

Nicholas O'Dwyer Ltd

Natura Impact Statement Report

Rosslare Coastal Erosion & Flood Relief Scheme (CEFRS)

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ACRONYMS AND DEFINITIONS

Acronym	Definition
AA	Appropriate Assessment
ADCP	Acoustic Doppler Current Profiler
CEFRS	Coastal Erosion and Flood Relief Scheme
COs	Conservation Objectives
CPT	Cone Penetration Tests
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EPA	Environmental Protection Agency
ERT	Electrical Resistivity Tomography
EU	European Union
HSE	Health, Safety and Environment
IWDG	Irish Whale and Dolphin Group
LSEs	Likely Significant Effects
MARA	Maritime Area Regulatory Authority
MBES	Multibeam Echo Sounder
MUL	Maritime Usage Licence
NIS	Natura Impact Statement
NOD	Nicholas O'Dwyer Ltd
NPWS	National Parks and Wildlife Service
PTS	Permanent Threshold Shift
QI	Qualifying Interests
SAC	Special Areas of Conservation
SBP	Sub-Bottom Profiler
SI	Site Investigations
SISAA	Screening for Appropriate Assessment
SPA	Special Protection Areas
S-P-R	Source-Pathway-Receptor
SSC	Suspended Sediment Concentrations
SSCO	Site-Specific Conservation Objectives
SSS	Side-Scan Sonar
TTS	Temporary Threshold Shift

1 INTRODUCTION

1.1 Overview

Wexford County Council (WCC) intends to apply to the Maritime Area Regulatory Authority (MARA) for a Maritime Usage Licence (MUL) to conduct marine site investigations (SI) and environmental surveys within two areas adjacent to the townlands of Burrow and Hopeland (area A), and adjacent to the townlands of Warren Lower, Warren Middle, Doogans Warren, Rosehill and Hill of Sea (area B), in the vicinity of Rosslare, Ireland.

This report has been prepared as part of the MUL application process. The proposed works are designed to provide high quality baseline data that will contribute to site selection and any subsequent design, Environmental Impact Assessment Report (EIAR), and Appropriate Assessment (AA), undertaken for the Rosslare Coastal Erosion and Flood Relief Scheme (CEFRS) project; in the event that a site is taken forward to the planning/consenting stage.

1.2 Purpose of the report

This document has been prepared by RSK Environment Ltd. (RSK) on behalf of WCC in support of the MUL Application to the MARA (originally submitted on 12/05/2026). A Supporting Information for Screening for Appropriate Assessment (SISAA) report was prepared for the SI works and identified the presence of European sites within the potential Zone of Influence of the SI works. The SISAA concluded that the potential for the SI works to cause Likely Significant Effects (LSEs) cannot be ruled out on certain occasions.

MARA in their Appropriate Assessment screening and determination (undertaken on the 2/10/2026) screened in a number of potential pathways for impact and consequently designated sites that were not screened in to the assessment based on the findings of the SISAA report, as such this NIS has been revised from that which was originally submitted such that information to inform the AA can be undertaken. Works have the potential to contribute to habitat loss, alteration, fragmentation and disturbance in the following Special Area of Conservation (SAC) and Special Protected Area (SPA) designated sites:

- Slaney River Valley SAC (000781)
- Carnsore Point SAC (002269)
- Blackwater Bank SAC (002953)
- Saltee Islands SAC (00707)
- Hook Head SAC (000746)
- River Barrow and River Nore SAC (002162)
- Seas off Wexford cSPA (004237)
- The Raven SPA (004019)

- Wexford Harbour and Slobs SPA (004076)
- Lady's Island Lake SPA (004009)
- Tacumshin Lake SPA (004092)
- Saltee Islands SPA (004002)
- Ballyteigue Barrow SPA (004020).

