 m/s. According to **Volume 1, Part 3, Chapter 18: Coastal and Marine Physical Processes** this means that only fines (<63 µm) could settle within the MCZ at a maximum distance of 1.3-6.5 km of the trench. A fine sediment	Additionally, existing activities particularly commercial fisheries that use bottom trawling fishing methods may already exert pressure on this site. As explained in the assessment for The EGL 4 Project Alone, any deposition would be <2 mm of fine material <63 µm, which would not be noticeable against natural background levels and suspended sediment concentrations would dilute and disperse. As a result, it is concluded that the EGL 4 Project would not contribute to any detectable in-combination effects.	

Relevant Designated Feature	Potential Impact	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		plume may persist for up to 400 hours exceeding concentrations of 10 mg/l for up to 4.0 km (as calculated for peak flow speeds beyond KP 330) however, concentrations would dilute and disperse whilst in suspension. The sediment plume would also be transported by currents, making it unlikely that all of the fine sediment would settle within the MCZ. If deposition does occur within the MCZ, it would be <2 mm, which would not be noticeable against natural background levels. As a result, a temporary increase and deposition of suspended sediments is expected to have no discernible effect on the structure, function, or quality of habitats within the site. In addition, given the temporary and transient nature of the construction, repair and decommissioning activities, the EGL 4 Project is not considered to have a significant effect on habitats within this site during any phase of development from this impact pathway.		
Species: • Ocean quahog	Temporary increase and deposition of suspended sediments	**No-** Ocean quahog is not recognised as being sensitive to changes in suspended sediments (water clarity) or smothering (light and heavy) (Ref 3.17.A.5). Therefore, there is no source-pathway- receptor at any stage	**No**- Due to the insensitivity of ocean quahog to this impact, there is no source-pathway-receptor between **the** EGL 4 Project and other projects and	Screened **out**

Relevant Designated Feature	Potential Impact	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		of the development on the features of the MCZ.	plans to interact with the MCZ at any stage of the development.	
	Electromagnetic changes	**No**- The EGL 4 Project is beyond the ZOI, therefore, there is no source-pathway- receptor at any stage of the development on the features of the MCZ.	**No**- There is no pathway between the EGL 4 Project and other projects and plans to interact with the MCZ at any stage of the development.	Screened out
Firth of Forth Banks Complex NCMPA Distance from the EGL 4 Project draft Order Limits to the NCMPA: 1.8 km				
Geology: • Quaternary of Scotland: Moraines representative of the Wee Bankie Key Geodiversity Area	Temporary habitat loss / seabed disturbance	**No**- The EGL 4 Project does not cross the boundary for this NCMPA and is beyond the ZOI for the potential impact. Therefore, there is no source-pathway- receptor at any stage of the development on the features of the NCMPA.	**No**- There is no pathway between the EGL 4 Project and other projects and plans to interact with the NCMPA at any stage of the development.	Screened out
Habitats: • Offshore subtidal sands and gravels • Shelf banks and mounds Species: • Ocean quahog	Permanent habitat loss	**No**- The EGL 4 Project does not cross the boundary for this NCMPA and is beyond the ZOI for the potential impact. There would be no permanent habitat loss within the NCMPA. Therefore, there is no source-pathway-receptor at any stage of the development on the features of the NCMPA.	**No**- There is no pathway between the EGL 4 Project and other projects and plans to interact with the NCMPA at any stage of the development.	Screened out
	Water flow (tidal current) changes, including	**No**- The EGL 4 Project does not cross the boundary for this NCMPA and is beyond the ZOI for the potential	**No**- There is no pathway between the EGL 4 Project and other projects and plans to	Screened out

Relevant Designated Feature	Potential Impact	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
	sediment transport considerations	impact. It has been considered that permanent structures, such as cable protection outside the NCMPA, could potentially impact water flow within the NCMPA. Where cable protection is not required, the seabed level would remain unchanged or similar to its pre-installation condition, eliminating the potential for this impact to occur. Where cable protection is required, the height of the structures on top of the seabed would result in a highly localised change of a small magnitude, immediately around the area where cable protection is applied. As this NCMPA is 1.8 km away from the EGL 4 Project, there is no source-pathway-receptor at any stage of the development on the features of the NCMPA.	interact with the NCMPA at any stage of the development.	
Habitats: • Offshore subtidal sands and gravels • Shelf banks and mounds	Temporary increase and deposition of suspended sediments	**N**o- MarLIN categorise light smothering as the deposition of up to 5 cm of sediment in a discrete event. Light smothering would occur from several of the EGL 4 Project activities. The most significant contributor (relatively) would be from the sediment plume generated by cable trenching. There is no pre-sweeping required near the NCMPA and therefore, only the effects of cable trenching have been considered.	**No**- Three other subsea cable projects are currently in planning within 2 km of the NCMPA. The Berwick Bank Cambois Connection Marine Scheme Scoping Boundary overlaps with the NCMPA for approximately 361.7 km^2 (Ref 3.17.A.51),the Morvern Hawthorn Pit Grid Connection Project Scoping Boundary is located immediately adjacent to	Screened out

Relevant Designated Feature	Potential Impact	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		Using GIS, a 2 km buffer (the ZOI for this impact) was applied to the NCMPA, where the buffer overlapped with the draft Order Limits, benthic survey data from Benthic Solutions, (Ref 3.17.A.66) was referred to. The survey identified circalittoral muddy sand within the draft Order Limits, which typically has a silt content of 5-20% (Ref 3.17.A.67).**Volume 1, Part 3, Chapter 18: Coastal and Marine Physical Processes** states that only fine sands and silts would disperse beyond the draft Order Limits from cable trenching activities. Therefore, coarse sediments won't affect the NCMPA. Based on estimates from ABPmer, the peak flow speed during spring tides around the NCMPA is approximately 0.45-0.55 m/s. According to **Volume 1, Part 3, Chapter 18: Coastal and Marine Physical Processes this** means that only fines (<63 µm) could settle within the NCMPA at a maximum distance of 1.3-6.5 km of the trench. A fine sediment plume may persist for up to 400 hours exceeding concentrations of 10 mg/l for up to 4.0 km (as calculated for peak flow speeds beyond KP 330) however, concentrations would dilute and disperse whilst in suspension. The sediment plume would also be	the Montrose Bank part of the NCMPA (RPS, 2025b, 68), while the Eastern Green Link 2 Marine Installation Corridor is located approximately 0.03 km from the Montrose Bank part of the NCMPA (AECOM, 2022, 52). The EGL 4 Project is located within 2 km of the Berwick Bank section of the NCMPA, in contrast to the Morvern Hawthorn Pit Grid Connection Project and Eastern Green Link 2, which are closer to the Montrose Bank. Therefore, there would be no significant accumulation of sediment deposition within the same area of the NCMPA from these projects in-combination with the EGL 4 Project. Additionally, existing activities particularly commercial fisheries that use bottom trawling fishing methods may already exert pressure on this site. However, the EGL 4 Project has been determined to have no significant effect on the site as any deposition would be <2 mm of fine material <63 µm, which would not be noticeable against natural background	

Relevant Designated Feature	Potential Impact	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		transported by currents, making it unlikely that all of the fine sediment would settle within the NCMPA. If deposition does occur within the NCMPA, it would be <2 mm, which would not be noticeable against natural background levels. As a result, a temporary increase and deposition of suspended sediments is expected to have no discernible effect on the structure, function, or quality of habitats within the site. In addition, given the temporary and transient nature of the construction, repair and decommissioning activities, the EGL 4 Project is not considered to have a significant effect on habitats within this site during any phase of development from this impact pathway.	levels and suspended sediment concentrations would dilute and disperse. Consequently, it is concluded that the EGL 4 Project would not contribute to any detectable in-combination effects. Any significant impacts are more likely to arise from the Berwick Bank Cambois Connection Marine Scheme or commercial fisheries activities in isolation, rather than from a combined effect with the EGL 4 Project.	
Species: • Ocean quahog	Temporary increase and deposition of suspended sediments	**No-** Ocean quahog is not recognised as being sensitive to changes in suspended sediments (water clarity) or smothering (light and heavy) (Ref 3.17.A.5). Therefore, there is no source-pathway- receptor at any stage of the development on the features of the NCMPA.	**No**- Due to the insensitivity of ocean quahog to this impact, there is no source-pathway-receptor between **the** EGL 4 Project and other projects and plans to interact with the MCZ at any stage of the development.	Screened **out**
	Electromagnetic changes	**No**- The EGL 4 Project is beyond the ZOI, therefore, there is no source-pathway- receptor at any stage of the	**No**- There is no pathway between the EGL 4 Project and other projects and plans to	Screened out

Relevant Designated Feature	Potential Impact	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		development on the features of the MCZ on the features of the NCMPA.	interact with the MCZ at any stage of the development.	
Berwick to St Mary's MCZ Distance from the EGL 4 Project draft Order Limits to the MCZ: 20.9 km				
Species: • Common eider	Changes in distribution of prey species	**No**- **Volume 1, Part 3, Chapter 20: Fish and Shellfish Ecology** concluded that the English Offshore Scheme would not have a significant adverse effect on fish and shellfish ecology. The permanent loss of habitat is extremely localised relative to the wider geographic areas available to prey species. No impact on stock recruitment is predicted. Therefore, there is no source-pathway- receptor at any stage of the development on the features of the MCZ.	**No**- There is no pathway between the EGL 4 Project and other projects and plans to interact with the MCZ at any stage of the development.	Screened out
	Temporary increase and deposition of suspended sediments	**No**- Although the MCZ is beyond the ZOI, mobile species may travel to forage within the ZOI. Given that the MCZ is 20.9 km from the EGL 4 draft Order Limits and the foraging range of common eider is 21.5 km (Ref 3.17.A.14), it is unlikely that individuals foraging within the MCZ would also forage within the draft Order Limits as it is towards the limit of their foraging range and preferred foraging grounds are likely to be closer to the MCZ.	**No**- Two other subsea cable projects are currently in planning within 2 km of the MCZ. The Berwick Bank Cambois Connection Marine Scheme Scoping Boundary overlaps with the MCZ for approximately 4 km (Ref 3.17.A.51), while the Eastern Green Link 1 project may be situated approximately 1.7 km	Screened out

Relevant Designated Feature	Potential Impact	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		Volume 1, Part 3, Chapter 18: Coastal and Marine Physical Processes states that only fine sands and silts would disperse beyond the draft Order Limits from cable trenching activities. Therefore, coarse sediments would not affect the MCZ and would only impact the area immediately surrounding the cable. Based on estimates from ABPmer, the peak flow speed during spring tides around the MCZ is approximately 0.5 m/s. According to **Volume 1, Part 3, Chapter 18: Coastal and Marine Physical Processes** this means only fines (<63 µm) could exceed the draft Order Limits as a sediment plume with concentrations exceeding 10 mg/l on spring tides for a maximum distance of 5.2 km (as calculated for peak flow speeds between KP 230-330). However, the sediment plume would dilute and disperse whilst in suspension, with concentrations decreasing with distance and time. Given the temporary and transient nature of cable laying activities and that the draft Order Limits would be the area most impacted by suspended sediment, which is towards the limit of the foraging range of this species, it is considered that the EGL 4 Project would not have a significant effect on	from the MCZ (at its closest point). Given the distance between the EGL 4 Project and the MCZ, there is no potential for an in-combination effect within the MCZ. As birds are mobile receptors, they may travel further offshore to forage within the EGL 4 Project ZOI. However, given that the distance between Eastern Green Link 1 and the EGL 4 Project is approximately 14.2 km, there is no potential for an in-combination effect. The Berwick Bank Cambois Connection Marine Scheme follows a similar route to the EGL 4 Project and therefore would also be towards the maximum foraging range (or exceeding) of common eider (21.5 km) (Ref 3.17.A.14). Therefore, preferred foraging grounds are likely to be closer to the MCZ, and it is concluded that there would be no significant impacts in-combination. Additionally, existing activities particularly commercial fisheries	

Relevant Designated Feature	Potential Impact	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		individuals from this site during any phase of development from this impact pathway.	that use bottom trawling fishing methods may already exert pressure on this site however, given the insignificant impact from EGL 4 and given the distance to the site, there would be no detectable contribution to an in-combination effect resulting from this impact.	
	Underwater noise changes	**No**- Birds that are sensitive to noise disturbance are typically also sensitive to visual disturbance. Given that the 5 km EDR is recommended by JNCC, (Ref 3.17.A.2) for geophysical surveys for very high frequency cetaceans such as harbour porpoise and that birds are less sensitive to underwater noise than marine mammals, they are more likely to be displaced by the visual presence of the EGL 4 Project vessels before being affected by underwater noise. Although common eider has a moderate to high disturbance sensitivity score (where 1 is the lowest and 5 is the highest) of 3 (Ref 3.17.A.13), once flushed by the visual disturbance of the EGL 4 Project vessels, they may not rapidly resettle. This means that they are likely to be flushed before they are within proximity of the EGL 4 Project vessels to be affected by underwater noise.	**No**- No- Two other subsea cable projects are currently in planning within 5 km of the MCZ. The Berwick Bank Cambois Connection Marine Scheme Scoping Boundary overlaps with the MCZ for approximately 4 km (Ref 3.17.A.51), while the Eastern Green Link 1 project may be situated approximately 1.7 km from the MCZ (at its closest point). Given the distance between the EGL 4 Project and the MCZ, there is no potential for an in-combination effect within the MCZ. As birds are mobile receptors, they may travel further offshore to forage within the EGL 4 Project ZOI. However, given	Screened out

Relevant Designated Feature	Potential Impact	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		Therefore, the EGL 4 Project would not have a significant effect on individuals from this site during any phase of development from this impact pathway.	that the distance between Eastern Green Link 1 and the EGL 4 Project is approximately 14.2 km, there is no potential for an in-combination effect. The Berwick Bank Cambois Connection Marine Scheme follows a similar route to the EGL 4 Project. However, 5 km is the effective deterrent range (EDR) for geophysical surveys as recommended by JNCC, (Ref 3.17.A.2) for very high frequency cetaceans such as harbour porpoise. It is also acknowledged that existing activities such as commercial fisheries, tourism and recreation, military practice areas and shipping and navigation can be sporadic or have a continuous use of the region and may already exert pressure on the site. However, birds are less sensitive to underwater noise than marine mammals and it is therefore unlikely that underwater noise would displace them before the visual disturbance of the presence of the EGL 4 Project vessels. Therefore, it is concluded that there would be	

Relevant Designated Feature	Potential Impact	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
			no in-combination effect from this impact.	
	Visual / physical disturbance or displacement	**No**- The ZOI for visual disturbance is 4 km from the EGL 4 Project vessels within the draft Order Limits. Although the MCZ is beyond the ZOI, mobile species may travel to forage within the ZOI. Common eiders have a moderate to high disturbance sensitivity score (where 1 is the lowest and 5 is the highest) of 3 (Ref 3.17.A.3). However, (Ref 3.17.A.69) calculated that the mean escape distance of this species is 277 m, which is significantly less than the 4 km ZOI. The MCZ is 20.9 km from the draft Order Limits and the foraging range of common eider is 21.5 km (Ref 3.17.A.3). The draft Order Limits is therefore at the limit of their foraging range, and preferred foraging grounds are likely to be closer to the MCZ. Given the distance to the MCZ and the relatively short mean escape distance, the EGL 4 Project is not predicted to have a significant effect on individuals from this site during any phase of development from this impact pathway.	**No**- Two other subsea cable projects are currently in planning within 4 km of the MCZ. The Berwick Bank Cambois Connection Marine Scheme Scoping Boundary overlaps with the MCZ for approximately 4 km (Ref 3.17.A.51), while the Eastern Green Link 1 project may be situated approximately 1.7 km from the MCZ (at its closest point). Given the distance between the EGL 4 Project and the MCZ, there is no potential for an in-combination effect within the MCZ. As birds are mobile receptors, they may travel further offshore to forage within the EGL 4 Project ZOI. However, given that the distance between Eastern Green Link 1 and the EGL 4 Project is approximately 14.2 km, there is no potential for an in-combination effect. The Berwick Bank Cambois	Screened out

Relevant Designated Feature	Potential Impact	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
			Connection Marine Scheme follows a similar route to the EGL 4 Project and therefore would also be towards the maximum foraging range (or exceeding) of common eider (21.5 km) (Ref 3.17.A.14). Therefore, preferred foraging grounds are likely to be closer to the MCZ, and it is concluded that there would be no significant impacts in-combination. Additionally, existing activities such as commercial fisheries, tourism and recreation, military practice areas and shipping and navigation can be sporadic or have a continuous use of the region and may already exert pressure on the site. However, given the insignificant impact from EGL 4 and given the distance to the site, there would be no detectable contribution to an in-combination effect resulting from this impact.	
Southern Trench NCMPA Distance from the EGL 4 Project draft Order Limits to the NCMPA: 161.1 km				

Relevant Designated Feature	Potential Impact	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
Species: • Minke whale	Changes in distribution of prey species	**No**- **Volume 1, Part 3, Chapter 20: Fish and Shellfish** concluded that the English Offshore Scheme would not have a significant adverse effect on fish and shellfish ecology. The permanent loss of habitat is extremely localised relative to the wider geographic areas available to prey species. No impact on stock recruitment is predicted. Therefore, there is no source-pathway-receptor at any stage of the development with the relevant designated feature of the NCMPA.	**No**- A high level of marine development is scheduled for the North Sea over the next ten years, particularly for the construction of offshore wind and other cable projects. There is the potential for more than one project to be under construction at the same time as the EGL 4 Project or occurring consecutively, extending the duration of or widening the spatial extent of impacts. It is also acknowledged that existing activities such as commercial fisheries, tourism and recreation, military practice areas and shipping and navigation can be sporadic or have a continuous use of the region and may already exert pressure on the site. However given the distance to the site, the transient and temporary nature of the EGL 4 Project activities and the insignificant effects of the EGL 4 Project alone, it is considered that the EGL 4 Project would not act as a barrier to the site and would not affect the distribution or population of the species within the MU at any stage of the	Screened out

