The Great Grid Upgrade

Sea Link

Sea Link

Volume 7: Other Documents

Document 7.5.11 Outline Marine Mammal Mitigation Plan

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nationalgrid

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Version History

Date	Version	Status	Description / Changes
March 2025	A	Final	For DCO submission
November 2025	B	Final	Updated in response to Natural England Relevant Representations for Deadline 1
February 2026	C	Final	Updated in response to Natural England Deadline 3 Submission Appendix F3

Executive Summary

Ex1.1.1 This Outline Marine Mammal Management Plan (MMMP) provides a key mechanism, through which the relevant regulatory authorities can be assured that environmental management required during the construction and operation of the Proposed Project, with particular regard to minimizing impacts to marine mammals, will be formally controlled.

Ex1.1.2 The document highlights specific activities within each phase of the Proposed Project that carry a significant risk of disturbance or injury to marine mammals. The purpose of an Outline MMMP is to specify the overarching principles and detailed measures to minimise as far as reasonably practicable and mitigate the effects of the construction activities associated with the Proposed Project on marine mammals.

Ex1.1.3 On confirmation of a Principal Contractor, this Outline MMMP will be updated to reflect specific proposed construction methods and will seek approval from the relevant authorities. The MMMP will be a live document which will continue to evolve and is subject to refinement, amendment, and expansion as necessary.

Ex1.1.4 The Final MMMP will be approved by the relevant licencing authority and will be periodically reviewed and updated by National Grid as required, to ensure environmental risks are managed and mitigated throughout.

1. Outline Marine Mammal Mitigation Plan

1.1 Introduction

1.1.1 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.

1.1.2 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.

1.1.3 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.

~~1.1.4 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*."~~

~~1.1.5~~1.1.4 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.

~~1.1.6~~1.1.5 The marine HVDC cables will be routed through a section of the Southern North Sea (SNS) Special Area of Conservation (SAC), designated for harbour porpoise, and will reach landfall in Kent in the vicinity of haul-out locations for grey seals at Goodwin Sands and harbour seals in Pegwell Bay.

1.1.6 This Outline Marine Mammal Management Plan (MMMP) has been prepared on behalf of National Grid to support the Application for a Development Consent Order (DCO). The Outline MMMP provides a key mechanism, through which the relevant regulatory authorities can be assured that environmental management required during the construction and operation of the Proposed Project, with particular regard to minimizing impacts to marine mammals, will be formally controlled.

1.1.7 The Outline MMMP is secured by requirement 6 of the DCO and condition 3 of the deemed marine licence (DML) (**Application Document 3.1 draft Development Consent Order (DCO)**, Schedule 16 Deemed Marine Licence). This document should be read in conjunction with **Application Document 7.5.2 Outline Offshore Construction Environmental Management Plan**.

1.1.8 This Outline MMMP is a 'living' document that will be updated as required post submission of the DCO application, during the Examination Period and during the detailed design process as necessary prior to implementation.

1.1.9 The purpose of an Outline MMMP is to specify the overarching principles and detailed measures to minimise as far as reasonably practicable and mitigate the effects of the construction activities associated with the Proposed Project on marine mammals. More specifically, the Outline MMMP will:

- give an overview of the Proposed Project and discuss the specific area and activities identified as having potential to affect marine mammals;
- provide background regarding the marine mammal species of concern present around the Proposed Project;
- ensure that relevant mitigation measures set out in the Environmental Statement (ES) as submitted in support of the DCO application are implemented during all relevant construction activities; and
- ensure that relevant legislation, Government and industry standards, and construction industry codes of practice and best practice standards relevant to the protection of marine mammals are complied with.

1.1.10 On confirmation of a Principal Contractor (the organisation that will manage the construction of the Proposed Project), this Outline MMMP will be updated to reflect specific proposed construction methods and approved by the relevant authorities.

1.1.11 Compliance with the contents of this Outline MMMP is intended to provide a systematic approach to environmental management so that environmental risks are identified, incorporated in all decision-making, and managed appropriately.