Underwater noise impacts could not be ruled out for Qualifying Interest (QI) species inhabiting the following SACs and SPAs:

- Slaney River Valley SAC (000781)
- Carnsore Point SAC (002269)
- Blackwater Bank SAC (002953)
- Saltee Islands SAC (00707)
- Hook Head SAC (000746)
- River Barrow and River Nore SAC (002162)
- Seas off Wexford cSPA (004237)
- The Raven SPA (004019)
- Wexford Harbour and Slobs SPA (004076)
- Lady's Island Lake SPA (004009)
- Saltee Islands SPA (004002).

Above water noise, vibration and lighting impacts could not be ruled out for QI species inhabiting the following designated sites:

- Slaney River Valley SAC (000781)
- Saltee Islands SAC (00707)
- Seas off Wexford cSPA (004237)
- The Raven SPA (004019)
- Wexford Harbour and Slobs SPA (004076)
- Lady's Island Lake SPA (004009)
- Tacumshin Lake SPA (004092)
- Saltee Islands SPA (004002)
- Ballyteigue Barrow SPA (004020).

Collision risks impacts could not be ruled out for QI species inhabiting the following designated sites:

- Slaney River Valley SAC (000781)
- Carnsore Point SAC (002269)
- Blackwater Bank SAC (002953)
- Saltee Islands SAC (00707)

- Hook Head SAC (000746).

Mitigation measures to avoid adverse impacts are therefore required. As such a revised Natura Impact Statement (NIS) has been prepared to assist the MARA, the competent authority, in conducting an AA that covers additional sites and potential impact pathways than that which were originally screened in to the SISAA report. The findings of the NIS are presented in this report.

The purpose of this NIS is to provide MARA with information for the purposes of Article 6 of the Habitats Directive on the implications of the SI works, on its own or in combination with other plans or projects, for one or more than one European site, in view of the Conservation Objectives (COs) of the site or sites. This NIS will assist MARA in determining whether or not the SI works will adversely affect the integrity of the site(s) concerned. This NIS provides an overview of the marine SI works proposed to be undertaken in support of the MUL Application to MARA. The Maritime Usage Licence Application is for site survey and investigation works to inform site selection and engineering design. The results of these surveys will also provide baseline data for any subsequent NIS and EIAR should the development be taken forward to the planning/consenting stage.

This assessment has been carried out in accordance with the legal context as outlined in Section 1.4.

1.3 Statement of Authority

This report has been prepared by RSK on behalf of WCC. The technical competence of the authors is outlined below:

Andrew Bendell is an Associate Director within the RSK's International Project Group. He has over 25 years of experience in marine environmental surveying and consulting. He holds an honours degree in Marine Biology and Oceanography and a Masters in Marine Resource Development and Protection. He has particular experience in marine ecology surveys, and the subsequent analysis and reporting of marine survey data for Environmental Impact Assessment (EIA) projects, and AA and Annex IV species reports.

Jordan Featherstone is a Marine Environmental Consultant within RSK's International Projects Group Marine Team. She has over 5 years of experience in the marine environmental field. She holds an honours degree in Ocean Science and Marine Conservation, and a Master's degree in Environmental Consultancy. She has contributed to numerous marine environmental projects including marine site visits, marine sample and data collection, AA Screening and EIA chapters.

This NIS report has been prepared in compliance with the legislative and policy requirements described below.

1.4 Legislation

1.4.1 European legislation

Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (the Habitats Directive) provides protection for habitats and species of European importance; Council Directive 79/409/EEC (the Birds Directive) aims to

protect all 500 wild bird species naturally occurring in the European Union (EU). Areas designated for protection under the Habitats Directive are described as SAC and those designated under the Birds Directive, as SPA and the sites are known collectively as Natura 2000 sites (see Section 1.4.2.5). As each member of the EU is required to designate areas in their jurisdictions, the establishment of this network of Natura 2000 sites under Articles 3 to 9 of Directive 92/43EEC is the key measure to protect nature and biodiversity in the EU.

Articles 6(3) and 6(4) of the Habitats Directive set out the decision-making tests for plans and projects likely to have a significant effect on or to adversely affect the integrity of Natura 2000 sites. Article 7 of the Habitats Directive extends the scope of its articles 6(3) and 6(4) to the Birds Directive.