Relevant Designated Feature	Potential Impact	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
			development. Therefore, it is concluded that there would be no detectable contribution to an in-combination effect resulting from this impact.	
	Electromagnetic changes	**No-** Although the NCMPA is beyond the ZOI, mobile species such as minke whale may travel within the ZOI. The burial and bundling of cables help to reduce the strength of induced electrical fields when compared to surface laid cables. An EMF study was undertaken for the EGL 3 and EGL 4 cable systems (**Volume 2, Part 1, Appendix 1.4.A: EGL 3 and EGL 4 Electromagnetic Field (EMF) Calculations**). It calculates that EMF fields on the seabed immediately above the cables would reach 123.8 µT (or 76.4 µT without the earth's magnetic field) and would attenuate to background levels within 20 m of the bundled cables. (Ref 3.17.A.57) reports that there have been no impacts to the migration of cetaceans over existing interconnector cables and (Ref 3.17.A.70) notes that harbour porpoise migration across the Basslink interconnector has been observed unhindered despite several crossings of operating sub-sea HVDC cables. Therefore, it can be assumed	**No**- A high level of marine development is scheduled for the North Sea over the next ten years, particularly for the construction of offshore wind and other cable projects. There is the potential for more than one project to be under construction at the same time as the EGL 4 Project or occurring consecutively, extending the duration of or widening the spatial extent of impacts. It is also acknowledged that existing activities such as commercial fisheries, tourism and recreation, military practice areas and shipping and navigation can be sporadic or have a continuous use of the region and may already exert pressure on the site. However, given the insignificant effects of the EGL 4 Project alone, the lack of evidence of effects on cetaceans, and the predominantly pelagic existence	Screened out

Relevant Designated Feature	Potential Impact	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		that minke whale would also not be significantly affected by 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 low likelihood of being affected by EMF. Furthermore, as the site is 161.1 km away from the draft Order Limits, and that minke whale have a large MU, it is unlikely that individuals would be in the vicinity of the EGL 4 Project for a sustained period of time, reducing the likelihood and occurrence of any impact. In conclusion, the EGL 4 Project would not have a significant effect on individuals from this site during any phase of development from this impact pathway.	resulting in separation with the change in field and that minke whale have large MUs, mike whale have a low likelihood of being affected by EMF from cable systems. It is considered that the EGL 4 Project would not act as a barrier to the site and would not affect the distribution or population of the species within the MU at any stage of the development. Therefore, it is concluded that there would be no detectable contribution to an in-combination effect resulting from this impact.	
	Underwater noise changes	**No**- The licensable activities for the EGL 4 Project would not involve any impulsive noise (UXO clearance would be the subject of a separate licence). Therefore, to calculate whether underwater noise from the EGL 4 Project would be considered significant the 5 km EDR for geophysical surveys recommended by the JNCC., (Ref 3.17.A.2) has been used as the ZOI. Although the NCMPA is beyond the	**No**- A high level of marine development is scheduled for the North Sea over the next ten years, particularly for the construction of offshore wind and other cable projects. There is the potential for more than one project to be under construction at the same time as the EGL 4 Project or occurring consecutively,	Screened out

Relevant Designated Feature	Potential Impact	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		ZOI, mobile species such as minke whale may travel within the ZOI. Although the NCMPA is beyond the ZOI, mobile species such as minke whale may travel within the ZOI. The effects of noise disturbance may be physical, physiological and / or behavioural. Disturbance is frequently a behavioural response to noise and may lead to animals being displaced from an affected area. The onset of a temporary threshold shift (TTS) can be referred to as the fleeing response. This is therefore a behavioural response, and animals exposed to these noise levels are likely to actively avoid injury as a result of a permanent threshold shift (PTS) by moving away from the area. According to Southall *et al* (Ref 3.17.A.59) and NMFS (Ref 3.17.A.60), minke whale are categorised within the functional hearing group of low frequency cetacean. **Volume 2, Part 3, Appendix 3.22.A: Underwater Noise Modelling Report** indicates that as low frequency cetaceans, the maximum potential impact range of a TTS for minke whale as a result of geophysical surveys using a SBP is 41-90 m. Noise levels do not exceed the threshold for impacts for a PTS or a TTS from the	extending the duration of or widening the spatial extent of impacts. It is also acknowledged that existing activities such as commercial fisheries, tourism and recreation, military practice areas and shipping and navigation can be sporadic or have a continuous use of the region and may already exert pressure on the site. However, given the distance to the site, the transient and temporary nature of the EGL 4 Project activities and the insignificant effects of the EGL 4 Project alone, it is considered that the EGL 4 Project would not act as a barrier to the site and would not affect the distribution or population of the species within the MU at any stage of the development. Therefore, it is concluded that there would be no detectable contribution to an in-combination effect resulting from this impact.	

Relevant Designated Feature	Potential Impact	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		EGL 4 Project vessels and equipment After reviewing the impact thresholds, the JNCC's advised 5 km EDR used in this assessment would be highly precautionary. Given the distance to the site there would be no direct impacts on minke whale within the NCMPA. Indirect impacts have been considered including animals moving away from the site into the ZOI. However, given the wide area available for foraging for minke whale in the MU, and the fact that works would take place against a high level of shipping activity in the North Sea (with vessel density in some areas of 100+ hours / km^2 per month in 2023 (Ref 3.17.A.61), the EGL 4 Project activities would not have a significant effect on individuals from the site during any phase of development from this impact pathway. In addition, the licensable activities would not act as a barrier to movement to or from the site.		
	Visual / physical disturbance or displacement	**No**- Although the NCMPA is beyond the ZOI (4 km EDR), mobile species such as minke whale may travel within the ZOI. Given the distance to the site and the large extent of the MU for minke whale and the transient and temporary nature of the construction,	**No**- A high level of marine development is scheduled for the North Sea over the next ten years, particularly for the construction of offshore wind and other cable projects. There is the potential for more than	Screened out

Relevant Designated Feature	Potential Impact	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		repair and decommissioning activities, it is unlikely that individuals would be in the vicinity of the EGL 4 Project vessels for a sustained period of time. Therefore, any visual disturbance would be temporary and not repeated over an extended period of time. As light levels light within the water column decrease rapidly with depth, whales have evolved a sophisticated acoustic sensory system which helps them to navigate, find prey, communicate with each other and avoid potential predators (Ref 3.17.A.87). It is therefore likely that any disturbance/displacement would first occur through underwater noise changes before the visual presence of the EGL 4 Project vessels. In addition, the North Sea is already used by large ships and ferries, with vessel density in some areas of 100+ hours / km^2 per month in 2023 (EMODnet, 2024, 61), and animals are therefore habituated to a certain degree to the presence of vessels. The EGL 4 Project would not have a significant effect on individuals from this site during any phase of development from this impact pathway.	one project to be under construction at the same time as the EGL 4 Project or occurring consecutively, extending the duration of or widening the spatial extent of impacts. It is also acknowledged that existing activities such as commercial fisheries, tourism and recreation, military practice areas and shipping and navigation can be sporadic or have a continuous use of the region and may already exert pressure on the site. However, given the distance to the site, the transient and temporary nature of the EGL 4 Project activities and the insignificant effects of the EGL 4 Project alone, it is considered that the EGL 4 Project would not act as a barrier to the site and would not affect the distribution or population of the species within the MU at any stage of the development. Therefore, it is concluded that there would be no detectable contribution to an in-combination effect resulting from this impact.	

Relevant Designated Feature	Potential Impact	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
	Collision with project vessels	**No**- Although the NCMPA is beyond the ZOI mobile species such as minke whale may travel within the ZOI. Given the distance to the site and the large extent of the MU for minke whale and the transient and temporary nature of the construction, repair and decommissioning activities, it is unlikely that individuals would be in the vicinity of the EGL 4 Project vessels for a sustained period of time, reducing the likelihood of collision. Individuals are likely to avoid the EGL 4 Project vessels to prevent the onset of a TTS and PTS. Given that vessels involved in the EGL 4 Project are likely to be either stationary or travelling slowly (circa 5 knots) in predictable straight lines during construction, maintenance or decommissioning activities, minke whale would be able to avoid collision with the EGL 4 Project vessels. The EGL 4 Project would not have a significant effect on individuals from this site during any phase of development from this impact pathway.	**No**- A high level of marine development is scheduled for the North Sea over the next ten years, particularly for the construction of offshore wind and other cable projects. There is the potential for more than one project to be under construction at the same time as the EGL 4 Project or occurring consecutively, extending the duration of or widening the spatial extent of impacts. It is also acknowledged that existing activities such as commercial fisheries, tourism and recreation, military practice areas and shipping and navigation can be sporadic or have a continuous use of the region and may already exert pressure on the site. However, given the distance to the site, the transient and temporary nature of the EGL 4 Project activities and the insignificant effects of the EGL 4 Project alone, it is considered that the EGL 4 Project would not act as a barrier to the site and would not affect the distribution or population of the species within the MU at any stage of the	Screened out

Relevant Designated Feature	Potential Impact	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
			development. Therefore, it is concluded that there would be no detectable contribution to an in-combination effect resulting from this impact.	
Sea of the Hebrides NCMPA Distance from the EGL 4 Project draft Order Limits the NCMPA: 275.4 km				
Species: • Minke whale	Changes in distribution of prey species	**No**- **Volume 1, Part 3, Chapter 20: Fish and Shellfish** concluded that the English Offshore Scheme would not have a significant adverse effect on fish and shellfish ecology. The permanent loss of habitat is extremely localised relative to the wider geographic areas available to prey species. No impact on stock recruitment is predicted. Therefore, there is no source-pathway-receptor at any stage of the development with the relevant designated feature of the NCMPA.	**No**- There is no pathway between the EGL 4 Project and other projects and plans to interact with the NCMPA at any stage of the development.	Screened out
	Electromagnetic changes	**No-** Although the NCMPA is beyond the ZOI, mobile species such as minke whale may travel within the ZOI. The burial and bundling of cables help to reduce the strength of induced electrical fields when compared to surface laid cables. An EMF study was undertaken for the EGL 3 and EGL 4	**No**- A high level of marine development is scheduled for the North Sea over the next ten years, particularly for the construction of offshore wind and other cable projects. There is the potential for more than one project to be under	Screened out

Relevant Designated Feature	Potential Impact	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		cable systems (**Volume 2, Part 1, Appendix 1.4.A: EGL 3 and EGL 4 Electromagnetic Field (EMF) Calculations**). It calculates that EMF fields on the seabed immediately above the cables would reach 123.8 µT (or 76.4 µT without the earth's magnetic field) and would attenuate to background levels within 20 m of the bundled cables. Gill *et al*., (Ref 3.17.A.57) reports that there have been no impacts to the migration of cetaceans over existing interconnector cables and (Ref 3.17.A.58) notes that harbour porpoise migration across the Basslink interconnector has been observed unhindered despite several crossings of operating sub-sea HVDC cables. Therefore, it can be assumed that minke whale would also not be significantly affected by 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 low likelihood of being affected by EMF. Furthermore, as the site is 275.5 km away from the draft Order Limits, and that minke whale have a large MU, it is unlikely that	construction at the same time as the EGL 4 Project or occurring consecutively, extending the duration of or widening the spatial extent of impacts. It is also acknowledged that existing activities such as commercial fisheries, tourism and recreation, military practice areas and shipping and navigation can be sporadic or have a continuous use of the region and may already exert pressure on the site. However, given the insignificant effects of the EGL 4 Project alone, the lack of evidence of effects on cetaceans, and the predominantly pelagic existence resulting in separation with the change in field and that minke whale have a large MU, minke whale have a low likelihood of being affected by EMF from cable systems. It is considered that the EGL 4 Project would not act as a barrier to the site and would not affect the distribution or population of the species within the MU at any stage of the development. Therefore, it is concluded that there would be no detectable	

Relevant Designated Feature	Potential Impact	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		individuals would be in the vicinity of the EGL 4 Project for a sustained period of time, reducing the likelihood and occurrence of any impact. In conclusion, the EGL 4 Project would not have a significant effect on individuals from this site during any phase of development from this impact pathway.	contribution to an in-combination effect resulting from this impact	
	Underwater noise changes	**No**- The licensable activities for the EGL 4 Project would not involve any impulsive noise (UXO clearance would be the subject of a separate licence). Therefore, to calculate whether underwater noise from the EGL 4 Project would be considered significant the 5 km EDR for geophysical surveys recommended by the JNCC., (Ref 3.17.A.2) has been used as the ZOI. Although the NCMPA is beyond the ZOI, mobile species such as minke whale may travel within the ZOI. Although the NCMPA is beyond the ZOI, mobile species such as minke whale may travel within the ZOI. The effects of noise disturbance may be physical, physiological and / or behavioural. Disturbance is frequently a behavioural response to noise and may lead to animals being displaced from an affected area. The onset of a TTS can be referred to as the fleeing response. This is therefore a behavioural	**No**- A high level of marine development is scheduled for the North Sea over the next ten years, particularly for the construction of offshore wind and other cable projects. There is the potential for more than one project to be under construction at the same time as the EGL 4 Project or occurring consecutively, extending the duration of or widening the spatial extent of impacts. It is also acknowledged that existing activities such as commercial fisheries, tourism and recreation, military practice areas and shipping and navigation can be sporadic or have a continuous use of the region and may already exert pressure on the site. However, given the distance to the site, the transient and temporary	Screened out

Relevant Designated Feature	Potential Impact	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		response, and animals exposed to these noise levels are likely to actively avoid injury as a result of a PTS by moving away from the area. According to Southall *et al* (Ref 3.17.A.59) and NMFS (Ref 3.17.A.60), minke whale are categorised within the functional hearing group of low frequency cetacean. **Volume 2, Part 3, Appendix 3.22.A: Underwater Noise Assessment** indicates that as low frequency cetaceans, the maximum potential impact range of a TTS for minke whale as a result of geophysical surveys using a SBP is 41-90 m. Noise levels do not exceed the threshold for impacts for a PTS or a TTS from the EGL 4 Project vessels and equipment. After reviewing the impact thresholds, the JNCC's advised 5 km EDR used in this assessment would be highly precautionary. Given the distance to the site there would be no direct impacts on minke whale within the NCMPA. Indirect impacts have been considered including animals moving away from the site into the ZOI. However, given the wide area available for foraging for minke whale in the MU, and the fact that works would take place against a high level of shipping activity in the North Sea (with	nature of the EGL 4 Project activities and the insignificant effects of the EGL 4 Project alone, it is considered that the EGL 4 Project would not act as a barrier to the site and would not affect the distribution or population of the species within the MU at any stage of the development. Therefore, it is concluded that there would be no detectable contribution to an in-combination effect resulting from this impact.	

Relevant Designated Feature	Potential Impact	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		vessel density in some areas of 100+ hours / km2 per month in 2023 (Ref 3.17.A.61), the EGL 4 Project activities would not have a significant effect on individuals from the site during any phase of development from this impact pathway. In addition, the licensable activities would not act as a barrier to movement to or from the site.		
	Visual / physical disturbance or displacement	**No**- Although the NCMPA is beyond the ZOI (4 km EDR), mobile species such as minke whale may travel within the ZOI. Given the distance to the site and the large extent of the MU for minke whale and the transient and temporary nature of the construction, repair and decommissioning activities, it is unlikely that individuals would be in the vicinity of the EGL 4 Project vessels for a sustained period of time. Therefore, any visual disturbance would be temporary and not repeated over an extended period of time. As light levels within the water column decrease rapidly with depth, whales have evolved a sophisticated acoustic sensory system which helps them to navigate, find prey, communicate with each other and avoid potential predators (Ref 3.17.A.87). It is therefore likely that any disturbance/displacement would first occur through underwater	**No**- A high level of marine development is scheduled for the North Sea over the next ten years, particularly for the construction of offshore wind and other cable projects. There is the potential for more than one project to be under construction at the same time as the EGL 4 Project or occurring consecutively, extending the duration of or widening the spatial extent of impacts. It is also acknowledged that existing activities such as commercial fisheries, tourism and recreation, military practice areas and shipping and navigation can be sporadic or have a continuous use of the region and may already exert pressure on the site. However, given the distance to the site,	Screened out

Relevant Designated Feature	Potential Impact	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		noise changes before the visual presence of the EGL 4 Project vessels. In addition, the North Sea is already used by large ships and ferries, with vessel density in some areas of 100+ hours / km2 per month in 2023 (Ref 3.17.A.61), and animals are therefore habituated to a certain degree to the presence of vessels. The EGL 4 Project would not have a significant effect on individuals from this site during any phase of development from this impact pathway.	the transient and temporary nature of the EGL 4 Project activities and the insignificant effects of the EGL 4 Project alone, it is considered that the EGL 4 Project would not act as a barrier to the site and would not affect the distribution or population of the species within the MU at any stage of the development. Therefore, it is concluded that there would be no detectable contribution to an in-combination effect resulting from this impact.	
	Collision with project vessels	**No**- Although the NCMPA is beyond the ZOI mobile species such as minke whale may travel within the ZOI. Given the distance to the site and the large extent of the MU for minke whale and the transient and temporary nature of the construction, repair and decommissioning activities, it is unlikely that individuals would be in the vicinity of the EGL 4 Project vessels for a sustained period of time, reducing the likelihood of collision. Individuals are likely to avoid the EGL 4 Project vessels to prevent the onset of a TTS and PTS. Given that vessels involved in the EGL 4 Project are likely to be either	**No**- A high level of marine development is scheduled for the North Sea over the next ten years, particularly for the construction of offshore wind and other cable projects. There is the potential for more than one project to be under construction at the same time as the EGL 4 Project or occurring consecutively, extending the duration of or widening the spatial extent of impacts. It is also acknowledged that existing activities such as commercial fisheries, tourism	Screened out

Relevant Designated Feature	Potential Impact	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		stationary or travelling slowly (circa 5 knots) in predictable straight lines during construction, maintenance or decommissioning activities, minke whale would be able to avoid collision with the EGL 4 Project vessels. The EGL 4 Project would not have a significant effect on individuals from this site during any phase of development from this impact pathway.	and recreation, military practice areas and shipping and navigation can be sporadic or have a continuous use of the region and may already exert pressure on the site. However, given the distance to the site, the transient and temporary nature of the EGL 4 Project activities and the insignificant effects of the EGL 4 Project alone, it is considered that the EGL 4 Project would not act as a barrier to the site and would not affect the distribution or population of the species within the MU at any stage of the development. Therefore, it is concluded that there would be no detectable contribution to an in-combination effect resulting from this impact.	
North-east Lewis NCMPA Distance from the EGL 4 Project draft Order Limits to the NCMPA: 363.6 km				
Species: • Risso's dolphin	Changes in distribution of prey species	**No**- **Volume 1, Part 3, Chapter 20: Fish and Shellfish** concluded that the English Offshore Scheme would not have a significant adverse effect on fish and shellfish ecology. The permanent	**No**- There is no pathway between the EGL 4 Project and other projects and plans to interact with the NCMPA at any stage of the development.	Screened out