1.1.12 The Final MMMP will be updated to reflect any additional mitigation measures applied to the licence, as part of the DCO process. The MMMP will be reviewed and updated by National Grid as required, to ensure environmental risks are managed and mitigated in accordance with the requirements and DML throughout.

1.1.13 A Marine Licence will be deemed to have been granted within the DCO which will secure the necessary mechanism for protection of the marine environment associated with licensed activities. The deemed Marine Licence will provide consent for all construction works below the mean high water springs (MHWS) tidal mark and includes Conditions to control those works and mitigate potential impacts.

~~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:

- 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.

1.2.2 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.

~~1.2.3 This document is applicable to the Offshore Scheme.~~

~~1.3~~1.2 Relevant Legislation

~~1.3.1~~1.2.1 The following international legislation ~~and agreements in~~, to which the United Kingdom (UK) is a signatory, ~~concern~~concerns the preservation of marine mammal populations during the planning and execution of projects in UK waters:

- European Union Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora adopted in 1992. The Habitats Directive (92/43/EEC) is transposed into UK legislation under The Conservation of Habitats and Species Regulations 2017 (HM Government, 2017) (amended 2019) for inshore waters out to the 12 nautical mile (NM) limit, and the The Conservation of Offshore Marine Habitats and Species Regulations 2017 (HM Government, 2017) Offshore Regulations for offshore regions. which;
  - All cetaceans (whales, dolphins, and porpoises) are listed as European Protected Species (EPS) on Schedule 2 of the Habitats Regulations 2017 and under UK law, identified as species that are in need of strict protection. This legislation makes it an offence to:
    - (a) deliberately or recklessly to capture, injure or kill a wild animal of a European protected species;
    - (b) deliberately or recklessly—
      - (i) to harass a wild animal or group of wild animals of a European protected species;
      - (ii) to disturb such an animal while it is occupying a structure or place which it uses for shelter or protection;
      - (iii) to disturb such an animal while it is rearing or otherwise caring for its young;
      - (iv) to obstruct access to a breeding site or resting place of such an animal, or otherwise to deny the animal use of the breeding site or resting place;
      - (v) to disturb such an animal in a manner that is, or in circumstances which are, likely to significantly affect the local distribution or abundance of the species to which it belongs;
      - (vi) to disturb such an animal in a manner that is, or in circumstances which are, likely to impair its ability to survive, breed or reproduce, or rear or otherwise care for its young; or
      - (vii) to disturb such an animal while it is migrating or hibernating;
    - (c) deliberately or recklessly to take or destroy the eggs of such an animal; or
    - (d) to damage or destroy a breeding site or resting place of such an animal; and

- Pinnipeds (seals): grey seal (*Halichoerus grypus*) and harbour seal (*Phoca vitulina*) are listed as Annex II species (as are harbour porpoise (*Phocoena phocoena*) and bottlenose dolphin (*Tursiops truncatus*).

~~1.3.2 Other national UK legislation includes:~~

- ~~The Marine and Coastal Access Act 2009 (HM Government, 2009) provides the legal mechanism to help ensure clean, healthy, safe, and productive and biologically diverse oceans and seas.~~
- ~~The Conservation of Seals Act 1970 (HM Government, 1970) provides seasonal protection and, with some exceptions, prohibits the taking, injuring, and killing of seals.~~
- ~~Section 41 of the Natural Environment and Rural Communities (NERC) 2006 (HM Government, 2006) lists species of principal importance, including marine mammals, for the purpose of conservation of biodiversity.~~

~~1.4~~1.3 Marine Mammal Receptors

~~1.4.1~~1.3.1 The baseline studies undertaken for the Proposed Project Environmental Statement (ES) identified harbour porpoise, harbour seal, and grey seal as the marine mammal species most likely to be present within the Study Area identified for the Offshore Scheme (see **Application Document 6.2.4.4 Part 4 Marine Chapter 4 Marine Mammals**). ~~Marine~~However, all marine mammals have high levels of environmental protection in the UK (see Section 1.2~~).~~) and are covered by this oMMMP.