Article 6(3) establishes the requirement for AA:

"*Any plan or project not directly connected with or necessary to the management of the [Natura 2000] site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subjected to appropriate assessment of its implications for the site in view of the site's conservation objectives. Considering the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the public*."

Further detail on the stages of AA is provided in Section 3.2 of this report.

Each Natura 2000 site has assigned COs and a list of QI. The CO concept appears in the eighth recital of Directive 92/43/EEC which reads: *"whereas it is appropriate, in each area designated, to implement the necessary measures having regard to the conservation objectives pursued*". Article 1 then explains that *"conservation means a series of measures required to maintain or restore the natural habitats and the populations of species of wild fauna and flora at a favourable status*".

The National Parks and Wildlife Service (NPWS) has established COs for each Natura 2000 site in Ireland. These are published on their website. NPWS advise in the general introductory notes of their Site-Specific Conservation Objectives (SSCO) series publications, that an AA based on their "*published conservation objectives will remain valid even if the CO targets are subsequently updated, providing they were the most recent objectives available when the assessment was carried out*".

NPWS advise that to assist in that regard, it is essential that the date and version are included when objectives are cited.

1.4.2 National legislation

1.4.2.1 Maritime Area Planning Act

The Maritime Area Planning Act, 2021 (updated 2 October 2025) established the MARA. One of the functions of MARA is to consider licence applications and the granting of licences.

Schedule 7 of the Maritime Area Planning Act, 2021 (as amended) lists maritime usages which may be undertaken in the maritime area pursuant to licence. Of relevance to this SI project are the following items within Schedule 7:

3. Marine environmental surveys for the purposes of site investigation or in support of an application under Part XXI of the Act of 2000.
6. The deposit of any substance or object, either in the sea or on or under the seabed, from-
    a) a vehicle, vessel (including a craft capable of travelling on, in or under water, whether or not self-propelled), boat, aircraft or marine structure (other than a pipeline).
7. The use of a vehicle, vessel (including a craft capable of travelling on, in or under water, whether or not self-propelled), boat, aircraft, marine structure (other than a pipeline) or floating container to remove any substance or object from the seabed.
11. The deposit, construction or removal of any mooring not requiring authorisation under any other enactment.
12.

a) The removal of beach material from, or the disturbance of beach material in, the maritime area otherwise than in the course of the ordinary or reasonable recreational enjoyment of the maritime area.
b) In this paragraph, “beach material” means sand, clay, gravel, shingle, stones, rocks, mineral substances, seashells, coral and maerl and any flora, in or on the surface of the seabed or suspended in the water of the maritime area, and includes outcrops of rock or any other mineral substance above the surface of the seabed.

NOD is applying to MARA for the grant of a licence for the above Schedule 7 usages, as more fully described in Section 2 of this report.

1.4.2.2 Requirements in relation to AA

The following definitions in relation to AA are included in Section 2(1) of the Maritime Area Planning Act, 2021 (as amended):

“screening for appropriate assessment” shall be construed in accordance with, as appropriate—

a) section 177U of the Act of 2000, or
b) Part 5 of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011)

“appropriate assessment” shall be construed in accordance with, as appropriate—

a) section 177V of the Act of 2000, or
b) Part 5 of the European Communities (Birds and Natural Habitats) Regulations (S.I. No. 477 of 2011).

Where the Act of 2000 refers to the Planning and Development Act 2000 (as amended). Act of 2024 refers to the updated Planning and Development Act 2024.

The European Communities (Birds and Natural Habitats) Regulations 2011 have also been amended.

Under Section 112 of the Maritime Area Planning Act, 2021 (as amended), MARA has been designated as a competent authority for the purposes of Part 5 of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011); and appropriate assessments to which that Part applies.

MARA is required to carry out a screening for AA in accordance with Section 117(4)(a) of the Act.

Where MARA determines that an AA is required it shall carry out the AA in accordance with Section 117(7)(a) of the Act.

