

**The Great Grid Upgrade**

Sea Link

# Sea Link

**Volume 9: Examination Submissions**

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**nationalgrid**

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# 1. Introduction

## 1.1 Background

- 1.1.1 This Outline In Principle Monitoring Plan has been prepared for the Sea Link Project Offshore Scheme.
- 1.1.2 The Sea Link Project (hereafter referred to as the 'Proposed Project') is a proposal by National Grid Electricity Transmission plc (hereafter referred to as National Grid) to reinforce the transmission network in the South East and East Anglia. The Proposed Project is required to accommodate additional power flows generated from renewable and low carbon generation, as well as accommodating additional new interconnection with mainland Europe.
- 1.1.3 National Grid owns, builds and maintains the electricity transmission network in England and Wales. Under the Electricity Act 1989, National Grid holds a transmission licence under which it is required to develop and maintain an efficient, coordinated, and economic electricity transmission system.
- 1.1.4 This would be achieved by reinforcing the network with a High Voltage Direct Current (HVDC) Link between the proposed Friston substation in the Sizewell area of Suffolk and the existing Richborough to Canterbury 400 kV overhead line close to Richborough in Kent.
- 1.1.5 National Grid is also required, under Section 38 of the Electricity Act 1989, to comply with the provisions of Schedule 9 of the Act. Schedule 9 requires licence holders, in the formulation of proposals to transmit electricity, to:
- *Schedule 9(1)(a) "...have regard to the desirability of preserving natural beauty, of conserving flora, fauna and geological or physiographical features of special interest and of protecting sites, buildings and objects of architectural, historic or archaeological interest"; and*
  - *Schedule 9(1)(b) "...do what [it] reasonably can to mitigate any effect which the proposals would have on the natural beauty of the countryside or on any such flora, fauna, features, sites, buildings or objects."*
- 1.1.6 The Proposed Project includes the Offshore Scheme, which is a subsea HVDC cable across the outer Thames region of the southern North Sea, linking Suffolk to Kent. The Offshore Scheme includes three distinct components: the Suffolk landfall at Aldeburgh, the marine HVDC cable and the Kent landfall at Pegwell Bay.

## Purpose and Objectives of this Outline In-Principle Monitoring Plan

- 1.1.7 This Offshore Outline In-Principle Monitoring Plan (IPMP) sets out the basis for delivering offshore monitoring measures for the Proposed Project as expected to be required under the deemed Marine Licence (dML).
- 1.1.8 The IPMP provides a framework for further discussions post consent with the Marine Management Organisation (MMO) and the relevant authorities to agree the exact detail

(timings, methodologies etc.) of the monitoring that is required. Final detailed plans will be produced prior to the commencement of any monitoring work.

- 1.1.9 Agreeing guiding principles reinforces commitments made in the Environmental Statement (ES) and complements Conditions set out in the DCO/dML and allows refinements to be made based on the best available knowledge and technology. Final detailed plans for monitoring work would be produced closer to the time that the actual work would be undertaken and based on information available at that time.
- 1.1.10 The relevant topics and / or receptor groups discussed in this plan are as follows:
- Marine Physical Environment;
  - Benthic and Intertidal Ecology;
  - Fish and Shellfish Ecology;
  - Marine Mammals;
  - Offshore Ornithology;
  - Commercial Fisheries; and
  - Marine Archaeology.
- 1.1.11 This outline IPMP presents topic specific monitoring proposals in line with the residual impacts assessed in the ES (topics listed above). This Offshore IPMP sets out the approach to monitoring in line with the assessments carried out at the date of writing and the Applicant recognises that this is a first iteration and through ongoing discussions with stakeholders monitoring methodologies will be refined in future iterations of this IPMP.