Relevant Designated Feature	Potential Impact	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		loss of habitat is extremely localised relative to the wider geographic areas available to prey species. No impact on stock recruitment is predicted. Therefore, there is no source-pathway-receptor at any stage of the development with the relevant designated feature of the NCMPA.		
	Electromagnetic changes	**No-** Although the NCMPA is beyond the ZOI, mobile species such as minke whale may travel within the ZOI. The burial and bundling of cables help to reduce the strength of induced electrical fields when compared to surface laid cables. An EMF study was undertaken for the EGL 3 and EGL 4 cable systems (**Volume 2, Part 1, Appendix 1.4.A: EGL 3 and EGL 4 Electromagnetic Field (EMF) Calculations**). It calculates that EMF fields on the seabed immediately above the cables would reach 123.8 µT (or 76.4 µT without the earth's magnetic field) and would attenuate to background levels within 20 m of the bundled cables. Gill *et al*., (Ref 3.17.A.57) reports that there have been no impacts to the migration of cetaceans over existing interconnector cables and (Ref 3.17.A.58) notes that harbour porpoise migration across the Basslink	**No**- A high level of marine development is scheduled for the North Sea over the next ten years, particularly for the construction of offshore wind and other cable projects. There is the potential for more than one project to be under construction at the same time as the EGL 4 Project or occurring consecutively, extending the duration of or widening the spatial extent of impacts. It is also acknowledged that existing activities such as commercial fisheries, tourism and recreation, military practice areas and shipping and navigation can be sporadic or have a continuous use of the region and may already exert pressure on the site. However, given the insignificant effects of the EGL 4 Project alone, the	Screened out

Relevant Designated Feature	Potential Impact	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		interconnector has been observed unhindered despite several crossings of operating sub-sea HVDC cables. Therefore, it can be assumed that risso's dolphin would also not be significantly affected by 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 low likelihood of being affected by EMF. Furthermore, as the site is 363.6 km away from the draft Order Limits, and that risso's dolphin have a large MU, it is unlikely that individuals would be in the vicinity of the EGL 4 Project for a sustained period of time, reducing the likelihood and occurrence of any impact. In conclusion, the EGL 4 Project would not have a significant effect on individuals from this site during any phase of development from this impact pathway.	lack of evidence of effects on cetaceans, and the predominantly pelagic existence resulting in separation with the change in field and that risso's dolphin have a large MU, risso's dolphin have a low likelihood of being affected by EMF from cable systems. It is considered that the EGL 4 Project would not act as a barrier to the site and would not affect the distribution or population of the species within the MU at any stage of the development. Therefore, it is concluded that there would be no detectable contribution to an in-combination effect resulting from this impact	
	Underwater noise changes	**No**- The licensable activities for the EGL 4 Project would not involve any impulsive noise (UXO clearance would be the subject of a separate licence). Therefore, to calculate whether underwater noise from the EGL 4 Project would be considered significant the 5 km EDR for geophysical surveys	**No**- A high level of marine development is scheduled for the North Sea over the next ten years, particularly for the construction of offshore wind and other cable projects. There is the potential for more than one project to be under	Screened out

Relevant Designated Feature	Potential Impact	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		recommended by the JNCC., (Ref 3.17.A.2) has been used as the ZOI. Although the NCMPA is beyond the ZOI mobile species such as risso's dolphin may travel within the ZOI. The effects of noise disturbance may be physical, physiological and / or behavioural. Disturbance is frequently a behavioural response to noise and may lead to animals being displaced from an affected area. The onset of a TTS can be referred to as the fleeing response. This is therefore a behavioural response, and animals exposed to these noise levels are likely to actively avoid injury as a result of a PTS by moving away from the area. According to Southall *et al* (Ref 3.17.A.59) and NMFS, (Ref 3.17.A.60), risso's dolphin are categorised within the functional hearing group of high frequency cetacean. **Volume 2, Part 3, Appendix 3.22.A: Underwater Noise Assessment** indicates that as high frequency cetaceans, the maximum potential impact range of a TTS for risso's dolphin as a result of geophysical surveys using a SBP is 115-165 m. Noise levels do not exceed the threshold for impacts for a PTS or a TTS from the EGL 4 Project vessels and equipment. After reviewing the	construction at the same time as the EGL 4 Project or occurring consecutively, extending the duration of or widening the spatial extent of impacts. It is also acknowledged that existing activities such as commercial fisheries, tourism and recreation, military practice areas and shipping and navigation can be sporadic or have a continuous use of the region and may already exert pressure on the site. However, given the distance to the site, the transient and temporary nature of the EGL 4 Project activities and the insignificant effects of the EGL 4 Project alone, it is considered that E the EGL 4 Project would not act as a barrier to the site and would not affect the distribution or population of the species within the MU at any stage of the development. Therefore, it is concluded that there would be no detectable contribution to an in-combination effect resulting from this impact.	

Relevant Designated Feature	Potential Impact	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		impact thresholds, the JNCC's advised 5 km EDR used in this assessment would be highly precautionary. Given the distance to the site there would be no direct impacts on risso's dolphin within the NCMPA. Indirect impacts have been considered including animals moving away from the site into the ZOI. However, given the wide area available for foraging for risso's dolphin in the MU, and the fact that works would take place against a high level of shipping activity in the North Sea (with vessel density in some areas of 100+ hours / km2 per month in 2023 (Ref 3.17.A.61), the EGL 4 Project activities would not have a significant effect on individuals from the site during any phase of development from this impact pathway. In addition, the licensable activities would not act as a barrier to movement to or from the site.		
	Visual / physical disturbance or displacement	**No**- Although the NCMPA is beyond the ZOI (4 km EDR), mobile species such as risso's dolphin may travel within the ZOI. Given the distance to the site and the large extent of the MU for risso's dolphin and the transient and temporary nature of the construction, repair and decommissioning activities, it is unlikely that individuals would be in the vicinity of the EGL 4 Project vessels for a	**No**- A high level of marine development is scheduled for the North Sea over the next ten years, particularly for the construction of offshore wind and other cable projects. There is the potential for more than one project to be under construction at the same time as the EGL 4 Project or	Screened out

Relevant Designated Feature	Potential Impact	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		sustained period of time. Therefore, any visual disturbance would be temporary and not repeated over an extended period of time. As light levels within the water column decrease rapidly with depth, dolphins have evolved a sophisticated acoustic sensory system which helps them to navigate, find prey, communicate with each other and avoid potential predators (Ref 3.17.A.87). It is therefore likely that any disturbance/displacement would first occur through underwater noise changes before the visual presence of the EGL 4 Project vessels. In addition, the North Sea is already used by large ships and ferries, with vessel density in some areas of 100+ hours / km2 per month in 2023 (Ref 3.17.A.61), and animals are therefore habituated to a certain degree to the presence of vessels. The EGL 4 Project would not have a significant effect on individuals from this site during any phase of development from this impact pathway.	occurring consecutively, extending the duration of or widening the spatial extent of impacts. It is also acknowledged that existing activities such as commercial fisheries, tourism and recreation, military practice areas and shipping and navigation can be sporadic or have a continuous use of the region and may already exert pressure on the site. However, given the distance to the site, the transient and temporary nature of the EGL 4 Project activities and the insignificant effects of the EGL 4 Project alone, it is considered that the EGL 4 Project would not act as a barrier to the site and would not affect the distribution or population of the species within the MU at any stage of the development. Therefore, it is concluded that there would be no detectable contribution to an in-combination effect resulting from this impact.	
	Collision with project vessels	**No**- Although the NCMPA is beyond the ZOI, mobile species such as risso's dolphin may travel within the ZOI. Given	**No**- A high level of marine development is scheduled for the North Sea over the next ten	Screened out

Relevant Designated Feature	Potential Impact	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		the distance to the site and the large extent of the MU for risso's dolphin and the transient and temporary nature of the construction, repair and decommissioning activities, it is unlikely that individuals would be in the vicinity of the EGL 4 Project vessels for a sustained period of time, reducing the likelihood of collision. Individuals are likely to avoid the EGL 4 Project vessels to prevent the onset of a TTS and PTS. Given that vessels involved in the EGL 4 Project are likely to be either stationary or travelling slowly (circa 5 knots) in predictable straight lines during construction, maintenance or decommissioning activities, risso's dolphin would be able to avoid collision with the EGL 4 Project vessels. The EGL 4 Project would not have a significant effect on individuals from this site during any phase of development from this impact pathway.	years, particularly for the construction of offshore wind and other cable projects. There is the potential for more than one project to be under construction at the same time as the EGL 4 Project or occurring consecutively, extending the duration of or widening the spatial extent of impacts. It is also acknowledged that existing activities such as commercial fisheries, tourism and recreation, military practice areas and shipping and navigation can be sporadic or have a continuous use of the region and may already exert pressure on the site. However, given the distance to the site, the transient and temporary nature of the EGL 4 Project activities and the insignificant effects of the EGL 4 Project alone, it is considered that the EGL 4 Project would not act as a barrier to the site and would not affect the distribution or population of the species within the MU at any stage of the development. Therefore, it is concluded that there would be no detectable contribution to an	

Relevant Designated Feature	Potential Impact	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
			in-combination effect resulting from this impact.	

Northeast of Farnes Deep HPMA Screening Assessment

3.17.A.7.4 The designated feature of the site is the marine ecosystem of the area, which includes 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 the seabed, water column and the surface of the sea (Ref 3.17.A.71).

3.17.A.7.5 Supplementary information provided by NE and the JNCC, (Ref 3.17.A.72) presents the rationale for the key important habitats and species for which the HPMA was designated to protect. These are listed below in **Table 3.17.A-10** and were assessed in relation to the potential impacts and ZOI presented in **Table 3.17.A-6**, in order to evaluate whether the Project would undermine the conservation objectives of this site. The assessment is presented in **Table 3.17.A-11**. Given that the HPMA is located 0.5 km from the EGL 4 Project at its closest point, direct impacts of temporary habitat loss and permanent habitat loss are screened out and not considered in the assessment. As the HPMA is located approximately 5.1 km from the EGL 3 Project, it is outside of the 2 km search area for habitats, benthic species and geomorphological interests and therefore, these receptors are not considered in **Table 3.17.A-11**. Additionally, the EGL 3 Project is outside of the ZOI for all receptors outlined in **Table 3.17.A-6** however, as mobile species such as fish, marine mammals and birds can travel within the ZOI, the impacts for these receptors have been included in **Table 3.17.A-11**.

Table 3.17.A-10 - Key important habitats and species of the Northeast of Farnes Deep HPMA

Receptor	Habitat/Species
EUNIS level 3 broad-scale habitats	• Sublittoral coarse sediment • Sublittoral sand • Sublittoral mud • Sublittoral mixed sediments
Important habitats	• Subtidal sands and gravels • Seapens and burrowing megafauna
Important demersal/benthic species	• Ocean quahog (Arctica islandica)
Important bird species	• Black-legged kittiwake (*Rissa tridactyla*) • Common guillemot (*Uria aalge*) • Herring gull (*Larus argentatus*) • Northern fulmar (*Fulmarus glacialis*) • Northern gannet (*Morus bassanus*) • Razorbill (*Alca torda*) • Atlantic puffin (*Fratercula arctica*) • European storm petrel (*Hydrobates pelagicus*) • Great skua (Stercorarius skua) • Lesser black-backed gull (Larus fuscus)
Important marine mammal species	• Harbour porpoise (*Phocoena phocoena*)

Receptor	Habitat/Species
	• Minke whale (Balaenoptera acutorostrata) • White-beaked dolphin (Lagenorhynchus albirostris) • Grey seal (Halichoerus grypus) • Harbour seal (*Phoca vitulina*)
Important fish species	• Angler fish (*Lophiiformes*) • Haddock (Melanogrammus aeglefinus) • European pilchard (*Sardina pilchardus*) • Whiting (Merlangius merlangus) • European Smelt (*Osmerus eperlanus*)

Table 3.17.A-11 - Screening Assessment for Northeast of Farnes Deep HPMA

Designated Feature	Potential Impact	Connectivity between the EGL 3 Project and Designated Feature(s)	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
Northeast of Farnes Deep HPMA Distance from the EGL 3 Project to the HPMA: 5.1 km Distance from the EGL 4 Project to the HPMA: 0.5 km					
EUNIS level 3 broad-scale habitats: • Sublittoral coarse sediment • Sublittoral sand • Sublittoral mud • Sublittoral mixed sediments Important habitats: • Subtidal sands and gravels	Temporary increase and deposition of suspended sediments	**No**- The EGL 3 Project is beyond the ZOI, therefore, there is no source-pathway-receptor at any stage of the development on the features of the HPMA.	**No**-. According to **Volume 1, Part 3, Chapter 18: Coastal and Marine Physical Processes** the maximum distance from trenching activities (within the EGL 4 Project that routes alongside the HPMA) where suspended sediment concentrations could exceed 10 mg/l is estimated at 4.0 km (as calculated for peak flow speeds beyond KP 330). Although this has potential to overlap and increase turbidity within the HPMA, this would be temporary and sediment concentrations would disperse and dilute whilst in suspension. MarLIN categorise light smothering as the deposition	**No**- There is one other subsea cable project currently in planning within 2 km of the HPMA. The exact route of the Morvern Hawthorn Pit Grid Connection Project has not yet been confirmed; therefore, this assessment considers the worst-case scenario, assuming the cable route runs along the eastern boundary of the HPMA for its entire length (25.1 km). It is also acknowledged that existing activities particularly commercial fisheries, may already exert pressure on the site. Although commercial fishing is prohibited within the HPMA, suspended sediment from bottom trawling outside out the HPMA could travel within the site boundaries.	Screened out

Designated Feature	Potential Impact	Connectivity between the EGL 3 Project and Designated Feature(s)	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
			of <5 cm of sediment in a discrete event. Light smothering would occur from several of the EGL 4 Project activities. The most significant contributor (relatively) would be from the sediment plume generated by cable trenching. There is no pre-sweeping required near the HPMA and therefore, only the effects of cable trenching have been considered. **Volume 1, Part 3, Chapter 18: Coastal and Marine Physical Processes** states that only fine sands and silts would disperse beyond the draft Order Limits from cable trenching activities. Therefore, coarse sediments would not affect the HPMA. Based on estimates from ABPmer, the peak flow speed during spring tides around the HPMA is approximately 0.5 m/s. According to **Volume 1, Part 3, Chapter 18: Coastal and Marine Physical Processes**	As explained in the assessment for the EGL 4 Project alone, the characterising species/biotopes of these habitats within the draft Order Limits are either not sensitive or have a low sensitivity to this impact. Given the distance to the draft Order Limits, these characterising species are also likely to be present within the HPMA. Therefore, given the temporary and transient nature of the construction, repair and decommissioning activities, and that the characterising species are not sensitive to this impact and that this habitat type is exposed to natural increases in turbidity, the EGL 4 Project is not considered to have a potential significant effect on habitats within this site during any phase of development from this impact pathway. As a result, it is concluded that the EGL 4 Project would not contribute to any detectable in-combination effect on the designated feature of the HPMA.	

Designated Feature	Potential Impact	Connectivity between the EGL 3 Project and Designated Feature(s)	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
			this means that only fines (<63 µm) could settle within the HPMA at a maximum distance of 1.2-6.5 km of the trench. The sediment plume may persist for up to 400 hours however, concentrations would dilute and disperse whilst in suspension. The sediment plume would also be transported by currents, making it unlikely that all the fine sediment would settle within the HPMA. If deposition does occur within the HPMA, it would be <2 mm, which would not be noticeable against natural background levels. The EGL 4 Environmental Baseline Survey (Ref 3.17.A.73) identified sand, muddy sand, coarse sediment and moderate energy rock habitats within the EGL 4 Project that runs parallel to HPMA. The EGL 3 Environmental Baseline Survey (Ref 3.17.A.74) identified muddy sand, sandy	Any significant impacts are more likely to arise from the Morvern Hawthorn Pit Grid Connection Project in isolation (if it is constructed immediately adjacent to the boundary), rather than from a combined effect with the EGL 4 Project.	