1.4.2.3 Screening out for AA

Under Section 214 of the Planning and Development Act 2024 (as amended), the competent authority shall determine that an AA of a proposed development **is not required** if it can be excluded, on the basis of objective information, that the proposed development, individually or in combination with other plans or projects, will have a significant effect on a European site.

Under Regulation 42(7) of the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended) the public authority shall determine that an AA of a project **is not required** where the plan or project is not directly connected with or necessary to the management of the site as a European Site and if it can be excluded on the basis of objective scientific information following screening that the project, individually or in combination with other plans or projects, will have a significant effect on a European site.

1.4.2.4 Screening in for AA

Under Section 214 of the Planning and Development Act 2024 (as amended), the competent authority shall determine that an AA of a proposed development **is required** if it cannot be excluded, on the basis of objective information, that the proposed development, individually or in combination with other plans or projects, will have a significant effect on a European site.

Under Regulation 42(6) of the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended) the public authority shall determine that an AA of a plan or project **is required** where the plan or project is not directly connected with or necessary to the management of the site as a European Site and if it cannot be excluded, on the basis of objective scientific information following screening under this Regulation, that the plan or project, individually or in combination with other plans or projects, will have a significant effect on a European site.

Where the competent authority determines that an AA is required, they shall make a determination under Article 6.3 of the Habitats Directive as to whether or not the proposed development would adversely affect the integrity of a European site and an appropriate assessment shall be carried out by the competent/ public authority before consent is given for the proposed development (see Section 214 of the Planning and

Development Act 2024 (as amended) and Regulation 42(11) European Communities (Birds and Natural Habitats) Regulations 2011 (as amended).

1.4.2.5 European Sites and Natura 2000 sites

The term European site is defined in the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended) as:

> "European Site" means—
>
> a) a candidate site of Community importance
>
> b) a site of community importance
>
> c) a candidate special area of conservation
>
> d) a special area of conservation
>
> e) a candidate special protection area, or
>
> f) a special protection area.

The term Natura 2000 site is defined in the same Regulations as:

"Natura 2000" means the European network of SACs under the Habitats Directive and SPAs under the Birds Directive, provided for by Article 3(1) of the Habitats Directive and, for the purposes of these Regulations, includes European Sites.

The two terms are often used interchangeably. For the purposes of this report, the term European site is used.

2 PROJECT DESCRIPTION

2.1 Site location

The MUL area covers a total area of 16.47km^2 and is split into two separate areas of 0.74km^2 (area A) and 15.73km^2 (area B) (Figure 2.1). The works described in this application relates solely to the SI works and environmental sampling works within the proposed MUL Area. Marine SI and environmental surveys are required to inform preliminary design and facilitate environmental assessment in advance of a development application for the Rosslare CEFRS project.

2.2 Description of the works

2.2.1 Overview

The objective of the proposed surveys is to provide high-quality data that can contribute to a reliable baseline for project design and development, as well as informing the EIAR. While the exact scope of the SI works will be refined as the project design progresses, it is not yet possible to confirm precisely which surveys will ultimately be required. Accordingly, the surveys listed below are currently considered potentially necessary (see Table 2.12.1), including:

- Drop-down camera survey
- Geophysical survey, including:
    - Magnetometer
    - Sub-Bottom Profiler (SBP)
    - Side-Scan Sonar (SSS)
    - Multibeam Echo Sounder (MBES)
    - Marine refraction seismic
    - Marine Electrical Resistivity Tomography (ERT)
- Boreholes
- Cone Penetration Tests (CPTs)
- Grab samples
- Intertidal walkover survey
- Intertidal core samples
- Archaeological surveys and other investigations (i.e. underwater inspections, walkovers, metal detectors, dive surveys)
- Deployment of metocean monitoring buoys to collect physical oceanographic data.

These works are collectively referred to as the SI works throughout this report. Indicative sampling locations within the MUL area are intended to support the development of flood relief measures along Burrow Road and coastal erosion protection measures at Rosslare Strand (i.e. groynes, revetments, beach nourishment). It should be noted that all locations shown for sampling within the proposed MUL area are indicative and may be subject to a degree of change on-site.