## 1.2 The Proposed Project

- 1.2.1 The Proposed Project would comprise the following elements:

### The Suffolk Onshore Scheme

- A connection from the existing transmission network via Friston Substation, including the substation itself. Friston Substation already has development consent as part of other third-party projects. If Friston Substation has already been constructed under another consent, only a connection into the substation would be constructed as part of the Proposed Project.
- A high voltage alternating current (HVAC) underground cable of approximately 1.9 km in length between the proposed Friston Substation and a proposed converter station (below).
- A 2 GW high voltage direct current (HVDC) converter station (including permanent access from the B1121 and a new bridge over the River Fromus) up to 26 m high plus external equipment (such as lightning protection, safety rails for maintenance works, ventilation equipment, aerials, similar small scale operational plant, or other roof treatment) near Saxmundham.
- A HVDC underground cable connection of approximately 10 km in length between the proposed converter station near Saxmundham, and a Transition Joint Bay (TJB)

approximately 900 m inshore from a landfall point (below) where the cable transitions from onshore to offshore technology.

- A landfall on the Suffolk coast (between Aldeburgh and Thorpeness).

## The Offshore Scheme

1.2.2 Approximately 122 km of subsea HVDC cable, running between the Suffolk landfall location (between Aldeburgh and Thorpeness), and the Kent landfall location at Pegwell Bay.

## The Kent Onshore Scheme

- A landfall point on the Kent coast at Pegwell Bay.
- A TJB approximately 800 m inshore to transition from offshore HVDC cable to onshore HVDC cable, before continuing underground for approximately 1.7 km to a new converter station (below).
- A 2 GW HVDC converter station (including a new permanent access off the A256), up to 28 m high (2m allowance for ground level rise plus 26m converter station) plus external equipment such as lightning protection, safety rails for maintenance works, ventilation equipment, aerials, and similar small scale operational plant near Minster. A new substation would be located immediately adjacent.
- Removal of approximately 2.2 km of existing HVAC overhead line, and installation of two sections of new HVAC overhead line, together totalling approximately 3.5 km, each connecting from the substation near Minster and the existing Richborough to Canterbury overhead line.

1.2.3 The Proposed Project also includes modifications to sections of existing overhead lines in Suffolk (only if Friston Substation is not built pursuant to another consent) and Kent, diversions of third-party assets, and land drainage from the construction and operational footprint. It also includes opportunities for environmental mitigation and compensation. The construction phase will involve various temporary construction activities including overhead line diversions, use of temporary towers or masts, working areas for construction equipment and machinery, site offices, parking spaces, storage, accesses, bellmouths, and haul roads, as well as watercourse crossings and the diversion of public rights of way (PROWs) and other ancillary operations.

1.2.4 This document is applicable to the Offshore Scheme only.

## 2. General Guiding Principles for Proposed Monitoring

2.1.1 Throughout the Environment Impact Assessment (EIA) process, the Applicant has taken steps to avoid or reduce significant effects, either through the iterative process of project design (embedded mitigation) or by ‘additional’ mitigation measures which would be applied during the construction, operation and maintenance or decommissioning stages of the Proposed Project.

2.1.2 The guiding principles for monitoring, which apply to the monitoring outlined in this document, are as follows:

- All consent conditions, which would include those for monitoring, should be “necessary, relevant to planning and to the development to be permitted, enforceable, precise and reasonable in all other respects” as set out in Paragraph 56 of the National Planning Policy Framework and referred to as the ‘six tests’ (Ministry of Housing, Communities and Local Government (MHCLG) 2021<sup>1</sup>).
- In line with good practice, monitoring must have a clear purpose in order to provide answers to specific questions where significant environmental impacts have been identified. As such, monitoring proposals should have an identified aim, end date and confirmed outputs, which provide, as far as possible, statistically robust data sets, as applicable to the hypothesis being tested.
- Monitoring should be targeted towards significant evidence gaps or uncertainties, which are relevant to the project and can be realistically delivered by project level monitoring, as well as those receptors considered to be the most sensitive to project specific impacts including those of conservation, ecological and/or economic importance. The presence of a significant impact should not, on its own, necessarily lead to a requirement for monitoring.
- Proposals for monitoring should be based, where relevant, on best practice and the latest environmental data associated with post-consent monitoring of subsea cables.
- The scope and design of all monitoring work should be finalised and agreed following review of the results of any preceding survey (i.e., an adaptive approach), including those surveys conducted in support of the environmental impact assessment (EIA). This includes the potential for survey requirements to be adapted based on the results of the monitoring outlined in this document, including in the event that unforeseen effects arise, which may in turn give rise to the need for adaptive management measures to be considered. Where it has been agreed that there are no significant effects, monitoring need not be conditioned through the DML.