~~1.4.2 The two species of pinniped, or seal, in the UK are nationally protected and are also considered to be of high conservation importance (see Section 1.3).~~

~~1.4.3~~1.3.2 Harbour porpoise are common in the region of the Proposed Project, as reflected by the presence of the SNS SAC, which has been designated specifically for harbour porpoise (**Figure 6.4.4.4.1 Marine Mammals Study Area** in **Application Document 6.4.4.4 ES Figures Marine Mammals**).

~~1.4.4~~1.3.3 ~~Harbour and grey seal are also~~The two species of pinniped, or seal, in the UK are nationally protected and are also considered to be of high conservation importance (see Section 1.2). Both species are common, with haul-out sites known to occur near the Offshore Scheme. These are Pegwell Bay where harbour seals haul-out in the River Stour and some pupping also occurs here in June and July, and Goodwin Sands where grey seals haul-out on the sandbanks at low tide. (**Figure 6.4.4.4.6 Harbour and Grey Seal Distribution** in **Application Document 6.4.4.4 ES Figures Marine Mammals**).

~~Table 1.1 Marine mammal receptors~~

~~Group~~	~~Key Receptors~~	~~Location~~
~~Cetaceans~~	~~Harbour porpoise~~ ~~Dolphin and whales~~ ~~Designated sites for harbour porpoise~~	~~Southern North Sea~~ ~~North Sea generally~~ ~~SNS SAC~~
~~Pinnipeds~~	~~Harbour seal~~	~~Pegwell Bay, Kent~~

Group	Key Receptors	Location
	Grey seal	Goodwin Sands
	Designated sites	

1.4.5 Marine mammals rely on sound for a range of important ecological functions and sound from anthropogenic activities can affect their ability to echolocate and communicate and can even cause physical harm. Man-made sound sources have the potential to affect marine mammals where the frequency of the sound generated is within a species auditory range. Harbour porpoise are particularly sensitive to underwater sound, whereas hauled-out harbour and grey seal are most likely to be impacted by airborne sound.

1.4.6 Thus, when considering the proximity of marine mammals to the Offshore Scheme, there is potential for these animals to be subject to impacts from Proposed Project activities.

1.51.4 Project Activities and Associated Impacts

1.5.11.4.1 The activities associated with the Proposed Project, which may result in impact to marine mammals, are of two main types: landfall related construction activities at Pegwell Bay that take place in the intertidal zone, and pre-installation geophysical surveys prior to cable installation activities that take place in the subtidal environment.

Kent Landfall Activities

1.5.21.4.2 Activities at the landfall location in Pegwell Bay will produce airborne sound which has the potential to disturb nearby hauled out harbour seals. Within Pegwell Bay, a trenchless installation technique, such as horizontal directional drilling (HDD) for cable installation will occur in the intertidal mudflats. Vibratory sheet pilling and the movement of excavators is expected as a worst-case scenario for the production of airborne sound during construction required for the x4 HDD exit pits and associated activities.

1.5.31.4.3 For installation between the exit pit and the subtidal environment, trenching when the tide out is assumed as the worst-case scenario for installation down to low water where vessel-based installation will take over. These activities produce airborne noise levels which may disturb nearby hauled-out harbour seals.

1.5.41.4.4 However, all noise generating activities taking place in Pegwell Bay are a minimum of 670 m away from the region of the River Stour where the harbour seal haul-out sites are located (see **Application Document 6.3.4.4.A (Version B) Pegwell Bay Seal Survey Report**, submitted at Deadline 1).

Submarine Activities

1.5.51.4.5 Construction phase activities associated with the Offshore Scheme will produce underwater sound, which at certain levels can be lethal to some species of marine mammals. Harbour porpoise in particular (which are known to occur throughout the Study Area), are highly sensitive to underwater sound (see Section 4.9 in **Application Document 6.2.4.4 Part 4 Marine Chapter 4 Marine Mammals**).

Summary

1.5.61.4.6 Construction phase activities which are likely to produce airborne or underwater sound within the hearing ranges of marine mammals present within the Study Area are summarized in Table 1.1. The mitigation measures required for each activity are also included.