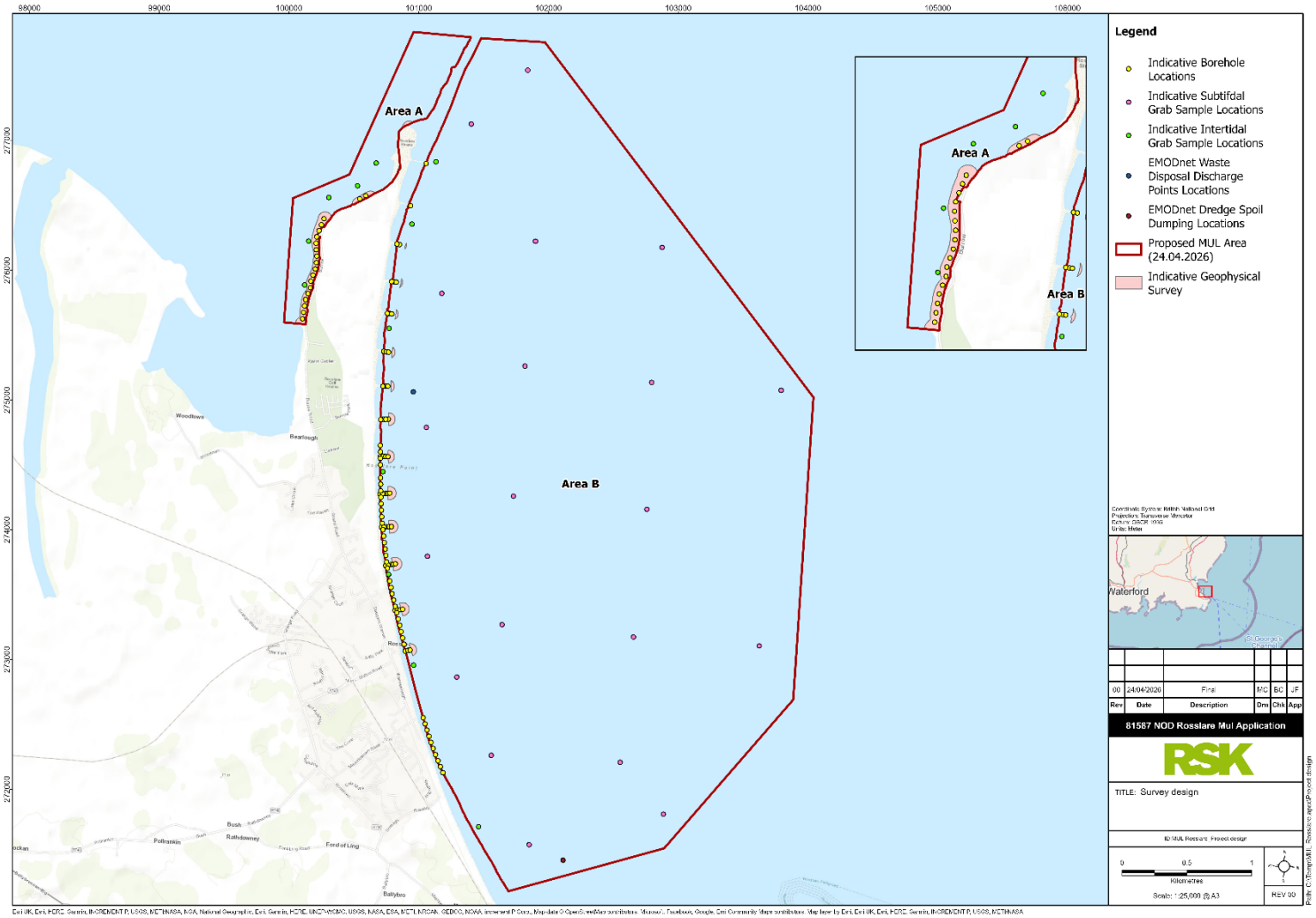


Figure 2.1: Indicative geophysical survey and sampling locations within the MUL area

The following drawings have been prepared in support of the Maritime Usage Licence application to the MARA:

- Proposed MUL area map
- Proposed survey design map
- SI indicative table of coordinates.