## 2.2 The Proposed Project’s Residual Effects

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<sup>1</sup> Ministry of Housing, Communities and Local Government, Ministry of Housing, Communities & Local Government (2018 to 2021) Use of Planning Conditions <https://www.gov.uk/guidance/use-of-planning-conditions>

- 2.2.1 The EIA predicts the residual effect to receptors taking into account:
- Linkages using the source > pathway > receptor model;
  - Embedded / additional mitigation;
  - Receptor sensitivity;
  - Ecological / economic importance / value; and
  - Magnitude of impact.
- 2.2.2 The significance of the residual effect should not in its own right necessarily lead to the requirement for monitoring. Monitoring should be targeted to address significant evidence gaps or uncertainty, which are relevant to the Proposed Project and can be realistically filled.
- 2.2.3 For each receptor, the residual effects and major areas of uncertainty as predicted within the EIA (or HRA), (and any updated assessments as indicated throughout) are detailed.

## 3. In-Principle Proposal for Monitoring

- 3.1.1 The following sections set out the in-principle proposals for monitoring in relation to those topics and/or receptor groups outlined in Section 1.1.
- 3.1.2 Accepting that this IPMP represents the proposed approach to monitoring at the time of writing, it is recognised that the outcomes of future survey work could influence future monitoring requirements, methodologies, focus and effort for the Proposed Project, as knowledge and understanding develops.
- 3.1.3 For example, where appropriate, and in consultation with the MMO and its advisors, including the relevant SNCB (e.g. Natural England), these scopes may be refined to consider other relevant studies. An adaptive approach to monitoring is important to ensure that data collected can realistically and robustly contribute to the evidence base for subsea cable impacts. This IPMP will be the subject of ongoing consultation between National Grid, the MMO and its advisers. This document sets out the monitoring commitments made in the ES and secured in the draft Development Consent Order and will be used as a basis for further discussions, in relation to monitoring, post consent.
- 3.1.4 All relevant survey and monitoring data will be subject to regular submission to the Marine Data Exchange and Local Environmental Record Centres as appropriate.

### 3.2 Engineering and Design Related Monitoring

- 3.2.1 Pre-construction and post-construction survey activities will be undertaken for engineering and design purposes.

#### Pre-Construction Surveys

- 3.2.2 Pre-installation surveys may involve a range of standard marine survey techniques including:
- Bathymetry: Multi-Beam and Single Beam Echo Sounders (MBES and SBES) to record water depth, prepare a three dimensional (3D) digital terrain model of the seabed, and to identify relevant bedforms/confirm areas of mobile sediments.
  - Side Scan Sonar (SSS): Mapping of the seabed surface and identification of sediment types. Obstacles lying on the seabed, such as wrecks, debris, pUXO, and surface-laid or exposed pipelines and cables that might impede cable installation can be identified from the SSS outputs.
  - Sub-Bottom Profiling (SBP): Directing a pulse of acoustic energy into the seabed and using reflections from the sub-surface geology to assess the thickness, stratification, and nature of the seabed sediments.
  - Multibeam Echosounder (MBES): (specifically backscatter data), for Benthic Ecology mapping - augmenting SSS surveys.
  - Magnetometer/Gradiometer: Passively detect magnetic anomalies compared to the earth's magnetic field. Such anomalies can be caused by geological faults and buried metallic objects such as pUXO, pipelines, cables and archaeological features.

