



Supporting Information: Screening for AA

MUL application - Tonn Nua

ESB

7th November 2025

Doc ref: 1404816

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Document history

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Issue	Date	Revision Details
Final	07/11/2025	Final draft

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Glossary

Term	Definition
Appropriate Assessment (AA)	The statutory process under the Habitats Directive to assess the implications of a plan or project for European sites in view of their conservation objectives.
Likely Significant Effect (LSE)	A precautionary threshold used to determine if a plan or project could possibly harm a protected habitat.
MUL Application Area	As shown on Figure 1.1
Project	Tonn Nua
Proposed site investigation work	Suite of survey work including geophysical surveys, geotechnical surveys, Metocean surveys and environmental/ecological surveys (detailed in Table 2.1)
South Coast DMAP (SC-DMAP)	The designated maritime area plan adopted in 2024 for the South Coast of Ireland, which identifies areas suitable for offshore renewable energy development.

Abbreviations and Acronyms

Abbreviation or Acronym	Meaning
AA	Appropriate Assessment
ADCP	Acoustic Doppler Current Profiler
ASV	Autonomous Surface Vehicles
CIL	Commissioners of Irish Lights
CPT	Cone Penetration Testing
DDV	Drop Down Video
DPEI	DP Energy Ireland
EAF	East Atlantic Flyway
EDR	Effective Deterrence Range
EIAR	Environmental Impact Assessment Report
ESB	Electricity Supply Board
FWPM	Freshwater Pearl Mussel
HF	High Frequency cetaceans
IMO	International Maritime Organization
LIDAR	Light Detection and Ranging
LSE	Likely Significant Effect
MARA	Maritime Area Regulatory Authority
MBES	Multi Beam Echosounder
MUL	Marine Usage Licence
NIS	Natura Impact Statement
ODAS	Ocean Data Acquisition Systems
ORE	Offshore Renewable Energy
OWF	Offshore Windfarm
PCPT	Piezocone Penetration Test
PTS	Permanent Threshold Shift
PW	Phocid seals in water
QI	Qualifying Interest
RNLI	Royal National Lifeboat Institution
ROI	Republic of Ireland
ROTV	Remotely Operated Towed Vehicle
ROV	Remotely Operated Vehicle
SAC	Special Area of Conservation
SC DMAP	South Coast Designated Maritime Area Plan
SBP	Sub-Bottom Profiler
SCI	Special Conservation Interest
SFPA	Sea Fisheries Protection Agency

Abbreviation or Acronym	Meaning
SI	Site Investigation
SOLAS	Safety of Life at Sea
SPA	Special Protection Area
SPL	Sound Pressure Levels
SSS	Side Scan Sonar
TRBM	Trawl Resistant Bottom Mount
TTS	Temporary Threshold Shift
UHRS	Ultra-high Resolution Seismic
UK	United Kingdom
USBL	Ultra-Short Baseline
USV	Uncrewed Surface Vessel
UXO	Unexploded Ordnance
VHF	Very High Frequency cetaceans
WTG	Wind Turbine Generator
Zol	Zone of Influence
ZSC	Zones Spéciales de Conservation

1. Introduction

1.1. The Project

Tonn Nua is located off the coast of County Waterford, Republic of Ireland (ROI) and lies wholly within Maritime Area A – Tonn Nua, as designated in the South Coast Designated Maritime Area Plan (SC DMAP). Maritime Area A has been identified by Government as suitable for the plan-led development of fixed-foundation offshore wind, with an indicative potential capacity of approximately 900 megawatts (MW) (Figure 1.1).

This application seeks a Marine Usage Licence (MUL) from the Maritime Area Regulatory Authority (MARA) to undertake a programme of site investigation (SI) works at the Tonn Nua site. The SI works are enabling activities designed to gather the geophysical, geotechnical, environmental, and metocean data required to inform project design, environmental assessment, and future consenting.

The SI works are surveys that will be temporary, small in scale, and fully reversible, undertaken on a phased basis over the five-year licence period (subject to MUL approval and contractor availability). They will provide the robust technical and environmental baseline necessary to support the sustainable delivery of offshore renewable energy within the DMAP framework, in line with Ireland's legally binding climate and energy commitments.

1.2. The Developer

The applicant, Helvick Head Offshore Wind Designated Activity Company (Helvick Head OSW DAC), is a 50:50 joint venture between Electricity Supply Board (ESB) and Ørsted A/S (Ørsted). In June 2023, ESB and Ørsted formed a partnership to jointly develop a pipeline of offshore renewable energy projects off the Irish coast.

ESB is Ireland's leading energy utility and is majority state-owned. Established in 1927, ESB has a long history of delivering large-scale infrastructure projects and providing secure, reliable, and affordable electricity to Ireland. ESB has been involved in offshore wind generation since 2007 with projects spread across Ireland and the United Kingdom.

Ørsted is a global leader in developing, constructing, and operating offshore wind farms, with a core focus on Europe. With more than 30 years of experience in offshore wind, Ørsted has 10.2 GW of installed offshore capacity and 8.1 GW under construction.

By developing projects such as Tonn Nua, ESB and Ørsted in partnership will contribute directly to Ireland's energy security, decarbonisation goals, and sustainable economic growth, while supporting the wider European transition to clean energy.

1.3. Purpose and Status

This Supporting Information to Support Appropriate Assessment (SISAA) has been prepared by Natural Power Consultants on behalf of ESB in support of an application for a MUL for SI works at the Tonn Nua site.

The purpose of the SISAA is to provide MARA with sufficient information to enable screening for Appropriate Assessment (AA) under Article 6(3) of the Habitats Directive (Council Directive 92/43/EEC) as required under Part 4: Marine Planning and Environmental Considerations of the MARA Guidance Note for Applicants (August 2025).

Specifically, it:

- identifies European sites within the Zone of Influence (Zol) of the SI works;
- considers the potential pathways for likely significant effects (LSE) on qualifying interests; and
- determines whether full Appropriate Assessment is required.

This SISAA should be read in conjunction with the accompanying Natura Impact Statement (Attachment 4.3.2), Annex IV Species Risk Assessment (Attachment 4.4), and Water Framework Directive Assessment (Attachment 4.5), each of which builds on the findings presented here.

7°42.0'W

7°6.0'W

6°30.0'W

52°12.0'N

51°54.0'N

51°36.0'N

Project:

Tonn Nua MUL

Title:

Figure 1.1: MUL Application Area

Key

MUL Application Area

12 nautical mile (NM) Irish limit

© OpenStreetMap contributors.
Not to be used for Navigation.

Scale @ A3: 1:400,000

Coordinate System: IRENET95 Irish Transverse Mercator
Graticules: WGS 84

0 5 10 15 20 km



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2. Proposed Survey Work

The proposed SI works at Tonn Nua are enabling activities required to characterise the physical, biological, and environmental conditions of the site. The data collected will underpin project design, environmental assessment, and consenting, ensuring that any future offshore wind development within Maritime Area A proceeds on a robust, evidence-based foundation.

The SI works will be phased over the five-year MUL period (subject to licence grant), with campaigns scheduled according to seasonal windows, contractor availability, and environmental constraints. The surveys are designed to be temporary, small in scale, and fully reversible, with all equipment removed upon completion. This section provides a summary of the proposed survey programme; full technical detail including further information on the proposed sampling and monitoring locations is contained in the Schedule of Works (SoW) submitted with the application (Attachment 3.1).

2.1. Geophysical Survey

Geophysical surveys will provide detailed mapping of the seabed and shallow sub-seabed to inform design and consenting. Techniques include:

- Multibeam echosounder (MBES);
- Side-scan sonar (SSS);
- Sub-bottom profiler (SBP) / Ultra-high-resolution seismic (UHRS); and
- Magnetometer surveys.

This equipment will either be hull- or pole-mounted or towed behind the vessel. These are predominantly non-intrusive acoustic methods, supplemented by occasional ground-truthing through grab sampling or drop-down video. Subsurface navigation systems¹ (ultra short baseline (USBL)) will also be used.

The surveys will identify:

- Bathymetry and seabed morphology;
- Sediment distribution and shallow geology;
- Potential hazards (e.g. obstructions, Unexploded Ordnance (UXO), shallow gas hazards);
- Archaeological and cultural heritage features; and
- Habitat features relevant to ecological assessment.

2.2. Geotechnical Survey

Geotechnical investigations will provide data on the engineering properties of seabed sediments and underlying strata. These are intrusive surveys carried out from specialist vessels and may include:

- Cone Penetration Tests (CPTs), including seabed and downhole testing (10–40 locations);
- Sampling/ coring boreholes (5–15 locations, to depths of up to 70 m);
- Vibrocores (or piston cores) (30–60 samples, up to 6 m depth);
- In situ thermal conductivity testing; and
- Laboratory testing of recovered samples.

These works will refine a 3D ground model of the site to support foundation and cable design.

¹ Transmitter located on towed equipment, receiver mounted on vessel.

2.3. Metocean Survey

Metocean campaigns will capture long-term datasets on wind, wave, current, and water properties (all mooring systems will be temporary and fully removed at the end of deployment). This will include deployment of:

- Acoustic Doppler Current Profilers (ADCPs) for current profiling;
- Wave buoys for directional wave and surface current data;
- Floating LiDAR buoys for wind resource assessment (12–36 months); and
- Autonomous Floating Platform (uncrewed surface vessels (USVs)) to operate as moored Ocean Data Acquisition Systems (ODAS; metocean) buoy.

Vessels will be used to deploy the metocean monitoring equipment.

2.4. Environmental and Ecological Baseline Surveys

Environmental baseline surveys will inform assessment of benthic habitats, marine mammals, birds, and fisheries. These will include:

- Benthic sampling (grab samples, box corer, sediment analysis, seabed photography);
- Static acoustic monitoring (deployment of C-POD/F-POD recorders for cetaceans);

Other environmental and ecological baseline surveys that will be carried out for the project include but are not limited to the following;

- Ornithological and Marine Mammal surveys (aerial/vessel-based and vantage point observations);
- Shipping and Navigation surveys; and
- Consultation-led fisheries surveys (methods to be agreed with Sea Fisheries Protection Agency (SFPA) if required).

2.5. Archaeological Survey

Archaeological investigations will primarily utilise data collected through geophysical methods (e.g. side-scan sonar, magnetometer) to identify potential cultural heritage features. Where required, these will be followed up with targeted diver or Remotely Operated Vehicle (ROV) inspections.

2.6. Duration and Phasing

The indicative programme is as follows:

- Geophysical surveys: 2–5 months (commencement estimated Q2/Q3 2026–2027);
- Geotechnical surveys: 2–5 months (commencement estimated Q2/Q3 2026–2027);
- Environmental/ecological and archaeological surveys: periodic, over 12–24 months (commencement estimated 2026 or 2027);
- Metocean surveys: 12–36 months continuous deployment (Commencement estimated 2026, 2027 or 2028).

These durations represent active survey time only and will not be continuous across the five-year MUL period. The schedule is subject to change depending on weather, seabed conditions, and stakeholder consultation.

2.7. General Requirements

All survey campaigns will be delivered in accordance with recognised industry standards and applicable regulations. Key requirements include:

- All contractors to operate under ISO 9001-certified quality systems with project-specific Health, Safety and Environmental (HSE) / Environmental Management Plans;
- Vessels to be fully certified in line with International Maritime Organization (IMO), Safety of Life at Sea (SOLAS), and Irish maritime regulations;
- Standard embedded measures applied across all campaigns, including:
 - Marine Mammal Observer (MMO) / Passive Acoustic Monitoring (PAM) protocols;
 - Fisheries liaison and Notices to Mariners;
 - Pollution prevention and MARPOL-compliant waste management;
 - Navigation safety in compliance with COLREGS and Irish Coast Guard guidance.

3. Identification of Potential Impacts and Effects

The following sections identify the potential impacts that may arise from the works associated with the MUL application. Where standard procedures and practices ensure that certain impacts will not arise (i.e. pollution prevention measures and invasive species management measures - see Attachment 4.0 Marine Planning and Environmental Considerations), these are considered an inherent part of the proposed work and are not considered to be mitigation measures designed to reduce or eliminate impacts to designated sites or features. Accordingly, the potential for impacts to arise from pollution incidents or from the introduction of invasive species are considered to have been reduced to as low as reasonably practicable and thus have no potential to impact designated sites.

3.1. Marine Ornithology (species protected by the Birds Directive)

The potential routes to impact for Special Conservation Interests (SCIs) or habitats supporting SCIs (within Special Protection Area (SPAs)) from the proposed site investigation and survey works are considered to be:

- Increased above-water noise;
- Increased underwater noise; and
- Impacts upon seabird prey species.

As the MUL application boundary is located approximately 10 km off the Waterford coast, the identified relevant ornithological SCI species are primarily comprised of seabirds. These include auks (i.e. guillemot, razorbill and puffin), gulls (including kittiwake), divers, seaduck and cormorant species. It is considered that there is no connectivity and therefore no route to impact for sites hosting migratory wildfowl (i.e. ducks, geese and swans) and waterbird SCIs along the adjacent coastline.

3.1.1. Above-water Noise

Activities from at-sea surveys are likely to be associated with additional anthropogenic noise. Different seabird species show varied sensitivities to noise. Some species, such as herring gull, lesser black-backed gull and to a lesser extent kittiwake, can nest in urban landscapes and display habituated responses to additional anthropogenic noise. Other species, such as red-throated diver, are notably sensitive to anthropogenic disturbance (Furness *et al.*, 2012, Black *et al.*, 2015, Dierschke *et al.*, 2017, Fleissbach *et al.*, 2019). Disturbance and displacement from anthropogenic above water-noise may have consequences at individual and population levels (Joint SNCB note, 2017).

3.1.2. Underwater Noise

Activities of surveys at sea and the vessel itself may result in underwater noise affecting seabird species. For some species of diving seabirds, underwater noise may be a disturbing factor, affecting prey acquisition, displacing them from habitat or otherwise evoking an escape flight response (Black *et al.*, 2015, Dierschke *et al.*, 2017). Other seabirds that may shallow dive, dip or surface feed as their predominant method of foraging (including gulls, terns, petrels and fulmars) are unlikely to be impacted by below water noise, due to the brevity of exposure time and sensitivity to disturbance (Furness *et al.*, 2012, Fleissbach *et al.*, 2019). Disturbance and displacement from anthropogenic below water noise may have consequences at individual and population levels (Joint SNCB note 2017).

3.1.3. Visual Disturbance

Vessel presence or presence of anthropogenic objects in the marine environment have the potential to result in disturbance of SCIs. Seabirds at sea may become disturbed from areas of marine habitat as a result of the presence

of vessels and/or associated anthropogenic activities (Althouse *et al.*, 2012, Furness *et al.*, 2012, Dierschke *et al.*, 2017, Fleissbach *et al.*, 2019). Disturbance and displacement from visual stimuli may have consequences at individual and population levels (Joint SNCB notes 2017 and 2022).

3.1.4. Impacts upon prey species

Activities of surveys at sea may result in disturbance or displacement of certain prey species which, in turn, may affect their availability for SCIs. Disturbance or displacement of hearing specialist fish prey species (by noise from geophysical surveys) or benthic fish prey species (by agitation of benthic habitat from geotechnical and environmental surveys) may change the availability of those prey species to piscivorous seabird species. Reductions in prey availability may adversely influence survival and productivity.

3.2. Marine Mammals (species on Annex II of the Habitats Directive)

The following marine mammal species are listed under Annex II of the Habitats Directive (European Union Council Directive 92/43/EEC), for which Special Areas of Conservation (SACs) have been designated:

- Bottlenose dolphin (*Tursiops truncatus*);
- Harbour porpoise (*Phocoena phocoena*);
- Grey seal (*Halichoerus grypus*); and
- Harbour seal (*Phoca vitulina*).

The potential routes to impact from the proposed survey work for Annex II marine mammal species are:

- Increased anthropogenic noise from geophysical surveys;
- Increased anthropogenic noise from geotechnical surveys; and
- Collision risk.

3.2.1. Anthropogenic Noise-Related Risk Assessment

The following (anthropogenic noise-related) assessment has been conducted for Annex II marine mammals only. Information on the generalised hearing range of the marine mammal hearing groups applicable to these species has been taken from NMFS (2024) (see Table 3.1). The NMFS (2024) guidance identifies the received levels and auditory weighting functions, or criteria, at which individual marine mammals are predicted to experience changes in their hearing sensitivity for acute (≤ 24 hours) exposure to underwater anthropogenic sound sources. The thresholds used in this assessment (taken from NMFS, 2024) are detailed in Table 3.2 (for the onset of auditory injury²) and Table 3.3 (for the onset of a Temporary Threshold Shift (TTS)³). Use of NMFS (2024) is considered to constitute best practice because it supersedes earlier guidance from the National Marine Fisheries Service (NMFS) and publications by Brandon Southall and colleagues on this topic.

Relevant literature (underwater noise modelling studies undertaken as part of MUL applications for SI surveys off the south coast of Ireland) was reviewed to support this Risk Assessment (see Appendix A of the Annex IV Species Risk Assessment (Attachment 4.4)) and the findings used to infer the size of potential impact ranges from use of the equipment proposed here (Table 3.4). The type and specification of the equipment modelled is comparable to that proposed.

² Defined by NMFS (2024) as damage to the inner ear that can result in destruction of tissue. Auditory injury may or may not result in a Permanent Threshold Shift (PTS). PTS (as defined by NMFS, 2024) is a permanent, irreversible increase in the threshold of audibility at a specified frequency or portion of an individual's hearing range above a previously established reference level.

³ Defined by NMFS (2024) as a temporary, reversible increase in the threshold of audibility at a specified frequency or portion of an individual's hearing range above a previously established reference level.

Table 3.1: Generalised hearing range of Annex II marine mammal hearing groups

Hearing group	Annex II marine mammal species	Generalised hearing range (kHz)
High frequency cetaceans (HF)	Bottlenose dolphin	0.15 – 160
Very high frequency cetaceans (VHF)	Harbour porpoise	0.2 – 165
Phocid seals in water (PW)	Grey seal	0.04 – 90
	Harbour seal	

Source: NMFS (2024)

Table 3.2: Annex II marine mammal auditory injury onset thresholds

Hearing group	Auditory injury onset threshold (dB re. 1 µPa at 1 m)	
	Impulsive ⁴	Non-impulsive ⁵
HF	230	201
VHF	202	181
PW	223	195

Source: NMFS (2024).

Table 3.3: Annex II marine mammal TTS onset thresholds

Hearing group	TTS onset thresholds (dB re. 1 µPa at 1 m)	
	Impulsive	Non-impulsive
HF	224	181
VHF	196	161
PW	217	175

Source: NMFS (2024).

3.2.2. Increased Anthropogenic Noise from Geophysical Surveys

Geophysical survey and positioning equipment works by directing sound at the seabed thereby increasing anthropogenic noise in the marine environment; the resulting reflections are then analysed.

The potential effects on Annex II marine mammal species from increased anthropogenic noise from geophysical surveys (including noise from the survey vessels) include:

- Auditory injury onset;
- TTS onset; and
- Disturbance.

Noise travels well underwater therefore, potential effects may occur at some distance from the sound source.

The geophysical survey of the MUL application area will use the following types of equipment which will either be hull- or pole-mounted or towed behind the vessel:

- MBES;
- SSS;

⁴ Relevant to geophysical surveys.

⁵ Relevant to geotechnical surveys.

- SBP/ UHRS⁶;
- Magnetometer⁷; and
- USBL.

It may also incorporate visual surveys (e.g., Drop Down Video (DDV), ROV, Remotely Operated Towed Vehicle (ROTV) etc.) pending the development of the MUL application area's ground model and for assessment of potential hazards such as UXO.

Although part of the metocean surveys, ADCP frames (which will be deployed on the seabed at positions across the application area to collect data on water movements, current speeds and directions) have been assessed here.

Typical frequencies and Sound Pressure Levels (SPLs) for each equipment type are summarised in Table 3.4.