Table 1.1 Sea Link construction activities generating sound

Activity	Location	Impact pathway	Receptor	Measures required
Vibratory piling	Pegwell Bay	Air-borne sound disturbance	Harbour seal	None. Sound modelling indicates negligible disturbance to seals in the River Stour. See Section 1.7
Operation of x4 excavators	Pegwell Bay	Air-borne sound disturbance	Harbour seal	With the exception of transiting to site (which is further away from the seal locations) the excavators shall remain within the Order Limits at all times whilst construction activities are taking place. Section 1.7.
Intertidal trenching for cable installation	Pegwell Bay	Air-borne sound disturbance	Harbour seal	
Sub-bottom profiling (SBP) during Geophysical survey	Entire marine HVDC between landfalls	Underwater sound disturbance	All marine mammals including harbour porpoise designated by SNS SAC	JNCC 2017 and 2025a (draft updated guidelines) recommended mitigation measures as detailed in Section 1.8
Unexploded ordnance (UXO) detonation[1]	Unknown but anywhere within the marine HVDC cable corridor	Underwater sound injury and disturbance	All marine mammals including harbour porpoise designated by SNS SAC	Licence application and full impact assessment to be undertaken pre-installation and post detailed UXO survey with mitigation measures adopted according to JNCC (2025b)

[1] Underwater sound as a result of UXO clearance will be considered as part of a separate marine licence application. The need for clearance is currently unknown, and attempting to assess potential impacts without defined parameters would result in unrealistic and unrepresentative scenarios. Any necessary mitigation measures for UXO clearance will be secured through the marine licensing process and will be enforceable by the MMO.

Activity	Location	Impact pathway	Receptor	Measures required
				~~Section 1.11.~~Section 1.11 and in accordance with UXO Joint Position Statement (HM Government, 2026).
Cable trenching, sandwave levelling etc.	Entire marine HVDC between landfalls	Underwater sound disturbance	All marine mammals including harbour porpoise designated by SNS SAC	None required for cable installation as underwater sound is low intensity, transient and short term.

~~1.5.7~~1.4.7 There are different mitigation measures in relation to marine mammals for airborne and underwater sound and therefore requirements are divided into measures for airborne sound occurring at Pegwell Bay (Section 1.7) and underwater sound from geophysical activities as the only source requiring specific mitigation measures (Section 1.8).

~~1.5.1~~1.4.1 A separate marine licence application will be made for any unexploded ordinance (UXO) detonation in line with MMO advice to allow for appropriate consideration of potential UXO impacts once sufficient information is available to identify any potential UXO risk. This document will be reviewed and updated as appropriate prior to these activities taking place. Reference to JNCC (JNCC, 2025b) guidance will be made at the time[2].

~~1.6~~1.5 Embedded, Control and Management Measures

Embedded

~~1.6.1~~1.5.1 Embedded measures, integral in reducing the environmental effects of the Proposed Project, that have been incorporated and reduce impacts to marine mammals are:

- Sensitive routeing and siting of infrastructure and temporary works; and
- Commitments made within **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments**.

Control and Management Measures

~~1.6.2~~1.5.2 The following measures have been included within **Application Document 7.5.3.1 CEMP Appendix A Outline Code of Construction Practice** relevant to the control and management of impacts that could affect marine mammal receptors:

- MM01 - adherence to JNCC guidelines, where appropriate, regarding the minimisation of injury from underwater sound generated from known project geophysical surveys (JNCC, 2017; JNCC, 2025a).

[2] Adoption of JNCC guidance for minimising risk injury to marine mammals is advised by the regulators including Natural England and JNCC.