- Benthic Ecology: Drop Down Video or Remotely Operated Vehicle (ROV) mounted cameras may be used to confirm the locations and extents of sensitive benthic habitats or features. This would inform micro-routing of submarine cable systems to avoid or minimise interactions with these features in so far as practicable.
- Geotechnical: Vibrocore and Cone Penetration Test (CPT) samples may be obtained to inform engineering method decisions, micro-routing and installation tool selection at specific locations. This would verify whether ground conditions are suitable for cable trenching as well as to assess the existing Ground Model from the seabed sediments with regard to engineering of crossing structures and trenching equipment intended to be used.
- Visual inspection by ROV might be required of submarine assets to be crossed.

## Post-Construction Surveys

3.2.3 During operation the offshore HVDC cable link would transmit electricity from the proposed Friston Substation to the existing network in Kent and vice versa depending on the supply and demand at the time. During the lifetime of the cable link, scheduled monitoring of the system would be undertaken via:

- Electrical testing and monitoring of system.
- Depth of Lowering assessment by planned surveys comprising General Visual Inspection (GVI), bathymetric survey (MBES) and buried cable detection (cable tracker) to chart the cable depth of lowering over time.
- Surveys of crossings with 3rd Party subsea assets, as per requirements in separate crossing agreements per asset.
- Surveys of new offshore asset crossings / proximity zones when new structures are installed crossing over the route of the Proposed Project.
- DTAS (Digital Temperature and Acoustic Sensing) HVDC status monitoring via fibre optic cable (innovative in-situ monitoring of cable via near real-time temperature and acoustic monitoring which can inform of changes to the cable by intrusive contact as well as variations in depth of burial dependent on thermal changes on the baseline conditions).

3.2.4 A preliminary inspection, maintenance and repair (IMR) programme as the basis for preventative maintenance may comprise of the following:

- Base-line as-built depth of lowering (DOL) survey (ideally a continuous survey after installation and protection completed).
- Initial DOL monitoring survey 12 months after commissioning and handover to operations.
- Regular monitoring surveys at approximately 12-24 month intervals to establish any areas where DOL hot spots may develop and where integrity of cable is critical and inform the maintenance programme. Establish that the seabed conditions and DOL have reverted to equilibrium and reduce the frequency of inspections.
- Reduced interval surveys to ensure DOL is maintained (may be as much as 5-year interval).
- Potential DTAS HVDC cable monitoring via fibre optic cable with near real-time monitoring. As changes occur through time, these can be used as locators of

potential seabed change resulting in heat changes, or areas where increase in vessel traffic through the lifetime of the asset may make the link more vulnerable to damage than was risked during the original design of the cable route. The DTAS HVDC cable monitoring would be carried out from the onshore converter stations, but the results would be used to inform the IMR programme each year, and the repair locations in the event of an outage or significant disruption to the transmission of power along the link.

- AIS vessel monitoring to track any vessels stationary or acting suspiciously in the vicinity of the cable.

3.2.5 Other relevant Plans secured under the dML with commitments to monitoring (linked to the surveys listed above) are:

- A Cable Specification and Installation Plan (CSIP) in accordance with the Outline CSIP (Application Document 9.92).
- Offshore Written Scheme of Investigation (WSI) in accordance with the Outline Offshore Written Scheme of Investigation (Application Document 7.5.5) submitted with this DCO application.
- Application Document 7.8 Red Throated Diver Protocol.
- Offshore Construction Environmental Management Plan (Offshore CEMP) in accordance with the Outline Offshore Construction Management Plan (Application Document 7.5.2) submitted with this DCO Application.

### 3.3 Marine Physical Environment

3.3.1 The impacts on the marine physical environment during the construction, operation and decommissioning phases of the Proposed Project (Application Document 6.2.4.1) found that there will be effects of **negligible** to **minor adverse** on the marine physical environment.

#### In Principle Monitoring Proposed

3.3.2 As outlined within Section 3.2, geophysical and geotechnical survey data will be collected pre-construction to inform detailed engineering design and will inform pre-construction identification and mapping of features of any importance.

3.3.3 Post construction survey proposals will be informed by the final engineering design of the project and any need for cable burial depth monitoring; and potential for impact on features of ecological (primarily benthic) sensitivity.