Table 3.4: Typical frequencies and sound pressure levels for each equipment type

Equipment type	Typical frequency (kHz)	Audible?	Typical SPL (dB re 1 µPa at 1 m)	Potential for auditory injury onset?	Potential for TTS onset?
MBES	400 – 700	No	200 – 228	No	No
SSS	300 – 900	No	228	No	No
SBP – pinger/chirp	2 – 115	Yes	149 – 247	HF VHF PW	HF VHF PW
UHRS – boomer	0.0003 – 0.0025	No	212 – 215	No	No
UHRS – sparker	0.3 – 4	Yes	185 – 226	VHF PW	HF VHF PW
USBL	18 – 30	Yes	170 – 220	VHF	VHF PW
ADCP	300 - 600	No	114	No	No

Source: 'Site Investigation – Schedule of Works' (Attachment 3.1)

3.2.2.1. Assessment of Potential Effects

The MBES, SSS, UHRS (boomer) and ADCP will not be audible to marine mammals; this is because the typical frequencies (Table 3.4) are outwith the hearing range of the species groups concerned (Table 3.1). Furthermore, high frequency sound (relevant to the MBES and SSS) is likely to attenuate quickly in shallow (<200 m) water (JNCC, 2017). There is therefore no potential for effect from this equipment.

Sound emitted by the SBP, UHRS (sparker), and USBL may be audible to marine mammals; this is because the typical frequencies (Table 3.4) overlap the hearing range of the species groups concerned (Table 3.1).

3.2.2.1.1. Auditory injury onset

If operated at the greatest typical SPL value (247 dB re 1 µPa at 1 m), sound from the SBP has the potential to induce the onset of auditory injury in high frequency cetaceans (HF), very high frequency cetaceans (VHF) and phocid seals in water (PW); this is because the thresholds (Table 3.2) may be exceeded.

⁶ Should a more detailed investigation of sub-seabed conditions be necessary, a 3D UHRS survey may be commissioned.

⁷ Magnetometers do not emit sound therefore no further assessment undertaken for this equipment type.

If operated at the greatest typical SPL value (226 dB re 1 μ Pa at 1 m), sound from the UHRS (sparker) has the potential to induce the onset of auditory injury in VHF and PW; this is because the thresholds (Table 3.2) may be exceeded. HF are not at risk of auditory injury onset from the UHRS sparker as the threshold is not exceeded.

If operated at the greatest typical SPL value (220 dB re 1 μ Pa at 1 m), sound from the USBL has the potential to induce the onset of auditory injury in VHF; this is because the threshold (Table 3.2) may be exceeded. HF and PW are not at risk of auditory injury onset from the USBL as the thresholds are not exceeded.

Even with no mitigation, potential impact ranges are likely to be small (see Appendix A of the Annex IV Species Risk Assessment which reviews the outputs of underwater noise modelling undertaken for survey work at this location (Attachment 4.4)). The arrival of the survey vessel will likely displace individuals from the zone of potential effect (e.g., Benhemma-Le Gall *et al.*, 2021; Fernandez-Betelu *et al.*, 2024).

3.2.2.1.2. TTS onset

If operated at the greatest typical SPL value (247 dB re 1 μ Pa at 1 m), sound from the SBP has the potential to induce the onset of TTS in HF, VHF and PW; this is because the thresholds (Table 3.3) may be exceeded.

If operated at the greatest typical SPL value (226 dB re 1 μ Pa at 1 m), sound from the UHRS (sparker) has the potential to induce the onset of TTS in HF, VHF and PW; this is because the thresholds (Table 3.3) may be exceeded.

If operated at the greatest typical SPL value (220 dB re 1 μ Pa at 1 m), sound from the USBL has the potential to induce the onset of TTS in VHF and PW; this is because the thresholds (Table 3.3) may be exceeded. HF are not at risk of TTS onset from the USBL as the threshold is not exceeded.

Even with no mitigation, potential impact ranges are likely to be small (see Appendix A of the Annex IV Species Risk Assessment which reviews the outputs of underwater noise modelling undertaken for survey work at this location (Attachment 4.4)). The arrival of the survey vessel will likely displace individuals from the zone of potential effect (e.g., Benhemma-Le Gall *et al.*, 2021; Fernandez-Betelu *et al.*, 2024).

3.2.2.1.3. Disturbance

Sound emitted by the SBP, UHRS (sparker), and USBL may be audible to marine mammals and therefore their use may have the potential to induce behavioural responses. The most likely response will be temporary avoidance of the sound source's location (there is evidence that short-term disturbance caused by a commercial two-dimensional seismic survey does not lead to long-term displacement of harbour porpoises; Thompson *et al.*, 2013).

Using the 5 km Effective Deterrence Range (EDR) for geophysical surveys (JNCC, 2020; JNCC, 2025), the number of individuals of each of the four Annex II species which may be disturbed temporarily has been estimated (Table 3.7). The 5 km EDR was used to calculate the area of the zone of potential effect (assuming spherical spreading). The number of individuals within this zone was then estimated using the densities presented in Table 3.5 and Table 3.6. To provide context, the percentage of the appropriate reference population this represents was also estimated.

The percentage of the reference population which may be disturbed temporarily by increased anthropogenic noise from geophysical surveys was less than 0.2 for all four Annex II species.

The potential for disturbance as a result of increased anthropogenic noise from geophysical surveys is negligible.

Table 3.5: Density and reference population information for cetacean Annex II species

Annex II Cetacean Species	Density (animals per km ²)	Reference population	
		Management Unit	Abundance
Bottlenose dolphin*	0.194	Irish Sea and Offshore Channel, Celtic Sea and South West England	10,946

Annex II Cetacean Species	Density (animals per km ²)	Reference population	
		Management Unit	Abundance
Harbour porpoise*	0.13	Celtic and Irish Seas	62,517

* The greatest of the ObSERVE 2 corrected design-based estimates (for the strata in which the application area lies (4, 6c)) has been used.

Source: Giraló Paradell et al. (2024); IAMMWG (2023).

Table 3.6: Density, count and reference population information for seal Annex II species

Annex II Seal Species	Density (animals per km ²)	Reference population		
		Region	Count	Abundance
Grey seal	0.0072	South-east region	556	2,211
		Ireland	3,698	14,704
Harbour seal	0.00006	South-east region	34	47
		Ireland	4,007	5,565

Source: Morris and Duck (2019); Carter et al. (2022); SCOS (2024).

Table 3.7: An estimate of the number of individuals of Annex II marine mammal species which may be disturbed temporarily by increased anthropogenic noise from geophysical surveys and the percentage of the reference population this represents

Species	Number of individuals which may be disturbed temporarily	% of reference population
Bottlenose dolphin ⁸	15	0.14
Harbour porpoise	10	0.02
Grey seal	<1	<0.001 ⁹
Harbour seal	<1	<0.001

3.2.3. Increased Anthropogenic Noise from Geotechnical Surveys

Geotechnical surveys investigate the physical properties of the seabed and subsurface soils through in situ testing, soil sampling/rock coring (to extract samples), and laboratory analysis. As such, anthropogenic noise in the marine environment may increase.

The potential effects on Annex II marine mammal species from increased anthropogenic noise from geophysical surveys (including noise from the survey vessels) include:

- Auditory injury onset;
- TTS onset; and
- Disturbance.

⁸ The bottlenose dolphin estimates are precautionary because assuming a uniform distribution of this highly social species (which tends to occur in groups rather than singly e.g., Cheney *et al.*, 2024) is unrealistic. Rather than individuals occurring over the whole area at any given time, no individuals will be present at a particular location for the majority of the time.

⁹ The south-east region abundance estimate (Table 3.6) was used as the reference population. This approach is conservative compared to using the Ireland abundance estimate (Table 3.6) as the reference population.

Noise travels well underwater therefore potential effects may occur at some distance from the sound source.

The geotechnical survey of the application area will use the following techniques:

- In situ testing – seabed CPT, down the hole (cone penetration) testing; and
- Soil sampling/rock coring – boreholes, vibrocores/grabs.

Potential effects of subsurface navigation systems (USBL), which may also be used, have been assessed in Section 3.2.1.

Typical frequencies and SPLs for each activity are summarised in Table 3.8; indicative quantities and depths (for the preliminary geotechnical survey campaign) have also been summarised.

Table 3.8: Typical frequencies and sound pressure levels for each activity

Activity	Typical frequency (kHz)	Audible?	Typical SPL (dB re 1 μ Pa at 1 m)	Potential for auditory injury onset?	Potential for TTS onset?	Indicative quantity	Depth below seabed (m)
CPT (seabed/down the hole)	0.02 – 0.2	No	118 – 166	No	No	10 – 40	Up to 70 (or refusal)
Boreholes	Maximum 0.6 (low frequency)	Yes (HF, VHF PW)	145 – 190	VHF	HF VHF PW	5 – 15	Up to 70
Vibrocores	0.05 (low frequency)	Yes (PW)	188	No	PW	30 – 60	Up to 6
Grabs							Up to 0.1

Source: 'Site Investigation – Schedule of Works' document (Attachment 3.1)

3.2.3.2. Assessment of Potential Effects

CPT will not be audible to Annex II marine mammals; this is because the typical frequency (Table 3.8) is outwith the hearing range of the species groups concerned (Table 3.1). There is therefore no potential for effect from this activity.

Boreholes may be audible to all Annex II marine mammal species (HF, VHF and PW). Vibrocores may be audible to PW. This is because the typical frequencies (Table 3.8) overlap the hearing range of the species groups concerned (Table 3.1).

3.2.3.2.4. Auditory injury onset

If the greatest typical SPL value (190 dB re 1 μ Pa at 1 m) is generated, sound from the boreholes has the potential to induce the onset of auditory injury in VHF; this is because the threshold (Table 3.2) may be exceeded. HF and PW are not at risk of auditory injury onset from sound from the boreholes as the thresholds are not exceeded.

Even if the greatest typical SPL value (188 dB re 1 μ Pa at 1 m) is generated, sound from vibrocores does not have the potential to induce the onset of auditory injury in PW; this is because the threshold (Table 3.2) is not exceeded.

Even with no mitigation, potential impact ranges are likely to be small; it is generally expected that the activity of setting up the drilling equipment will deter marine mammals from entering the immediate work area (BOEM, 2012).

3.2.3.2.5. TTS onset

If the greatest typical SPL value (190 dB re 1 μ Pa at 1 m) is generated, sound from the boreholes has the potential to induce the onset of TTS in VHF, HF and PW; this is because the thresholds (Table 3.3) may be exceeded.

If the greatest typical SPL value (188 dB re 1 µPa at 1 m) is generated, sound from the vibrocores has the potential to induce the onset of TTS in PW; this is because the threshold (Table 3.3) may be exceeded.

Even with no mitigation, potential impact ranges are likely to be small; it is generally expected that the activity of setting up the drilling equipment will deter marine mammals from entering the immediate work area (BOEM, 2012).

3.2.3.2.6. Disturbance

Because boreholes and vibrocores may be audible to marine mammals these activities may have the potential to induce behavioural responses. However, the impacts of geotechnical surveys are thought to be of low concern (JNCC *et al.*, 2010). This is supported by Nedwell and Brooker (2008)'s study of a similar activity (pin pile drilling) which concluded that the ranges for 'significant avoidance in the majority of individuals' and 'low likelihood of disturbance' were 1.5 m and 85 m respectively.

As such, marine mammals are considered to be unlikely to be disturbed by noise from geotechnical surveys (over and above that as a result of the activity of setting up the drilling equipment; BOEM, 2012).

3.2.4. Collision Risk (Vessels)

Vessels may be used during all aspects of the proposed survey programme (geophysical surveys, geotechnical surveys, metocean surveys, environmental/ecological surveys, archaeological surveys; see Section 2).

Although vessel strikes are a known cause of mortality and physical injury (with potential for subsequent infection) for large whales (Laist *et al.*, 2001; Van Waerebeek *et al.*, 2007), small cetaceans (including bottlenose dolphin and harbour porpoise) and seals (including grey seal and harbour seal) are agile and have been shown to avoid vessels e.g., Palka and Hammond (2001).

Due to the nature of the proposed survey work, vessels¹⁰ (typically 15 – 100 m in length) will either be:

- Following pre-defined linear routes at low to moderate working speeds (e.g., geophysical survey);
- Stationary (e.g., geotechnical survey when sampling); or
- Transiting in a predictable manner (e.g., geotechnical survey when travelling between sampling locations).

It will therefore be easy for Annex II species to predict their path and avoid them, which will greatly reduce the risk of collision. Annex II species in the area are exposed to marine traffic on a regular basis and should therefore be habituated to vessel movements. The small number of vessels that will be required for these surveys will not significantly increase vessel traffic in the area; collision risk for Annex II species is not expected to increase as a result of the localised increase in survey vessels.

3.3. Habitats (Annex I of the Habitats Directive)

The potential routes to impact from the proposed SI work to SACs with Annex I habitats QIs are:

- Habitat disturbance and loss from geotechnical, benthic (subtidal), fish and shellfish, and metocean surveys;
- Increased Suspended Sediment Concentrations (SSC) / smothering from geotechnical, benthic, fish and shellfish and metocean surveys;

Note that the fish and shellfish survey requirement, type and methods will be confirmed following consultation with relevant stakeholders including the SFPA and for the purposes of this assessment, it is assumed that there will be interaction with the seabed, albeit limited.

¹⁰ Including unmanned surface vehicles (USVs) and autonomous surface vehicles (ASVs). USVs and ASVs are increasingly used to conduct marine mammal surveys (Verfuss *et al.*, 2019; Rodofili *et al.*, 2022; Álvarez-González *et al.*, 2023). Collision risk is negligible due to their small size, slow speeds (average of 3 – 9 knots), and predictable trajectories.

No impacts are predicted on the offshore benthic habitat during geophysical surveys as no contact is made with the seabed.

Each of these impact pathways are described further below. Additionally, whilst all marine surveys have the potential for effects on benthic habitats via pollution or littering pathways, there is considered to be no potential for impacts on habitat receptors due to the offshore location and strict maritime regulations and survey protocols which will be in place (e.g., compliance with MARPOL).

3.3.1. Habitat Disturbance

A number of different elements of the proposed SI works have the potential to directly disturb the seabed and cause temporary subtidal habitat disturbance within the MUL Application Area. It is considered habitat disturbance will only occur as a result of direct contact with the seabed (through e.g. benthic grabs, geotechnical works, deployment of metocean equipment).

Vibro-coring will also introduce vibration to the seabed and although benthic organisms have no auditory capabilities, they are susceptible to vibration (Rogers *et al.*, 2016), with responses including temporary retreat of tube dwelling species, and movement of mobile organisms from the source of disturbance.

3.3.2. Increases in SSC and Smothering

Indirect effects arising as a result of the SI works will include increases in SSC and potential smothering of benthic habitats. Regional data (INFOMAR, 2019; EMODnet, 2023) suggest that the most likely substrate type within the MUL Application Area is coarse sediment and sand. Given the general coarse nature of the sediment across the majority of the MUL Application Area, it is likely that the proportion of finer sediment fractions within the sediment will be low, evidenced in INFOMAR (2019) data. Coarser sediment will settle quickly, and no elevation of SSC is expected beyond close proximity (1-2 km) of the proposed SI works, with sediment rapidly settling almost immediately.

3.4. Diadromous Fish (on Annex II of the Habitats Directive)

The potential impacts on Annex II diadromous fish QIs from the proposed site investigation work are considered to be:

- Underwater noise from geophysical surveys; and
- Increased levels of suspended sediment concentrations (SSC).

The potential effects on Annex II diadromous fish QIs resulting from these potential impacts are injury and disturbance from underwater noise, or disturbance from increased SSC. These effects are expanded upon below.

3.4.1. Underwater Noise

Underwater noise has two distinct components, sound pressure and particle motion. Particle motion is detectable by all fish through otolithic organs located within the inner ear and sensory hair cells in the lateral line (Popper and Hawkins, 2018), whereas sound pressure is detected by fish, based on hearing sensitivity (Popper *et al.*, 2014).

Not all of the Annex II diadromous fish QIs are susceptible to underwater noise based on the hearing categories below (as per Popper *et al.*, 2014):

- **Group 1 (least sensitive)** – Fishes with no swim bladder or other gas chamber (e.g., lamprey). These species are less susceptible to barotrauma and only detect particle motion, not sound pressure. However, some barotrauma may result from exposure to sound pressure.

- **Group 2** - Fishes with swim bladders in which hearing does not involve the swim bladder or other gas volume (e.g., Atlantic salmon). These species are susceptible to barotrauma although hearing only involves particle motion, not sound pressure.
- **Group 3 (most sensitive)** - Fishes in which hearing involves a swim bladder or other gas volume (e.g., shad). These species are susceptible to barotrauma and detect sound pressure as well as particle motion.

3.4.2. Increased SSC and Smothering

The coarse nature of the sediments across much of the MUL Application Area mean that any potential increase in SSC will remain within close proximity to the works (see Section 3.3.2). Migratory fish are not considered sensitive to elevated SSC levels or smothering due to their frequent passage through turbid estuarine environments, and their mobile nature which allows them to rapidly move away from areas of increased SSC if necessary.

4. Stage 1 – Appropriate Assessment (AA) Screening

4.1. Identification of Relevant Designated Sites

4.1.1. Marine Ornithology (species protected by the Birds Directive)

Situated where the Atlantic Ocean meets North-western Europe, Ireland is an important breeding, wintering and migratory stopover destination for many species of birds. The coastline of Ireland and its associated islands and estuaries host nationally and internationally important assemblages of bird species throughout the year and as such several sites are designated as SPAs. Many of the island and cliff SPAs provide important habitat for breeding seabird species, of which 24 species are recorded as breeding in Ireland (Mitchell *et al.*, 2004). The East Atlantic Flyway (EAF) is a major migratory route for a number of bird species, which connects Arctic and Nearctic breeding grounds that extend from eastern Canada and central Siberia with wintering areas that stretch from western Europe and to sub-Saharan Africa. Ireland's location at the "gateway" between the northern reaches and central/southern extent of the EAF make it an important stopover destination for migrating waterfowl, waders and passerines. The estuarine habitats provide important foraging and staging areas for resident and migratory species of waterfowl and waders (Crowe, 2005).

It is noted that, given their generally large foraging ranges, seabirds from other, more distant SPAs may occasionally forage in, pass through or undertake other behaviours within the MUL application area. On the basis that the frequency of birds from these more distant SPAs occurring within the MUL Application Area decreases as the distance between the MUL Application Area and those SPAs increases, it is considered that the MUL Application Area is beyond any core habitat use areas around these more distant sites. Given the highly localised, temporary and short duration of the proposed site investigation works, it is considered that only those SPAs with direct overlap, or which lie within the mean of the maximum foraging range of gannet (509.4 km; Woodward *et al.* 2019), have potential to be negatively affected by the proposed activities. SPAs were included in screening based upon assessment of the potential for connectivity between their SCIs and the offshore MUL application area. SPAs within 509.4 km were included in the screening process based on their potential for connectivity with the Project. Only SCIs with potential connectivity to the Project are included in the screening process due to the potential pathway for impact, all other features were screened out, due to the lack of pathway to impact and conclusion of no Likely Significant Effect (LSE). Any potential impacts to seabird SCIs from SPAs beyond 509.4 km from the MUL Application Area are therefore considered negligible and there is no potential for LSE to arise in relation to SCIs of these sites.

Wintering wader and wildfowl SCIs from estuarine SPAs (waders and waterfowl) do not generally occur within the marine environment (and as such the MUL application boundary). Given the highly localised, temporary and short duration of the proposed surveys, along with the absence of connectivity between the proposed works, it is considered that there is no route to impact for wintering wader wildfowl SCIs utilising SPAs located along the Waterford coastline. Any potential impacts to any such wintering estuarine SCIs are considered negligible and therefore no LSE will arise in relation to the SCIs of such sites.

SPAs considered in screening are listed in Table 4.1 and shown in Figure 4.1.