Designated Feature	Potential Impact	Connectivity between the EGL 3 Project and Designated Feature(s)	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
			mud, coarse sediment and moderate rock energy within the EGL 3 Project that runs parallel to the HPMA. These habitats, and their biotopes, are common throughout the North Sea and given the proximity of the English Offshore Scheme are likely to occur within the NEFD HPMA. Subtidal coarse sediments include coarse sand, gravel, pebbles, shingle and cobbles. Thus, the only sediment subject to suspension and deposition within the HPMA from the EGL 4 Project would be that present in sand and muddy sand habitats. This provides further evidence that the greatest amount of smothering within NEFD HPMA would be <2 mm, similar to that experienced from natural wave energy. Subtidal coarse and mixed sediment habitats, as present within the HPMA, comprise of sessile epifauna and mobile infauna, such as crustacea,		

Designated Feature	Potential Impact	Connectivity between the EGL 3 Project and Designated Feature(s)	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
			that can temporarily relocate during periods of increased turbidity and to avoid smothering from sediment deposition but can return once cable construction and decommissioning is completed within the area. **Volume 1, Part 3, Chapter 19: Intertidal and Subtidal Benthic Ecology** describes the three Level 5 biotopes found within the Atlantic circalittoral coarse sediment of the draft Order Limits: '*Glycera lapidum*, *Thyasria spp*. and *Amythasides macroglossus* in offshore gravelly sand' (MD3211); '*Mediomastus fragilis*, *Lumbrineris spp*. and venerid bivalves in Atlantic circalittoral coarse sand or gravel' (MC3212) and '*Protodorvillea kefersteini* and other polychaetes in impoverished circalittoral mixed gravelly sand' (MC3213). Given the distance to the draft Order Limits, these biotopes are		

Designated Feature	Potential Impact	Connectivity between the EGL 3 Project and Designated Feature(s)	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
			also likely to be present within the HPMA. MD3211 is not thought to be sensitive to changes in suspended solids (water clarity) and have a low sensitivity and high resilience to light smothering (Ref 3.17.A.75). MC3212 is thought to have a low sensitivity and high resilience to changes in suspended solids and light smothering (Ref 3.17.A.76). MC3213 is not thought to be sensitive to changes in suspended solids (Ref 3.17.A.77). There is no specific evidence on Marlin regarding this biotope's sensitivity to light smothering. However, it can be reasonably assumed that its' response would be similar to the other two biotopes identified in the same habitat type, suggesting a low sensitivity and high resilience. **Volume 1, Part 3, Chapter 19: Intertidal and Subtidal Benthic Ecology** describes		

Designated Feature	Potential Impact	Connectivity between the EGL 3 Project and Designated Feature(s)	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
			the biotope '*Flustra foliacea* and *Hydrallmania falcata* on tide-swept circalittoral mixed sediment'(MC4214), which was found to be present within mixed sediment habitats within the English Offshore Scheme. Given the distance to the draft Order Limits, this biotope is also likely to be present within the HPMA .MC4214 is not thought to be sensitive to changes in suspended solids (water clarity) or light smothering (Ref 3.17.A.78). The Ross worm *Sabellaria spinulosa* was also identified in Atlantic circalittoral mixed sediments within the draft Order Limits. This species is a tube building polychaete that thrives in areas of increased suspended sediment. It requires a supply of suspended sediment sufficient for feeding and tube formation activities. Additionally, this polychaete can tolerate 5 cm of smothering for several		

Designated Feature	Potential Impact	Connectivity between the EGL 3 Project and Designated Feature(s)	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
			weeks, suggesting a high adaptability to sediment deposition (Ref 3.17.A.79). Subtidal sand, as present within the HPMA, is characterised by the presence of burrowing infauna, some of which rely on the water column for feeding and respiration. During periods of increased turbidity, suspension feeders are vulnerable to clogged feeding apparatus, causing decreased feeding efficiency and increased energy costs. Smothering from the deposition of suspended sediments could also impose energetic costs to organisms who need to re-establish burrow openings or ascend through a greater volume of sediment to reach the seabed surface. However, some infaunal species demonstrate tolerance to smothering by sediment deposition. For example: the catworm *(Nephyts hombergii*)		

Designated Feature	Potential Impact	Connectivity between the EGL 3 Project and Designated Feature(s)	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
			can migrate through up to 90 cm of sand of a rate of 20 cm/day; bivalves such as *Kurtiella bidentata, Abra spp*. and *Thyasira spp*. can migrate through up to 20 cm of sediment deposition to reach the seabed surface; the brittlestar *Ophiura ophiura* can survive up to 32 days buried in up to 7 cm of coarse and fine sediment (Ref 3.17.A.80) and the polychaete *Nereis spp*. can migrate through up to 50 cm of deposited mud and 80 cm of deposited sand. The forementioned species are present within the EGL 4 Project and are common throughout the North Sea. Thus, it is likely these species are present within the HPMA. **Volume 1, Part 3, Chapter 19: Intertidal and Subtidal Benthic Ecology** describes three Level 5 biotopes found within the Atlantic circalittoral sand sediment of the draft Order Limits: *Thyasira spp*. and *Nuculoma tenuis* in		

Designated Feature	Potential Impact	Connectivity between the EGL 3 Project and Designated Feature(s)	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
			Atlantic circalittoral sandy mud' (MC6212); '*Amphiura filiformis* and *Ennucula tenuis* in circalittoral and offshore sandy mud' (MC6213) and '*Echinocyamus pusillus*, *Ophelia borealis* and *Abra prismatica* in circalittoral fine sand' (MC5211). Given the distance to the draft Order Limits, these biotopes are also likely to be present within the HPMA. MC6212 and MC6213 are not thought to be sensitive to changes in suspended solids (water clarity) or light smothering and therefore have a high resilience to this impact (Ref 3.17.A.81; Ref 3.17.A.82).MC5211 are thought to have a low sensitivity to changes in suspended solids and light smothering and have a high resilience (Ref 3.17.A.83). Characterising species of mud habitats can switch from suspension feeding to deposit feeding during		

Designated Feature	Potential Impact	Connectivity between the EGL 3 Project and Designated Feature(s)	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
			periods of increased turbidity. Temporary increase and deposition of suspended sediment increase the availability of organic matter, which can be incorporated into the seabed through bioturbation, enhancing food supply for deposit feeders. Sudden light smothering of 5 cm would temporarily stop feeding and respiration, however. Macrofauna whose only method of feeding is either filter or suspension feeding are at risk of physical damage and clogging of gills or filters. However, these habitats are subject to natural turbidity from the fine silt and mud sediments within the habitat. The characterising polychaetes of mud habitats are either predators or deposit feeders and are unaffected by increased suspended sediment in the water column. *et alet al* As a result, a temporary increase and deposition of		

Designated Feature	Potential Impact	Connectivity between the EGL 3 Project and Designated Feature(s)	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
			suspended sediments from EGL 4 Project activities is expected to have no discernible effect on the structure, function, or quality of habitats within the site. In addition, given the temporary and transient nature of the construction, repair and decommissioning activities, the EGL 4 Project is not considered to have a potential significant effect on habitats within this site during any phase of development from this impact pathway.		
EUNIS level 3 broad-scale habitats: • Sublittoral coarse sediment • Sublittoral sand • Sublittoral mud • Sublittoral mixed sediments	Water flow (tidal current) changes, including sediment transport considerations	**No**- The draft Order Limits do not cross the boundary for this HPMA and is beyond the ZOI for the potential impact. It has been considered that permanent structures, such as cable protection outside the HPMA, could potentially impact water flow within the HPMA. Where cable protection is not required, the seabed level would remain unchanged or similar to its pre-installation condition, eliminating the potential for this impact to occur. Where cable protection is required, the height of the structures on top of the seabed would result in a highly localised change of a small magnitude, immediately around the area where cable protection is applied. As this HPMA is 5.1 km away from the EGL 3 Project and 0.5 km away from the EGL		**No-** There is no pathway between the English Offshore Scheme and other projects and plans to interact with the HPMA at any stage of the development	Screened out

Designated Feature	Potential Impact	Connectivity between the EGL 3 Project and Designated Feature(s)	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
Important habitats: • Subtidal sands and gravels		4 Project, there is no source-pathway- receptor at any stage of the development on the features of the HPMA.			
Important habitats: • Seapens and burrowing megafauna	Temporary increase and deposition of suspended sediments	**No**- The EGL 3 Project is beyond the ZOI, therefore, there is no source-pathway- receptor at any stage of the development on the features of the HPMA.	**No**- Seapens and burrowing megafauna are not thought to be sensitive to changes in suspended solids (water clarity), light smothering or heavy smothering (Ref 3.17.A.84). Therefore, there is no source-pathway- receptor at any stage of the development on these features of the HPMA.	**No-** There is no pathway between the English Offshore Scheme and other projects and plans to interact with the HPMA at any stage of the development.	Screened out
Important demersal/benthic species: • Ocean quahog	Water flow (tidal current) changes, including sediment transport considerations	**No**- The draft Order Limits do not cross the boundary for this HPMA and is beyond the ZOI for the potential impact. It has been considered that permanent structures, such as cable protection outside the HPMA, could potentially impact water flow within the HPMA. Where cable protection is not required, the seabed level would remain unchanged or similar to its pre-installation condition, eliminating the potential for this impact to occur. Where cable protection is required, the height of the structures on top of the seabed would		**No-** There is no pathway between the English Offshore Scheme and other projects and plans to interact with the HPMA at any stage of the development.	Screened out

Designated Feature	Potential Impact	Connectivity between the EGL 3 Project and Designated Feature(s)	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		result in a highly localised change of a small magnitude, immediately around the area where cable protection is applied. As this HPMA is 5.1 km away from the EGL 3 Project and 0.5 km away from the EGL 4 Project, there is no source-pathway- receptor at any stage of the development on the features of the HPMA.			
	Temporary increase and deposition of suspended sediments	**No**- The EGL 3 Project is beyond the ZOI, therefore, there is no source-pathway-receptor at any stage of the development on the features of the HPMA.	**No-** Ocean quahog is not recognised as being sensitive to changes in suspended sediments (water clarity) or smothering (light and heavy) (Ref 3.17.A.5). Therefore, there is no source-pathway-receptor at any stage of the development.	**No**- Due to the insensitivity of ocean quahog to this impact, there is no source-pathway-receptor between the English Offshore Scheme and other projects and plans to interact with the HPMA at any stage of the development.	Screened out
	Electromagnetic changes	**No**- The English Offshore Scheme is beyond the ZOI, therefore, there is no source-pathway- receptor at any stage of the development on the features of the HPMA.		**No-** There is no pathway between the English Offshore Scheme and other plans/projects to interact with the HPMA at any stage of the development.	Screened out
Important bird species: • Black-legged kittiwake • Common guillemot	Changes in distribution of prey species	**No**- **Volume 1, Part 3, Chapter 20: Fish and Shellfish** concluded that the English Offshore Scheme would not have a significant adverse effect on fish and shellfish ecology. The permanent loss of habitat is extremely localised relative to the wider geographic areas available to prey species. No impact on stock recruitment is predicted. Therefore, there is no source-		**No**- There is no pathway between the English Offshore Scheme and other projects and plans to interact with the HPMA at any stage of the development.	Screened out

Designated Feature	Potential Impact	Connectivity between the EGL 3 Project and Designated Feature(s)	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
• Herring gull • Northern fulmar • Northern gannet • Razorbill • Atlantic puffin • European storm petrel • Great skua • Lesser black-backed gull		pathway- receptor at any stage of the development on the features of the HPMA.			
	Temporary increase and deposition of suspended sediments	**No**- The HPMA is within the ZOI (2 km EDR) for EGL 4, and due to the high mobility of birds, they may also enter the ZOI of the EGL 3 Project or the EGL 4 Project outside of the HPMA. The bird species listed as important are in general visually foraging birds which depend on clear water to identify and catch potential prey. *et al* There is no pre-sweeping required near the HPMA and therefore, only the effects of cable trenching have been considered. According to **Volume 1, Part 3, Chapter 18: Coastal and Marine Physical Processes** the maximum distance from trenching activities (within the EGL 4 Project that routes alongside the HPMA) where suspended sediment concentrations could exceed 10 mg/l is estimated at 4.0 km (as calculated for peak flow speeds beyond KP 330). Although this has potential to overlap and increase turbidity within the HPMA, this would be temporary and sediment concentrations would disperse and dilute whilst in suspension, making it unlikely to impede forging. Given the distance to the site and the transient nature of the construction, repair and decommissioning activities, the English Offshore Scheme would not have a significant effect on individuals from this site during any phase of development from this impact pathway.	**No**- There is one other subsea cable project currently in planning within 2 km of the HPMA. The exact route of the Morvern Hawthorn Pit Grid Connection Project has not yet been confirmed; therefore, this assessment considers the worst-case scenario, assuming the cable route runs along the eastern boundary of the HPMA for its entire length (25.1 km). It is also acknowledged that existing activities particularly commercial fisheries outside of the HPMA, may already exert pressure on the site. As explained in the assessment for the English Offshore Scheme alone, any sediment plume would be caused by fine material (<63 µm) and would dilute and disperse whilst in suspension, with concentrations decreasing with distance and time, making it unlikely to impede forging success. Furthermore, cable burial	Screened out

Designated Feature	Potential Impact	Connectivity between the EGL 3 Project and Designated Feature(s)	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
				activities would be temporary and transient. As a result, it is concluded that the English Offshore Scheme would not contribute to any detectable in-combination effects.	
	Underwater noise changes	**No**- Birds that are sensitive to noise disturbance are typically also sensitive to visual disturbance. Given that the 5 km EDR is recommended by JNCC, (Ref 3.17.A.2) for geophysical surveys for very high frequency cetaceans such as harbour porpoise and that birds are less sensitive to underwater noise than marine mammals, they are more likely to be displaced by the visual presence of the English Offshore Scheme vessels before being affected by underwater noise. Therefore, it is concluded that underwater noise from the English Offshore Scheme would not have a significant impact on individuals from this site during any phase of development from this impact pathway.		**No**- There are two other subsea cable projects currently in planning within 5 km of the HPMA. The exact route of the Morvern Hawthorn Pit Grid Connection Project has not yet been confirmed; therefore, this assessment considers the worst-case scenario, assuming the cable route runs along the eastern boundary of the HPMA for its entire length (25.1 km) and the Eastern Green Link 2 project is located approximately 3.1 km from the HPMA. Birds that are sensitive to noise disturbance are typically also sensitive to visual disturbance. However, the 5 km EDR is	Screened out

Designated Feature	Potential Impact	Connectivity between the EGL 3 Project and Designated Feature(s)	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
				recommended by JNCC, (Ref 3.17.A.2) for geophysical surveys for very high frequency cetaceans such as harbour porpoise. It is also acknowledged that existing activities such as commercial fisheries, tourism and recreation, military practice areas and shipping and navigation can be sporadic or have a continuous use of the region and may already exert pressure on the site. However, birds are less sensitive to underwater noise than marine mammals, they are more likely to be displaced by the visual presence of the English Offshore Scheme vessels before being affected by underwater noise. Therefore, it is concluded that there would be no in-combination effect from this impact.	
	Visual / physical disturbance or displacement	**No**- The HPMA is within the ZOI (4 km EDR) for EGL 4, and due to the high mobility of birds, they may also enter the ZOI of the EGL 3 Project or the EGL 4 Project outside of the HPMA. Birds identified as being sensitive to the English Offshore Scheme activities are breeding birds or those foraging within proximity to the		**No**- There are two other subsea cable projects currently in planning within 5 km of the HPMA. The exact route of the Morvern Hawthorn Pit Grid Connection	Screened out

Designated Feature	Potential Impact	Connectivity between the EGL 3 Project and Designated Feature(s)	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		English Offshore Scheme vessels. Birds may take evasive action, but a single disturbance event does not have an immediate effect on the survival or productivity of an individual bird. However, repeated disturbance, or disturbance over an extended period of time can affect survival and productivity. Given the transient nature of the construction, repair and decommissioning activities and that the English Offshore Scheme vessels would be progressing in a linear manner, repeated or extended disturbance of individual birds is unlikely. Common guillemot has a low to moderate disturbance susceptibility score (where 1 is the lowest and 5 is the highest) of 3 (Ref 3.17.A.13) and as such, are identified as being moderately sensitive to disturbance. However, (Ref 3.17.A.69) calculated that the mean escape distance of this species is 127 m, which is significantly less than the 4 km ZOI. Given that common guillemot have large foraging ranges of up 80.5 km (Ref 3.17.A.14), they would be able to avoid travelling within range of the escape distance without significantly reducing foraging opportunities. In the event that common guillemot are disturbed/displaced by the English Offshore Scheme vessels, they would be able to return to forage in the area once vessels have moved on. The remaining bird species listed as important to the HPMA have a low disturbance susceptibility score of 1 or 2 (Ref 3.17.A.13) and are not identified as being sensitive to disturbance. Furthermore, considering the transient nature of the construction, repair, and decommissioning activities, coupled with the fact that	Project has not yet been confirmed; therefore, this assessment considers the worst-case scenario, assuming the cable route runs along the eastern boundary of the HPMA for its entire length (25.1 km) and the Eastern Green Link 2 project is located approximately 3.1 km from the HPMA. As explained for the English Offshore Scheme alone, common guillemot are the only species listed as being important to the HPMA that is identified as being sensitive to disturbance. Given that their mean escape distance is calculated as 127 m (Ref 3.17.A. 69) and the distance to the other projects vastly exceeds this distance, there would be no direct impacts within the HPMA. Although individuals from this HPMA may travel to forage closer to the other projects, common guillemot have large foraging ranges of up 80.5 km (Ref 3.17.A.14) and would be able to	

Designated Feature	Potential Impact	Connectivity between the EGL 3 Project and Designated Feature(s)	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		vessels would not remain in one area for extended periods, the English Offshore Scheme would not have a significant effect on individuals from this site during any phase of development from this impact pathway.		avoid travelling within range of the escape distance without significantly reducing foraging opportunities. Furthermore, considering the transient and temporary nature of construction, maintenance and decommissioning activities associated with subsea cable projects, coupled with the fact that vessels would not remain in one area for extended periods it is concluded that there would not be a significant in-combination effect on bird receptors from this impact. Additionally, existing activities such as commercial fisheries, tourism and recreation, military practice areas and shipping and navigation can be sporadic or have a continuous use of the region and may already exert pressure on the site. However, given the insignificant impact from EGL 4 and given the distance to the site, there would be no detectable contribution to an in-combination effect resulting from this impact.	

Designated Feature	Potential Impact	Connectivity between the EGL 3 Project and Designated Feature(s)	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
Important marine mammal species • Harbour porpoise • Minke whale • White-beaked dolphin • Grey seal • Harbour seal	Changes in distribution of prey species	**No**- Volume 1, Part 3, Chapter 29: Fish and Shellfish concluded that the English Offshore Scheme would not have a significant adverse effect on fish and shellfish ecology. The permanent loss of habitat is extremely localised relative to the wider geographic areas available to prey species. No impact on stock recruitment is predicted. Therefore, there is no source-pathway- receptor at any stage of the development on the features of the HPMA.		**No**- There is no pathway between the English Offshore Scheme and other projects and plans to interact with the HPMA at any stage of the development.	Screened out
	Electromagnetic changes	**No**- Although the HPMA is beyond the ZOI, mobile species such as marine mammals may travel within the ZOI. The burial and bundling of cables help to reduce the strength of induced electrical fields when compared to surface laid cables. An EMF study was undertaken for the EGL 3 and EGL 4 cable systems (**Volume 2, Part 1, Appendix 1.4.A: EGL 3 and EGL 4 Electromagnetic Field (EMF) Calculations**). It calculates that EMF fields on the seabed immediately above the cables would reach 123.8 µT (or 76.4 µT without the earth's magnetic field) and would attenuate to background levels within 20 m of the bundled cables. No evidence of magnetic sensitivity has been reported for seals (Ref 3.17.A.85) therefore, there is not considered to be a source-pathway-receptor for harbour seal and grey seal. (Ref 3.17.A.57) reports that there have been no impacts to the migration of cetaceans over existing		**No**- Given the insignificant effects of the English Offshore Scheme alone, the lack of evidence of effects on cetaceans, and the predominantly pelagic existence resulting in separation with the change in field and that cetaceans have large MUs, cetaceans have a low likelihood of being affected by EMF from cable systems. It is considered that the English Offshore Scheme would not act as a barrier to the site and would not affect the distribution or population of the species within the MU at any stage of the development. Therefore, it is concluded that there would be no detectable contribution to	Screened out