#### Pre-Construction Monitoring / Programme

3.3.4 A pre-construction survey of the refined cable corridor survey will be carried out to provide full sea floor coverage swath-bathymetric and side-scan data for the area within the DCO Order Limits in which it is proposed to carry out construction works. This includes the extent of the Coralline Crag within the Order Limits at Suffolk.

3.3.5 The surveys will include the localised areas that are likely to be affected by the works. The surveys will not include areas of seabed or bedforms outside of the Order Limits or where natural processes may be active, but no measurable change or difference to those processes are expected, as a result of the works.

## Post-Construction Monitoring / Programme

- 3.3.6 Over the operational lifetime of the Proposed Project, monitoring of the beach profile and erosion rates will be carried out at both the Suffolk and Kent landfall sites. This commitment is listed as MPE06 within the Register of Environmental Actions and Commitments (Application Document 9.84).
- 3.3.7 In addition, the River Stour Channel at Pegwell Bay will be monitored throughout the operational life of the asset. Monitoring will be undertaken annually for the first five years following installation, after which the frequency and scope of monitoring will be reviewed in consultation with the Environment Agency. This commitment is listed as MPE09 within the Register of Environmental Actions and Commitments (Application Document 9.84) and also as a Requirement within the DCO.
- 3.3.8 If monitoring demonstrates that the River Stour channel is migrating and is likely to interact with the installed cable, National Grid will consult with and agree appropriate mitigation measures with the Environment Agency. National Grid will also consult the relevant (SNCB's and other relevant stakeholders as appropriate. Where required to implement any mitigation, National Grid will apply for and obtain any necessary separate Marine Licence and undertake a HRA prior to implementation.
- 3.3.9 Monitoring of the River Stour channel within Pegwell Bay will be undertaken using a proportionate, risk-based approach and may include aerial and drone surveys, geomorphological assessments, marine bathymetric surveys, comparison of LiDAR datasets, and review of available satellite imagery to identify any material change in channel position, morphology, or migration over time.
- 3.3.10 A trigger for consultation with the Environment Agency will be if monitoring demonstrates that the River Stour channel has migrated to within 50 metres of the as-built cable location.
- 3.3.11 Following consultation, any required mitigation measures will be agreed with and approved by the Environment Agency prior to the undertaking of any remedial works.

## 3.4 Benthic and Intertidal Ecology

- 3.4.1 The impacts on benthic and intertidal ecology during the construction, operation and decommissioning phases of the Proposed Project (Application Document 6.2.4.2) found that there will be impacts of **negligible** to **minor adverse** significance on benthic ecology.

### In Principle Monitoring Proposed

- 3.4.2 Geophysical and geotechnical survey data will be collected pre-construction to inform detailed engineering design and will inform pre-construction identification and mapping of features of importance in relation to benthic ecology, using drop-down video where potential features may be present.
- 3.4.3 Post construction survey proposals will be informed by the final engineering design of the project and any need for cable burial depth monitoring; and potential for impact on features of ecological sensitivity.

## Pre-Construction Monitoring / Programme

- 3.4.4 A pre-construction survey of the refined cable corridor survey will be carried out to provide full sea floor coverage swath-bathymetric and side-scan data for the area within the DCO Order Limits in which it is proposed to carry out construction works.
- 3.4.5 The surveys will include the localised areas that are likely to be affected by the works. The surveys will not include areas of seabed or bedforms outside of the Order Limits.
- 3.4.6 In areas where potential *Sabellaria spinulosa* reef is identified from the review of geophysical data, drop down video (DDV) and/ or stills will be deployed to confirm presence, provide data on likely height of reef and additional information on potential reef extent. However, it should be noted that *S. spinulosa* was not recorded in reef form during the site specific surveys.
- 3.4.7 The DDV footage will also be analysed to determine if there are any other benthic habitats of principal importance present, such as peat and clay exposures with piddocks. Where benthic habitats of principal importance are identified from the DDV, these will be avoided by micro-siting where practicable during the construction works. Where avoidance is not practicable, National Grid will demonstrate how impacts have been minimised.
- 3.4.8 In Pegwell Bay, a survey of the saltmarsh extent will be conducted prior to construction in order to determine the minimum distance between the saltmarsh and construction activities. This commitment is listed as B67 within the Register of Environmental Actions and Commitments (Application Document 9.84)