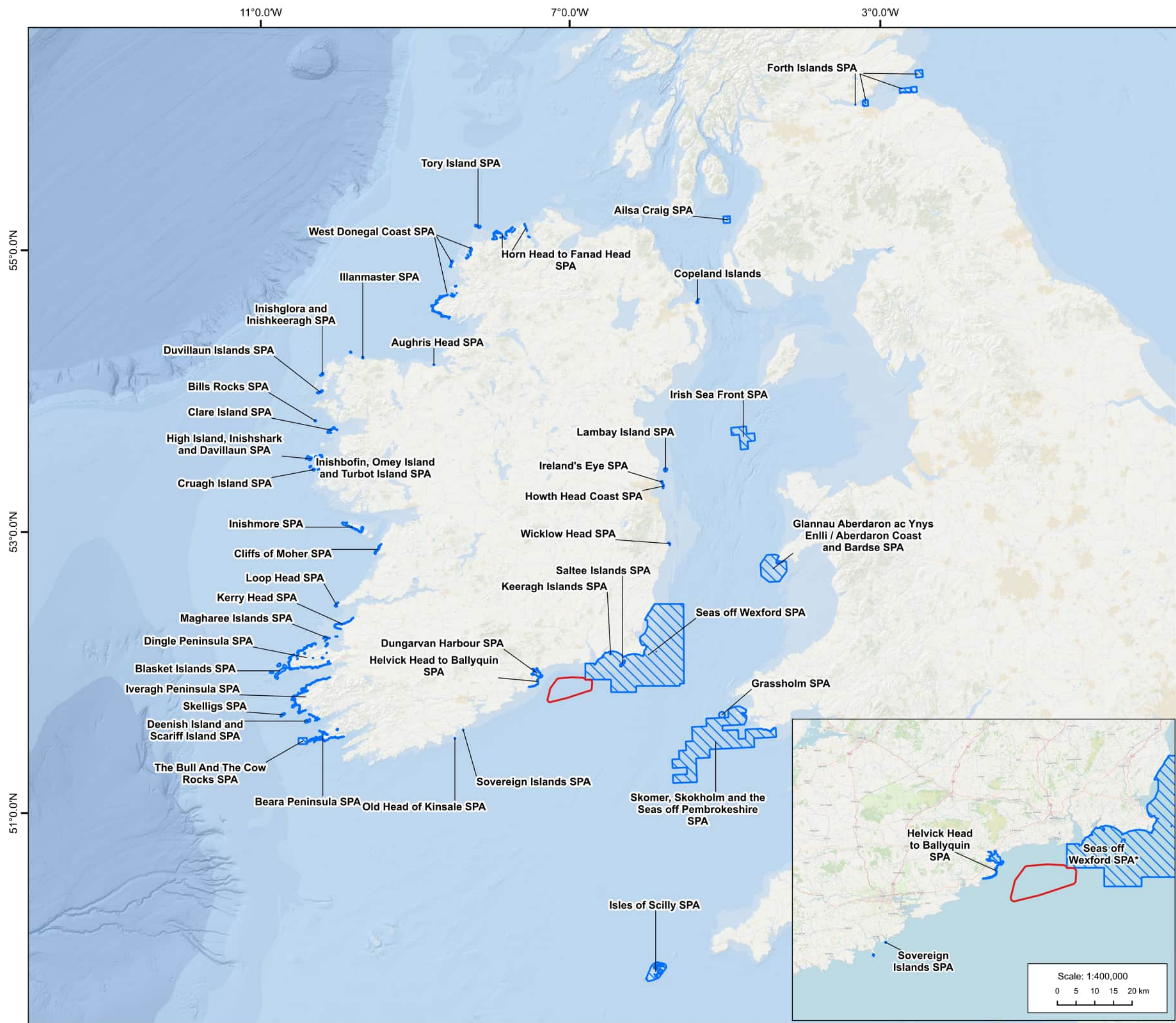
Table 4.1: SPAs included in Screening

Site code	Site name	Special Conservation Interests		Distance from Application area (km)
[IE0004237]	Seas off Wexford SPA	[A009]	Fulmar (<i>Fulmarus glacialis</i>)	0.05
		[A013]	Manx shearwater (<i>Puffinus puffinus</i>)	
		[A016]	Gannet (<i>Morus bassanus</i>)	
		[A188]	Kittiwake (<i>Rissa tridactyla</i>)	
		[A176]	Mediterranean gull (<i>Ichthyaetus melanocephalus</i>)	
		[A179]	Black-headed gull (<i>Chroicocephalus ridibundus</i>)	
		[A183]	Lesser black-backed gull (<i>Larus fuscus</i>)	
		[A184]	Herring gull (<i>Larus argentatus</i>)	
		[A191]	Sandwich tern (<i>Thalasseus sandvicensis</i>)	
		[A192]	Roseate tern (<i>Sterna dougallii</i>)	
		[A193]	Common tern (<i>Sterna hirundo</i>)	
		[A194]	Arctic tern (<i>Sterna paradisaea</i>)	
		[A195]	Little tern (<i>Sterna albifrons</i>)	
		[A199]	Guillemot (<i>Uria aalge</i>)	
		[A200]	Razorbill (<i>Alca torda</i>)	
		[A204]	Puffin (<i>Fratercula arctica</i>)	
[IE0004193]	Mid-Waterford Coast SPA	[A017]	Cormorant	10.18
		[A103]	Peregrine falcon (<i>Falco peregrinus</i>)	
		[A184]	Herring gull	
		[A346]	Chough (<i>Pyrrhocorax pyrrhocorax</i>)	
[IE0004192]	Helvick Head to Ballyquin SPA	[A017]	Cormorant	10.47
		[A103]	Peregrine falcon	
		[A184]	Herring gull	
		[A188]	Kittiwake	
		[A346]	Chough	
[IEC004118]	Keeragh Islands SPA	[A017]	Cormorant	25.69
[IEC004002]	Saltee Islands SPA	[A009]	Fulmar	25.47
		[A016]	Gannet	
		[A017]	Cormorant	
		[A183]	Lesser Black-backed Gull	
		[A184]	Herring Gull	
		[A188]	Kittiwake	
		[A199]	Guillemot	
		[A200]	Razorbill	

Site code	Site name	Special Conservation Interests		Distance from Application area (km)
		[A204]	Puffin	
[IEC004124]	Sovereign Islands SPA	[A017]	Cormorant	70.78
[IEC004021]	Old Head of Kinsale SPA	[A188]	Kittiwake	79.36
		[A199]	Guillemot	
[UK9014051]	Skomer, Skokholm and the Seas off Pembroke hire SPA	[A014]	European storm petrel (<i>Hydrobates pelagicus</i>)	85.20
		[A013]	Manx Shearwater	
		[A204]	Puffin	
		[A183]	Lesser black-backed gull	
[UK9014041]	Grassholm SPA	[A016]	Gannet	103.36
[IEC004127]	Wicklow Head SPA	[A188]	Kittiwake	137.57
[UK9013121]	Aberdaron Coast and Bardsey Island SPA	[A013]	Manx Shearwater	158.74
[IEC004236]	North-West Irish Sea SPA	[A009]	Fulmar	179.47
		[A013]	Manx Shearwater	
		[A183]	Lesser black-backed gull	
		[A188]	Kittiwake	
		[A200]	Razorbill	
		[A204]	Puffin	
[IEC004113]	Howth Head Coast SPA	[A188]	Kittiwake	183.27
[IEC004155]	Beara Peninsula SPA	[A009]	Fulmar	193.14
[IEC004117]	Ireland's Eye SPA	[A188]	Kittiwake	185.30
		[A200]	Razorbill	
[IEC004069]	Lambay Island SPA	[A009]	Fulmar	195.61
		[A183]	Lesser black-backed gull	
		[A188]	Kittiwake	
		[A204]	Puffin	
[IEC004066]	The Bull and the Cow Rocks SPA	[A016]	Gannet	204.38
		[A014]	European storm petrel	
		[A204]	Puffin	

Site code	Site name	Special Conservation Interests		Distance from Application area (km)
[UK9020288]	Isles of Scilly SPA	[A014]	European storm petrel	222.23
		[A183]	Lesser black-backed gull	
[IEC004175]	Deenish Island and Scariff Island SPA	[A013]	Manx Shearwater	223.63
		[A009]	Fulmar	
		[A014]	European storm petrel	
		[A183]	Lesser black-backed gull	
[IEC004154]	Iveragh Peninsula SPA	[A009]	Fulmar	225.96
		[A188]	Kittiwake	
[UK9020328]	Irish Sea Front SPA	[A013]	Manx Shearwater	226.41
[IEC004007]	Skelligs SPA	[A013]	Manx Shearwater	236.51
		[A009]	Fulmar	
		[A016]	Gannet	
		[A014]	European storm petrel	
		[A188]	Kittiwake	
		[A204]	Puffin	
[IEC004003]	Puffin Island SPA	[A013]	Manx Shearwater	237.18
		[A009]	Fulmar	
		[A014]	European storm petrel	
		[A183]	Lesser black-backed gull	
		[A204]	Puffin	
[IEC004008]	Blasket Islands SPA	[A013]	Manx Shearwater	261.91
		[A009]	Fulmar	
		[A014]	European storm petrel	
		[A188]	Kittiwake	
		[A183]	Lesser black-backed gull	
[IEC004153]	Dingle Peninsula SPA	[A009]	Fulmar	267.51
[IEC004125]	Magharee Islands SPA	[A014]	European storm petrel	308.91
[IEC004189]	Kerry Head SPA	[A009]	Fulmar	321.20
[UK9020291]	Copeland Islands	[A013]	Manx Shearwater	332.94
[IEC004119]	Loop Head SPA	[A188]	Kittiwake	334.28
[IEC004005]	Cliffs of Moher SPA	[A009]	Fulmar	384.71
		[A188]	Kittiwake	
		[A204]	Puffin	

Site code	Site name	Special Conservation Interests		Distance from Application area (km)
[IEC004152]	Inishmore SPA	[A188]	Kittiwake	392.76
[UK9003091]	Alisa Craig SPA	[A016]	Gannet	395.03
[IEC004170]	Cruagh Island SPA	[A013]	Manx Shearwater	427.32
[IEC004144]	High Island, Inishshark and Davillaun SPA	[A009]	Fulmar	427.67
[IEC004136]	Clare Island SPA	[A013] [A188]	Manx Shearwater Kittiwake	461.71
[IEC004177]	Bills Rocks SPA	[A014]	European storm petrel	465.82
[IEC004111]	Duvillaun Islands SPA	[A009] [A014]	Fulmar European storm petrel	489.83
[IEC004084]	Inishglora and Inishkeeragh SPA	[A014]	European storm petrel	503.43
[IEC004194]	Horn Head to Fanad Head SPA	[A009]	Fulmar	509.43



Project:

Tonn Nua Offshore Wind

Title:

Figure 4.1: Relevant Special Protection Areas (SPAs) for Ornithological Special Conservation Interests

Key

MUL Application Area

Special Protectoin Area (SPA)

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community.

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Not to be used for Navigation.

Scale @ A3: 1:3,000,000

Coordinate System: ETRS89 / UTM zone 29N

Graticules: WGS 84

050100150200 km

N

Date: 17-10-25

Prepared by: NN

Checked by: BC

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4.1.2. Marine Mammals (species on Annex II of the Habitats Directive)

The following marine mammal species are listed on Annex II of the Habitats Directive:

- [1349] Bottlenose dolphin (*Tursiops truncatus*);
- [1351] Harbour porpoise (*Phocoena phocoena*);
- [1364] Grey seal (*Halichoerus grypus*); and
- [1365] Harbour seal (*Phoca vitulina*).

SACs and Zones Speciales de Conservation (ZSCs)¹¹ for each species were considered for screening based on the following criteria:

- Bottlenose dolphin – sites within the Irish Sea Management Unit and the Offshore Channel, Celtic Sea and South West England Management Unit (IAMMWG, 2023);
- Harbour porpoise – sites within the Celtic and Irish Seas Management Unit (IAMMWG, 2023);
- Grey seal – sites within 448 km (this distance represents the species' maximum foraging range; Carter *et al.* (2022)); and
- Harbour seal – sites within 273 km (this distance represents the species' maximum foraging range; Carter *et al.* (2022)).

The sites assessed for each species are detailed in Table 4.2 to Table 4.5 and Figure 4.2.

Table 4.2: Sites assessed for bottlenose dolphin

Site name	Site code	QI	Country	Shortest distance by sea from the Tonn Nua MUL application area (km)
Hook Head	IE0000764	Bottlenose Dolphin	Ireland	2
Cardigan Bay	UK0012712	Bottlenose Dolphin	Wales	136
Lleyn Peninsula and the Sarnau	UK0013117	Bottlenose Dolphin	Wales	163
Mers Celtiques - Talus du golfe de Gascogne	FR5302015	Bottlenose Dolphin	France	322
Nord Bretagne DH	FR2502022	Bottlenose Dolphin	France	346
Abers - Cote des legendes	FR5300017	Bottlenose Dolphin	France	402
Ouessant-Molene	FR5300018	Bottlenose Dolphin	France	402
Cote de Granit Rose-Sept Iles	FR5300009	Bottlenose Dolphin	France	410
Recifs du talus du golfe de Gascogne	FR5302016	Bottlenose Dolphin	France	413
Tregor Goelo	FR5300010	Bottlenose Dolphin	France	433
Cotes de Crozon	FR5302006	Bottlenose Dolphin	France	441
Chaussee de Sein	FR5302007	Bottlenose Dolphin	France	448

¹¹ ZSCs are the equivalent of SACs in France.

Site name	Site code	QI	Country	Shortest distance by sea from the Tonn Nua MUL application area (km)
Recifs et landes de la Hague	FR2500084	Bottlenose Dolphin	France	498
Anse de Vauville	FR2502019	Bottlenose Dolphin	France	499
Cap d'Erquy-Cap Frehel	FR5300011	Bottlenose Dolphin	France	501
Banc et recifs de Surtainville	FR2502018	Bottlenose Dolphin	France	504
Chausey	FR2500079	Bottlenose Dolphin	France	525
Recifs et marais arriere-littoraux du Cap Levi a la Pointe de Saire	FR2500085	Bottlenose Dolphin	France	534
Cote de Cancale a Parame	FR5300052	Bottlenose Dolphin	France	539
Baie du Mont Saint-Michel	FR2500077	Bottlenose Dolphin	France	552
Baie de Seine occidentale	FR2502020	Bottlenose Dolphin	France	563
Baie de Seine orientale	FR2502021	Bottlenose Dolphin	France	624

Table 4.3: Sites assessed for harbour porpoise

Site name	Site code	QI	Country	Closest distance by sea from the Tonn Nua MUL application area (km)
Hook Head	IE000764	Harbour Porpoise	Ireland	2
Blackwater Bank	IE002953	Harbour Porpoise	Ireland	56
West Wales Marine / Gorllewin Cymru Forol	UK0030397	Harbour Porpoise	Wales	93
Bristol Channel Approaches / Dynesfeydd Môr Hafren	UK0030396	Harbour Porpoise	Offshore UK	140
Roaringwater Bay and Islands	IE0000101	Harbour Porpoise	Ireland	140
Rockabill to Dalkey Island	IE0003000	Harbour Porpoise	Ireland	169

Site name	Site code	QI	Country	Closest distance by sea from the Tonn Nua MUL application area (km)
North Anglesey Marine / Gogledd Môn Forol	UK0030398	Harbour Porpoise	Wales	195
Blasket Islands	IE0002172	Harbour Porpoise	Ireland	257
North Channel	UK0030399	Harbour Porpoise	Northern Ireland	278
Belgica Mound Province	IE002327	Harbour Porpoise	Ireland	294
Mers Celtiques - Talus du golfe de Gascogne	FR5302015	Harbour Porpoise	France	322
Nord Bretagne DH	FR2502022	Harbour Porpoise	France	346
Abers - Cote des legendes	FR5300017	Harbour Porpoise	France	402
Ouessant-Molene	FR5300018	Harbour Porpoise	France	402
Cote de Granit Rose-Sept Iles	FR5300009	Harbour Porpoise	France	410
Recifs du talus du golfe de Gascogne	FR5302016	Harbour Porpoise	France	413
Baie de Morlaix	FR5300015	Harbour Porpoise	France	414
West Connacht Coast	IE002998	Harbour Porpoise	Ireland	419
Tregor Goelo	FR5300010	Harbour Porpoise	France	433
Chaussee de Sein	FR5302007	Harbour Porpoise	France	448
Cap d'Erquy-Cap Frehel	FR5300011	Harbour Porpoise	France	501
Bunduff Lough and M achair/Trawalua/Mulla ghmore	IE000625	Harbour Porpoise	Ireland	654
Carnsore Point	IE002269	Harbour Porpoise	Ireland	525

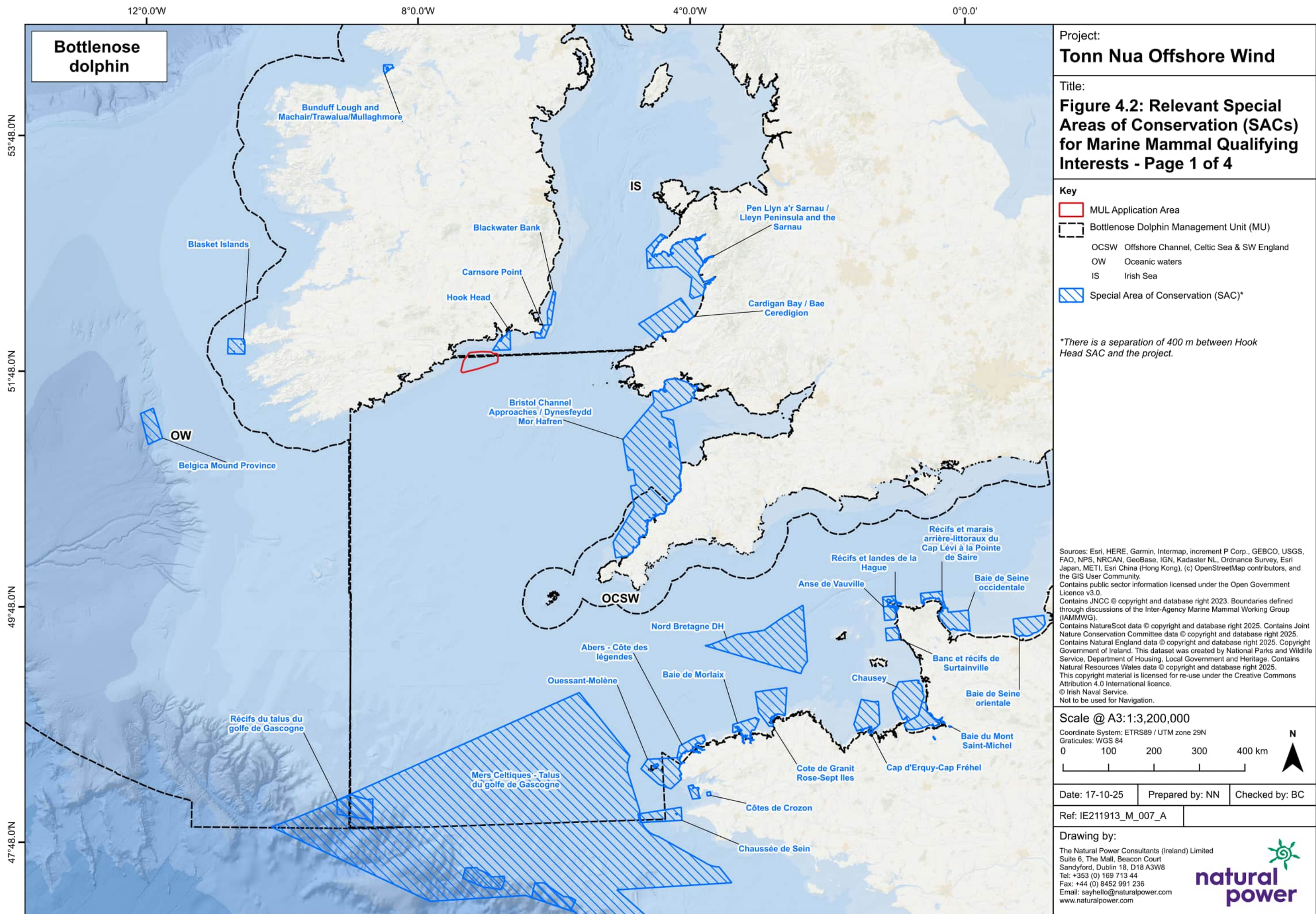
Table 4.4: Sites assessed for grey seal

Site name	Site code	QI	Country	Closest distance by sea from the Tonn Nua MUL application area (km)
Saltee Islands	IE0000707	Grey Seal	Ireland	20
Pembrokeshire Marine/ Sir Benfro Forol	UK0013116	Grey Seal	Wales	86