Designated Feature	Potential Impact	Connectivity between the EGL 3 Project and Designated Feature(s)	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		interconnector cables and (Ref 3.17.A.86) notes that harbour porpoise migration across the Basslink interconnector has been observed unhindered despite several crossings of operating sub-sea HVDC cables. Therefore, it can be assumed that minke whale would also not be significantly affected by 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 low likelihood of being affected by EMF. Furthermore, harbour porpoise, minke whale and white-beaked dolphin have large MUs, and therefore, it is unlikely that individuals would be in the vicinity of the English Offshore Scheme for a sustained period of time, reducing the likelihood and occurrence of any impact. In conclusion, the English Offshore Scheme would not have a significant effect on individuals from this site during any phase of development from this impact pathway. source-pathway- receptor at		an in-combination effect resulting from this impact. For harbour seal and grey seal, there is no pathway between the English Offshore Scheme and other projects and plans to interact with the HPMA at any stage of the development for this impact as there is no evidence of magnetic sensitivity (Ref 3.17.A.3585). Additionally, existing activities such as commercial fisheries, tourism and recreation, military practice areas and shipping and navigation can be sporadic or have a continuous use of the region and may already exert pressure on the site. However, given the insignificant impact from EGL 4 and given the distance to the site, there would be no detectable contribution to an in-combination effect resulting from this impact.	
	Underwater noise changes	**No**- Although the HPMA is beyond the ZOI (5 km EDR), mobile species may travel within the ZOI. The	**Yes**- The draft Order Limits is within the 5 km ZOI for underwater noise. According to guidance from the JNCC, (Ref 3.17.A.2), noise	**Yes**- There are two other subsea cable projects currently in planning within 5 km of the HPMA.	Screened in (for the EGL 4 Project alone and

Designated Feature	Potential Impact	Connectivity between the EGL 3 Project and Designated Feature(s)	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		effects of noise disturbance may be physical, physiological and / or behavioural. Disturbance is frequently a behavioural response to noise and may lead to animals being displaced from an affected area. The onset of a TTS can be referred to as the fleeing response. This is therefore a behavioural response, and animals exposed to these noise levels are likely to actively avoid injury as a result of a PTS by moving away from the area. The worst-case scenario for underwater noise is very high frequency (VHF) cetaceans (such as harbour porpoise) which have the largest potential impact range for TTS and PTS from geophysical surveys, vessel and equipment	disturbance is considered significant in relation to Special Areas of Conservation if it causes the exclusion of harbour porpoises from more than: ▪ 20% of the relevant area of the site in any given day, or ▪ an average of 10% of the relevant area of the site over the season. This guidance is applied in this assessment to evaluate the potential impact of underwater noise on marine mammals within the HPMA. Since the draft Order Limits run parallel to, rather than intersecting with, the HPMA, the consideration of underwater noise is limited to a 5 km radius from one side of the source, as opposed to 5 km either side. The 5 km EDR could overlap with the HPMA (which spans an area of 492 km^2), for a maximum of 103.6 km^2, which is equivalent to 21.1% of the entire HPMA. If this	The exact route of the Morven Hawthorn Pit Grid Connection Project has not yet been confirmed; therefore, this assessment considers the worst-case scenario, assuming the cable route runs along the eastern boundary of the HPMA for its entire length (25.1 km). Since the cable route runs parallel to the HPMA rather than intersecting it, the consideration of underwater noise is limited to a 5 km radius from one side of the source, rather than from both sides. Given that the HPMA spans an area of 492 km^2, the 5 km EDR could potentially affect up to 25.5% of the entire HPMA (calculated as 25.1 km × 5 km / 492 km^2 × 100). The EGL 4 Project alone has the potential to impact up to 21.1% of the HPMA on any given day (if the cable is installed along the HPMA in one day). Therefore, in combination, these projects could affect up to 46.5% of the HPMA. Although unlikely that project activities would take	in-combination)

Designated Feature	Potential Impact	Connectivity between the EGL 3 Project and Designated Feature(s)	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		noise. **Volume 2, Part 3, Appendix 3.22.A: Underwater Noise Assessment** indicates that, the maximum potential impact range of a PTS on VHF cetaceans as a result of geophysical surveys using a SBP is 150-195m. The potential impact range for a TTS is larger at 430-620 m. These distances are significantly reduced for the EGL 3 Project vessels and equipment, where underwater noise levels do not exceed the threshold for impacts of a PTS and the maximum impact range for a TTS is between 30-108 m for the EGL 3 Project where a TSHD or rock placement vessel is used. However, pre-sweeping is not required near the HPMA and therefore	area is impacted by underwater noise in any given day (if the cable is installed along the HPMA in one day), it would exceed the thresholds set by the JNCC guidance and is considered significant. This impact is screened into the Stage 1 Assessment for the EGL 4 Project. Although marine mammals are mobile and may travel within the ZOI outside the HPMA boundary, the reasoning provided for the EGL 3 Project also applies to the EGL 4 Project. The potential impact range for a PTS or a TTS in VHF cetaceans is the same as for the EGL 3 Project. The potential impact range for a TTS as a result of vessels and equipment are similar to that of the EGL 3 Project with a range of 33-118 m for rock placement vessels. Therefore, it can be concluded that the EGL 4	place at the same time, depending on the time of works, if they do converge this could potentially exceed the JNCC threshold of 20% of the relevant area in any given day (Ref 3.17.A.2). As such, this project is screened into the Stage 1 Assessment for an in-combination impact with the EGL 4 Project. The Eastern Green Link 2 project is located approximately 3.1 km from the HPMA and the overlap from the 5 km EDR could cover an area of approximately 4.9 km^2. As the HPMA spans an area of 492 km^2 this is equivalent to 1% of the entire HPMA. However, the overlap from Eastern Green Link 2 is in the same location as the overlap from the EGL 4 Project, but to a lesser extent. Therefore, in-combination these projects would not increase the area of the HPMA impacted by noise. Therefore, it is considered that would be no significant in-combination	

Designated Feature	Potential Impact	Connectivity between the EGL 3 Project and Designated Feature(s)	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		only survey vessels and construction support vessels can cause a TTS with a potential impact range of 11 m for the EGL 3 Project. Given the large MUs for marine mammals compared to the potential impact distances for TTS and PTS, the transient nature of the construction, repair and decommissioning activities, the EGL 3 Project is not considered to have a significant effect on individuals from this site during any phase of development from this impact pathway. **Volume 2, Part 3, Appendix 3.22.A: Underwater Noise Assessment** indicates that lower frequency cetaceans and pinnipeds have significantly shorter	Project would not have a potential significant effect on individuals outside of the HPMA during any phase of development.	effects with Eastern Green Link 2 and the EGL 4 Project. Additionally, existing activities such as commercial fisheries, tourism and recreation, military practice areas and shipping and navigation can be sporadic or have a continuous use of the region and may already exert pressure on the site. However, as these activities do not include geophysical surveys using a SBP, noise is unlikely to propagate into the HPMA and therefore, there would be no in-combination effect. Given that the EGL 4 Project in-combination with the Morven Hawthorn Pit Grid Connection Project could affect up to 46.5% of the HPMA the EGL 4 Project is screened into the Stage 1 Assessment.	

Designated Feature	Potential Impact	Connectivity between the EGL 3 Project and Designated Feature(s)	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		potential impact ranges for TTS and PTS than VHF cetaceans. As such, it can also be concluded that lower frequency marine mammals would not be significantly affected.			
	Visual / physical disturbance or displacement	**No**- The HPMA is within the ZOI (4 km EDR) for the EGL 4 Project, and due to the mobility of marine mammals, they may also enter the ZOI of the EGL 3 Project outside of the HPMA. As light levels light within the water column decrease rapidly with depth, whales, dolphins and porpoise have evolved a sophisticated acoustic sensory system which helps them to navigate, find prey, communicate with each other and avoid potential predators (Ref 3.17.A.87). Seal are more sensitive to anthropogenic disturbance when hauled out. (Ref 3.17.A.88) 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 seal (i.e., one at which there is a low risk of significant numbers of seal flushing) is about 200 m. As the HPMA is located approximately 55 km offshore, the English Offshore Scheme vessels would not disturb seal haul out sites. Therefore, it is likely that any disturbance/displacement would primarily result from changes in underwater noise before the visual presence of the English Offshore Scheme vessels has an effect. Furthermore,	**No**- There are two other subsea cable projects currently in planning within 5 km of the HPMA. The exact route of the Morvern Hawthorn Pit Grid Connection Project has not yet been confirmed; therefore, this assessment considers the worst-case scenario, assuming the cable route runs along the eastern boundary of the HPMA for its entire length (25.1 km) and the Eastern Green Link 2 project is located approximately 3.1 km from the HPMA. It is also acknowledged that existing activities such as commercial fisheries, tourism and recreation, military practice areas and shipping and navigation can be sporadic or have a continuous use of the	Screened out

Designated Feature	Potential Impact	Connectivity between the EGL 3 Project and Designated Feature(s)	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		considering the transient nature of the construction, repair, and decommissioning activities, coupled with the fact that vessels would not remain in one area for extended periods, it is concluded that the English Offshore Scheme would not have a significant impact on individuals from this site during any phase of development from this impact pathway.		region and may already exert pressure on the site. However, as explained for the English Offshore Scheme alone, it is likely that any disturbance/displacement would primarily result from changes in underwater noise before the visual presence of the English Offshore Scheme vessels has an effect. Furthermore, considering the transient and temporary nature of construction, maintenance and decommissioning activities associated with subsea cable projects, coupled with the fact that vessels would not remain in one area for extended periods it is concluded that there would not be a significant in-combination effect on marine mammal receptors from this impact.	
	Collision with project vessels	**No**- Although the HPMA is beyond the ZOI (draft Order Limits), mobile species may travel within the ZOI. However, individuals are likely to avoid the English Offshore Scheme vessels to prevent the onset of a TTS and PTS as a result of underwater noise. Given that vessels involved in the English Offshore Scheme are likely to be either stationary or travelling		**No**- There are no other plans/projects in planning or under construction within HPMA. However, as marine mammals are mobile species, they move within proximity to vessels from projects	Screened out

Designated Feature	Potential Impact	Connectivity between the EGL 3 Project and Designated Feature(s)	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		slowly (circa 5 knots) in predictable straight lines during construction, maintenance or decommissioning activities, marine mammals would be able to avoid collision with the English Offshore Scheme vessels. The English Offshore Scheme would not have a significant effect on individuals from this site during any phase of development from this impact pathway.		surrounding the HPMA. There are two other subsea cable projects currently in planning within 5 km of the HPMA. The exact route of the Morvern Hawthorn Pit Grid Connection Project has not yet been confirmed; therefore, this assessment considers the worst-case scenario, assuming the cable route runs along the eastern boundary of the HPMA for its entire length (25.1 km) and the Eastern Green Link 2 project is located approximately 3.1 km from the HPMA. It is also acknowledged that existing activities such as commercial fisheries, tourism and recreation, military practice areas and shipping and navigation can be sporadic or have a continuous use of the region and may already exert pressure on the site. However, marine mammals are likely to avoid the English Offshore Scheme vessels to prevent the onset of a TTS and PTS as a result of underwater	

Designated Feature	Potential Impact	Connectivity between the EGL 3 Project and Designated Feature(s)	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
				noise. In addition, the temporary and transient nature of construction, maintenance and decommissioning activities associated with subsea cables would not act as a barrier to the HPMA, the wider MUs for whales and dolphins or the foraging ranges of grey and harbour seal which are estimated at 100 and 50 km respectively (Ref 3.17.A.89). Therefore, there would be no effect to the distribution or population of species, and it is concluded that there would be no significant in-combination effect from this impact.	
Important fish species • Angler fish • Haddock • European pilchard • Whiting • European Smelt	Changes in distribution of prey species	**No**- **Volume 1, Part 3, Chapter 20: Fish and Shellfish** concluded that the English Offshore Scheme would not have a significant adverse effect on fish and shellfish ecology. The permanent loss of habitat is extremely localised relative to the wider geographic areas available to prey species. No impact on stock recruitment is predicted. Therefore, there is no source-pathway- receptor at any stage of the development on the features of the HPMA.		**No**- There is no pathway between the English Offshore Scheme and other projects and plans to interact with the HPMA at any stage of the development.	Screened out
	Temporary increase and deposition of	**No**- The HPMA is within the ZOI (2 km EDR) for EGL 4, and due to the high mobility of fish, they may also enter the ZOI of the EGL 3 Project or the EGL 4		**No**- There is one other subsea cable project currently in planning within 2 km of the	Screened out

Designated Feature	Potential Impact	Connectivity between the EGL 3 Project and Designated Feature(s)	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
	suspended sediments	Project outside of the HPMA. The most significant contributor (relatively) to a temporary increase and deposition of suspended sediments would be from the sediment plume generated by cable trenching. There is no pre-sweeping required near the HPMA and therefore, only the effects of cable trenching have been considered. *et al* , **Volume 1, Part 3, Chapter 18: Coastal and Marine Physical Processes** states that only fine sands and silts would disperse beyond the draft Order Limits from cable trenching activities. Therefore, coarse sediments would not affect the HPMA and would only impact the area immediately surrounding the cable. Based on estimates from ABPmer, the peak flow speed during spring tides around the HPMA is approximately 0.5 m/s. According to **Volume 1, Part 3, Chapter 18: Coastal and Marine Physical Processes**, this means only fines (<63 µm) could settle within the HPMA at a maximum distance of 1.3-6.5 km of the trench and that the maximum distance that suspended sediment concentrations could exceed 10 mg/l is estimated at 4.0 km (as calculated for peak flow speeds beyond KP 330). The sediment plume of fines may persist for up to 400 hours however, concentrations would dilute and disperse whilst in suspension. The sediment plume would also be transported by currents, making it unlikely that all of the fines would settle within the HPMA. If deposition does occur within the HPMA, it would be <2 mm, which would not be noticeable against natural background levels. As such, it is		HPMA. The exact route of the Morvern Hawthorn Pit Grid Connection Project has not yet been confirmed; therefore, this assessment considers the worst-case scenario, assuming the cable route runs along the eastern boundary of the HPMA for its entire length (25.1 km). It is also acknowledged that existing activities particularly commercial fisheries outside of the HPMA, may already exert pressure on the site. As explained in the assessment for the English Offshore Scheme alone, any deposition would be <2 mm of fine material (<63 µm), which would not be noticeable against background levels. Additionally, sediment concentrations would disperse and dilute with distance and time and any increase and deposition of suspended sediment from cable burial activities would be temporary. . As a result, it is concluded that the English Offshore Scheme would not contribute to any	

Designated Feature	Potential Impact	Connectivity between the EGL 3 Project and Designated Feature(s)	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		unlikely that a temporary increase and deposition of suspended sediment would impede forging success or egg survival rates. In addition, given the temporary and transient nature of the construction, repair and decommissioning activities, the English Offshore Scheme would not have a significant effect on individuals from this site during any phase of development from this impact pathway.		detectable in-combination effects.	
	Electromagnetic changes	**No**- Although the HPMA is beyond the ZOI, mobile species such as fish may travel within the ZOI. However, the burial and bundling of cables help to reduce the strength of induced electrical fields when compared to surface laid cables. An EMF study was undertaken for the EGL 3 and EGL 4 cable systems (**Volume 2, Part 1, Appendix 1.4.A: EGL 3 and EGL 4 Electromagnetic Field (EMF) Calculations**). It calculates that EMF fields on the seabed immediately above the cables would reach 123.8 µT (or 76.4 µT without the earth's magnetic field) and would attenuate to background levels within 20 m of the bundled cables. Sensitivity to EMF is species dependant. Any impacts would mostly affect those species on the seabed, such as flatfish and shellfish species rather than pelagic species or demersal species which tend to swim a few meters above the seabed and would be out of the range of EMF emissions (Ref 3.17.A.90). Haddock have pelagic and demersal life stages. European pilchard, whiting and European Smelt are	**No**- A high level of marine development is scheduled for the North Sea over the next ten years, particularly for the construction of offshore wind and other cable projects. There is the potential for more than one project to be under construction at the same time as the English Offshore Scheme or occurring consecutively, extending the duration of or widening the spatial extent of impacts. It is also acknowledged that existing activities such as commercial fisheries, tourism and recreation, military practice areas and shipping and navigation can be sporadic or have a continuous use of the region and may already exert	Screened out

Designated Feature	Potential Impact	Connectivity between the EGL 3 Project and Designated Feature(s)	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		pelagic species. Angler fish are typically deep-sea pelagic species. Therefore, these species would not be significantly impacted by EMF from the buried cables. In conclusion, the increased levels of EMF would be highly localised to the area immediately above the cables and would attenuate rapidly with distance. Additionally, the fish species are demersal/pelagic and making them less susceptible to EMF exposure than benthic species such as flatfish. Therefore, the English Offshore Scheme is not considered to have a significant effect on individuals from this site during any phase of development from this impact pathway.	pressure on the site. However, any impacts would mostly affect those species on the seabed, such as flatfish and shellfish species rather than pelagic species or demersal species which tend to swim a few meters above the seabed and would be out of the range of EMF emissions (Ref 3.17.A.37). As the designated species are demersal/pelagic, they are less susceptible to EMF exposure than benthic species. Therefore, it is concluded that there would be no significant in-combination effect on the designated features of the HPMA from this impact.	
	Underwater noise changes	**No**- The HPMA is within the ZOI (5 km EDR) for the EGL 4 Project, and due to the mobility of fish, they may also enter the ZOI of the Project outside of the HPMA. (Ref 3.17.A.91) categorised fish species into four groups, with groups 3 and 4 (where the swim bladder is involved in hearing, primarily pressure detection) being the most sensitive to noise. The effects of noise disturbance may be physical, physiological and / or behavioural. Disturbance is frequently a behavioural response to noise and may lead to animals being displaced from an affected area.	**No**- There are two other subsea cable projects currently in planning within 5 km of the HPMA. The exact route of the Morvern Hawthorn Pit Grid Connection Project has not yet been confirmed; therefore, this assessment considers the worst-case scenario, assuming the cable route runs along the eastern boundary of the HPMA	Screened out

Designated Feature	Potential Impact	Connectivity between the EGL 3 Project and Designated Feature(s)	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		The onset of a TTS can be referred to as the fleeing response. This is therefore a behavioural response, and animals exposed to these noise levels are likely to actively avoid injury by moving away from the area. The worst-case scenario for underwater noise in relation to fish would be species within groups 3 & 4. The 5 km EDR is based on the JNCCs guidance for geophysical surveys however, there are no thresholds in Popper *et al*., (Ref 3.17.A.40) in relation to noise from high frequency sonar-based surveys (>10 kHz) (i.e. geophysical surveys). This is because the hearing range of fish species falls well below the frequency range of high frequency sonar systems. Consequently, the effects of noise from geophysical surveys on fish has not been conducted as part of this assessment. **Volume 2, Part 3, Appendix 3.22.A: Underwater Noise Assessment** indicates that the greatest impact range for a TTS in group 3 and 4 fish would be 17 m for the EGL 3 Project and 15 m for the EGL 4 Project where a TSHD is used. However, pre-sweeping is not required near the HPMA and therefore the maximum potential impact range for a TTS to occur from the EGL 3 Project would be 10 m for cable lay vessels and 9 m for survey and construction support vessels. For the EGL 4 Project, a TTs could only occur at a range of 10 m from survey and construction vessels, Noise levels do not exceed the threshold for impacts for recoverable injury to occur from vessels and equipment. The underwater noise report also notes that fish would need to be exposed within these potential impact ranges for a period of 48 hours	for its entire length (25.1 km) and the Eastern Green Link 2 project is located approximately 3.1 km from the HPMA. It is also acknowledged that existing activities such as commercial fisheries, tourism and recreation, military practice areas and shipping and navigation can be sporadic or have a continuous use of the region and may already exert pressure on the site. However, as explained for the English Offshore Scheme alone, the 5 km EDR is extremely precautionary as the hearing range of fish species falls well below the frequency range of geophysical surveys. Fish species that are most sensitive to underwater noise are categorised as group 3 & 4 fish (Ref 3.17.A.40). **Volume 2, Part 3, Appendix 3.22.A: Underwater Noise Assessment** indicates that the greatest impact range for a TTS in group 3 and 4 fish to occur from the EGL 3 Project would be 10 m for cable lay vessels	

Designated Feature	Potential Impact	Connectivity between the EGL 3 Project and Designated Feature(s)	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		continuously for recoverable injury to occur and 12 hours continuously for a TTS to occur. Given the temporary and transient nature of the construction, repair, and decommissioning activities, the English Offshore Scheme is not considered to have a potential significant effect on individuals from this site during any phase of development from this impact pathway.		and 9 m for survey and construction support vessels. For the EGL 4 Project, a TTS could only occur at a range of 10 m from survey and construction vessels. Noise levels do not exceed the threshold for impacts for recoverable injury to occur from vessels and equipment. The underwater noise report also notes that fish would need to be exposed within these potential impact ranges for a period of 48 hours continuously for recoverable injury to occur and 12 hours continuously for a TTS to occur. Given the short impact range for a behavioural to avoid TTS and the transient, temporary nature of construction, maintenance and decommissioning activities associated with subsea cable projects, it is concluded that there would not be a significant in-combination effect on fish receptors from this impact.	