- MM02 – adherence to JNCC guidance for assessing the significance of noise disturbance against conservation objectives of the SNS SAC ~~(JNCC, 2019)~~ (JNCC, 2020; JNCC, 2025c).
- GM03 - an offshore Construction Environmental Management Plan (CEMP) including an Emergency Spill Response Plan and Waste Management Plan, Marine Pollution Contingency Plan (MPCP), Shipboard Oil Pollution Emergency Plan (SOPEP) and a dropped objects procedure will be produced prior to installation.
- FSF01 - in accordance with the Department of Energy and Climate Change report and MMO recommendations, the target depth of lowering (DOL) will be between 1.5 m to 2.5 m (subject to local geology and obstructions).
- LVS02 - all project vessels must comply with the International Regulations for Preventing Collisions at Sea 1972 (International Maritime Organisation, Convention on the International Regulations for Preventing Collisions at Sea 1972 (COLREGs), 1972), regulations relating to International Convention for the Prevention of Pollution from Ships (the MARPOL Convention 73/78) (International Maritime Organisation, 1983), with the aim of preventing and minimising pollution from ships and the International Convention for the Safety of Life at Sea (SOLAS 1974) (International Maritime Organisation, 1974).
- LVS05 - drilling fluids required for trenchless operations will be carefully managed to minimise the risk of breakouts into the marine environment. Specific avoidance measures would include: the use of biodegradable drilling fluids (PLONOR substances) where practicable; drilling fluids will be tested for contamination to determine possible reuse or disposal; and if disposal is required drilling fluids would be transported by a licensed courier to a licensed waste disposal site.

~~1.7~~1.6 Roles and Responsibilities

~~1.7.1~~1.6.1 This Outline MMMP forms part of the Construction Environmental Management Plan (CEMP; **Application Document 7.5.2 Outline Offshore Construction Environmental Management Plan**), where necessary roles and responsibilities are outlined to ensure adherence to correct mitigation protocols. The Project wide relevant roles and responsibilities for the implementation of this Outline MMMP are detailed within the Proposed Project's Offshore CEMP (**Application Document 7.5.2 Outline Offshore Construction Environmental Management Plan**) and Table 1.2. It is the responsibility of the Principal Contractor to ensure a suitably qualified Marine mammal observer (MMO) and passive acoustic monitoring (PAM) operator (if applicable) is present on any vessel undertaking SBP survey activities.

~~1.7.2~~1.6.2 The roles that are specific to the shore-based operations at Pegwell Bay are presented in the Proposed Project Onshore CEMP (**Application Document 7.5.3 Outline Onshore Construction Environmental Management Plan**) and **Application Document 7.5.7.2 Outline Landscape and Ecological Management Plan – Kent**.

Table 1.2 Offshore outline roles and responsibilities

Role	Responsibilities
Project Manager / Director	Overall environmental management of the Proposed Project, ensuring that all works are carried out in accordance with the Offshore CEMP.
~~Environmental Advisor / Manager~~	~~Work with programme planners and project managers to ensure consents (including any secondaries to the DCO application) are embedded within the programme.~~ ~~Monitor submission of consent applications and ensure their timely delivery.~~ ~~Provide input to consultation with consent granting bodies, commitment holders and other third parties.~~ ~~Co-ordinate and manage all required scheduled consents.~~ ~~Ensure environmental consents are obtained in line with the programme.~~ ~~Monitor and report progress on consents and commitments.~~ ~~Monitoring construction works for compliance against Environmental Risk Assessment and method statement control measures.~~ ~~Co-ordination of all environmental documentation.~~ ~~Monitoring environmental training, consultation and implementation of contractor procedures.~~ ~~Attending appropriate HSE committee meetings.~~ ~~Monitoring of all environmental incidents and ensuring they are reported and investigated.~~ ~~Undertaking audits/inspections, monitor and advise on compliance with duty of care, the Waste Management Plan or any permits and/or exemptions.~~ ~~Monitoring and measurement of waste.~~ ~~Communicate sustainability good practice, innovation and targets to the project team and supply chain.~~ ~~Keep a record of key performance indicators.~~ ~~Act as the main point of contact on environmental matters relating to the Proposed Project.~~
~~Community Relations Agency / Public Relations Officer~~	~~To advise on dissemination of project material to the public.~~ ~~To track complaints from members of the public and respond within reasonable time frames.~~ ~~To liaise with members of the public regarding issues such as any specific anticipated nuisance.~~
~~Fisheries Liaison Officer (FLO)~~	~~Will be maintained throughout installation to ensure project information is effectively disseminated to ensure a dialogue is maintained with the commercial fishing industry and access to home ports remains during the main fishing season.~~