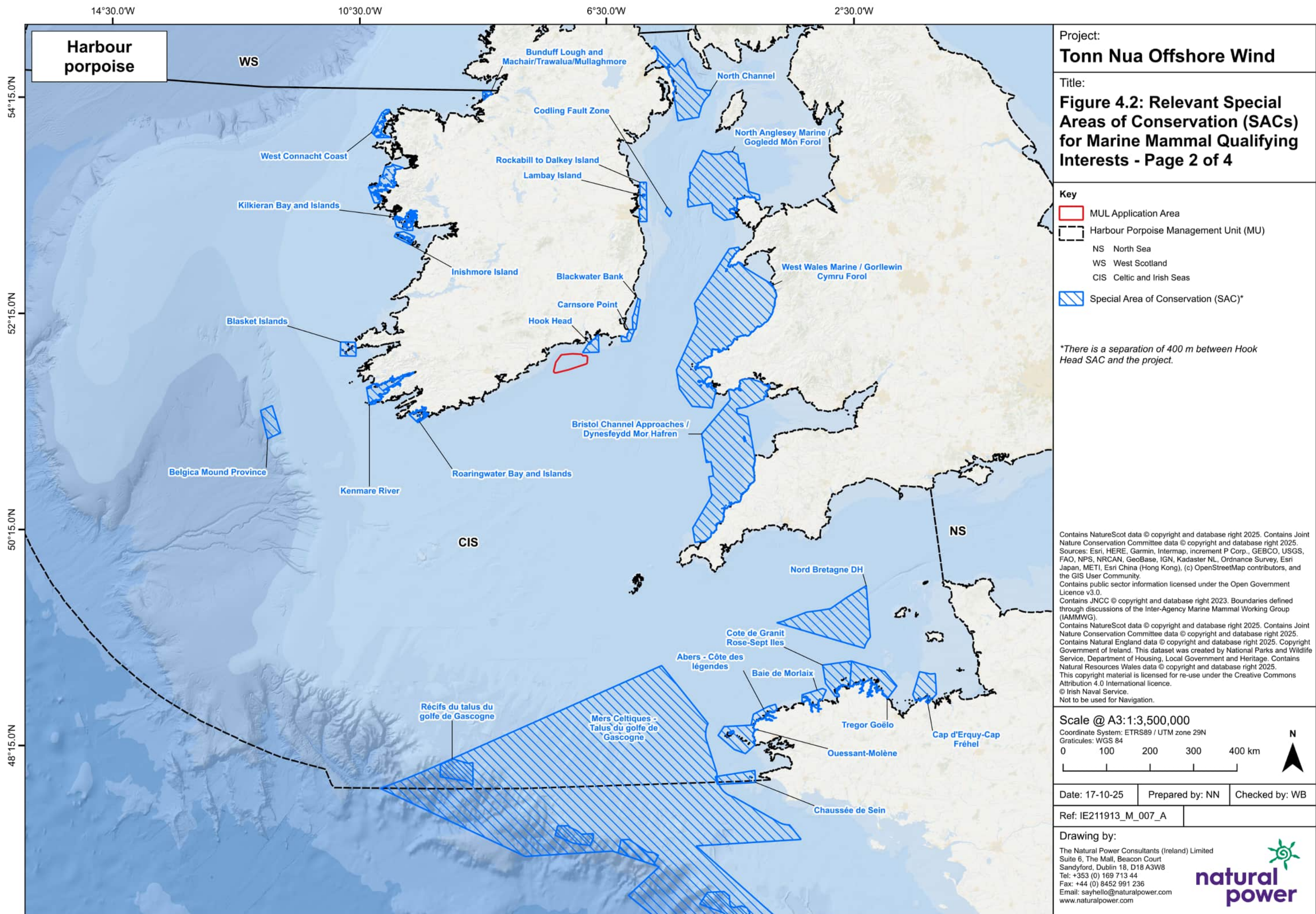
Site name	Site code	QI	Country	Closest distance by sea from the Tonn Nua MUL application area (km)
Cardigan Bay / Bae Ceredigion	UK0012712	Grey Seal	Wales	136
Roaringwater Bay and Islands	IE0000101	Grey Seal	Ireland	140
Pen Llyn a'r Sarnau / Llyn Peninsula and the Sarnau	UK0013117	Grey Seal	Wales	164
Lundy	UK0013114	Grey Seal	England	177
Lambay Island	IE0000204	Grey Seal	Ireland	195
Isles of Scilly Complex	UK0013694	Grey Seal	England	217
Blasket Islands	IE0002172	Grey Seal	Ireland	257
Abers - Cote des legendes	FR5300017	Grey Seal	France	402
Ouessant-Molene	FR5300018	Grey Seal	France	402
Cote de Granit Rose-Sept Iles	FR5300009	Grey Seal	France	410
Slyne Head Islands	IE0000328	Grey Seal	Ireland	412
Baie de Morlaix	FR5300015	Grey Seal	France	414
Inishbofin and Inishshark	IE0000278	Grey Seal	Ireland	433

Table 4.5: Sites assessed for harbour seal

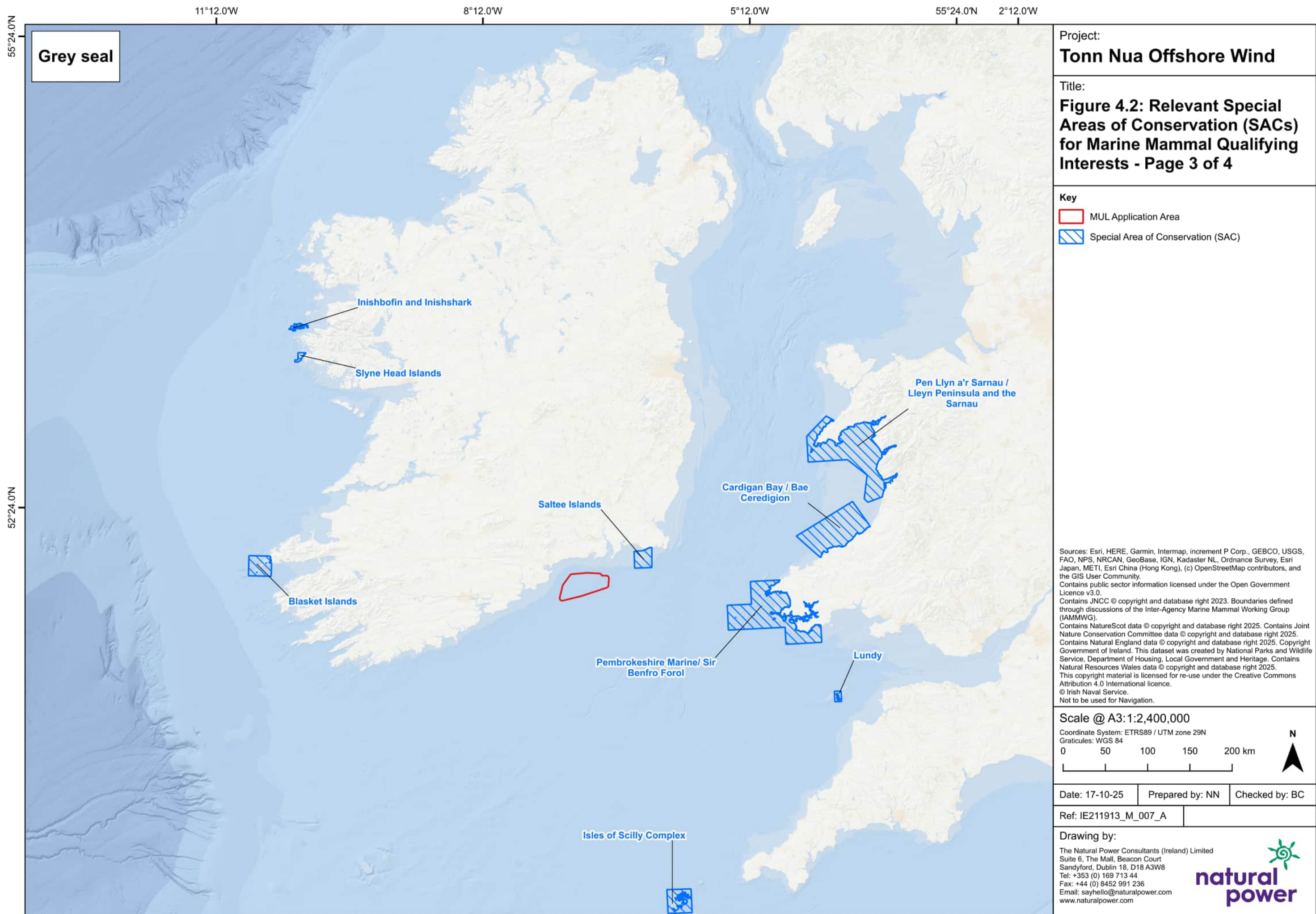
Site code	Site name	QI	Country	Closest distance by sea from the Tonn Nua MUL application area (km)
Slaney River Valley	IE0000781	Harbour Seal	Ireland	63
Lambay Island	IE0000204	Harbour Seal	Ireland	195
Kenmare River	IE0002158	Harbour Seal	Ireland	200
Glengarriff Harbour and Woodland	IE0000090	Harbour Seal	Ireland	213
Murlough	UK0016612	Harbour Seal	Northern Ireland	267

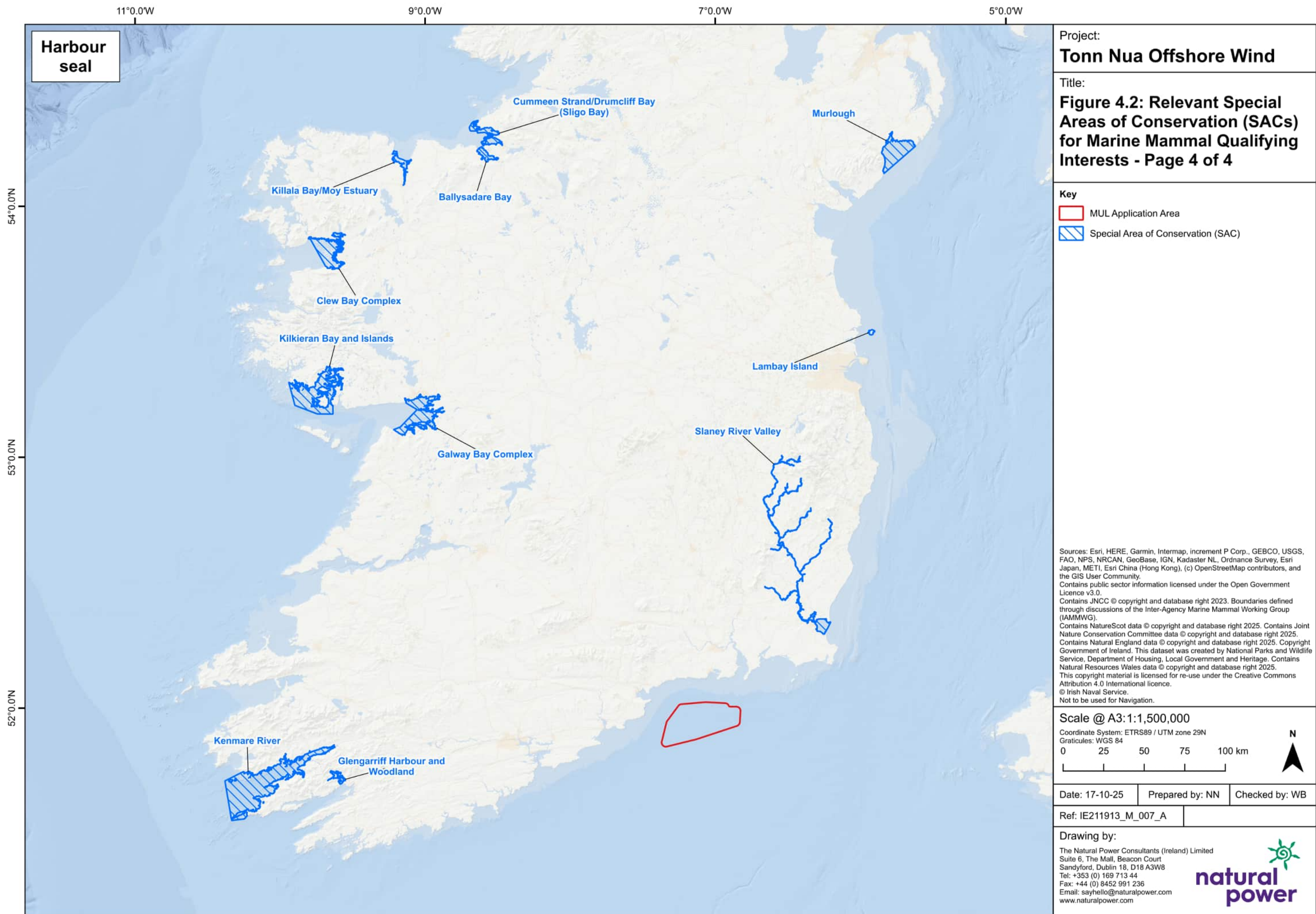


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4.1.3. Habitats (Annex I of the Habitats Directive)

SACs were considered for screening based upon an assessment of their potential for connectivity with the Annex I habitat QIs and the Project.

There was considered to be potential connectivity with SACs and associated Annex I habitat QIs, if the Application area overlapped the SAC (direct effects) or was within potential range of indirect impacts (1 – 2 km).

As the application area does not intersect with any of the SACs in the area, there is considered to be no route to impact from direct impacts (i.e. habitat loss or disturbance) and as such only indirect effects (i.e., increases in SSC and smothering) are considered further. The only indirect effects that may arise are those resulting from elevated SSC which, once suspended following disturbance during proposed SI works, have the potential to remain within the water column for a period of time, leading to effects on marine habitats and species.

It is considered there is no potential for LSE to arise from increases in SSC and smothering (deposition) beyond 1-2 km, noting that the potential for elevated SSC exists past this, but the concentration will be greatly reduced with no potential to affect habitat QIs.

One site is assessed for indirect effects relating to elevated SSC and smothering (due to proximity to the works), as follows:

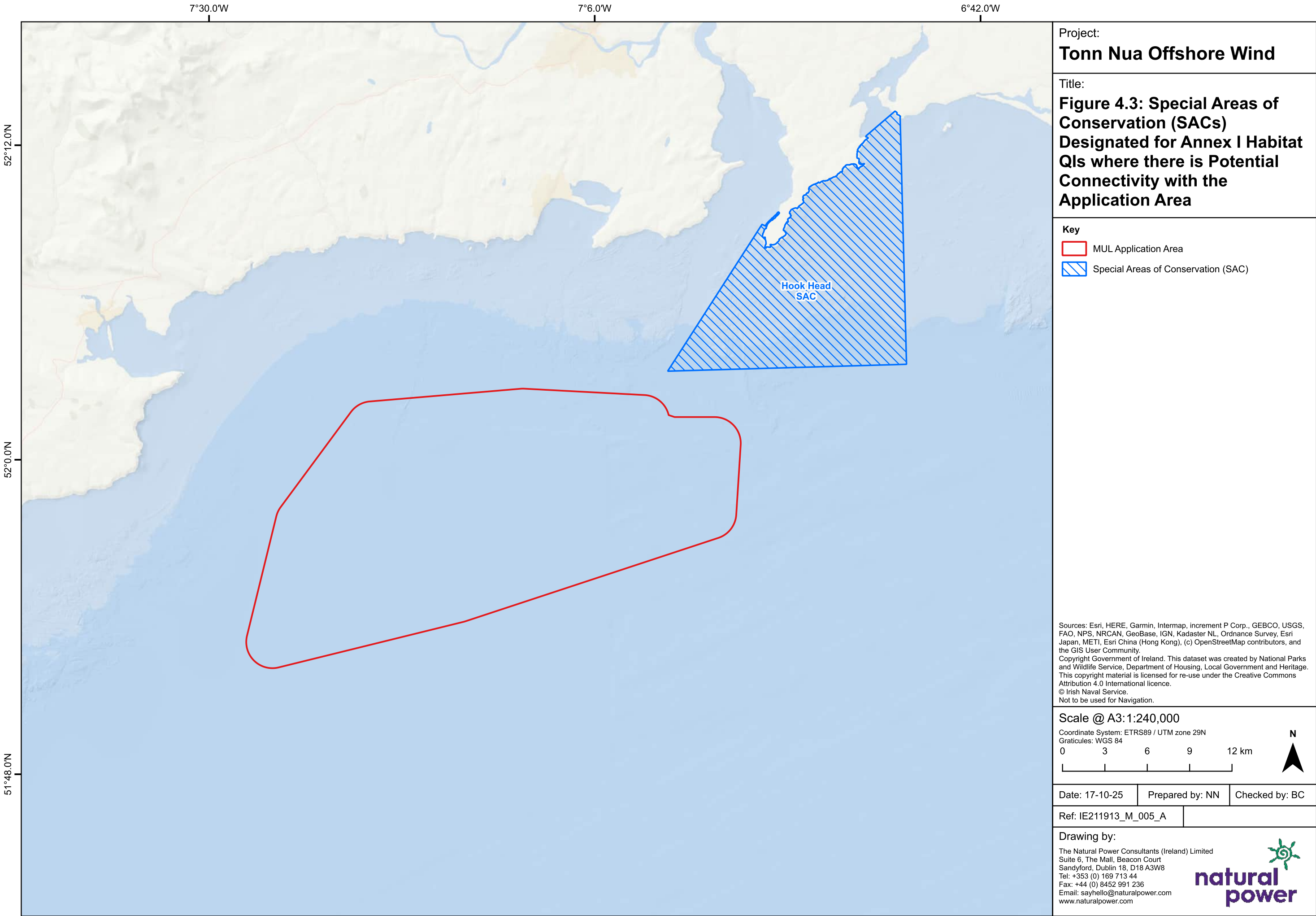
- [IE0000764] Hook Head SAC;

The corresponding QIs are provided in Table 4.5 and the location of the SAC illustrated in Figure 4.3.

Table 4.6: Relevant SACs designated for Annex I habitats

Site code	Site Name	Relevant Qualifying Interests	Closest distance by sea from the MUL application area (km)
[IE0000764]	Hook Head SAC ¹²	[1160] Large shallow inlets and bays; and [1170] Reefs	2

¹² Also designated for [1230] Vegetated sea cliffs of the Atlantic and Baltic coasts, however there is no potential connectivity with this habitat which is coastal and above the high water level. As such, no potential for LSE.



4.1.4. Diadromous Fish (species on Annex II of the Habitats Directive)

SACs were included in the screening assessment based upon their potential for connectivity with the Annex II diadromous fish QIs and the Project.

There are a number of SAC rivers on the south coast of Ireland which have been designated for Annex II diadromous fish (also including the parasitic bivalve mollusc the freshwater pearl mussel (FWPM) which has a host relationship with salmonids). These species are:

- [1095] Sea lamprey (*Petromyzon marinus*);
- [1103] Twaite shad (*Alosa Fallax*);
- [1106] Atlantic salmon (*Salmo salar*);
- [1096] River lamprey (*Lampetra fluviatilis*); and
- [1029] Freshwater pearl mussel¹³ (*Margaritifera margaritifera*) (FWPM).

Although brook lamprey are listed as Annex II fish species, they are not considered further given their sole existence in riverine environments (Kurz and Costello, 1999) and therefore there is no potential route to impact from the proposed SI works.

The FWPM lives its entire lifecycle in freshwater, its larval stages are parasitic and rely on salmonids, (including Atlantic salmon (and trout, *Salmo trutta*)) as a host to colonise different areas of a river. It is considered therefore that any impact from the proposed surveys that has the potential to affect Atlantic salmon may also affect FWPM.

Annex II diadromous fish are recorded off the coast of south eastern Ireland (Rikardsen *et al.*, 2021; Barry *et al.*, 2020) and adopting a precautionary (i.e., conservative) approach to assessment, all SACs along the south east Irish coast are considered to have potential connectivity (via migration routes) to the MUL Application Area. Other SACs are considered too distant for there to be any potential for LSE to arise.

Although these SACs are not marine, the migratory diadromous fish for which they are designated have a marine phase of their lifecycle. These species rely on the sea to migrate to feeding grounds before returning to rivers to spawn. There is potential, therefore, for one or a number of these species to be present in the MUL Application Area during the SI works.