Designated Feature	Potential Impact	Connectivity between the EGL 3 Project and Designated Feature(s)	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
	Visual / physical disturbance or displacement	**No**- The HPMA is within the ZOI (4 km EDR) for the EGL 4 Project, and due to the mobility of fish, they may also enter the ZOI of the EGL 3 Project outside of the HPMA. However, the 4 km EDR is based on the high sensitivity of sea ducks and diving birds to visual disturbance, and fish are unlikely to be impacted by the visual presence of vessels at this distance. De Robertis and Handegard, (Ref 3.17.A.92) reported that avoidance behaviour in fish can occur when the separation distance between the fish and the vessel reaches 250 m, suggesting that under water noise triggers a response at this range. As underwater noise propagates through the water column, it is likely that any disturbance/displacement would first occur through underwater noise. While disturbance or displacement could still occur at closer ranges, fish are more likely to avoid a temporary threshold shift (TTS) as outlined in the potential impact of underwater noise changes. Therefore, it is concluded that underwater noise from the English Offshore Scheme vessels would be the primary cause of disturbance/displacement. It is noted that repeated disturbance, or disturbance over an extended period of time can affect survival and productivity of individuals however, given the temporary and transient nature of the construction, repair, and decommissioning activities, any fish that travel close enough to the English Offshore Scheme vessels to experience disturbance/displacement are unlikely to encounter repeated disruptions. Therefore, the English Offshore Scheme would not have a significant impact on	**No**- There are two other subsea cable projects currently in planning within 4 km of the HPMA. The exact route of the Morvern Hawthorn Pit Grid Connection Project has not yet been confirmed; therefore, this assessment considers the worst-case scenario, assuming the cable route runs along the eastern boundary of the HPMA for its entire length (25.1 km) and the Eastern Green Link 2 project is located approximately 3.1 km from the HPMA. It is also acknowledged that existing activities such as commercial fisheries, tourism and recreation, military practice areas and shipping and navigation can be sporadic or have a continuous use of the region and may already exert pressure on the site. However, as discussed for the English Offshore Scheme alone, fish are more likely to experience behavioural disturbance or displacement due to underwater noise. Given	Screened out

Designated Feature	Potential Impact	Connectivity between the EGL 3 Project and Designated Feature(s)	Connectivity between the EGL 4 Project and Designated Feature(s)	Pathway for in-combination effects	Screening Decision
		individuals from this site during any phase of development from this impact pathway.		the conclusion that there would be no significant in-combination effects from underwater noise, it is also determined that no in-combination effects on fish receptors would result from this impact. Furthermore, considering the transient and temporary nature of activities associated with subsea cable projects, any disturbance to individuals is unlikely to be repeated or sustained long enough to impact the survival or productivity of the species. As such, the population would not be significantly affected, and it is concluded that would be no significant in-combination effect on fish receptors from this impact.	

3.17.A.8 Screening Conclusion

3.17.A.8.1 The screening assessment reached the following conclusions:

- One HPMA was screened in for Stage 1 Assessment for the EGL 4 Project; the Northeast of Farnes Deep HPMA
- No NCMPAs were screened in for Stage 1 Assessment
- No MCZs for the EGL 3 Project were screened in for Stage 1 Assessment
- One MCZ was screened in for Stage 1 Assessment for the EGL 4 Project; Holderness Offshore MCZ

3.17.A.8.2 **Table 3.17.A-12** below provides a summary of the sites screened into the Stage 1 Assessment. A Stage 1 Assessment would be undertaken, in consultation with NE and JNCC, to be submitted with the DCO application.

Table 3.17.A-12 - Summary of the sites screened into the Stage 1 Assessment

Site name	Cable Project (EGL 3/EGL 4)	Relevant Designated Feature	Potential Impact	Potential for effect alone or in-combination
Holderness Offshore MCZ	The EGL 4 Project	Geology: • North Sea glacial tunnel valleys Habitats: • Subtidal coarse sediment • Subtidal mixed sediments • Subtidal sand Benthic species: • Ocean quahog	Temporary habitat loss / seabed disturbance	Alone and in-combination
			Permanent habitat loss	Alone and in-combination
			Water flow (tidal current) changes, including sediment transport considerations	Alone and in-combination
		Habitats: • Subtidal coarse sediment • Subtidal mixed sediments • Subtidal sand	Temporary increase and deposition of suspended sediments	Alone and in-combination
Northeast of Farnes Deep HPMA	The EGL 4 Project	Important marine mammal species • Harbour porpoise • Minke whale	Underwater noise changes	Alone and in-combination

Site name	Cable Project (EGL 3/EGL 4)	Relevant Designated Feature	Potential Impact	Potential for effect alone or in-combination
		• White-beaked dolphin • Grey seal • Harbour seal		

Annex A Relevant Site Descriptions and Conservation Objectives

The site descriptions and conservation objectives for all relevant MCZs/NCMPAs and the Northeast of Farnes Deep HPMA are presented in **Annex A Table** 1.

Annex A Table 1: Relevant Site Descriptions and Conservation Objectives

Site Name	Site Description	Conservation Objectives
Holderness Offshore MCZ (Ref 3.17.A.93 ; Ref 3.17.A.17)	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 nautical mile territorial seas limit and overlaps with the Southern North Sea SAC. 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 a number of fish species, including lemon sole, plaice and European sprat. Ocean quahog has also been recorded within the site.	Conservation advice states that the North Sea glacial tunnel valleys within the MCZ is in favourable condition and the general management approach is to maintain the feature at a favourable condition. This means that: i. Its extent, component elements and integrity are maintained. ii. Its structure and functioning are unimpaired; and iii. Its surface remains sufficiently unobscured for the purposes of determining whether the conditions in paragraphs (i) and (ii) are satisfied. Any obscurement of that feature brought about entirely by natural processes is to be disregarded. Any alteration to that feature brought about entirely by natural processes is to be disregarded. Supplementary advice sets the following objectives for the sedimentary broadscale habitats: • Extent and distribution: Recover • Structure and function: Recover • Supporting processes: Maintain With respect to subtidal coarse sediment, subtidal sand and subtidal mixed sediments within the site, this means that: Its extent is stable or increasing; and i. Its structures and functions, its quality, and the composition of its characteristic biological communities (which includes a reference to the

Site Name	Site Description	Conservation Objectives
		diversity and abundance of species forming part of or inhabiting that habitat) are such as to ensure that it remains in a condition which is healthy and not deteriorating. ii. Any temporary deterioration in condition is to be disregarded if the habitat is sufficiently healthy and resilient to enable its recovery. Any alteration to that feature brought about entirely by natural processes is to be disregarded. Supplementary advice sets the following objectives for ocean quahog: • Extent and distribution: Recover • Structure and function: Recover • Supporting processes: Recover With respect to the ocean quahog within the MCZ, this means that: The quality and quantity of its habitat and the composition of its population in terms of number, age and sex ratio are such as to ensure that the population is maintained in numbers which enable it to thrive. Any temporary reduction of numbers is to be disregarded if the population is sufficiently thriving and resilient to enable its recovery. Any alteration to that feature brought about entirely by natural processes is to be disregarded.
Northeast of Farnes Deep HPMA (Ref 3.17.A.18; Ref 3.17.A.19)	The Northeast of Farnes Deep HPMA was designated in June 2023 and overlaps entirely with the Northeast of Farnes Deep MCZ, however they remain as two distinct designations. HPMAs extend protection to the entire marine ecosystem (seabed, water column, processes and all species) within the site. The	The conservation objective for the site 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 Northeast of Farnes Deep Highly Protected Marine Area, to a natural state, and

Site Name	Site Description	Conservation Objectives
	HPMA is located approximately 55 km offshore from the north Northumberland Coast, in the northern North Sea covering an area of 492 km^2. The seabed within the HPMA is a mix of highly mosaiced habitats, ranging from coarse sediments through to mixed sediments and mud. These are relatively stable habitats, which support a diverse range of marine flora and fauna such as anemones, worms, molluscs, echinoderms and fish species. These habitats also support birds and marine mammals, with at least seven nationally important seabird species and five marine mammal species recorded within the area. Large areas of muddy habitats cover 27 km^2 of the HPMA (equivalent to 5% of the site) and are thought to be important for the storage of carbon. At present, this is the only offshore HPMA with blue carbon habitats.	b. Prevent further degradation and damage to the protected feature, subject to natural change. Such that within the site: 1. The ecosystem is allowed to fully recover in the absence of damaging activities such that: a. The ecosystem structure consists of a diverse range of benthic and pelagic communities, habitats and species, including biotic and abiotic components of the ecosystem. These fulfil a variety of functional roles, including supporting key life cycle stages and/or behaviours of marine species. b. The physical, biological and chemical ecosystem processes and functions proceed unhindered, so that the site realises its full ecological potential to deliver goods and services, including habitats and species considered important to the long-term storage of carbon. c. The ecosystem is resilient to change and stressors. 2. Any ecosystem changes brought about by the process of removing anthropogenic pressures should be considered in the context of a naturally recovering ecosystem. 3. The HPMA supports our understanding of how marine ecosystems change and recover in the absence of impacting activities. Note that this does not prevent human intervention to enable or facilitate recovery or the prevention of degradation or damage.

Site Name	Site Description	Conservation Objectives
Northeast of Farnes Deep MCZ (Ref 3.17.A.71)	Northeast of Farnes Deep was designated as a MCZ in January 2013 for subtidal coarse sediment and subtidal sand. Additional features of mixed sediments, subtidal mud and ocean quahog were designated in January 2016. The MCZ is located approximately 55 km offshore from the north Northumberland Coast, in the northern North Sea covering an area of 492 km^2. The seabed within the MCZ is a mix of highly mosaiced habitats, ranging from coarse sediments through to mixed sediments and mud. These are relatively stable habitats, which support a diverse range of marine flora and fauna such as anemones, worms, molluscs, echinoderms and fish species. These habitats also support birds and marine mammals, with at least seven nationally important seabird species and five marine mammal species recorded within the area.	The Conservation Objective for the Northeast of Farnes Deep Marine Conservation Zone is that the protected features: • so far as already in favourable condition, remain in such condition; and • so far as not already in favourable condition, be brought into such condition, and remain in such condition With respect to Subtidal coarse sediment, Subtidal sand, Subtidal mixed sediments and Subtidal mud within the Zone, this means that— • Extent is stable or increasing; and • Structures and functions, quality, and the composition of characteristic biological communities (which includes a reference to the diversity and abundance of species forming part of or inhabiting each habitat) are such as to ensure that they remain in a condition which is healthy and not deteriorating. Any temporary deterioration in condition is to be disregarded if the habitats are sufficiently healthy and resilient to enable recovery. Any alteration to the features brought about entirely by natural processes is to be disregarded. With respect to the ocean quahog within the Zone, this means that the quality and quantity of its habitat and the composition of its population in terms of number, age and sex ratio are such as to ensure that the population is maintained in numbers which enable it to thrive.

Site Name	Site Description	Conservation Objectives
		Any temporary reduction of numbers is to be disregarded if the population is sufficiently thriving and resilient to enable its recovery. Any alteration to that feature brought about entirely by natural processes is to be disregarded.
Firth of Forth Banks Complex NCMPA (Ref 3.17.A.94; Ref 3.17.A.21)	The Firth of Forth Banks Complex NCMPA covers an area of 2,130 km^2 and is located in offshore waters to the east of Scotland. The NCMPA includes the Berwick, Scalp and Montrose Banks, and the Wee Bankie shelf banks and mounds. Diverse and fine-scale current patterns result in a wide-ranging mosaic of different sedimentary habitats throughout the site, which support a range of benthic species including echinoderms, soft corals, bryozoans and ocean quahog. Both Berwick Bank and Wee Bankie support sand and gravel habitats suitable for colonisation by sandeels. Therefore, the shelf banks within the NCMPA are identified as being critical for foraging seabirds and grey seals. Berwick Bank is also thought to be a spawning ground for plaice, which may be important for repopulating exploited stocks along the east coast of England. Furthermore, the Wee Bankie moraine formation is considered important in furthering understanding of the last British Irish Ice Sheet.	The conservation objectives for the Firth of Forth Banks NCMPA are that the protected features: • So far as already in favourable condition, remain in such condition; and • So far as not already in favourable condition, be brought into such condition, and remain in such condition With respect to the Wee Bankie key geodiversity area within the NCMPA, this means that: • Its extent, component elements and integrity are maintained; • Its structure and functioning are unimpaired; and • Its surface remains sufficiently unobscured for the purposes of determining whether the above criteria are satisfied. Any obscuring of that feature entirely by natural processes is to be disregarded. Any alteration to that feature brought about entirely by natural processes is to be disregarded. With respect to the Offshore subtidal sands and gravels within the NCMPA, this means that: • Extent is stable or increasing; and • Structures and functions, quality, and the composition of characteristic biological communities (which includes a reference to the diversity and abundance of species forming part of or living within the habitat) are such as to

Site Name	Site Description	Conservation Objectives
		ensure that they remain in a condition which is healthy and not deteriorating. Any temporary deterioration in condition is to be disregarded if the habitat is sufficiently healthy and resilient to enable its recovery from such deterioration. Any alteration to that feature brought about entirely by natural processes is to be disregarded. With respect to the Shelf banks and mounds large-scale feature within the NCMPA, this means that: • The extent, distribution and structure are maintained; • The function is maintained so as to ensure that it continues to support its characteristic biological communities (which includes a reference to the diversity of any species associated with the large-scale feature) and their use of the site for, but not restricted to, feeding, courtship, spawning, or use as nursery grounds; and • The processes supporting that feature are maintained. Any alteration to that feature brought about entirely by natural processes is to be disregarded. With respect to the ocean quahog aggregations within the NCMPA, this means that: • The quality and quantity of its habitat and the composition of its population in terms of number, age and sex ratio are such as to ensure that the population is maintained in numbers which enable it to thrive. Any temporary reduction of numbers is to be disregarded if the population of ocean quahog aggregations is sufficiently thriving and resilient to enable its recovery. Any alteration to that feature brought about entirely by natural processes is to be disregarded.

Site Name	Site Description	Conservation Objectives
Berwick to St Mary's MCZ (Ref 3.17.A.22)	The Berwick to St. Mary's MCZ is an inshore site located along the Northumberland coast in north-east England. The area extends from Berwick-upon-Tweed in the north to St Mary's Island in the south and covers an area of 634 km^2. The MCZ holds nationally important numbers of breeding common eider and supports regionally and nationally (England) important numbers of common eider in the non-breeding season. This area encompasses the Farne Islands common eider breeding site, and these islands together with Coquet Island are the main breeding areas for common eiders on the east coast of England and form the southern limit of regular breeding of the species on the western side of the North Sea. This area from Coquet to Berwick-upon-Tweed holds 26.2% of the English and 5.7% of the British non-breeding population	1. The conservation objectives of the Zone are that, in relation to common eider. a. The habitat used by members of that species ("supporting habitat"): i. So far as already in favourable condition, remain in such condition, and ii. So far as not already in favourable condition, be brought into such condition and remain in such condition; b. The population of that species: i. So far as already in favourable condition, remain in such condition, and ii. So far as not already in favourable condition, be brought into such condition, and remain in such condition. 2. In paragraph (1), "favourable condition". a. With respect to supporting habitat within the Zone, means that: i. Its extent and distribution are stable or increasing, and ii. Its structures and functions, its quality, and the composition of its characteristic biological communities are such as to ensure that it remains in a condition which is healthy and not deteriorating;

Site Name	Site Description	Conservation Objectives
		b. With respect to the population of that species occurring within the Zone (whether temporary or otherwise), means that the distribution, size, age and sex ratios of the population are such as to ensure that it is maintained in numbers which enable it to thrive. 3. In paragraph 2(a)(ii), the reference to the composition of the characteristic biological communities of a habitat includes a reference to the diversity and abundance of species forming part of, or inhabiting, that habitat. 4. For the purpose of determining whether the protected feature is in a favourable condition within the meaning of paragraph (2), any alteration to that feature brought about entirely by natural processes is to be disregarded.
Southern Trench NCMPA (Ref 3.17.A.23; Ref 3.17.A.24)	The Southern Trench NCMPA is located off the north-east coast of Scotland and covers an area of 2,398 km^2. It is dominated by a deep geological trench which was formed by glacial movement and contains rock formations which are thought to be over 250 million years old. The trench is 58 km long, 9 km wide and 250 m deep. The trench area is an important nursery ground for juvenile fish, and the burrowed mud habitat supports a diverse assemblage of fauna, including seapens, tube anemones lobster and crabs. The NMCPA features a mixing zone of warm and cold waters known as a front that attracts shoals of herring, mackerel and cod. This attracts predators such as minke whale.	The Conservation Objectives of the Southern Trench MPA, are that the protected features: • So far as already in favourable condition, remain in such condition • So far as not already in favourable condition, be brought into such condition, and remain in such condition “Favourable condition”, with respect to a feature of geomorphological interest, means that: a. Its extent, component elements and integrity are maintained; b. Its structure and functioning are unimpaired; and c. Its surface remains sufficiently unobscured for the purposes of determining whether the criteria in paragraphs (a) and (b) are satisfied.