### **Post-Construction Monitoring / Programme**

- 3.4.9 The requirement for post-construction benthic survey will be informed by the results of pre-construction surveys and the final engineering design of the project.
- 3.4.10 If no benthic habitats of principal importance are identified during the pre-construction survey of the proposed works area, no benthic post-construction monitoring or will be required for the Proposed Project.
- 3.4.11 Where benthic habitats of principal importance (qualifying as Annex 1 or NERC Section 41) are identified during pre-construction surveys (engineering surveys and UXO) and there is potential for an impact on these habitats, National Grid will prepare a Benthic Mitigation Plan, in consultation with the MMO and SNCBs for submission to the MMO for approval. This commitment is listed as BE05 within the Register of Environmental Actions and Commitments (Application Document 9.84).

## **3.5 Fish and Shellfish Ecology**

- 3.5.1 The impacts on fish and shellfish ecology during the construction, operation and decommissioning phases of the Proposed Project (Application Document 6.2.4.3) found that there will be impacts of **negligible to minor adverse** significance with no residual impact on fish and shellfish ecology assessed.

### **In Principle Monitoring Proposed**

- 3.5.2 No monitoring or independent surveys are proposed in relation to fish and shellfish ecology on the basis of no residual impact being assessed within the ES.

## **3.6 Marine Mammals**

- 3.6.1 The impacts on marine mammals during the construction, operation and decommissioning phases of the Proposed Project (Application 6.2.4.4) found that all impacts are of **negligible** to **minor adverse** significance on marine mammals.

### In Principle Monitoring Proposed

- 3.6.2 No monitoring or independent surveys are proposed in relation to marine mammal ecology on the basis of no residual impact being assessed within the ES.

## 3.7 Offshore Ornithology

- 3.7.1 The impacts on offshore ornithology during the construction, operation and decommissioning phases of the Proposed Project (Application 6.2.4.5) found that all impacts are of **negligible** to **minor adverse** significance on ornithology.
- 3.7.2 Regarding the potential for an Adverse Effect on Integrity (AEoI) on Red-throated Diver (RTD) from the Outer Thames Estuary (OTE) Special Protection Area (SPA), the Report to Inform Appropriate Assessment (RIAA), (Application Document 6.6) concludes that there is no potential for AEoI, either alone or in combination, across all phases of the project.
- 3.7.3 The Applicant confirms that it will apply the Red-Throated Diver Protocol (Application Document 7.8) throughout the lifetime of the Proposed Project.

### In Principle Monitoring Proposed

- 3.7.4 No monitoring or independent surveys are proposed in relation to offshore ornithology on the basis of no residual impact being assessed within the ES.

## 3.8 Commercial Fisheries

- 3.8.1 The impacts on commercial fisheries during the construction, operation and decommissioning phases of the Proposed Project (Application Document 6.2.4.8) found that all impacts are of **negligible** to **minor adverse** significance on commercial fisheries.

### In Principle Monitoring Proposed

- 3.8.2 No monitoring specific to commercial fisheries is considered necessary based on the impact assessment conclusions.

## 3.9 Marine Archaeology

- 3.9.1 The impacts on marine archaeology during the construction, operation and decommissioning phases of the Proposed Project (Application Document 6.2.4.6) found that all impacts are of **negligible** to **minor** significance on marine archaeology.

### In Principle Monitoring Proposed

- 3.9.2 The principal mechanism for delivery of monitoring for marine archaeology is through agreement on Application Document 7.5.5 Outline Offshore Overarching Written Scheme of Investigation.

# 4. Summary of Assessment

4.1.1 Table 4.1 outlines the receptors assessed within each offshore chapter of the ES. All residual effects have been marked as green meaning no significant adverse effects are predicted for the Proposed Project.