Role	Responsibilities
~~Engineering Manager~~	~~Ensure environmental issues and constraints are included in individual designs, in accordance with environmental design procedures.~~
Construction Manager	Advising Contractor representative on the implementation of the Offshore CEMP. Monitoring construction works for compliance against Environmental Risk Assessment and any method statement control measures. Monitoring environmental training, consultation and implementation of contractor procedures. Accompanying Environment Inspections where required and any environmental authority inspections. Attending Environmental co-ordination meetings.
Works Supervisors	Ensuring that all work is carried out in accordance with project requirements. Ensure that staff under their supervision are aware of their environmental responsibilities. Ensure key risks are identified and brief operatives on environmental topics. Carry out inspections to identify any environmental issues.
General Operatives	Ensuring environmental mitigation measures are carried out during the course of their duties, in line with project requirements. Working considerately with a good working ethic in order to minimise adverse environmental impacts and follow all requirements communicated during briefings and project training sessions. Informing relevant persons of any environmental issues through timely reporting, so that these can be communicated to the project management team for further investigation and for immediate appropriate action when safe to do to prevent a worsening situation. Attending the project induction prior to commencing work where details of the environmental requirements will be provided. A Contractors key role listing will be included in the Final Offshore CEMP.
Marine mammal observer	Responsible for monitoring mitigation zones and conducting searches prior to activation of the SBP, equipped with appropriate visual aids and positioned on a suitable platform for full 360° coverage of the 500 m observation zone (see Section 1.9 for further detail).
PAM operator	Responsible for monitoring of PAM equipment ~~for harbour porpoise vocalisations~~ following an interruption of SBP for

Role	Responsibilities
	more than 10 minutes in hours of darkness/poor visibility (See Section 1.9 for further detail).

~~1.8~~1.7 Construction at Pegwell Bay

Mitigation Measures to be Implemented

~~1.8.1~~1.7.1 The airborne sound modelling indicates that the noise created during landfall construction works in the intertidal zone of Pegwell Bay attenuates rapidly away from the source. The thresholds for auditory effects are met only in very close proximity, a maximum of 13 m, to the activities in a worst-case scenario of a vibratory piling rig and four excavators operating at the same time (see **Application Document 9.49 Seals and Airborne Sound Disturbance Technical Note**, submitted at Deadline 1). For other construction scenarios assessed, auditory injury thresholds are not met or are negligible. At a minimum of 670 m away from the closest construction activity, seals are hauled-out significantly beyond the distance of any potential impact and whilst there are no agreed thresholds for disturbance sound propagation shows a rapid decline in noise intensity. The seals in the River Stour, at the haul-out locations are well habituated to vessel traffic very close-by, within ~30 m in the case of seal sightseeing boats, with no disturbance behaviour evident. Some seals are aware of the presence of vessels but this is evident from small movements of the head only.

~~1.8.2~~1.7.2 The airborne sound modelling was based on the activities occurring within the cable corridor. Thus, with the exception of transiting to site (which is further away from the seal locations) the excavators shall remain within the Order Limits at all times whilst construction activities are taking place. No further mitigation measures are considered necessary based on the low intensity of the sound at the haul-out locations (even at worst-case), the habituation of the seals to vessels in the River Stour and the short duration of the works.

~~1.8.3~~1.7.3 The Environmental Advisor/Manager should be responsible for implementation of the Final MMMP in relation to shore-based operations, including tool-box talks for contractors onsite, keeping detailed record of operations, mitigation procedures and recording marine mammal observations should there be any.

~~1.9~~1.8 Offshore Geophysical Surveys

Pre-survey Licences and Notifications

~~1.9.1~~1.8.1 It has been established that with the adoption of the above mitigation measures for sub-bottom profiling (SBP) a full Marine Licence will not be required. However, prior to any SBP activities starting it will be necessary to submit a number of notifications:

- **Notification to the MMO**: a Notification for performing a marine licence exempted activity, in this case a geophysical survey, that has been determined to not cause significant disturbance. This must be submitted before any survey activities start. Full guidance on the notification process is available from: https://www.gov.uk/government/publications/marine-licensing-exempted-activities/marine-licensing-exempted-activities#notifications The requirements are

here: Perform a marine seismic or geophysical survey - GOV.UK (www.gov.uk). The notification will need to be submitted via the MMO Marine Case Management System portal (Log in - MCMS (marinemanagement.org.uk)) for which an account will be required.