Those sites included in screening are provided in Table 4.7 and shown in Figure 4.4

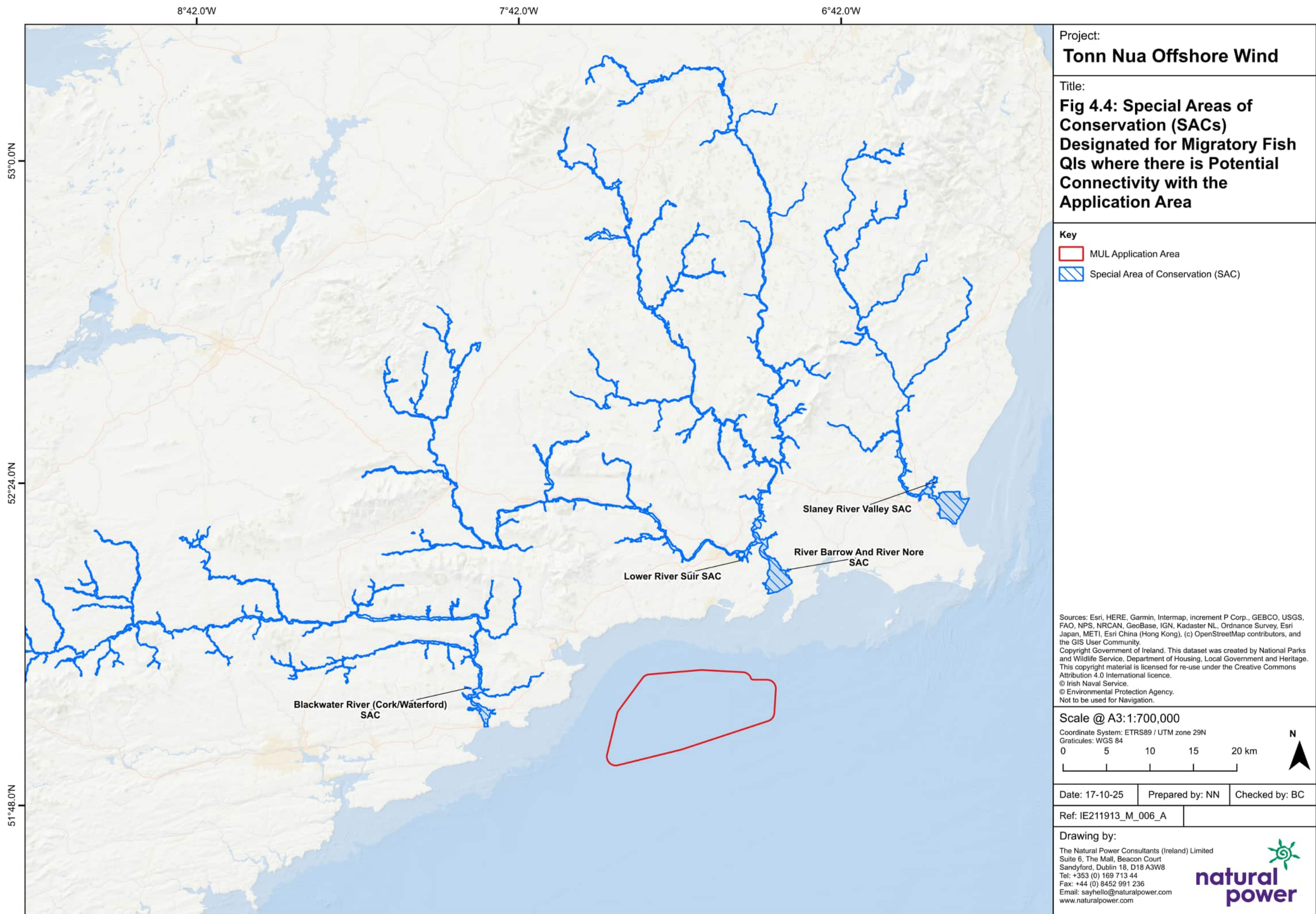
- [IE0002162] River Barrow and River Nore SAC;
- [IE0002137] Lower River Suir SAC;
- [IE0002170] Blackwater River SAC; and
- [IE0000781] Slaney River Valley SAC.

Table 4.7: Relevant SACs designated for Annex II diadromous fish

Site Code	SAC	Country	Relevant Qualifying Interests	Closest straight line distance by sea from the Tonn Nua MUL application area (km)
[IE0002162]	River Barrow and River Nore SAC	Ireland	[1103] Twaite shad; [1106] Atlantic salmon; [1095] Sea lamprey; [1096] River lamprey; and	17.8

¹³ Included here due to the important role of salmonid diadromous fish in this species reproductive cycle.

Site Code	SAC	Country	Relevant Qualifying Interests	Closest straight line distance by sea from the Tonn Nua MUL application area (km)
			[1029] FWPM	
[IE0002137]	Lower River Suir SAC	Ireland	[1103] Twaite shad; [1106] Atlantic salmon; [1095] Sea lamprey; [1096] River lamprey; and [1029] FWPM	24.2
[IE0002170]	Blackwater River (Cork/Waterford) SAC	Ireland	[1103] Twaite shad; [1106] Atlantic salmon; [1095] Sea lamprey; [1096] River lamprey; and [1029] FWPM	25.4
[IE0000781]	Slaney River Valley SAC	Ireland	[1103] Twaite shad; [1106] Atlantic salmon; [1095] Sea lamprey; [1096] River lamprey; and [1029] FWPM	50.0



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4.2. Project Alone Assessment

4.2.1. Marine Ornithology (species protected by the Birds Directive)

Table 4.8 considers LSE on the SCIs of those sites identified in Section 4.1.1 where there may be connectivity with the Project, based on potential impacts and effects identified in Section 3.1.

Both tables list SPAs in order of increasing distance from the works. SPAs are proposed to be screened in where LSE cannot be ruled out for one or more SCIs, for one or more routes to impact. SPAs are screened out where LSE can be ruled out for all route to impact to all SCIs. A rationale is given for each SPA for each SCI and route to impact to explain the screening decision.

Table 4.8: Screening of NATURA 2000 sites within 509.4 km of the proposed surveys: SCIs within the mean of the maximum foraging range of Proposed Activities

SPA	Special Conservation Interest	Season	Route to Impact	Screened in/out	Justification if screened out
Seas off Wexford SPA [IE0004237]	[A009] Fulmar [A176] Mediterranean gull [A179] Black-headed gull [A183] Lesser black-backed gull [A184] Herring gull [A188] Kittiwake [A191] Sandwich tern [A192] Roseate tern [A193] Common tern [A194] Arctic tern [A195] Little tern	Breeding	Above-water noise ^{*1}	In	LSE cannot be ruled out. Progress to NIS
			Underwater noise ^{*2}	Out	These species do not forage by pursuit- or deep plunge-diving. Rather, these species forage by surface gleaning, dipping or shallow plunge-diving (i.e. terns). As such these species are not considered to be “available” for underwater noise impacts to the same extent as those species which do spend greater parts of their feeding cycle underwater (see below). There is therefore considered to be no route to impact and no LSE.
			Visual impacts ^{*3}	In	LSE cannot be ruled out. Progress to NIS
			Impacts upon prey species ^{*4}	Out	Given the nature of the proposed site investigation works, the potential for displacement of prey species of these SCIs is considered limited. Furthermore, as proposed works are localised and would take place only for short durations in any particular location, should any displacement of SCI prey species occur as a result of proposed works, any such impacts would be spatially and temporally very limited. At any given time during the course of proposed works the vast majority of SCI prey species would experience no impacts in association with the works. Any impacts upon prey species would therefore be negligible. No LSE.
	[A018] Shag [A199] Guillemot [A200] Razorbill [A204] Puffin [A013] Manx shearwater [A016] Gannet	Breeding	Above-water noise ^{*1}	In	LSE cannot be ruled out. Progress to NIS
			Underwater noise ^{*2}	In	Diving species. LSE cannot be ruled out. Progress to NIS
			Visual impacts ^{*3}	In	LSE cannot be ruled out. Progress to NIS
			Impacts upon prey species ^{*4}	Out	Given the nature of proposed site investigation works, the potential for displacement of prey species of this SCI is considered limited. Furthermore, as proposed works are localised and would take place only for short durations in any particular location, should any displacement of SCI prey species occur as a result of proposed works, any such impacts would be spatially and temporally very limited. At any given time during the course of proposed works the vast majority of SCI prey species would experience no impacts in association with the works. Any impacts upon prey species would therefore be negligible. No LSE.
	[A065] Common scoter [A001] Red-throated diver	Non-breeding	Above-water noise ^{*1}	In	LSE cannot be ruled out. Progress to NIS
			Underwater noise ^{*2}	In	Diving species. Progress to NIS
			Visual impacts ^{*3}	In	LSE cannot be ruled out. Progress to NIS
			Impacts upon prey species ^{*4}	Out	Given the nature of proposed site investigation works, the potential for displacement of prey species of this SCI is considered limited. Furthermore, as proposed works are localised and would take place only for short durations in any particular location, should any displacement of SCI prey species occur as a result of proposed works, any such impacts would be spatially and temporally very limited. At any given time during the course of proposed works the vast majority of SCI prey species would experience no impacts in association with the works. Any impacts upon prey species would therefore be negligible. No LSE.
	[A017] Cormorant	Resident	Above-water noise ^{*1}	In	LSE cannot be ruled out. Progress to NIS
			Underwater noise ^{*2}	In	Diving species. LSE cannot be ruled out. Progress to NIS
			Visual impacts ^{*3}	In	LSE cannot be ruled out. Progress to NIS
			Impacts upon prey species ^{*4}	Out	Given the nature of proposed site investigation works, the potential for displacement of prey species of this SCI is considered limited. Furthermore, as proposed works are localised and would take place only for short durations in any particular location, should any displacement of SCI prey species occur as a result of proposed works, any such impacts would be spatially and temporally very limited. At any given time during the course of proposed works the vast majority of SCI prey species would experience no impacts in association with the works. Any impacts upon prey species would therefore be negligible. No LSE.
Mid-Waterford Coast SPA [IE0004193]	[A103] Peregrine falcon [A346] Chough	Resident	Above-water noise ^{*1}	Out	Non-marine species. No route to impact. No LSE
			Underwater noise ^{*2}	Out	Non-marine species. No route to impact. No LSE

SPA	Special Conservation Interest	Season	Route to Impact	Screened in/out	Justification if screened out
			Visual impacts ^{*3}	Out	Non-marine species. No route to impact. No LSE
			Impacts upon prey species ^{*4}	Out	Non-marine species. No route to impact. No LSE
	[A184] Herring gull	Breeding	Above-water noise ^{*1}	In	LSE cannot be ruled out. Progress to NIS
			Underwater noise ^{*2}	Out	This species does not forage by pursuit- or deep plunge-diving. Rather, these species forage by surface gleaning or dipping. As such, this species is not considered to be “available” for underwater noise impacts to the same extent as those species which do spend greater parts of their feeding cycle underwater. There is therefore considered to be no route to impact and no LSE.
			Visual impacts ^{*3}	In	LSE cannot be ruled out. Progress to NIS
			Impacts upon prey species ^{*4}	Out	Given the nature of proposed site investigation works, the potential for displacement of prey species of this SCI is considered limited. Furthermore, as proposed works are localised and would take place only for short durations in any particular location, should any displacement of SCI prey species occur as a result of proposed works, any such impacts would be spatially and temporally very limited. At any given time during the course of proposed works the vast majority of SCI prey species would experience no impacts in association with the works. Any impacts upon prey species would therefore be negligible. No LSE.
	[A017] Cormorant	Breeding	Above-water noise ^{*1}	In	LSE cannot be ruled out. Progress to NIS
			Underwater noise ^{*2}	In	Diving species. LSE cannot be ruled out. Progress to NIS
			Visual impacts ^{*3}	In	LSE cannot be ruled out. Progress to NIS
			Impacts upon prey species ^{*4}	Out	Given the nature of proposed site investigation works, the potential for displacement of prey species of this SCI is considered limited. Furthermore, as proposed works are localised and would take place only for short durations in any particular location, should any displacement of SCI prey species occur as a result of proposed works, any such impacts would be spatially and temporally very limited. At any given time during the course of proposed works the vast majority of SCI prey species would experience no impacts in association with the works. Any impacts upon prey species would therefore be negligible. No LSE.
Helvick Head to Ballyquin SPA [IE0004192]	[A188] Kittiwake [A184] Herring gull	Breeding	Above-water noise ^{*1}	In	LSE cannot be ruled out. Progress to NIS
			Underwater noise ^{*2}	Out	These species do not forage by pursuit- or deep plunge-diving. Rather, these species forage by surface gleaning or dipping. As such, these species are not considered to be “available” for underwater noise impacts to the same extent as those species which do spend greater parts of their feeding cycle underwater. There is therefore considered to be no route to impact and no LSE.
			Visual impacts ^{*3}	In	LSE cannot be ruled out. Progress to NIS
			Impacts upon prey species ^{*4}	Out	Given the nature of proposed site investigation works, the potential for displacement of prey species of these SCIs is considered limited. Furthermore, as proposed works are localised and would take place only for short durations in any particular location, should any displacement of SCI prey species occur as a result of proposed works, any such impacts would be spatially and temporally very limited. At any given time during the course of proposed works the vast majority of SCI prey species would experience no impacts in association with the works. Any impacts upon prey species would therefore be negligible. No LSE.
	[A017] Cormorant	Breeding	Above-water noise ^{*1}	In	LSE cannot be ruled out. Progress to NIS
			Underwater noise ^{*2}	In	Diving species. LSE cannot be ruled out. Progress to NIS
			Visual impacts ^{*3}	In	LSE cannot be ruled out. Progress to NIS
			Impacts upon prey species ^{*4}	Out	Given the nature of proposed site investigation works, the potential for displacement of prey species of this SCI is considered limited. Furthermore, as proposed works are localised and would take place only for short durations in any particular location, should any displacement of SCI prey species occur as a result of proposed works, any such impacts would be spatially and temporally very limited. At any given time during the course of proposed works the vast majority of SCI prey species would experience no impacts in association with the works. Any impacts upon prey species would therefore be negligible. No LSE.
	[A103] Peregrine falcon	Resident	Above-water noise ^{*1}	Out	Non-marine species. No route to impact. No LSE

SPA	Special Conservation Interest	Season	Route to Impact	Screened in/out	Justification if screened out
	[A346] Chough		Underwater noise ^{*2}	Out	Non-marine species. No route to impact. No LSE
			Visual impacts ^{*3}	Out	Non-marine species. No route to impact. No LSE
			Impacts upon prey species ^{*4}	Out	Non-marine species. No route to impact. No LSE
Sovereign Islands SPA [IEC004124]	[A017] Cormorant	Breeding	Above-water noise ^{*1}	Out	On the basis that the frequency of birds from more distant SPAs occurring within the Application Area decreases as the distance between the Application Area and those SPAs increases, it is considered that the Application Area is beyond any core habitat use areas around these more distant sites. Furthermore, for SCIs from SPAs beyond 15 km from the Application Area, given the small footprint of Proposed Activities within the Application Area at any given time, the potential for disturbance and displacement effects resulting from survey noise, visual impacts or impacts upon prey species is considered to be limited. None of the SCIs from these more distant SPAs are documented to display large flushing or disturbance distances at sea (e.g. as per some diver species), and many are considered not to be sensitive to vessel operations. If the approximate foraging areas of these SCIs are conservatively calculated as 50% of the mean-max foraging range to account for coastal distribution, and a very precautionary stance is taken in considering that individuals could be displaced from a radius of 1 km around survey vessels (considered precautionary as if the receptors are already present in this area they are already accustomed to high levels of vessel traffic), the percentage of the foraging areas affected by any individual activity under the scope of Proposed Activities would be c. 0.31% in the greatest case (cormorant) and less than 0.001% in the lesser case (gannet and Manx shearwater and storm petrel). Any impacts upon SCIs from SPAs beyond 15 km from the Application Area from any route to impact would therefore be negligible. No LSE.
			Underwater noise ^{*2}	Out	
			Visual impacts ^{*3}	Out	
			Impacts upon prey species ^{*4}	Out	
Keeragh Islands SPA [IEC004118]	[A017] Cormorant	Breeding	Above-water noise ^{*1}	Out	
			Underwater noise ^{*2}	Out	
			Visual impacts ^{*3}	Out	
			Impacts upon prey species ^{*4}	Out	
Saltee Islands SPA [IEC004002]	[A009] Fulmar [A016] Gannet [A017] Cormorant [A183] Lesser Black-backed Gull [A184] Herring Gull [A188] Kittiwake [A199] Guillemot [A200] Razorbill [A204] Puffin	Breeding	Above-water noise ^{*1}	Out	
			Underwater noise ^{*2}	Out	
			Visual impacts ^{*3}	Out	
			Impacts upon prey species ^{*4}	Out	
Old Head of Kinsale SPA [IEC004021]	[A188] Kittiwake [A199] Guillemot	Breeding	Above-water noise ^{*1}	Out	
			Underwater noise ^{*2}	Out	
			Visual impacts ^{*3}	Out	
			Impacts upon prey species ^{*4}	Out	
Skomer, Skokholm and the Seas off Pembrokeshire SPA [UK9014051]	[A014] European storm petrel [A013] Manx Shearwater [A204] Puffin [A183] Lesser black-backed gull	Breeding	Above-water noise ^{*1}	Out	
			Underwater noise ^{*2}	Out	
			Visual impacts ^{*3}	Out	
			Impacts upon prey species ^{*4}	Out	
Grassholm SPA [UK9014041]	[A016] Gannet	Breeding	Above-water noise ^{*1}	Out	
			Underwater noise ^{*2}	Out	
			Visual impacts ^{*3}	Out	
			Impacts upon prey species ^{*4}	Out	
Wicklow Head SPA [IEC004127]	[A188] Kittiwake	Breeding	Above-water noise ^{*1}	Out	
			Underwater noise ^{*2}	Out	
			Visual impacts ^{*3}	Out	
			Impacts upon prey species ^{*4}	Out	

SPA	Special Conservation Interest	Season	Route to Impact	Screened in/out	Justification if screened out
North-West Irish Sea SPA [IEC004236]	[A009] Fulmar [A013] Manx Shearwater [A183] Lesser black-backed gull [A188] Kittiwake [A200] Razorbill [A204] Puffin	Breeding	Above-water noise* ¹ Underwater noise* ² Visual impacts* ³ Impacts upon prey species* ⁴	Out Out Out Out	
Aberdaron Coast and Bardsey Island SPA [UK9013121]	[A013] Manx Shearwater	Breeding	Above-water noise* ¹ Underwater noise* ² Visual impacts* ³ Impacts upon prey species* ⁴	Out Out Out Out	
Howth Head Coast SPA [IEC004113]	[A188] Kittiwake	Breeding	Above-water noise* ¹ Underwater noise* ² Visual impacts* ³ Impacts upon prey species* ⁴	Out Out Out Out	
Beara Peninsula SPA [IEC004155]	[A009] Fulmar	Breeding	Above-water noise* ¹ Underwater noise* ² Visual impacts* ³ Impacts upon prey species* ⁴	Out Out Out Out	
Kerry Head SPA [IEC004189]	[A009] Fulmar	Breeding	Above-water noise* ¹ Underwater noise* ² Visual impacts* ³ Impacts upon prey species* ⁴	Out Out Out Out	
Ireland's Eye SPA [IEC004117]	[A188] Kittiwake [A200] Razorbill	Breeding	Above-water noise* ¹ Underwater noise* ² Visual impacts* ³ Impacts upon prey species* ⁴	Out Out Out Out	
Iveragh Peninsula SPA [IEC004154]	[A009] Fulmar [A188] Kittiwake	Breeding	Above-water noise* ¹ Underwater noise* ² Visual impacts* ³ Impacts upon prey species* ⁴	Out Out Out Out	
Magharee Islands SPA [IEC004125]	[A014] European storm petrel	Breeding	Above-water noise* ¹ Underwater noise* ² Visual impacts* ³ Impacts upon prey species* ⁴	Out Out Out Out	
Dingle Peninsula SPA [IEC004153]	[A009] Fulmar	Breeding	Above-water noise* ¹ Underwater noise* ² Visual impacts* ³ Impacts upon prey species* ⁴	Out Out Out Out	