Site Name	Site Description	Conservation Objectives
		For the purpose of determining whether a feature of geomorphological interest is sufficiently unobscured under paragraph (3)(c), any obscuring of that feature entirely by natural processes is to be disregarded. “Favourable condition”, with respect to a marine habitat, means that a. Its extent is stable or increasing; and b. Its structures and functions, its quality, and the composition of its characteristic biological communities are such as to ensure that it is in a condition which is healthy and not deteriorating Any temporary deterioration in condition is to be disregarded if the habitat is sufficiently healthy and resilient to enable its recovery from such deterioration. “Favourable condition”, with respect to a large-scale feature, means that: a. The extent, distribution and structure of that feature is maintained; b. The function of the feature is maintained so as to ensure that it continues to support its characteristic biological communities and their use of the site including, but not restricted to, feeding, spawning, courtship or use as nursery grounds; and c. The processes supporting the feature are maintained. For the purpose of determining whether a protected feature is in favourable condition any alteration to that feature

Site Name	Site Description	Conservation Objectives
		brought about entirely by natural processes is to be disregarded. “Favourable condition”, with respect to a mobile species of marine fauna, means that: a. The species is conserved or, where relevant, recovered to include the continued access by the species to resources provided by the MPA for, but not restricted to, feeding, courtship, spawning or use as nursery grounds; b. The extent and distribution of any supporting features upon which the species is dependent is conserved or, where relevant, recovered; and The structure and function of any supporting feature, including any associated 27 processes supporting the species within the MPA, is such as to ensure that the protected feature is in a condition which is healthy and not deteriorating.
North-east Lewis NCMPA (Ref 3.17.A.27; Ref 3.17.A.28)	The North-east Lewis NCMPA is located off the north-west coast of Scotland in the Minch strait, covering an area of 907 km^2 and is towards the most northerly extent of the risso’s dolphin range. Mothers with calves and groups of juveniles have been recorded within the NCMPA which suggests that this site is not only used for feeding but also for breeding, nursing and raising young. The NCMPA encompasses a former sandeel fishing ground that supports an important component of a larger, patchy sandeel population on the west coast. The well-flushed sandy seabed substrates preferred by the sandeels also form part of an internationally important assemblage of	The Conservation Objectives of the North-east Lewis MPA, are that the protected features: So far as already in favourable condition, remain in such condition So far as not already in favourable condition, be brought into such condition, and remain in such condition “Favourable condition”, with respect to a feature of geomorphological interest, means that: a. Its extent, component elements and integrity are maintained; b. Its structure and functioning are unimpaired; and

Site Name	Site Description	Conservation Objectives
	geodiversity interests present in this part of the Minch.	c. Its surface remains sufficiently unobscured for the purposes of determining whether the criteria in paragraphs (a) and (b) are satisfied. For the purpose of determining whether a feature of geomorphological interest is sufficiently unobscured under paragraph (3)(c), any obscuring of that feature entirely by natural processes is to be disregarded. “Favourable condition”, with respect to a mobile species of marine fauna, means that: a. The species is conserved or, where relevant, recovered to include the continued access by the species to resources provided by the MPA for, but not restricted to, feeding, courtship, spawning or use as nursery grounds; b. The extent and distribution of any supporting features upon which the species is dependent is conserved or, where relevant, recovered; and c. The structure and function of any supporting feature, including any associated processes supporting the species within the MPA, is such as to ensure that the protected feature is in a condition which is healthy and not deteriorating For the purpose of determining whether a protected feature is in favourable condition any alteration to that feature brought about entirely by natural processes is to be disregarded.
Sea of the Hebrides NCMPA	The Sea of the Hebrides NCMPA is located off the north-west coast of Scotland covering area of 10,039 km^2. The NCMPA lies within the Inner Hebrides Carbonate Production Area, which is a key geodiversity area in Scottish waters,	The Conservation Objectives of the Sea of the Hebrides MPA, are that the protected features: • So far as already in favourable condition, remain in such condition; and

Site Name	Site Description	Conservation Objectives
(Ref 3.17.A.3.17.A.25; Ref 3.17.A.26)	representing an internationally important example of a non-tropical shelf carbonate system. Cool, nutrient-rich water mixes with shallow warmer water within the NCMPA generating an area of high productivity known as a front. Fronts concentrate nutrients and plankton to create a feeding ground that attracts predators such as basking shark and minke whale.	• So far as not already in favourable condition, be brought into such condition, and remain in such condition. "Favourable condition", with respect to a feature of geomorphological interest, means that: a. Its extent, component elements and integrity are maintained; b. Its structure and functioning are unimpaired; and c. Its surface remains sufficiently unobscured for the purposes of determining whether the criteria in paragraphs (a) and (b) are satisfied. For the purpose of determining whether a feature of geomorphological interest is sufficiently unobscured under paragraph (3)(c), any obscuring of that feature entirely by natural processes is to be disregarded. "Favourable condition", with respect to a large-scale feature, means that: The extent, distribution and structure of that feature is maintained; a. The function of the feature is maintained so as to ensure that it continues to support its characteristic biological communities and their use of the site including, but not restricted to, feeding, spawning, courtship or use as nursery grounds; and b. The processes supporting the feature are maintained. For the purpose of determining whether a protected feature is in favourable condition any alteration to that feature

Site Name	Site Description	Conservation Objectives
		brought about entirely by natural processes is to be disregarded. “Favourable condition”, with respect to a mobile species of marine fauna, means that: a. The species is conserved or, where relevant, recovered to include the continued access by the species to resources provided by the MPA for, but not restricted to, feeding, courtship, spawning or use as nursery grounds; b. The extent and distribution of any supporting features upon which the species is dependent is conserved or, where relevant, recovered; and c. The structure and function of any supporting feature, including any associated processes supporting the species within the MPA, is such as to ensure that the protected feature is in a condition which is healthy and not deteriorating.

Bibliography

Ref 3.17.A.1 Marine Management Organisation (MMO) (2013) Marine Conservation Zones and Marine Licensing [Accessed 03/04/25]

Ref 3.17.A.2 JNCC (2020). Guidance for assessing the significance of noise disturbance against Conservation Objectives of harbour porpoise SACs Wales & Northern Ireland) 8091. JNCC Report No. 65 4 (England, JNCC, Peterborough, ISSN 0963)
3 Joint SNCB (2022). Joint SNCB Interim Displacement Advice Note. Available at: https://data.jncc.gov.uk/data/9aecb87c-80c5-4cfb-9102-39f0228dcc9a/joint-sncb-interim-displacement-advice-note-2022.pdf [Accessed 03/04/25]

Ref 3.17.A.4 Natural England (2018a). Natural England Offshore wind cabling: ten years' experience and recommendations. Available at: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010080/EN010080-001240-Natural%20England%20-%20Offshore%20Cabling%20paper%20July%202018.pdf [Accessed 03/04/25]

Ref 3.17.A.5 Tyler-Walters, H., & Sabatini, M. 2017. Arctica islandica Icelandic cyprine. In Tyler-Walters H. Marine Life Information Network: Biology and Sensitivity Key Information Reviews, [on-line]. Plymouth: Marine Biological Association of the United Kingdom. Available from: https://www.marlin.ac.uk/species/detail/1519#citation [Accessed 03/04/25]

Ref 3.17.A.6 OSPAR. (2023) Subsea cables within the OSPAR Maritime Area: Background document on technical considerations and potential environmental impacts. Available at: https://www.ospar.org/documents?v=52457 [Accessed 03/04/25]

Ref 3.17.A.7 Skomal, G. B., Zeeman, S. I., Chisholm, J. H., Summers, E. L., Walsh, H. J., McMahon, K. W., & Thorrold, S. R. (2009). Transequatorial migrations by basking sharks in the western Atlantic Ocean. Current biology, 19(12), 1019-1022. [Accessed 03/04/25]

Ref 3.17.A.8 Gore, M. A., Rowat, D., Hall, J., Gell, F. R., & Ormond, R. F. (2008). Transatlantic migration and deep mid-ocean diving by basking shark. Biology letters, 4(4), 395-398

Ref 3.17.A.9 Wilson, C.M., Tyler-Walters, H., & Wilding, C.M. 2020. Cetorhinus maximus Basking shark. In Tyler-Walters H. Marine Life Information Network: Biology and Sensitivity Key Information Reviews, [on-line]. Plymouth: Marine Biological Association of the United Kingdom. [cited 18-02-2025]. Available from: https://www.marlin.ac.uk/species/detail/1438 [Accessed 03/04/25]

Ref 3.17.A.10 Barnes, M.K.S. 2008a. Centrophorus granulosus Gulper shark. In Tyler-Walters H. and Hiscock K. Marine Life Information Network: Biology and Sensitivity Key Information Reviews, [on-line]. Plymouth: Marine Biological Association of the United Kingdom. [cited 18-02-2025]. Available from: https://www.marlin.ac.uk/species/detail/60 [Accessed 03/04/25]

Ref 3.17.A.11 Barnes, M.K.S. 2008b. Centrophorus squamosus Leafscraper shark. In Tyler-Walters H. and Hiscock K. Marine Life Information Network: Biology and Sensitivity Key Information Reviews, [on-line]. Plymouth: Marine Biological Association of the United Kingdom.

[cited 18-02-2025]. Available from: https://www.marlin.ac.uk/species/detail/61 [Accessed 03/04/25]

Ref 3.17.A.12 IAMMWG. 2023. Review of Management Unit boundaries for cetaceans in UK waters (2023). JNCC Report 734, JNCC, Peterborough, ISSN 0963-8091. https://hub.jncc.gov.uk/assets/b48b8332-349f-4358-b080-b4506384f4f7 [Accessed 03/04/25]

Ref 3.17.A.13 Joint SNCB. (2022). Joint SNCB Interim Displacement Advice Note. Available at: Joint SNCB Interim Displacement Advice Note (jncc.gov.uk) [Accessed 03/04/25]

Ref 3.17.A.14 Woodward, I., Thaxter, C., Owen, E. and Cook, A. (2019). Desk-based revision of seabird foraging ranges used for HRA screening. Report of work carried out by the British Trust for Ornithology on behalf of NIRAS and The Crown Estate, Issue BTO Research Report No.724 [Accessed 03/04/25]

Ref 3.17.A.15 JNCC Marine Protected Area Mapper. Available at: https://jncc.gov.uk/mpa-mapper/ [Accessed 03/04/25]

Ref 3.17.A.16 JNCC (2021). Holderness Offshore MPA – Conservation Advice 2021. Available at: https://hub.jncc.gov.uk/assets/d439f5d1-5440-4547-84fb-8bd6ec970e44#HoldernessOffshore-ConservationObjectives-V1.0.pdf [Accessed 03/04/25]

Ref 3.17.A.17 JNCC (2019). Holderness Offshore Marine Conservation Zone. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/805479/mcz-holderness-2019.pdf [Accessed 04/04/25]

Ref 3.17.A.18 JNCC (2023b) North East of Farnes Deep MPA and HPMA . Available at: https://jncc.gov.uk/our-work/north-east-of-farnes-deep-mpa-and-hpma/ [Accessed 04/04/25]

Ref 3.17.A.19 JNCC (2018a). North East of Farnes Deep MPA – Conservation Advice 2018. Available at: https://webarchive.nationalarchives.gov.uk/ukgwa/20230301134501/https://hub.jncc.gov.uk/assets/5c5def7f-e1a0-4a7f-8078-a0ff3050a4fb [Accessed 04/04/25]

Ref 3.17.A.20 JNCC (2018b). Firth of Forth Banks Complex MPA – Conservation Advice 2018. Available at: https://hub.jncc.gov.uk/assets/92fb7e5e-5e68-4e66-bde3-afd9c27d6b14#FFBC-2-ConservationObjectives-v1.0.pdf

Ref 3.17.A.21 JNCC (2017). Firth of Forth Banks Complex MPA. Available at: https://jncc.gov.uk/our-work/firth-of-forth-banks-complex-mpa/ [Accessed 04/04/25]

Ref 3.17.A.22 DEFRA (2019). Marine Conservation Zones: Berwick to St. Mary's. Available at :https://www.gov.uk/government/publications/marine-conservation-zones-berwick-to-st-marys [Accessed 04/04/25]

Ref 3.17.A.23 NatureScot (2024a). Conservation and Management Advice- Southern Trench MPA. Available at: https://www.nature.scot/sites/default/files/nature-conservation-mpa/10477/conservation-and-management-advice.pdf [Accessed 04/04/25]

Ref 3.17.A.24 NatureScot (2020a). Southern Trench Marine Protected Area. Available at: https://www.nature.scot/sites/default/files/nature-conservation-mpa/10477/mpa-site-summary-english.pdf [Accessed 04/04/25]

Ref 3.17.A.25 NatureScot (2024c). Conservation Management Advice - Sea of the Hebrides. Available at: https://www.nature.scot/sites/default/files/nature-conservation-mpa/10474/conservation-and-management-advice.pdf [Accessed 04/04/25]

Ref 3.17.A.26 NatureScot (2020c). Sea of the Hebrides Marine Protected Area. Available at: https://www.nature.scot/sites/default/files/nature-conservation-mpa/10474/mpa-site-summary-english.pdf [Accessed 04/04/25]

Ref 3.17.A.27 NatureScot (2024b). Conservation Management Advice - North-East Lewis MPA. Available at: https://www.nature.scot/sites/default/files/nature-conservation-mpa/10476/conservation-and-management-advice.pdf [Accessed 04/04/25]

Ref 3.17.A.28 NatureScot (2020b). North-east Lewis Marine Protected Area. Available at: https://www.nature.scot/sites/default/files/nature-conservation-mpa/10476/mpa-site-summary-english.pdf [Accessed 04/04/25]

Ref 3.17.A.29 JNCC (2022). Marine Pressures-Activities Database (PAD) v1.5. [online] Available at: Marine Pressures-Activities Database (PAD) v1.5 | JNCC Resource Hub [Accessed 04/04/25]

Ref 3.17.A.30 Oslo and Paris (OSPAR) Commission (2011) Intersessional Correspondence Group on Cumulative Effects – Amended 25th March 2011. [online] Available at: https://www.ospar.org/meetings/archive/interseessional-correspondence-group-on-cumulative-effects [Accessed 04/04/25]

Ref 3.17.A.31 Gooding, S., Black, K., Boyd, P. and Boyes, S. (2012). Environmental Impacts of Subsea Trenching Operations. [Accessed 04/04/25]

Ref 3.17.A.32 Pattison, I., Sear, D. A., Collins, A. L., Jones, J. I., & Naden, P. S. (2015). Interactions between fine-grained sediment delivery, river bed deposition and salmonid spawning success. *Proceedings of the International Association of Hydrological Sciences*, *367*, 199-206. [Accessed 04/04/25]

Ref 3.17.A.33 Cook, A.S.C.P. & Burton, N.H.K (2010). A review of the potential impacts of marine aggregate extraction on seabirds. Marine Environment Protection Fund (MEPF) Project 09/P130. Available at: https://www.bto.org/sites/default/files/shared_documents/publications/research-reports/2010/rr563.pdf [Accessed 04/04/25]

Ref 3.17.A.34 Albert, L., Deschamps, F., Jolivet, A., Olivier, F., Chauvaud, L., & Chauvaud, S. (2020). A current synthesis on the effects of electric and magnetic fields emitted by submarine power cables on invertebrates. *Marine environmental research*, *159*, 104958. [Accessed 04/04/25]

Ref 3.17.A.35 BOEMRE (2011) Effects of EMFS From Undersea Power Cables on Elasmobranchs and Other Marine Species. Available at:

https://www.boem.gov/sites/default/files/environmental-stewardship/Environmental-Studies/Pacific-Region/Studies/2011-09-EMF-Effects.pdf [Accessed 04/04/25]

Ref 3.17.A.36 Gill, A. B., & Bartlett, M. D. (2011). Literature review on the potential effects of electromagnetic fields and subsea noise from marine renewable energy developments on Atlantic salmon, sea trout and European eel. Scottish Natural Heritage Commissioned Report. [Accessed 04/04/25]

Ref 3.17.A.37 Gill, AB, Bartlett, M and Thomsen, F (2012). Potential interactions between diadromous fishes of U.K. conservation importance and the electromagnetic fields and subsea noise from marine renewable energy developments. Journal of Fish Biology. 81(2): 664-695 [Accessed 04/04/25]

Ref 3.17.A.38 Marlin (2023). MarESA pressures and benchmarks. Available at: https://www.marlin.ac.uk/sensitivity/SNCB-benchmarks#:~:text=Benthic%20species&text=Both%20include%20up%2Driver%20movements,birds%2C%20fish%2C%20and%20mammals. [Accessed 04/04/25]

Ref 3.17.A.39 Natural England (2024). Outer Thames Estuary SPA. Advice on Operations. Available at: Designated Sites View (naturalengland.org.uk) [Accessed 04/04/25]

Ref 3.17.A.40 Popper, A. N., Hawkins, A. D., Fay, R. R., Mann, D. A., Bartol, S., Carlson, T. J., ... & Tavolga, W. N. (2014). *Sound exposure guidelines* (pp. 33-51). Springer International Publishing. [Accessed 04/04/25]

Ref 3.17.A.41 Atterbury, A., Canning, S., Dinwoodie, K., Hall, R., Piesinger, N., Stewart, D., Thorpe, E. & West, L. (2021). Natural England
and JNCC guidance on key sensitivities of habitats and Marine Protected Areas in English waters to aggregate resource extraction. JNCC Report No. 694. JNCC, Peterborough, ISSN 0963-8091. [Accessed 04/04/25]

Ref 3.17.A.42 MIG-Birds (2022). Joint SNCB interim advice on the treatment of displacement for red-throated diver. Available at: https://data.jncc.gov.uk/data/9aecb87c-80c5-4cfb-9102-39f0228dcc9a/interim-sncb-advice-rtd-displacement-buffer.pdf [Accessed 04/04/25]

Ref 3.17.A.43 MIG-Birds (2022). Joint SNCB interim advice on the treatment of displacement for red-throated diver. Joint SNCB Interim Advice On The Treatment Of Displacement For Red-Throated Diver (2022) (jncc.gov.uk) [Accessed 04/04/25]