- **Notification to the JNCC Marine Noise Registry**: prior to survey activities it will be necessary to submit an entry to the JNCC Marine Noise Registry here: https://jncc.gov.uk/our-work/marine-noise-registry/.

Mitigation Measures to be Implemented

~~1.9.2~~1.8.2 The operation of geophysical equipment, specifically SBP during pre-installation survey work in the cable corridor has the potential to cause physical and/or auditory injury to cetacean EPS, but only at very close range without mitigation.

~~1.9.3~~1.8.3 Other geophysical or geotechnical activities, including the operation of a multibeam echosounder (MBES), side-scan sonar (SSS), magnetometer, cone-penetration tester (CPT) and vibrocoring are either outside the hearing range of marine mammals or do not use an acoustic signal for their operation. These activities do not require any mitigation measures to be implemented.

~~1.9.4~~1.8.4 However, some minor behavioural disturbance is possible in the vicinity of the SBP survey. Therefore, to follow established best-practice, the following measures, as detailed in full in the 2017 and 2025a (draft) "*JNCC guidelines for minimising the risk of injury to marine mammals from geophysical surveys*[3]", are required for any SBP activities that take place during surveys at any stage of the Proposed Project:

- **SBP sound source**: the lowest practicable sound source level will be used to meet data collection requirements.
- **Marine mammal observer:** a JNCC certified marine mammal observer (MMOb), who can also undertake PAM operations in the event of a break in operations in hours of darkness, will be present during the offshore survey. The MMOb will be responsible for monitoring the mitigation zones and conducting searches prior to activation (or re-activation) of the SBP sound source.
- **MMOb qualification:** the MMOb should have the appropriate training which is to have completed the JNCC registered marine mammal observer course and have sufficient field experience (at least one year of marine mammal observers experience on offshore projects).
- **Observation zone**: the MMOb should be positioned on a suitable platform on the vessel that allows full 360° coverage of a 500 m observation zone and an observer eye height of at least 5 m. They should be equipped with appropriate visual aids (such as reticule binoculars) and capable of determining the extent of the observation zone.
- **Observation period**: prior to the activation (or re-activation) of the SBP equipment, there shall be a period of 30 minutes for observations of the presence of marine mammals in the 500 m observation zone. SBP survey activities can only commence

[3] The full 2017 guidance document can be downloaded from the JNCC website. The URL is https://data.jncc.gov.uk/data/e2a46de5-43d4-43f0-b296-c62134397ce4/jncc-guidelines-seismicsurvey-aug2017-web.pdf. The 2025 draft guidance document can be found here: https://jncc.gov.uk/media/9379/draft-jncc-geophysical-guidelines-2025.pdf.

(or recommence) after a 30-minute period where no marine mammals have been observed in the 500 m observation zone around the survey vessel.

- **Marine mammal sightings**: if an animal is seen within the observation zone, a period of 20 minutes, when no animal is present, must pass before operations can begin. Any marine mammal sightings that occur after the SBP has been activated do not trigger any further actions.
- **Soft-start** - a 20-minute soft start will be employed for the SBP operations, with a gradual build-up of power/sound level before the full sound source level is reached.
- **Offshore Passive Acoustic Monitoring (PAM)** - where an interruption of more than 10 minutes occurs in the hours of darkness, or when conditions reduce observer visibility, a PAM pre-watch will be required (OR the re-start of SBP operations will wait until daylight or suitable weather conditions when a new visual observation can take place before commencing a soft-start). ~~The PAM equipment will be specifically set to monitor in the frequency range of harbour porpoise vocalisations as this is the cetacean species most at risk and present in the highest density.~~
- **Reporting of observations**: the MMOb shall be responsible for recording any cetacean observations using Marine Mammal Recording Forms provided by JNCC[4]. Reporting has been designed primarily for seismic survey operations can be used for other survey activities. A summary of the reporting requirements is provided below and JNCC guidance on completing the forms is also available[5].