SPA	Special Conservation Interest	Season	Route to Impact	Screened in/out	Justification if screened out
Cliffs of Moher SPA [IEC004005]	[A009] Fulmar [A188] Kittiwake [A204] Puffin	Breeding	Above-water noise ^{*1} Underwater noise ^{*2} Visual impacts ^{*3} Impacts upon prey species ^{*4}	Out Out Out Out	
Lambay Island SPA [IEC004069]	[A009] Fulmar [A183] Lesser black-backed gull [A188] Kittiwake [A204] Puffin	Breeding	Above-water noise ^{*1} Underwater noise ^{*2} Visual impacts ^{*3} Impacts upon prey species ^{*4}	Out Out Out Out	
Loop Head SPA [IEC004119]	[A188] Kittiwake	Breeding	Above-water noise ^{*1} Underwater noise ^{*2} Visual impacts ^{*3} Impacts upon prey species ^{*4}	Out Out Out Out	
Deenish Island and Scariff Island SPA [IEC004175]	[A013] Manx Shearwater [A009] Fulmar [A014] European storm petrel [A183] Lesser black-backed gull	Breeding	Above-water noise ^{*1} Underwater noise ^{*2} Visual impacts ^{*3} Impacts upon prey species ^{*4}	Out Out Out Out	
Inishmore SPA [IEC004152]	[A188] Kittiwake	Breeding	Above-water noise ^{*1} Underwater noise ^{*2} Visual impacts ^{*3} Impacts upon prey species ^{*4}	Out Out Out Out	
The Bull and the Cow Rocks SPA [IEC004066]	[A016] Gannet [A014] European storm petrel [A204] Puffin	Breeding	Above-water noise ^{*1} Underwater noise ^{*2} Visual impacts ^{*3} Impacts upon prey species ^{*4}	Out Out Out Out	
Puffin Island SPA [IEC004003]	[A013] Manx Shearwater [A009] Fulmar [A014] European storm petrel [A183] Lesser black-backed gull [A204] Puffin	Breeding	Above-water noise ^{*1} Underwater noise ^{*2} Visual impacts ^{*3} Impacts upon prey species ^{*4}	Out Out Out Out	
Blasket Islands SPA [IEC004008]	[A013] Manx Shearwater [A009] Fulmar [A014] European storm petrel [A188] Kittiwake [A183] Lesser black-backed gull [A204] Puffin	Breeding	Above-water noise ^{*1} Underwater noise ^{*2} Visual impacts ^{*3} Impacts upon prey species ^{*4}	Out Out Out Out	
Skelligs SPA [IEC004007]	[A013] Manx Shearwater [A009] Fulmar [A016] Gannet	Breeding	Above-water noise ^{*1} Underwater noise ^{*2} Visual impacts ^{*3}	Out Out Out	

SPA	Special Conservation Interest	Season	Route to Impact	Screened in/out	Justification if screened out
	[A014] European storm petrel [A188] Kittiwake [A204] Puffin		Impacts upon prey species* ⁴	Out	
Irish Sea Front SPA [UK9020328]	[A013] Manx Shearwater	Breeding	Above-water noise* ¹ Underwater noise* ² Visual impacts* ³ Impacts upon prey species* ⁴	Out Out Out Out	
Isles of Scilly SPA [UK9020288]	[A014] European storm petrel [A183] Lesser black-backed gull	Breeding	Above-water noise* ¹ Underwater noise* ² Visual impacts* ³ Impacts upon prey species* ⁴	Out Out Out Out	
Cruagh Island SPA [IEC004170]	[A013] Manx Shearwater	Breeding	Above-water noise* ¹ Underwater noise* ² Visual impacts* ³ Impacts upon prey species* ⁴	Out Out Out Out	
High Island, Inishshark and Davillaun SPA [IEC004144]	[A009] Fulmar	Breeding	Above-water noise* ¹ Underwater noise* ² Visual impacts* ³ Impacts upon prey species* ⁴	Out Out Out Out	
Clare Island [IEC004136]	[A013] Manx Shearwater [A188] Kittiwake	Breeding	Above-water noise* ¹ Underwater noise* ² Visual impacts* ³ Impacts upon prey species* ⁴	Out Out Out Out	
Aughris Head SPA [IEC004133]	[A188] Kittiwake	Breeding	Above-water noise* ¹ Underwater noise* ² Visual impacts* ³ Impacts upon prey species* ⁴	Out Out Out Out	
Bills Rocks SPA [IEC004177]	[A014] European storm petrel	Breeding	Above-water noise* ¹ Underwater noise* ² Visual impacts* ³ Impacts upon prey species* ⁴	Out Out Out Out	
Duvillaun Islands SPA [IEC004111]	[A009] Fulmar [A014] European storm petrel	Breeding	Above-water noise* ¹ Underwater noise* ² Visual impacts* ³ Impacts upon prey species* ⁴	Out Out Out Out	
Illanmaster SPA [IEC004074]	[A014] European storm petrel	Breeding	Above-water noise* ¹ Underwater noise* ² Visual impacts* ³	Out Out Out	

SPA	Special Conservation Interest	Season	Route to Impact	Screened in/out	Justification if screened out
			Impacts upon prey species*4	Out	
West Donegal Coast [IEC004150]	[A009] Fulmar [A188] Kittiwake	Breeding	Above-water noise*1	Out	
			Underwater noise*2	Out	
			Visual impacts*3	Out	
			Impacts upon prey species*4	Out	
Inishglora and Inishkeeragh SPA [IEC004084]	[A014] European storm petrel	Breeding	Above-water noise*1	Out	
			Underwater noise*2	Out	
			Visual impacts*3	Out	
			Impacts upon prey species*4	Out	
Stags of Broad Haven SPA [IEC004072]	[A014] European storm petrel [A015] Leach's storm petrel	Breeding	Above-water noise*1	Out	
			Underwater noise*2	Out	
			Visual impacts*3	Out	
			Impacts upon prey species*4	Out	
Copeland Islands [UK9020291]	[A013] Manx Shearwater	Breeding	Above-water noise*1	Out	
			Underwater noise*2	Out	
			Visual impacts*3	Out	
			Impacts upon prey species*4	Out	
Horn Head to Fanad Head SPA [IEC004194]	[A009] Fulmar	Breeding	Above-water noise*1	Out	
			Underwater noise*2	Out	
			Visual impacts*3	Out	
			Impacts upon prey species*4	Out	
Tory Island SPA [IEC004073]	[A009] Fulmar	Breeding	Above-water noise*1	Out	
			Underwater noise*2	Out	
			Visual impacts*3	Out	
			Impacts upon prey species*4	Out	
Alisa Craig [UK9003091]	[A016] Gannet	Breeding	Above-water noise*1	Out	
			Underwater noise*2	Out	
			Visual impacts*3	Out	
			Impacts upon prey species*4	Out	
Forth Islands [UK9004171]	[A016] Gannet	Breeding	Above-water noise*1	Out	
			Underwater noise*2	Out	
			Visual impacts*3	Out	
			Impacts upon prey species*4	Out	
<i>*1 Above water noise resulting from geophysical surveys, geotechnical surveys, metocean surveys and environmental/ecological surveys. Includes: above water noise resulting from survey vessel activity for all boat-based surveys, above water noise resultant from all terrestrial and intertidal survey activity (on foot and vehicular), above water mechanical noise associated with surveys.</i>					
<i>*2 Underwater noise resulting from geophysical surveys, geotechnical surveys, metocean surveys and environmental/ecological surveys. Includes: underwater noise resulting from survey vessel activity for all boat-based surveys, underwater mechanical noise associated with surveys, underwater noise associated with geophysical surveys (In particular lower frequency noise from SBP activities. This is potentially within audible range of diving bird species and these lower frequency noises attenuate less with distance than higher frequency noise).</i>					

SPA	Special Conservation Interest	Season	Route to Impact	Screened in/out	Justification if screened out
<i>*3 Visual impacts resulting from geophysical surveys, geotechnical surveys, metocean surveys and environmental/ecological surveys. Includes visual impacts resulting from survey vessel activity for all boat-based surveys and visual impacts resultant from all terrestrial and intertidal survey activity (on foot and vehicular).</i>					
<i>*4 Indirect effects upon prey species resulting from geophysical surveys, geotechnical surveys and environmental/ecological surveys.</i>					

4.2.2. Marine Mammals (species on Annex II of the Habitats Directive)

An assessment of the potential for LSE on the marine mammal Qualifying Interests (QIs) of the sites identified in Section 4.1.2 based on the potential impacts and effects identified in Section 3.2 has been undertaken in Table 4.9. The sites have been grouped and considered together for each species; the species have also been grouped and considered together for each potential effect (because there is little difference in susceptibility between species).

Table 4.9: Assessment of the potential for LSE on marine mammals

Potential effect	Qualifying Interest	Site name	Screened in/out	Justification if screened out
Auditory injury onset	Bottlenose dolphin	See Table 4.2	In	LSE cannot be ruled out. Progress to NIS
	Harbour porpoise	See Table 4.3	In	
	Grey seal	See Table 4.4	In	
	Harbour seal	See Table 4.5	In	
TTS onset	Bottlenose dolphin	See Table 4.2	In	LSE cannot be ruled out. Progress to NIS
	Harbour porpoise	See Table 4.3	In	
	Grey seal	See Table 4.4	In	

Potential effect	Qualifying Interest	Site name	Screened in/out	Justification if screened out
	Harbour seal	See Table 4.5	In	
Disturbance	Bottlenose dolphin	See Table 4.2	In	LSE cannot be ruled out. Progress to NIS
	Harbour porpoise	See Table 4.3	In	
	Grey seal	See Table 4.4	In	
	Harbour seal	See Table 4.5	In	
Collision risk (vessels)	Bottlenose dolphin	See Table 4.2	Out	Although vessel strikes are a known cause of mortality and physical injury (with potential for subsequent infection) for large whale species, small cetaceans (including bottlenose dolphin and harbour porpoise) and seals (including grey seal and harbour seal) are agile and have been shown to avoid vessels e.g., Palka and Hammond (2001). Due to the nature of the proposed survey work, vessels will either be: • Following pre-defined linear routes at low to moderate working speeds (e.g., geophysical survey); • Stationary (e.g., geotechnical survey when sampling); or • Transiting in a predictable manner (e.g., geotechnical survey when travelling between sampling locations).
	Harbour porpoise	See Table 4.3	Out	
	Grey seal	See Table 4.4	Out	

Potential effect	Qualifying Interest	Site name	Screened in/out	Justification if screened out
	Harbour seal	See Table 4.5	Out	It will therefore be easy for individuals of these species to predict their path and avoid them, which will greatly reduce the risk of collision (see Section 3.2.4). Therefore, no LSE as a result of collision can be concluded for the Project alone.

4.2.3. Habitats (Annex I habitats of the Habitats Directive)

Table 4.10 considers the potential for LSE on the Annex I habitat QIs of those sites with which there is potential for connectivity, based on potential impacts and effects identified in Section 3.3.

Table 4.10: LSE screening for Annex I habitats

Potential effect	Qualifying Interest	Site	Screened in/out	Justification if screened out
Disturbance from increased SSC and smothering resultant from geotechnical sampling, Metocean survey equipment and environmental surveys	[1160] Large shallow inlets and bays; [1170] Reefs,	Hook Head SAC [IE0000764]	Out	The majority of the sediment present within the MUL Application Area is coarse in nature, comprising 'deep circalittoral sand' and 'deep circalittoral coarse sediment' (EMODnet, 2023). Coarse sediment will settle back to the seabed faster (almost immediately) due to their weight, and there will be no prolonged elevation of SSC in the water column beyond close proximity of the works. Due to the relative lack of finer sediment fractions within the sediment, any resuspended fine material would be imperceptible against background levels (within the SAC) which occur naturally within a dynamic marine environment with strong hydrodynamic movements. The large shallow inlets and bays are located in the northern extent of the SAC, adjacent to land and therefore there is no route to impact due to distance from the proposed SI works and therefore are not considered further. The reef feature is approximately 3 km from the south western point of the SAC where the habitat comprises deep coarse sediment (NPWS, 2025). Given the sediment characteristics, the temporary and highly localised nature of the SI works and the limited spatial scale of potential effect, there is no potential for LSE on large shallow inlets and bays, and reefs as a result of increased SSC and smothering arising from the SI works within the Tonn Nua MUL Application Area, alone.

4.2.4. Diadromous Fish (species on Annex II of the Habitats Directive)

Table 4.11 considers the potential for LSE on the Annex II diadromous fish QIs of those sites with which there is potential for connectivity (based on potential impacts and effects identified in Section 3.4).

Table 4.11: LSE screening for Annex II diadromous fish

Potential effect	Qualifying Interest	Site	Screened in/out	Justification if screened out
Injury and disturbance from underwater noise resultant from geophysical surveys	[1103] Twaite shad	Blackwater River (Cork/Waterford) SAC [IE002170] River Barrow and River Nore SAC [IE002162] Slaney River Valley SAC [IE000781] Lower River Suir SAC [IE002137]	out	Twaite shad are a member of the herring family (<i>Clupeidae</i>) and are considered to be hearing specialists due to the coupling of the ear to the swim bladder, suggested to have a hearing range between 10 Hz and 180 kHz (Mann <i>et al.</i>, 2001) with geophysical survey methods considered within the perceptible range (Popper <i>et al.</i>, 2014). The risk of injury or disturbance however is negligible as shad are widely dispersed spending most of their life at sea, return to freshwater to spawn (typically in April and June (JNCC, 2025a)), congregating near mouths of estuaries (Whitehead, 1985; JNCC, 2025a) which are outside the MUL Application Area. They are also highly mobile and will move away from the impact before injury can occur due to other noise sources associated with the work such as vessel noise. Each proposed SI campaign will be localised and of relatively short duration. As such, interaction is unlikely and any behavioural response to noise will not affect SAC populations as none of the work will affect key areas for their life cycle. Therefore, there is no potential for LSE on the Twaite shad populations of Blackwater River (Cork/Waterford) SAC, River Barrow and River Nore SAC, Slaney River Valley SAC, and Lower River Suir SAC as a result of increases in underwater noise arising from the SI works within the Tonn Nua MUL Application Area, alone.
	[1106] Atlantic salmon	Blackwater River (Cork/Waterford) SAC [IE002170]	out	These Annex II diadromous fish QIs are considered to have limited sensitivity to underwater noise.

Potential effect	Qualifying Interest	Site	Screened in/out	Justification if screened out
	[1029] FWPM [1095] Sea lamprey	River Barrow and River Nore SAC [IE002162] Slaney River Valley SAC [IE000781] Lower River Suir SAC [IE002137]		Atlantic salmon are categorised as Group 2 hearing species (Popper <i>et al.</i>, 2014), meaning they are susceptible to barotrauma and can detect sound pressure in addition to particle motion. Although Atlantic salmon can detect sound pressure noise, it is considered they are not particularly sensitive (Hawkins and Johnstone, 1978). They are also highly mobile and will move away from the impact before injury can occur due to other noise sources associated with the work such as vessel noise. Each proposed SI campaign will be localised and of relatively short duration. As such, interaction is unlikely and any behavioural response to noise will not affect SAC populations as none of the work will affect key areas for their life cycle. Therefore, there is no potential for LSE on the Atlantic salmon populations of Blackwater River (Cork/Waterford) SAC, River Barrow and River Nore SAC, Slaney River Valley SAC, and Lower River Suir SAC as a result of increased underwater noise arising from the SI works within the Tonn Nua MUL Application Area, alone. As no LSE is concluded for the Atlantic salmon population, no LSE can also be concluded for FWPM as there will be no impact on Atlantic Salmon populations. Sea lamprey are considered to be relatively insensitive to noise, categorised as Group 1 hearing species (Popper <i>et al.</i>, 2014), however they are able to detect low tone sound, eliciting a mild behavioural response (increase in swimming and decrease in resting behaviour) (Mickle <i>et al.</i>, 2018). Given the localised and short term nature of the proposed SI works, any behavioural effects will be short term and will not affect the migratory potential of lamprey. In addition any behavioural

Potential effect	Qualifying Interest	Site	Screened in/out	Justification if screened out
				response to noise will not affect SAC populations as none of the work will affect key areas for their life cycle. Therefore, there is no potential for LSE on the sea lamprey population of Blackwater River (Cork/Waterford) SAC, River Barrow and River Nore SAC, Slaney River Valley SAC, and Lower River Suir SAC as a result of increased underwater noise arising from the SI works within the Tonn Nua MUL Application Area, alone.
	[1096] River lamprey	Blackwater River (Cork/Waterford) SAC [IE002170] River Barrow and River Nore SAC [IE002162] Slaney River Valley SAC [IE000781] Lower River Suir SAC [IE002137]	out	River lamprey are typically only found in rivers or estuaries and do not undertake lengthy at sea migrations or movements (JNCC, 2025b). Therefore, due to the distance from the SACs to the proposed SI works, it is considered there is no connectivity and thus no potential for LSE.
Disturbance from increased SSC and smothering from geotechnical survey sampling, metocean survey equipment and environmental surveys (benthic sampling)	[1103] Twaite shad [1106] Atlantic salmon [1029] FWPM	Blackwater River (Cork/Waterford) SAC [IE002170] River Barrow and River Nore SAC [IE002162] Slaney River Valley SAC [IE000781]	out	The majority of the sediment present within the MUL Application Area is coarse in nature, comprising 'deep circalittoral sand' and 'deep circalittoral coarse sediment' (EMODnet, 2023). Coarse sediment will settle back to the seabed faster (almost immediately), and there will be no prolonged elevation of SSC in the water column beyond close proximity of the works. Due to the relative lack of finer sediment fractions within the sediment, any resuspended fine material would be imperceptible against background

Potential effect	Qualifying Interest	Site	Screened in/out	Justification if screened out
	[1095] Sea lamprey	Lower River Suir SAC [IE002137]		levels which occur naturally within a dynamic marine environment with strong hydrodynamic movements. Diadromous fish (including Atlantic salmon and Twaite shad) are mobile receptors and transient (i.e., passing through the MUL Application area). Sea lamprey are found in variable water depths (Maitland, 2003) due to their parasitic nature when at sea therefore distribution is largely dictated by the distribution of host species These diadromous species are highly tolerant of increases in SSC, migrating through highly turbid estuarine and coastal environments as part of their normal movement patterns. The low SSC levels and limited extents of the increases in SSC which could be produced by the proposed SI works are insufficient to lead to perceptible disturbance which could lead to significant effects. Therefore, there is no potential for LSE on the Twaite shad, Atlantic salmon, and sea lamprey populations of Blackwater River (Cork/Waterford) SAC, River Barrow and River Nore SAC, Slaney River Valley SAC, and Lower River Suir SAC as a result of disturbance from increased SSC and smothering, arising from the SI works within the Tonn Nua MUL Application Area, alone. As no LSE is concluded for the Atlantic salmon population, no LSE can also be concluded for FWPM as there will be no impact on Atlantic Salmon populations.
	[1096]	Blackwater River (Cork/Waterford) SAC [IE002170]	out	River lamprey are typically only found in rivers or estuaries and do not undertake lengthy at sea migrations or movements (JNCC, 2025b).

Potential effect	Qualifying Interest	Site	Screened in/out	Justification if screened out
	River lamprey	River Barrow and River Nore SAC [IE002162] Slaney River Valley SAC [IE000781] Lower River Suir SAC [IE002137]		Therefore, due to the distance from the SACs to the proposed SI works, it is considered there is no connectivity and thus no potential for LSE.

4.3. In-combination Assessment

4.3.1. Marine Ornithology (species protected by the Birds Directive)

Table 4-12 lists all plans and projects which have been considered in screening with regards to potential in-combination effects upon SCIs from SPAs.

Whilst the known foraging ranges of some of the species are known to go beyond 100 km, it is considered that there is no LSE in-combination with projects greater than 100 km distant due to the large distances between this project and those identified.

The following table considers which of those other plans and projects have potential to act in-combination with the proposed works with regards to each designated site assessed, and whether that in-combination effect has the potential to lead to LSE.