**Table 4.1 Summary of residual effects**

| Receptor                                  | Physical Environment | Benthic Ecology | Fish and Shellfish | Marine Mammals | Marine Ornithology | Marine Archaeology | Shipping and Navigation | Commercial Fisheries | Other Sea Users |
|---|----------------------|-----------------|--------------------|----------------|--------------------|--------------------|-------------------------|----------------------|-----------------|
| Water column                              | Green                |                 |                    |                |                    |                    |                         |                      |                 |
| Water quality                             | Green                |                 |                    |                |                    |                    |                         |                      |                 |
| Seabed morphology                         | Green                |                 |                    |                |                    |                    |                         |                      |                 |
| Suffolk and Kent coastline                | Green                |                 |                    |                |                    |                    |                         |                      |                 |
| Coraline Crag Ridges                      | Green                |                 |                    |                |                    |                    |                         |                      |                 |
| Sizewell B and C power plant water intake | Green                |                 |                    |                |                    |                    |                         |                      |                 |
| Seabed Bathymetry                         | Green                |                 |                    |                |                    |                    |                         |                      |                 |
| Benthic Habitats                          |                      | Green           |                    |                |                    |                    |                         |                      |                 |
| Benthic Species                           |                      | Green           |                    |                |                    |                    |                         |                      |                 |
| Fish and Shellfish                        |                      |                 | Green              |                |                    |                    |                         |                      |                 |
| Marine Mammals                            |                      |                 |                    | Green          |                    |                    |                         |                      |                 |
| Seabirds and waterbirds.                  |                      |                 |                    |                | Green              |                    |                         |                      |                 |
| Sub-seabed heritage receptors             |                      |                 |                    |                |                    | Green              |                         |                      |                 |

| Receptor                                   | Physical Environment | Benthic Ecology | Fish and Shellfish | Marine Mammals | Marine Ornithology | Marine Archaeology | Shipping and Navigation | Commercial Fisheries | Other Sea Users |
|--|----------------------|-----------------|--------------------|----------------|--------------------|--------------------|-------------------------|----------------------|-----------------|
| Buried intertidal heritage receptors       |                      |                 |                    |                |                    | ■                  |                         |                      |                 |
| Seabed heritage receptors                  |                      |                 |                    |                |                    | ■                  |                         |                      |                 |
| Historic seascape                          |                      |                 |                    |                |                    | ■                  |                         |                      |                 |
| Passing vessels (all categories)           |                      |                 |                    |                |                    |                    | ■                       |                      |                 |
| Vessel frequently using established routes |                      |                 |                    |                |                    |                    | ■                       |                      |                 |
| Fishing vessels                            |                      |                 |                    |                |                    |                    | ■                       |                      |                 |
| Anchoring vessels                          |                      |                 |                    |                |                    |                    | ■                       |                      |                 |
| Deep draught vessels                       |                      |                 |                    |                |                    |                    | ■                       |                      |                 |
| Vessels navigating with magnetic compass   |                      |                 |                    |                |                    |                    | ■                       |                      |                 |
| Mobile fishing gear                        |                      |                 |                    |                |                    |                    |                         | ■                    |                 |
| Static fishing gear                        |                      |                 |                    |                |                    |                    |                         | ■                    |                 |
| Recreational boating                       |                      |                 |                    |                |                    |                    |                         |                      | ■               |
| Recreational fishing                       |                      |                 |                    |                |                    |                    |                         |                      | ■               |
| Oil and Gas                                |                      |                 |                    |                |                    |                    |                         |                      | ■               |
| Carbon Capture                             |                      |                 |                    |                |                    |                    |                         |                      | ■               |
| Offshore Wind                              |                      |                 |                    |                |                    |                    |                         |                      | ■               |
| Minerals and aggregates                    |                      |                 |                    |                |                    |                    |                         |                      | ■               |
| Dredging and disposal                      |                      |                 |                    |                |                    |                    |                         |                      | ■               |
| Military practice areas                    |                      |                 |                    |                |                    |                    |                         |                      | ■               |
| Pipelines and cables                       |                      |                 |                    |                |                    |                    |                         |                      | ■               |
| Aquaculture                                |                      |                 |                    |                |                    |                    |                         |                      | ■               |

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