Reporting

~~1.9.5~~1.8.5 A log of all MMOb/PAM effort and geophysical survey and positioning equipment operations will be kept (using the JNCC Marine Mammal Recording Forms provided at http://jncc.defra.gov.uk/).

~~1.9.6~~1.8.6 Following completion of the survey work, a report will be submitted to the Marine Management Organisation (MMO). The report will include the following:

- Completed Marine Mammal Recording Forms.
- The dates, locations and details of sound generating activity.
- Details of all MMOb/PAM operator effort including information about any marine mammals detected.
- Details of any technical problems encountered, and actions taken.
- The Marine Noise Registry (MNR), developed by JNCC, to record human activities in UK seas that produce loud, low to medium frequency (10 Hz – 10 kHz) impulsive noise, will be completed for all relevant geophysical activities (https://mnr.jncc.gov.uk/).

~~1.10~~1.9 Offshore UXO Detonation

[4] The JNCC forms can be downloaded from https://data.jncc.gov.uk/data/31662b6a-19ed-4918-9fab-8fbcff752046/Marine-mammal-recordingforms-piling-rev04.xls

[5] JNCC reporting forms guidance is available from: https://data.jncc.gov.uk/data/31662b6a-19ed-4918-9fab-8fbcff752046/Marine-mammal-recordingforms-guide-piling-rev05.pdf

~~1.10.1~~1.9.1 A separate marine licence application will be made for any UXO inspection and removal/ detonation in line with MMO advice to allow for appropriate consideration of potential UXO impacts once sufficient information is available to identify any potential UXO risk. This document will be reviewed and updated as appropriate prior to these activities taking place.

~~1.10.2~~1.9.2 The mitigation measures listed within the Outline MMMP have considered the latest draft guidance and recommendations from the Joint Nature Conservation Committee (JNCC) for UXO clearance ((JNCC, 2025b)).

~~1.10.3~~1.9.3 Some areas are considered more important for marine mammals than others and require additional or different mitigation measures. For example, should UXO detonation be required within the SNS SAC, designated for harbour porpoise, additional measures, including the use of additional acoustic deterrent devices and the implementation of a larger mitigation zone (for example increased from 500 m to 1 km), shall be considered at the time of the assessment and licence application.

~~1.10.4~~1.9.4 The mitigation measures are as follows:

- Defining the mitigation zone based on possible injury distances.
- Low order deflagration.
- Pre-detonation search.
- Actions following marine mammal detection.
- Reporting during and post detonation.
- Technical delays in operations.
- Acoustic deterrents.
- Noise abatement.
- Measures for high order deflagration.
- Post mitigation reporting.

~~1.10.5~~1.9.5 If residual impacts remain after implementing mitigation, a European Protected Species licence for injury may be required.

~~1.11~~1.10 Summary and Checklist of Requirements

~~1.11.1~~1.10.1 Provided below is a simple check list of required mitigation measures for each activity taking place in the Offshore Scheme that has potential impacts to marine mammals.

~~1.11.2~~1.10.2 The specific measures in relation to UXO detonation will be updated when the EPS licence application is made, after the detailed UXO identification works have been undertaken prior to installation, since current guidance to minimise harm to marine mammals has recently been updated and was out for comment in draft form at the time of writing.

SBP: MMO observer and associated measures	☐
SBP: Voluntary Notification to MMO	☐
SBP: Entry to JNCC Marine Noise Registry	☐
Excavator movements at Pegwell Bay: follow measures restricting movements in the intertidal section as described in section 1.9	☐
Trenching/ploughing at Pegwell Bay: follow measures restricting movements in the intertidal section as describe in section 1.9	☐
UXO clearance: EPS licence application may be required and mitigation measures as provided in up-to-date guidance shall be implemented[6]	☐

Plate 1.1 Checklist of Requirements

[6] Updated JNCC guidance in relation to UXO detonation was finalised and published in 2025 (JNCC, 2025a). At the time of the EPS licence application for UXO clearance the most up-to-date version of this document should be consulted and relevant mitigation measures adopted.

~~1.12~~1.11 References

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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