Table 4-12: Plans and projects that have potential to act in-combination with the proposed works

Project no.	Application Licence no.	Applicant	Description	Location (km from application site)	Project Scope	Potential for in-combination impact
1	MUL240036	EirGrid	The maritime usage proposed is for marine site investigation (SI) works to inform the engineering design and environmental assessments for two offshore substations (OSS) in the Tonn Nua Area A (as identified in the South Coast Designated Maritime Area Plan), potential offshore transmission cable corridors, approaches to seven potential landfall zones, and seven landfall zones	0	Site investigation work for offshore renewable energy project which includes the following surveys; geophysical, geotechnical, metocean and species-specific environmental surveys.	There is potential for in-combination impacts upon the following SPAs: Seas off Wexford SPA, Mid-Waterford Coast SPA, Helvick Head to Ballyquin SPA
2	FS007048	Energia	Site Investigation works to inform on possible construction of a windfarm off the Wexford coast	60.41	All of these projects have the same or very similar scope. Site investigation work for offshore renewable energy projects include the following surveys; geophysical, geotechnical, metocean and species-specific environmental surveys. These are conducted to inform AAs and	All of these projects include elements with similar underwater noise, marine vessel disturbance and benthic sampling potential impacts.
3	FS006982	Energia	Application for Site Investigation Licence for Windfarm off Helvick Head; Geophysical, Geotechnical, Archaeological, Ecological, Oceanographic and Meteorological investigations to determine optimum design for windfarm, cabling and associated structures	0	Site investigation work for offshore renewable energy projects include the following surveys; geophysical, geotechnical, metocean and species-specific environmental surveys. These are conducted to inform AAs and	Due to the lack of impact pathway to identified features there is

Project no.	Application Licence no.	Applicant	Description	Location (km from application site)	Project Scope	Potential for in-combination impact
4	FS007621	Péarla Offshore Wind Limited	Site Investigations for Export Cable Corridor For A Proposed Offshore Wind Project	0	environmental impact assessments.	considered to be no potential for in-combination impacts with these projects. There is also no potential for temporal overlap.
5	FS007318	RWE Renewables Ireland	Site Investigations for proposed East Celtic Offshore Wind Park, off Counties Wexford and Waterford	0		
6	FS007436	Voyage Offshore Array Limited	Site Investigations for proposed Offshore Wind Farm, off Counties Waterford and Wexford	0		
7	LIC230013	Port of Waterford Company	Proposed geotechnical investigation required to support the design of a proposed 250m Offshore Renewable Energy (ORE) capable quay extension in the River Suir at the Port of Waterford, Belview, Co. Kilkenny	31.41		
8	FS007098/ MUL240042	Port of Cork	Site Investigations at Dognose Bank Co Cork	58.44		
9	FS007575	Kinsale Offshore Wind	Limited Site Investigations for Export Cable Corridor for proposed Offshore Wind Farm, off County Cork	41.48		
10	FS007376/ MUL240048	Uisce Éireann	ADCP Surveys at Cork Harbour	63.04		

Project no.	Application Licence no.	Applicant	Description	Location (km from application site)	Project Scope	Potential for in-combination impact
11	FS006916	EirGrid	Celtic Interconnector Electricity Cable, Co. Cork	21.22		
12	FS006722	Eirgrid PLC	Ballinwilling Strand - Foreshore Licence application for geophysical marine survey works	20.26		
13	FS007445	Blackwater Offshore Wind	Marine Surveys off the coast of Wexford	17.63		
14	LIC240006	Department of the Environment, Climate & Communications	Deployment of the Marine Institute's R.V. to undertake a geophysical survey in the South Coast DMAP to inform future offshore renewable energy development	0		
15	FS007354	Kinsale Offshore Wind Ltd	Site Investigations for the proposed Kinsale Project offshore wind farm, off County Cork	64.99		
16	LIC230017	Microsoft Ireland Operations Ltd	Geophysical survey and site investigations for a proposed subsea fibre optic cable having a landfall in Kilmore Quay, County Wexford and to evaluate options for the route transversing Ballyteige Bay, across the Celtic Sea and St Georges Channel to Pembrokeshire, Wales	14.23		

Project no.	Application Licence no.	Applicant	Description	Location (km from application site)	Project Scope	Potential for in-combination impact
17	FS007351	GDG Ltd	GDG Ltd Deployment of 3 ADCP off the coast of Wicklow and Deployment of 1 ADCP off the coast of Wexford, Foreshore licence application for Four ADCP Trawl Resistant Bottom Mount (TRBM) units to be deployed on the seabed in the Irish Sea for a duration of 35 days to collect data on current speed and direction at each location.	82.93		
18	MUL240035	Gas Networks Ireland	Marine survey within Cork Harbour to provide high-quality baseline data that can contribute to a reliable basis for site selection for the Strategic Gas Emergency Reserve. The surveys require the deployment and retrieval of Static Acoustic Monitoring devices and up to two ADCP within the study area.	55.27		
19	MUL230015	University College Cork	To conduct a strategic modelling study of water currents and bathymetry along a section of the South Cork Coast.	57.24		
20	MUL240039	University College Cork	To conduct systematic, non- invasive seabed monitoring surveys at the	67.66		

Project no.	Application Licence no.	Applicant	Description	Location (km from application site)	Project Scope	Potential for in-combination impact
			Moirs Mounds area and additional geophysical and sediment sampling surveys at the localities of three shipwreck sites (namely, SS Miami, HMS Alyssum, and U-58)			
21	MUL240028	Uisce Éireann	To co-deploy passive acoustic monitoring devices ("acoustic receivers") in the western Irish Sea and southern Celtic Sea on existing Commissioners of Irish Lights (CIL) infrastructure to identify the broad scale movements of electronically tagged elasmobranchs (sharks, skates and rays).	85.92		
22	FS007219	Iarnród Éireann	Rosslare Europort Maintenance Dredging	57.54	All of these projects have the same or very similar scope. Dredging activities are undertaken to maintain harbours and waterways to ensure the safety of ports and shipping.	As these activities are being conducted on a localised scale, and lack of impact pathway, they are highly unlikely to act in-combination with the proposed development.
23	FS007126	Port of Cork	Maintenance Dredging	58.37		
24	FS007037	Cork County Council	Ballycotton Harbour Dredging	32.91		
25	FS007482	Department of Defence	Dredging at Haulbowline Naval Base, Co. Cork, The proposed work involves: Maintenance dredging of the Naval Basin and Approach Channel, Capital dredging of the Graving Dock. The objective of the project is to	61.44		

Project no.	Application Licence no.	Applicant	Description	Location (km from application site)	Project Scope	Potential for in-combination impact
			dredge the approach channel, naval basin and graving dock to -5.5m CD to ensure that the naval fleet can safely navigate.			
26	MUL230029	Department of Defence	The proposed maritime usage is for maintenance dredging of the entrance channel and the southern part of the Graving Dock. Maintenance dredging of the basin and entrance channel takes place approximately every 5 to 6 years to ensure the safe navigation of the naval fleet in the Haulbowline Naval Base, with the last Maintenance dredging campaign performed in 2017.	61.06		
27	MUL240003	Wexford County Council	Marine environmental surveys for the purposes of site investigation to establish baseline oceanographic and environmental data for use in assessments in relation to the potential dredging of these locations. Wexford County Council (the authority for the port of New Ross) propose to undertake a number of surveys in this section of estuary.	29.99		

Project no.	Application Licence no.	Applicant	Description	Location (km from application site)	Project Scope	Potential for in-combination impact
28	LIC230025	Port of Waterford Company	The proposed maritime usage is for maintenance dredging of the entrance channel and the southern part of the Graving Dock. Maintenance dredging of the basin and entrance channel takes place approximately every 5 to 6 years to ensure the safe navigation of the naval fleet in the Haulbowline Naval Base, with the last Maintenance dredging campaign performed in 2017.	18.48		
29	FS007064	Wexford County Council	Wexford County Council Fethard Slipway Construction	22.74	Detailed descriptions of these projects are not available; however they are similar in terms of relating to coastal construction.	As these activities are being conducted on a localised scale, and lack of impact pathway, they are highly unlikely to act in-combination with the proposed development.
30	FS006860	Pierce Flynn	Ballycotton Coastal Protection, Foreshore application for the construction of a rock armour revetment	37.86		
31	FS007552/ MUL240047	RNLI (Royal National Lifeboat Institution)	Site Investigation Works Courtmacsherry, Site investigation works to inform the design of a new RNLI jetty and berth and to inform disposal options for dredged sediment material.	92.13		

Project no.	Application Licence no.	Applicant	Description	Location (km from application site)	Project Scope	Potential for in-combination impact
32	FS005859	Cork City Council	Blackrock Castle, Foreshore lease application for the construction of amenity and car parking facility with public walkway	71.96		
33	FS007479	Waterford City and County Council	Waterford City Marina, Foreshore lease application for the existing Waterford City Marina to be removed and to reinstate the Waterford City Marina by reconfiguring its design to provide 17 no. jetty units for use by the local community and marine tourism.	39.04		
34	FS006996	Waterford City and County Council	Waterford Sustainable Transport Bridge, Foreshore lease application for construction of sustainable transport bridge, associated vessel collision protection system and public plaza on the Waterford south quays at the bridge landing point.	38.84		
35	FS007224	Iarnród Éireann	Rosslare Europort Berth 3 Extension, Foreshore lease application for an extension to the existing Berth 3 at Rosslare Europort, the replacement of the existing linkspan at Berth 3 with a new linkspan and support structures,	57.55		

Project no.	Application Licence no.	Applicant	Description	Location (km from application site)	Project Scope	Potential for in-combination impact
			the demolition and removal of the existing Berth 4 linkspan and associated works.			
36	FS007038	Wexford County Council	Lady's Island Pipeline, Foreshore lease application for the installation of 2 no. pipes and a flow control structure at boundary between Lady's Island Lake and the sea.	42.89		
37	FS007222	Iarnród Éireann	Iarnród Éireann - Rosslare Europort Site Investigation	57.68		
38	FS007265	Iarnród Éireann	Foreshore licence for a Rosslare Europort Benthic Survey	60.28		
39	FS007361	Amazon Ireland Ltd. MCS	Beaufort Sub-sea Fibre Optic Cable System, the installation of the Beaufort sub-sea fibre optic cable system from a landfall in Kilmore Quay, Wexford to landfalls in South Wales and Cornwall, providing high speed strategic international telecommunications connectivity from Wexford on the south east coast of Ireland to the United Kingdom (UK). Works will include the	31.05		

Project no.	Application Licence no.	Applicant	Description	Location (km from application site)	Project Scope	Potential for in-combination impact
			decommissioning of sections of the obsolete cable.			
40	FS005743	Irish Water Dungarvan Wastewater Treatment Plant	Foreshore Licence application for an outfall pipe in connection with Dungarvan wastewater treatment plant	13.25	Detailed descriptions of these projects are not available; however they are similar in terms of relating to coastal waterworks and drainage works.	As these activities are being conducted on a localised scale, and lack of impact pathway, they are highly unlikely to act in-combination with the proposed development.
41	FS006572	Irish Water	Installation of a water main across the River Brickey	21.33		
42	FS006833	Irish Water	Ballycotton - Foreshore Licence application for ground investigation works and sampling	36.75		
43	FS006985	Irish Water	Irish Water Storm Outfall Pipe at Gibbon's Quay	77.48		
44	FS007046	Irish Water	Site Investigation - a geotechnical investigation to inform the proposed extension of a storm water outfall at Gibbon's Quay	77.91		
45	FS007027	Irish Water	Whitegate to Aghada Construction of Waste Water Collection and Treatment System	56.56		
46	T05-392 T05-231	PKC Oysters Ltd	Aquaculture Licences to cultivate Pacific Oysters using Bags and Trestles and Foreshore Licences for	72.71 73.49	Detailed descriptions of these projects are not available; however they are	As these activities are being conducted on a localised scale, and

Project no.	Application Licence no.	Applicant	Description	Location (km from application site)	Project Scope	Potential for in-combination impact
	T05-081		the areas of foreshore to be used for these aquaculture activities	72.26	similar in terms of relating to aquaculture.	lack of impact pathway, they are highly unlikely to act in-combination with the proposed development.
47	T05-530A	Kinsale Oysterhaven Seafood Ltd	Aquaculture Licences to cultivate Pacific Oysters using Bags and Trestles and Foreshore Licences for the areas of foreshore to be used for these aquaculture activities	79.97		
	T05-530B			80.37		
	T05-530C			79.68		

4.3.2. Marine Mammals (species on Annex II of the Habitats Directive)

Appendix A lists the plans and projects off the south-east coast of Ireland (Counties Wicklow, Wexford, Kilkenny, Waterford, Cork have been included) that may have similar activities occurring over a timescale similar to those considered as part of the project alone assessment. These plans and projects have been considered when assessing the potential for in combination effects on marine mammal QIs (this section).

Collision risk (vessels) has been assessed here. In combination effects for the other potential effects (auditory injury onset, TTS onset, disturbance), which have been progressed to the NIS, have been assessed in the NIS.

4.3.2.1. Collision risk (vessels)

Although vessel strikes are a known cause of mortality and physical injury (with potential for subsequent infection) for large whale species, small cetaceans (including bottlenose dolphin and harbour porpoise) and seals (including grey seal and harbour seal) are agile and have been shown to avoid vessels e.g., Palka and Hammond (2001).

Due to the nature of the proposed survey work within the Tonn Nua MUL Application Area, and at the plans and projects listed in Table A.1, vessels will either be:

- Following pre-defined linear routes at low to moderate working speeds (e.g., geophysical survey);
- Stationary (e.g., geotechnical survey when sampling); or
- Transiting in a predictable manner (e.g., geotechnical survey when travelling between sampling locations).

It will therefore be easy for individuals of these species to predict their path and avoid them, which will greatly reduce the risk of collision (see Section 3.2.4).

Therefore, no LSE as a result of collision can be concluded for the Project in combination with other plans and projects.

4.3.3. Habitats (Annex I of the Habitats Directive)

4.3.3.2. Increases in SSC and Smothering

Appendix A lists the plans and projects off the south-east coast of Ireland (Counties Wicklow, Wexford, Kilkenny, Waterford, Cork have been included) that may have similar activities occurring over a timescale similar to those considered as part of the project alone assessment. These plans and projects have been considered at screening stage with regard to potential for in combination effects upon Annex I habitat QIs of relevant SACs. In-combination assessments are required for any QIs which have been screened out for Project effects alone and where connectivity exists. The following section considers which of those other plans and projects have potential to act in combination with the proposed works in regard to each designated site assessed, and whether that in-combination effect would mean that the potential for LSE cannot be ruled out.

Hook Head SAC

The projects listed in Table 4.13 are considered to have potential to lead to effects which may overlap spatially and temporally with effects on the Hook Head SAC resulting from the proposed site investigation works.

All other plans and projects are considered too distant or are located such that they have no potential to act in combination, or consist of activities where in-combination effects are not possible. As such, there is no potential for LSE to arise from in-combination effects from any other plan or project.

Table 4.13: In-combination plans and projects considered for Annex I habitats

Plan/project	Reference Number	Description
EirGrid - Tonn Nua Area A	MUL240036	Site investigation work for offshore renewable energy project which includes the following surveys; geophysical, geotechnical, metocean and species-specific environmental surveys.
Péarla Offshore Wind Limited	FS007621	Site Investigations For Export Cable Corridor For A Proposed Offshore Wind Project
RWE Renewables Ireland East Celtic Ltd (Offshore Wind Park)	FS007318	Site Investigations for a proposed East Celtic Offshore Wind Park
Voyage Offshore Array Limited	FS007436	Site Investigations for a proposed Offshore Wind Farm
Greenlink Interconnector Limited - Boyce's Bay and Baginbun Beach, Hook Head Peninsula, County Wexford	FS006582	Surveys
ESB Wind Development Ltd - Helvick Head	FS007136	Site investigations
Energia Offshore Wind Ltd - Helvick Head	FS006982	Geophysical, geotechnical, archaeological, ecological, oceanographic and meteorological surveys

It is considered that these projects also have the potential to lead to increases in SSC in the vicinity of the SAC due to their potential interaction with the seabed in this area, however any potential SSC arising from any of these plans or projects, along with the that from the proposed SI work, would be small due to the equipment and methodologies used. Furthermore, regional data (INFOMAR, 2019; EMODnet, 2023) suggests the sediment in the area is coarse gravels, shell materials and sands (with limited fines) exposed regularly to strong hydrodynamic movements as such no elevation in SSC beyond close proximity of the works from any of the above projects is predicted as any such sediment mobilised by the work will settle almost immediately. Therefore, considering the temporary and highly localised nature of the work, and the limited magnitude and spatial scale of the effect, it is considered that there is no potential for in-combination LSE to arise as a result of an increase in SSC from the proposed SI works on reefs and large shallow inlets and bays, within the Tonn Nua MUL Application area in-combination with other plans and projects.

4.3.4. Diadromous Fish (species on Annex II of the Habitats Directive)

Given the extremely localised and short duration of the proposed site investigation work, and the mobile nature of the receptors, it is considered that there is negligible potential for in-combination effects on the Annex II diadromous fish QIs of the relevant sites. Where routes to impact have been identified, and under a precautionary approach where the potential for LSE could not be ruled out, it is considered that any potential effects are negligible in scale, therefore there is no potential for in-combination LSE to arise as a result of increases in underwater noise and increases in SSC and smothering, on the diadromous fish features, arising within the MUL Application Area in-combination with any other plan or project (see Appendix A for details of the plans/projects considered).

5. Screening Conclusion

5.1. Marine Ornithology (species protected by the Birds Directive)

For the project alone or in-combination with other plans or projects, LSE as a result of the proposed site investigation work (without the use of mitigation measures) could not be ruled out for the Natura 2000 site/effect/SCI combinations shown in Table 5.1 and these are therefore progressed to Stage 2.

Table 5.1: SPAs where LSE could not be ruled out

Site	Effect	Special Conservation Interest
Seas off Wexford SPA [IE0004237]	Disturbance and displacement (by above-water noise and visual impacts)	[A009] Fulmar (breeding) [A013] Manx shearwater (breeding) [A016] Gannet (breeding) [A176] Mediterranean gull (breeding) [A179] Black-headed gull (breeding) [A183] Lesser black-backed gull (breeding) [A184] Herring gull (breeding) [A188] Kittiwake (breeding) [A191] Sandwich tern (breeding) [A192] Roseate tern (breeding) [A193] Common tern (breeding) [A194] Arctic tern (breeding) [A195] Little tern (breeding)
	Disturbance and displacement (by above-water noise, underwater noise and visual impacts)	[A001] Red-throated diver (non-breeding) [A017] Cormorant (resident) [A018] Shag (breeding) [A065] Common scoter (non-breeding) [A199] Guillemot (breeding) [A200] Razorbill (breeding) [A204] Puffin (breeding)
Mid-Waterford Coast SPA [IE0004193]	Disturbance and displacement (by above-water noise and visual impacts)	[A184] Herring gull (breeding)
	Disturbance and displacement (by above water noise, under water noise and visual impacts)	[A017] Cormorant (breeding)
Helvick Head to Ballyquin SPA [IE0004192]	Disturbance and displacement (by above water noise and visual impacts)	[A188] Kittiwake (breeding) [A184] Herring gull (breeding)

Site	Effect	Special Conservation Interest
	Disturbance and displacement (by above water noise, under water noise and visual impacts)	[A017] Cormorant (breeding)

For all remaining Natura 2000 site/effect/SCI combinations, no LSE, either alone or in combination with other plans or projects, was concluded.

5.2. Marine Mammals (species on Annex II of the Habitats Directive)

For the project alone or in-combination with other plans or projects, LSE as a result of the proposed site investigation work (without the use of mitigation measures) could not be ruled out for the Natura 2000 site/effect/QI combinations shown in Table 5.2 and these are therefore progressed to Stage 2. For all remaining Natura 2000 site/effect/QI combinations, no LSE, either alone or in combination with other plans or projects, was concluded.