Ref 3.17.A.44 Schoeman, R.P., Patterson-Abrolat, C. and Plön, S (2020). A Global Review of Vessel Collisions with Marine Animals. Available at: https://www.frontiersin.org/articles/10.3389/fmars.2020.00292/full [Accessed 04/04/25]

Ref 3.17.A.45 Wang, Y., Helden, A. V., Sutaria, D., Secchi, E., Sanino, G. P., Iñiguez, M., Gedamke, J., Félix, F., Baker, A. N. & Waerebeek, K. V (2007). Vessel collisions with small cetaceans worldwide and with large whales in the Southern Hemisphere, an initial assessment. Available at: https://www.lajamjournal.org/index.php/lajam/article/view/263 [Accessed 04/04/25]

Ref 3.17.A.46 The Crown Estate. Open Data Portal. Available at: https://opendata-thecrownestate.opendata.arcgis.com/ [Accessed 04/04/25]

Ref 3.17.A.47 MMO. Explore Marine Plans. Available at: https://explore-marine-plans.marineservices.org.uk/marine-plans-explorer [Accessed 04/04/25]

Ref 3.17.A.48 NSTA. Open Data. Available at: https://opendata-nstauthority.hub.arcgis.com/search [Accessed 04/04/25]

Ref 3.17.A.49 OPRED (2025). Oil and gas: environmental submissions and determinations. Available at: https://www.gov.uk/guidance/oil-and-gas-environmental-data#full-publication-update-history [Accessed 04/04/25]

Ref 3.17.A.50 Orsted (2021). Hornsea Project Four: Environmental Statement (ES), Volume A5, Annex 2.3: Marine Conservation Zone Assessment. Available at: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010098/EN010098-000758-A5.2.3%20ES%20Volume%20A5%20Annex%202.3%20Marine%20Conservation%20Zone%20Assessment.pdf [Accessed 04/04/25]

Ref 3.17.A.51 SSE Renewables (2023) Cambois Connection – Marine Scheme MPA and MCZ Assessment. Available at: https://static1.squarespace.com/static/60e8221b22cc6d086da292de/t/64d3f4f99ad31e1ddc229677/1691612420249/Cambois+Connection+-+Marine+Scheme+MPA+and+MCZ+Assessment.pdf [Accessed 04/04/25]

Ref 3.17.A.52 AECOM (2022). Eastern Green Link 2 - Marine Scheme Environmental Appraisal Report, Volume 3, Appendix 8.3 - Marine Protected Area (MPA) and Marine Conservation Zone (MCZ) Assessment. Available at: https://marine.gov.scot/sites/default/files/d8.3_environmental_appraisal_report_-_appendix_8.3_mpa_and_mcz_assessment.pdf [Accessed 04/04/25]

Ref 3.17.A.53 Centrica (2024). Rough Alpha Installation - 47/8A Decommissioning Programme. Available at: https://www.centrica.com/media/0paip1yw/rough-alpha-installations-decommissioning-programme.pdf [Accessed 04/04/25]

Ref 3.17.A.54 Benthic Solutions (2025a). Appendix G: Habitat Classification Chart. Eastern Green Link 3 Whole Route Habitat Assessment Report. [Accessed 04/04/25]

Ref 3.17.A.55 JNCC (2021). Supplementary Advice on Conservation Objectives for Holderness Offshore MCZ. Available at: https://data.jncc.gov.uk/data/d439f5d1-5440-4547-84fb-8bd6ec970e44/HoldernessOffshore-SACO-V1.0.pdf. [Accessed 14/04/2025]

Ref 3.17.A.56 RPS (2025a). Ossian Offshore Wind Farm: Transmission Infrastructure EIA Scoping Report Part 2 (of 5). Available at : https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN0210006-000004-Ossian%20Transmission%20Infrastructure%20Scoping%20Report%20Part%202.pdf

Ref 3.17.A.57 Gill, A.B., Gloyne-Phillips, I., Neal, K.J. & Kimber, J.A. (2005) The potential effects of electromagnetic fields generated by sub-sea power cables associated with offshore wind farm developments on electrically and magnetically sensitive marine organisms – a review. Available at:

https://tethys.pnnl.gov/sites/default/files/publications/The_Potential_Effects_of_Electromagnetic_Fields_Generated_by_Sub_Sea_Power_Cables.pdf [Accessed 04/04/25]

Ref 3.17.A.58 Walker (2001) Available at: Review of Impacts of High Voltage Direct Current Sea Cables and Electrodes on Chondrichthyan Fauna and Other Marine Life Basslink Supporting Study No. 2 [Accessed 04/04/25]
https://www.researchgate.net/publication/262232923_Basslink_project_review_of_impacts_of_high_voltage_direct_current_sea_cables_and_electrodes_on_chondrichthyan_fauna_and_other_marine_life_Basslink_Supporting_Study_No_29_Marine_and_Freshwater_Resource#pf [Accessed 04/04/25]

Ref 3.17.A.59 Southall, B.L., Finneran, J.J., Reichmuth, C., Nachtigall, P.E., Ketten, D.R., Bowles, A.E., Ellison, W.T., Nowacek, D.P and Tyack, P.L. (2019). Marine mammal noise exposure criteria: Updated scientific recommendations for residual hearing effects. Aquatic Mammals 2019, 45(2) 125-232. [Accessed 04/04/25]

Ref 3.17.A.60 NMFS. (2024) 2024 Update to: Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 3.0). NOAA Technical Memorandum NMFS-OPR-71. [Accessed 04/04/25]

Ref 3.17.A.61 EMODNet (2023). Available at: https://emodnet.ec.europa.eu/geonetwork/srv/eng/catalog.search#/metadata/379d0425-8924-4a41-a088-1a002d2ea748 [Accessed 04/04/25]

Ref 3.17.A.62 Bochert, R. and Zettler, M. L. (2004b) Long-term exposure of several marine benthic animals to static magnetic fields. Bioelectromagnetics 25: 498-502 [Accessed 04/04/25]

Ref 3.17.A.63 Malagoli, D., Lusvardi, M., Gobba, F. and Ottaviani, E. (2004). 50 Hz magnetic fields activate mussel immunocyte p38 MAP kinase and induce HSP70 and 90. Comparative Biochemistry and Physiology Part C: Toxicology & Pharmacology 137: 75-79. [Accessed 04/04/25]

Ref 3.17.A.64 Malagoli, D., Gobba, F. and Ottaviani, E (2003) Effects of 50-Hz magnetic fields on the signalling
pathways of fMLP-induced shape changes in invertebrate immunocytes: the activation of an alternative “stress pathway”. Biochimica et Biophysica Acta - General Subjects 1620: 185-190. [Accessed 04/04/25]

Ref 3.17.A.65 Ottaviani, E., Malagoli, D., Ferrari, A., Tagliazucchi, D., Conte, A. and Gobba, F. (2002) 50 Hz magnetic fields of varying flux intensity affect cell shape changes in invertebrate immunocytes: The role of potassium ion channels. Bioelectromagnetics, 23:292-297. [Accessed 04/04/25]

Ref 3.17.A.66 Benthic Solutions (2025b). Appendix K: Habitat Classification Chart. Eastern Green Link 4 Whole Route Habitat Assessment Report. [Accessed 04/04/25]

Ref 3.17.A.67 JNCC (2022a). The Marine Habitat Classification for Britain and Ireland Version 22.04. Available from: https://mhc.jncc.gov.uk/ [Accessed 04/04/25]

Ref 3.17.A.68 RPS (2025b). Morven Hawthorn Pit Grid Connect Project - Environmental Impact Assessment Scoping Report. Available at: https://nsip-

documents.planninginspectorate.gov.uk/published-documents/EN0210005-000004-Morven%20Hawthorn%20Pit%20Grid%20Connection%20Project%20Scoping%20Report.pdf [Accessed 04/04/25]

Ref 3.17.A.69 Fliessbach, K. L., Borkenhagen, K., Guse, N., Markones, N., Schwemmer, P., & Garthe, S. (2019). A ship traffic disturbance vulnerability index for Northwest European seabirds as a tool for marine spatial planning. *Frontiers in Marine Science*, *6*, 192. [Accessed 04/04/25]

Ref 3.17.A.70 Walker (2001) Available at: Review of Impacts of High Voltage Direct Current Sea Cables and Electrodes on Chondrichthyan Fauna and Other Marine Life Basslink Supporting Study No. 2 https://www.researchgate.net/publication/262232923_Basslink_project_review_of_impacts_of_high_voltage_direct_current_sea_cables_and_electrodes_on_chondrichthyan [Accessed 04/04/25]
_fauna_and_other_marine_life_Basslink_Supporting_Study_No_29_Marine_and_Freshwater_Resource#pf

Ref 3.17.A.71 JNCC (2023) North East of Farnes Deep MPA and HPMA . Available at: https://jncc.gov.uk/our-work/north-east-of-farnes-deep-mpa-and-hpma/ [Accessed 04/04/25]

Ref 3.17.A.72 NE and JNCC (2022b). Annex H. Ecological narratives: Supplementary documentation on the ecological merit of the candidate Highly Protected Marine Areas in English waters. Available at: https://consult.defra.gov.uk/hpma/consultation-on-highly-protected-marine-areas/supporting_documents/HPMA%20consultation%20Annex%20H%20Ecological%20narratives%20.pdf [Accessed 04/04/25]

Ref 3.17.A.73 Benthic Solutions (2025b). Appendix K: Habitat Classification Chart. Eastern Green Link 4 Whole Route Habitat Assessment Report [Accessed 04/04/25]

Ref 3.17.A.74 Benthic Solutions (2025c). Appendix G: Habitat Classification Chart. Eastern Green Link 3 Whole Route Habitat Assessment Report. [Accessed 04/04/25]

Ref 3.17.A.75 Tillin, H.M. & Watson, A., 2023. *Glycera lapidum*, *Thyasira* spp. and *Amythasides macroglossus* in offshore gravelly sand. In Tyler-Walters H. *Marine Life Information Network: Biology and Sensitivity Key Information Reviews*, [on-line]. Plymouth: Marine Biological Association of the United Kingdom. [cited 01-04-2025]. Available from: https://www.marlin.ac.uk/habitats/detail/1136/glycera_lapidum_thyasira_spp_and_amythasides_macroglossus_in_offshore_gravelly_sand [Accessed 04/04/25]

Ref 3.17.A.76 Tillin, H.M. & Watson, A., 2024a. *Mediomastus fragilis*, *Lumbrineris* spp. and venerid bivalves in circalittoral coarse sand or gravel. In Tyler-Walters H. *Marine Life Information Network: Biology and Sensitivity Key Information Reviews*, [on-line]. Plymouth: Marine Biological Association of the United Kingdom. [cited 01-04-2025]. Available from: https://www.marlin.ac.uk/habitats/detail/382/mediomastus_fragilis_lumbrineris_spp_and_venerid_bivalves_in_circalittoral_coarse_sand_or_gravel [Accessed 04/04/25]

Ref 3.17.A.77 Tillin, H.M. & Watson, A., 2023. *Protodorvillea kefersteini* and other polychaetes in impoverished circalittoral mixed gravelly sand. In Tyler-Walters H. *Marine Life Information Network: Biology and Sensitivity Key Information Reviews*, [on-line]. Plymouth: Marine Biological Association of the United Kingdom. [cited 01-04-2025]. Available from:

https://www.marlin.ac.uk/habitats/detail/1115/protodorvillea_kefersteini_and_other_polychaetes_in_impoverished_circalittoral_mixed_gravelly_sand [Accessed 04/04/25]

Ref 3.17.A.78 Readman, J.A.J., & Watson, A., 2024. *Flustra foliacea* and *Hydrallmania falcata* on tide-swept circalittoral mixed sediment. In Tyler-Walters H. *Marine Life Information Network: Biology and Sensitivity Key Information Reviews*, [on-line]. Plymouth: Marine Biological Association of the United Kingdom. [cited 01-04-2025]. Available from: https://www.marlin.ac.uk/habitats/detail/74/flustra_foliacea_and_hydrallmania_falcata_on_tide-swept_circalittoral_mixed_sediment [Accessed 04/04/25]

Ref 3.17.A.79 Jackson, A. & Hiscock, K. 2008. *Sabellaria spinulosa* Ross worm. In Tyler-Walters H. and Hiscock K. *Marine Life Information Network: Biology and Sensitivity Key Information Reviews*, [online]. Plymouth: Marine Biological Association of the United Kingdom. Available at: https://www.marlin.ac.uk/species/detail/1133 [Accessed 04/04/25]

Ref 3.17.A.80 David W. Laist, Amy R. Knowlton, James G. Mead, Anne S. Collet, Michela Podesta COLLISIONS BETWEEN SHIPS AND WHALES First published: 26 August 2006 https://doi.org/10.1111/j.1748-7692.2001.tb00980.x. [Accessed 04/04/25]

Ref 3.17.A.81 De-Bastos, E.S.R. & Watson, A., 2023a. *Thyasira* spp. and *Ennucula tenuis* in circalittoral sandy mud. In Tyler-Walters H. *Marine Life Information Network: Biology and Sensitivity Key Information Reviews*, [on-line]. Plymouth: Marine Biological Association of the United Kingdom. [cited 01-04-2025]. Available from: https://www.marlin.ac.uk/habitats/detail/1106/thyasira_spp_and_ennucula_tenuis_in_circalittoral_sandy_mud [Accessed 04/04/25]

Ref 3.17.A.82 De-Bastos, E.S.R. & Watson, A., 2023b. *Amphiura filiformis* and *Ennucula tenuis* in circalittoral and offshore sandy mud. In Tyler-Walters H. *Marine Life Information Network: Biology and Sensitivity Key Information Reviews*, [on-line]. Plymouth: Marine Biological Association of the United Kingdom. [cited 01-04-2025]. Available from: De-Bastos, E.S.R. & Watson, A., 2023. *Amphiura filiformis* and *Ennucula tenuis* in circalittoral and offshore sandy mud. In Tyler-Walters H. *Marine Life Information Network: Biology and Sensitivity Key Information Reviews*, [on-line]. Plymouth: Marine Biological Association of the United Kingdom. [cited 01-04-2025]. Available from: https://www.marlin.ac.uk/habitat/detail/1107 [Accessed 04/04/25]

Ref 3.17.A.83 Tillin, H.M. & Watson, A., 2024b. *Echinocyamus pusillus*, *Ophelia borealis* and *Abra prismatica* in circalittoral fine sand. In Tyler-Walters H. *Marine Life Information Network: Biology and Sensitivity Key Information Reviews*, [on-line]. Plymouth: Marine Biological Association of the United Kingdom. [cited 01-04-2025]. Available from: https://www.marlin.ac.uk/habitat/detail/1131 [Accessed 04/04/25]

Ref 3.17.A.84 Hill, J.M., Tyler-Walters, H.,, Garrard, S.L., & Watson, A., 2023. Seapens and burrowing megafauna in circalittoral fine mud. In Tyler-Walters H. *Marine Life Information Network: Biology and Sensitivity Key Information Reviews*, [on-line]. Plymouth: Marine Biological Association of the United Kingdom. [cited 01-04-2025]. Available from: https://www.marlin.ac.uk/habitats/detail/131/seapens_and_burrowing_megafauna_in_circalittoral_fine_mud#citation [Accessed 04/04/25]

Ref 3.17.A.85 BOEMRE (2011) Effects of EMFS From Undersea Power Cables on Elasmobranchs and Other Marine Species. Available at:

https://www.boem.gov/sites/default/files/environmental-stewardship/EnvironmentalStudies/Pacific-Region/Studies/2011-09-EMF-Effects.pdf [Accessed 04/04/25]

Ref 3.17.A.86 Walker (2001) Available at: Review of Impacts of High Voltage Direct Current Sea Cables and Electrodes on Chondrichthyan Fauna and Other Marine Life Basslink Supporting Study No. 2 https://www.researchgate.net/publication/262232923_Basslink_project_review_of_impacts_of_high_voltage_direct_current_sea_cables_and_electrodes_on_chondrichthyan_fauna_and_other_marine_life_Basslink_Supporting_Study_No_29_Marine_and_Freshwater_Resource#pf. [Accessed 04/04/25]

Ref 3.17.A.87 Guan, S., & Brookens, T. (2023). An overview of research efforts to understand the effects of underwater sound on cetaceans. *Water Biology and Security*, *2*(2), 100141. [Accessed 04/04/25]

Ref 3.17.A.88 Wilson, S.C. (2013) The impact of human disturbance at seal haul-outs. A literature review for the Seal Conservation Society [Accessed 04/04/25]

Ref 3.17.A.89 BEIS (2022). Offshore Energy Strategic Environmental Assessment 4. Environmental Report and Appendices Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1061613/Appendix_1a_8_-_Marine_mammals.pdf [Accessed 04/04/25]

Ref 3.17.A.90 Gill, A. Bartlett, M, Thomsen, F. (2012) Potential interactions between diadromous fishes of U.K. conservation importance and the electromagnetic fields and subsea noise from marine renewable energy developments. Available at: https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1095-8649.2012.03374.x. [Accessed 04/04/25]

Ref 3.17.A.91 Popper, A. N., Hawkins, A. D., Fay, R. R., Mann, D. A., Bartol, S., Carlson, T. J., Coombs, S., *et al*. (2014). ASA S3/SC1.4 TR-2014 Sound Exposure Guidelines for Fishes and Sea Turtles: A Technical Report Prepared by ANSI-Accredited Standards Committee S3/SC1 and Registered with ANSI. Springer. [Accessed 04/04/25]

Ref 3.17.A.92 De Robertis, A., & Handegard, N. O. (2013). Fish avoidance of research vessels and the efficacy of noise-reduced vessels: a review. *ICES Journal of Marine Science*, *70*(1), 34-45. [Accessed 04/04/25]

Ref 3.17.A.93 JNCC (2021). Holderness Offshore MPA – Conservation Advice 2021. Available at: https://hub.jncc.gov.uk/assets/d439f5d1-5440-4547-84fb-8bd6ec970e44#HoldernessOffshore-ConservationObjectives-V1.0.pdf [Accessed 04/04/25]

Ref 3.17.A.94 JNCC (2018b). Firth of Forth Banks Complex MPA – Conservation Advice 2018. Available at: https://hub.jncc.gov.uk/assets/92fb7e5e-5e68-4e66-bde3-afd9c27d6b14#FFBC-2-ConservationObjectives-v1.0.pdf [Accessed 04/04/25]

National Grid plc
National Grid House,
Warwick Technology Park,
Gallows Hill, Warwick.
CV34 6DA United Kingdom

Registered in England and Wales
No. 4031152
nationalgrid.com