Table 5.2: SACs designated for marine mammals where LSE could not be ruled out

Site	Effect	Special Conservation Interest
Hook Head SAC [IE0000764]	Auditory Injury	[1349] Bottlenose dolphin (<i>Tursiops truncatus</i>)
	TTS	[1351] Harbour porpoise (<i>Phocoena phocoena</i>)
	Disturbance	
Cardigan Bay SAC [UK0012712]	Auditory Injury	[1349] Bottlenose dolphin (<i>Tursiops truncatus</i>)
	TTS	[1364] Grey seal (<i>Halichoerus grypus</i>)
	Disturbance	
Lleyn Peninsula and the Sarnau [UK0013117]	Auditory Injury	[1349] Bottlenose dolphin (<i>Tursiops truncatus</i>)
	TTS	[1364] Grey seal (<i>Halichoerus grypus</i>)
	Disturbance	
Mers Celtiques - Talus du golfe de Gascogne [FR5302015]	Auditory Injury	[1349] Bottlenose dolphin (<i>Tursiops truncatus</i>)
	TTS	[1351] Harbour porpoise (<i>Phocoena phocoena</i>)
	Disturbance	
Nord Bretagne DH [FR2502022]	Auditory Injury	[1349] Bottlenose dolphin (<i>Tursiops truncatus</i>)
	TTS	[1351] Harbour porpoise (<i>Phocoena phocoena</i>)
	Disturbance	
Abers - Cote des legends [FR5300017]	Auditory Injury	[1349] Bottlenose dolphin (<i>Tursiops truncatus</i>)
	TTS	[1351] Harbour porpoise (<i>Phocoena phocoena</i>)
	Disturbance	[1364] Grey seal (<i>Halichoerus grypus</i>)
Ouessant-Molene [FR5300018]	Auditory Injury	[1349] Bottlenose dolphin (<i>Tursiops truncatus</i>)
	TTS	[1351] Harbour porpoise (<i>Phocoena phocoena</i>)
	Disturbance	[1364] Grey seal (<i>Halichoerus grypus</i>)
Cote de Granit Rose-Sept Iles [FR5300009]	Auditory Injury	[1349] Bottlenose dolphin (<i>Tursiops truncatus</i>)
	TTS	[1351] Harbour porpoise (<i>Phocoena phocoena</i>)
	Disturbance	[1364] Grey seal (<i>Halichoerus grypus</i>)

Site	Effect	Special Conservation Interest
Recifs du talus du golfe de Gascogne [FR5302016]	Auditory Injury	[1349] Bottlenose dolphin (<i>Tursiops truncatus</i>) [1351] Harbour porpoise (<i>Phocoena phocoena</i>)
	TTS	
	Disturbance	
Tregor Goelo [FR5300010]	Auditory Injury	[1349] Bottlenose dolphin (<i>Tursiops truncatus</i>) [1351] Harbour porpoise (<i>Phocoena phocoena</i>)
	TTS	
	Disturbance	
Cotes de Crozon [FR5302006]	Auditory Injury	[1349] Bottlenose dolphin (<i>Tursiops truncatus</i>)
	TTS	
	Disturbance	
Chaussee de Sein [FR5302007]	Auditory Injury	[1349] Bottlenose dolphin (<i>Tursiops truncatus</i>) [1351] Harbour porpoise (<i>Phocoena phocoena</i>)
	TTS	
	Disturbance	
Recifs et landes de la Hague [FR2500084]	Auditory Injury	[1349] Bottlenose dolphin (<i>Tursiops truncatus</i>)
	TTS	
	Disturbance	
Anse de Vauville [FR2502019]	Auditory Injury	[1349] Bottlenose dolphin (<i>Tursiops truncatus</i>)
	TTS	
	Disturbance	
Cap d'Erquy-Cap Frehel [FR5300011]	Auditory Injury	[1349] Bottlenose dolphin (<i>Tursiops truncatus</i>) [1351] Harbour porpoise (<i>Phocoena phocoena</i>)
	TTS	
	Disturbance	
Banc et recifs de Surtainville [FR2502018]	Auditory Injury	[1349] Bottlenose dolphin (<i>Tursiops truncatus</i>)
	TTS	
	Disturbance	
Chausey [FR2500079]	Auditory Injury	[1349] Bottlenose dolphin (<i>Tursiops truncatus</i>)
	TTS	
	Disturbance	
Recifs et marais arriere-littoraux du Cap Levi a la Pointe de Saire [FR2500085]	Auditory Injury	[1349] Bottlenose dolphin (<i>Tursiops truncatus</i>)
	TTS	
	Disturbance	
Cote de Cancale a Parame [FR5300052]	Auditory Injury	[1349] Bottlenose dolphin (<i>Tursiops truncatus</i>)
	TTS	
	Disturbance	
Baie du Mont Saint-Michel [FR2500077]	Auditory Injury	[1349] Bottlenose dolphin (<i>Tursiops truncatus</i>)
	TTS	
	Disturbance	

Site	Effect	Special Conservation Interest
Baie de Seine occidentale [FR2502020]	Auditory Injury	[1349] Bottlenose dolphin (<i>Tursiops truncatus</i>)
	TTS	
	Disturbance	
Baie de Seine orientale [FR2502021]	Auditory Injury	[1349] Bottlenose dolphin (<i>Tursiops truncatus</i>)
	TTS	
	Disturbance	
Blackwater Bank [IE002953]	Auditory Injury	[1351] Harbour porpoise (<i>Phocoena phocoena</i>)
	TTS	
	Disturbance	
West Wales Marine / Gorllewin Cymru Forol [UK0030397]	Auditory Injury	[1351] Harbour porpoise (<i>Phocoena phocoena</i>)
	TTS	
	Disturbance	
Bristol Channel Approaches / Dynesfeydd Môr Hafren [UK0030396]	Auditory Injury	[1351] Harbour porpoise (<i>Phocoena phocoena</i>)
	TTS	
	Disturbance	
Roaringwater Bay and Islands [IE0000101]	Auditory Injury	[1351] Harbour porpoise (<i>Phocoena phocoena</i>)
	TTS	[1364] Grey seal (<i>Halichoerus grypus</i>)
	Disturbance	
Rockabill to Dalkey Island [IE0003000]	Auditory Injury	[1351] Harbour porpoise (<i>Phocoena phocoena</i>)
	TTS	
	Disturbance	
North Anglesey Marine / Gogledd Môn Forol [UK0030398]	Auditory Injury	[1351] Harbour porpoise (<i>Phocoena phocoena</i>)
	TTS	
	Disturbance	
Blasket Islands [IE0002172]	Auditory Injury	[1351] Harbour porpoise (<i>Phocoena phocoena</i>)
	TTS	[1364] Grey seal (<i>Halichoerus grypus</i>)
	Disturbance	
North Channel [UK0030399]	Auditory Injury	[1351] Harbour porpoise (<i>Phocoena phocoena</i>)
	TTS	
	Disturbance	
Belgica Mound Province [IE002327]	Auditory Injury	[1351] Harbour porpoise (<i>Phocoena phocoena</i>)
	TTS	
	Disturbance	
Baie de Morlaix [FR5300015]	Auditory Injury	[1364] Grey seal (<i>Halichoerus grypus</i>)
	TTS	

Site	Effect	Special Conservation Interest
	Disturbance	
West Connacht Coast [IE002998]	Auditory Injury	[1351] Harbour porpoise (<i>Phocoena phocoena</i>)
	TTS	
	Disturbance	
Bunduff Lough and Machair/Trawalua/Mu Ilaghmore [IE000625]	Auditory Injury	[1351] Harbour porpoise (<i>Phocoena phocoena</i>)
	TTS	
	Disturbance	
Carnsore Point [IE002269]	Auditory Injury	[1351] Harbour porpoise (<i>Phocoena phocoena</i>)
	TTS	
	Disturbance	
Saltee Islands [IE0000707]	Auditory Injury	[1364] Grey seal (<i>Halichoerus grypus</i>)
	TTS	
	Disturbance	
Pembrokeshire Marine/ Sir Benfro Forol [UK0013116]	Auditory Injury	[1364] Grey seal (<i>Halichoerus grypus</i>)
	TTS	
	Disturbance	
Lundy [UK0013114]	Auditory Injury	[1364] Grey seal (<i>Halichoerus grypus</i>)
	TTS	
	Disturbance	
Lambay Island [IE0000204]	Auditory Injury	[1364] Grey seal (<i>Halichoerus grypus</i>)
	TTS	[1365] Harbour seal (<i>Phoca vitulina</i>)
	Disturbance	
Isles of Scilly Complex [UK0013694]	Auditory Injury	[1364] Grey seal (<i>Halichoerus grypus</i>)
	TTS	
	Disturbance	
Slyne Head Islands [IE0000328]	Auditory Injury	[1364] Grey seal (<i>Halichoerus grypus</i>)
	TTS	
	Disturbance	
Inishbofin and Inishshark [IE0000278]	Auditory Injury	[1364] Grey seal (<i>Halichoerus grypus</i>)
	TTS	
	Disturbance	
Slaney River Valley [IE0000781]	Auditory Injury	[1365] Harbour seal (<i>Phoca vitulina</i>)
	TTS	
	Disturbance	
Kenmare River [IE0002158]	Auditory Injury	[1365] Harbour seal (<i>Phoca vitulina</i>)
	TTS	
	Disturbance	

Site	Effect	Special Conservation Interest
Glengarriff Harbour and Woodland [IE0000090]	Auditory Injury	[1365] Harbour seal (<i>Phoca vitulina</i>)
	TTS	
	Disturbance	
Murlough [UK0016612]	Auditory Injury	[1365] Harbour seal (<i>Phoca vitulina</i>)
	TTS	
	Disturbance	

5.3. Habitats (Annex I of the Habitats Directive)

No LSE as a result of the potential effects (habitat disturbance and loss, and increased SSC and smothering), can be concluded for all Annex I habitat QIs, of all SACs, both alone and in-combination with other plans and projects

5.4. Diadromous Fish (species on Annex II of the Habitats Directive)

No LSE as a result of the potential effects (underwater noise, and increases in SSC and smothering) can be concluded for all of the Annex II diadromous fish QIs (namely Atlantic salmon, Twait shad, sea lamprey and river lamprey (and including the parasitic bivalve mollusc, FWPM) for all SACs arising from the proposed SI works, both alone and in combination with other plans and projects.

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Appendices

A. Plan/Project List for In Combination Assessment

Table A.1 shows plans and projects off the south-east coast of Ireland (Counties Wicklow, Wexford, Kilkenny, Waterford, Cork have been included) that may have similar activities occurring over a timescale similar to those considered as part of the project alone assessment. Information has been gathered from the following webpages and is correct as of 31/10/2025: MARA MUL applications received (<https://www.maritimeregulator.ie/our-work/maritime-usage-licences/mul-applications-received/>), MARA MUL applications determined (<https://www.maritimeregulator.ie/our-work/maritime-usage-licences/mul-applications-determined/>), Foreshore Notices (<https://www.gov.ie/en/foreshore-notices/>). Projects whose status is listed as withdrawn or closed have not been included.

Where additional plans and projects have been considered in topic-specific assessments, they have been detailed in the relevant sections.

Projects (within the five counties) not listed in Table A.1 are considered not to have the potential to contribute to in combination effects due to the type of work proposed e.g., seaweed harvesting, sewerage outfall improvements, floating pontoon installation.

Table A.1: Plan/project list for in-combination assessment. Application type is either Maritime Usage Licence (MUL) or Foreshore Licence (FL)

Reference number	Title of application	Application type	County	Description	Status of application (as of 31/10/2025)
MUL240005	Allod Energy Ltd - Celtic Sea	MUL	Cork	Geophysical site investigations	Applied
FS007361	Amazon MCS Ireland Ltd - Beaufort subsea fibre optic cable system	FL	Wexford	Cable installation including decommissioning of sections of obsolete cable	Determination
MUL230031	Amazon MCS Ireland Ltd - proposed transatlantic subsea fibre optic cable	MUL	Multiple	Geophysical survey and site investigations	Determined
FS007555	Arklow Bank Wind Park	FL	Wicklow	Ongoing site surveys to maintain up to date baseline information	Determined
FS007339	Arklow Bank Wind Park Phase 2	FL	Wicklow	Site investigations	Determination
FS007445	Blackwater Offshore Wind	FL	Wexford	Geophysical, geotechnical, environmental and metocean surveys	Applied
MUL230034	Codling Wind Park Ltd	MUL	Multiple	Surveys	Applied
FS006241	Codling Wind Park Ltd	FL	Wicklow	Site investigations	Consultation
FS007037	Cork County Council - Ballycotton Harbour	FL	Cork	Dredging	Determination
FS006969	Cork County Council - Courtmacsherry Pier area	FL	Cork	Dredging including off-site disposal	Determination
FS006970	Cork County Council - Glengarriff Pier area	FL	Cork	Dredging including off-site disposal	Determination

Reference number	Title of application	Application type	County	Description	Status of application (as of 31/10/2025)
FS006971	Cork County Council - Reen Pier area	FL	Cork	Dredging including off-site disposal	Determination
MUL230029	Department of Defence	MUL	Cork	Maintenance dredging	Public consultation
FS007482	Department of Defence	FL	Cork	Dredging at Haulbowline Naval Base, Co. Cork	Applied
FS006564	Department of Defence - Haulbowline Naval Base	FL	Cork	Maintenance dredging and disposal at the Port of Cork Dump Site	Determination
LIC240006	Department of the Environment, Climate & Communications - South Coast DMAP	MUL	Multiple	Geophysical survey	Determined
FS005782	Eircom - submarine cable	FL	Cork	Cable laying, using and maintenance	Determination
MUL240036	EirGrid - Tonn Nua Area A	MUL	Multiple	Site investigations	Determined
FS006916	EirGrid Celtic Interconnector project	FL	Cork	Installation of a submarine HVDC cable	Determination
FS005793	Eirgrid plc - Aghada to Whitegate	FL	Cork	Installation of a submarine power cable	Consultation
FS006722	Eirgrid PLC - Ballinwilling Strand, Redbarn Beach and Claycastle Beach Co. Cork	FL	Cork	Geophysical survey	Determination
FS006811	Eirgrid Plc - Ballinwilling, Claycastle & Redbarn Beaches	FL	Cork	Geotechnical and environmental surveys	Determination

Reference number	Title of application	Application type	County	Description	Status of application (as of 31/10/2025)
FS005788	Eirgrid plc - Glanagow to Raffeen	FL	Cork	Laying of a submarine power cable	Consultation
FS007048	Energia Offshore Wind Ltd	FL	Wexford	Site investigations	Determination
FS006982	Energia Offshore Wind Ltd - Helvick Head	FL	Waterford	Geophysical, geotechnical, archaeological, ecological, oceanographic and meteorological surveys	Determination
FS007136	ESB Wind Development Ltd - Helvick Head	FL	Multiple	Site investigations	Consultation
MUL240035	Gas Networks Ireland - Cork Harbour	MUL	Cork	Survey using static acoustic monitoring devices and up to 2 ADCPs	Determined
FS007351	Gavin & Doherty Geosolutions Ltd	FL	Multiple	Survey using 4 ADCP trawl resistant bottom mount units (deployed for a duration of 35 days)	Determination
FS006582	Greenlink Interconnector Limited - Boyce's Bay and Baginbun Beach, Hook Head Peninsula, County Wexford	FL	Wexford	Surveys	Determination
FS007050	Greenlink Interconnector Ltd	FL	Wexford	Subsea and underground electricity interconnector cable between Irish and UK electricity grids; connection between Eirgrid's Great Island substation (Republic of Ireland) and National Grid's substation in Pembrokeshire (Wales)	Determination
FS006444	Hibernia Networks – Cork Cable Laying Works	FL	Cork	Laying of a fibre optic cable	Determination
FS006788	Hibernian Wind Power - Kilmichael Point	FL	Wicklow	Surveys and investigations	Determination

Reference number	Title of application	Application type	County	Description	Status of application (as of 31/10/2025)
MUL240023	Iarnród Eireann - East Coast Rail Infrastructure Protection Projects	MUL	Multiple	Geotechnical, geophysical, ecological and archaeological surveys	Determined
FS006614	Irish Water - Arklow	FL	Wicklow	Site investigations	Applied
FS006833	Irish Water - Ballycotton	FL	Cork	Ground investigations and sampling	Determination
FS006834	Irish Water - Castletownshend	FL	Cork	Ground investigations and sampling	Determination
FS006835	Irish Water - Whitegate Waste Water Treatment Plant	FL	Cork	Site investigations	Determination
FS007046	Irish Water Site Investigation for Storm Water Outfall Extension, Kinsale	FL	Cork	Geotechnical investigation	Determination
FS007540	Keith Archer	FL	Cork	Installation of submarine electrical cable	Applied
FS007575	Kinsale Offshore Wind Ltd	FL	Cork	Surveys and site investigations	Consultation
FS007354	Kinsale Offshore Wind Ltd	FL	Cork	Surveys and site investigations	Consultation
LIC230017	Microsoft Ireland Operations Ltd - proposed subsea fibre optic cable	MUL	Wexford	Geophysical survey and site investigations	Determined
FS007459	ORCA Ireland	FL	Cork	Deployment of 1 static acoustic monitoring SmartBuoy off the south coast of Ireland to listen to cetaceans in real-time	Determination
FS007621	Péarla Offshore Wind Limited	FL	Waterford	Surveys and investigations	Applied
FS007126	Port of Cork	FL	Cork	Maintenance dredging	Determination

Reference number	Title of application	Application type	County	Description	Status of application (as of 31/10/2025)
MUL240042	Port of Cork Company	MUL	Cork	Geophysical, geotechnical, environmental, intertidal benthic and marine mammal surveys	Public consultation closed
MUL250008	Port of Cork Company	MUL	Cork	Deposition of dredged marine sediments from Ringaskiddy Basin	Determined
FS006441	Port of Cork Company - Ringaskiddy Port	FL	Cork	Site investigations	Determination
FS006684	Port of Waterford	FL	Waterford	Maintenance dredging	Determination
LIC230025	Port of Waterford Company	MUL	NA	Maintenance dredging	Applied
FS005701	Port of Waterford Company	FL	Waterford	Maintenance dredging	Consultation
LIC230013	Port of Waterford Company - quay extension	MUL	Kilkenny	Geotechnical investigation	Applied
FS006745	Port of Waterford Company - Waterford Estuary	FL	Waterford	Deployment of five acoustic wave and current profilers	Determination
FS006691	Proposed Eir fibre optic cable	FL	Multiple	Site investigations	Determination
MUL240047	RNLI Ireland	MUL	Cork	Site investigations	Applied
FS007219	Rosslare Europort	FL	Wexford	Maintenance dredging	Determination
FS007222	Rosslare Europort	FL	Wexford	Site investigations	Determination
FS006506	Rosslare Europort	FL	Wexford	Maintenance dredging	Applied
FS007509	Rosslare Europort Offshore Wind Hub	FL	Wexford	Site investigations	Determination
FS007318	RWE Renewables Ireland East Celtic Ltd (Offshore Wind Park)	FL	Multiple	Site investigations	Applied

Reference number	Title of application	Application type	County	Description	Status of application (as of 31/10/2025)
FS005947	Sea Fibre Networks Ltd	FL	Cork	Site investigations	Determination
FS007049	Sure Partners Site Investigations at Arklow Bank Wind Park	FL	Wicklow	Site investigations	Determination
FS006995	TechWorks Marine Ltd	FL	Waterford	Deployment of 4 trawl resistant ADCP frames for a period of 30 days	Determination
FS006949	TechWorks Marine Ltd	FL	Waterford	Deployment of 4 trawl resistant ADCP frames for a period of 30 days	Determination
MUL240048	Uisce Éireann	MUL	Cork	Deployment of up to 9 ADCPs	Applied
MUL240028	University College Cork	MUL	Cork	Co-deploy passive acoustic monitoring devices ("acoustic receivers") in the western Irish Sea and southern Celtic Sea on existing Commission of Irish Lights infrastructure to identify the broad scale movements of electronically tagged elasmobranchs (sharks, skates and rays)	Returned
MUL230039	University College Cork	MUL	Multiple	Deploy passive acoustic monitoring devices ("acoustic receivers") to identify the presence/absence of acoustically tagged elasmobranchs (sharks, skates and rays) in the Celtic Sea	Determined
LIC230006	University College Cork Cetacean study within the Irish and Celtic Seas	MUL	Multiple	Environmental survey including the deployment of hydrophones to carry out research into the seasonal and diurnal occurrence of cetaceans in the Irish and Celtic Seas	Determined
FS007436	Voyage Offshore Array Ltd	FL	Multiple	Surveys (geophysical, geotechnical, environmental) and site investigations	Applied
MUL240003	Wexford County Council	MUL	Wexford	Environmental surveys	Applied

Reference number	Title of application	Application type	County	Description	Status of application (as of 31/10/2025)
FS005762	Wicklow County Council - Arklow Harbour	FL	Wicklow	Dredging	Applied
MUL230026	Wicklow County Council - Wicklow Port	MUL	Wicklow	Maintenance dredging	Applied
FS007583	Wicklow County Council - Wicklow Port	FL	Wicklow	Dredging	Determined
FS007588	Wicklow Sea Wind Ltd	FL	Wicklow	Site investigations including surveys	Consultation
FS007163	Wicklow Sea Wind Ltd	FL	Wicklow	Surveys and site investigations	Consultation



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