The exact technical specification of the equipment to be used will not be known until the survey contract has been awarded. However, descriptions of typical equipment and survey parameters has been used within this report.

Predicted duration of the surveys and survey footprint is outlined in Table 2.2.

It is noted that the requirement for additional and more refined works may arise as the SI works progress and are analysed. This may include areas of particular interest using more targeted techniques and/or refined borehole locations and quantities.

There will be no permanent structures and all SI works will be temporary in nature. The moving marine plant will remain on site for the duration of the works.

2.2.2 Site investigations schedule

The intention is to begin SI activities as soon as feasible following MUL award. Timing of the SI activities is dependent on many factors including weather, tidal flows, availability of vessels and the grant of the MUL. The granting of the MUL will have a direct effect on the timing of SI activities. The duration of the SI works is approximately 16 weeks and are currently scheduled to begin in Q3 2026. The proposed licence duration is for 3 years to account for potential delays in the consenting process.

A description of the proposed equipment to be used is given below and summarised in Table 2.1.

2.2.3 Survey vessel

A multipurpose workboat will be used, based on a suitable vessel being available at the time of mobilisation. It is considered that a shallow draught vessel, suitable for survey support and operations requiring frequent manoeuvring in confined waters will be used. A suitable vessel in the range of 16 m with a shallow draught and gross tonnage of ~45 is assumed.

Table 2.1: Description of proposed works

Survey	Method	Method details	Sampling effort
Geophysical (up to 16 weeks)	SSS	SSS is a device that transmits sound pulses that provide the information required to map the seabed. It differs from MBES in that SSS has a finer beam width and smaller footprint to MBES and therefore higher resolution. It is generally towed behind the vessel very close to the seabed and emits fan-shaped acoustic pulses directed down toward the seafloor which are recorded as a series of cross tracks. The sound frequencies used by side-scan sonar generally range from 100 to 1000 kHz; higher frequencies yield better resolution but less range.	SSS may be used across area A and B of the proposed MUL area where required, to a suitable percentage coverage as part of the geophysical survey. This activity is anticipated to occur within daylight hours over a period of up to 10 days.
	Magnetometer	A magnetometer is used to identify magnetic anomalies and hazard mapping for metal obstructions, shipwrecks and unexploded ordnance on the surface and in the shallow sub-surface. The Geometrics G-882 can be taken as an indicative equipment example. It is a passive device (i.e. it does not emit any sound waves into the marine environment) the sensor responds to local variability in magnetic field. The magnetometer will be towed behind a small survey vessel using 20 m spacing of main lines and cross lines at 100 m spacing.	Magnetometer survey may be undertaken across area A and B of the proposed MUL area where required, to a suitable percentage coverage. This activity is anticipated to occur within daylight hours over a period of up to 10 days.
	SBP – parametric	SBP is used to develop an image of the subsurface, identifying different strata encountered in the shallow sediments. The proposed equipment comprises a Knudsen Chirp system or similar which transmit a sweep of frequencies (e.g. 2-10 kHz) in a single pulse. Depending on the profile of the seabed (rock, sand, mud etc.) and level of compaction, the energy reflected back can be related to the sub-bottom composition; which would be used in both nearshore and offshore areas.	Parametric SBP may also be used across area A and B of the proposed MUL area where required, to a suitable percentage coverage as part of the geophysical survey. This activity is anticipated to occur within daylight hours over a period of up to 10 days.

Survey	Method	Method details	Sampling effort
	SBP – boomer	A SBP boomer is an instrument used to image sediment layers beneath the seafloor. The Applied Acoustics AA301 is an indicative example of a boomer, the instrument consists of a piezo electric plate transducer mounted on a surface tow catamaran frame. Reflected sound signals are recorded using a separate hydrophone such as the Applied acoustics HYD-360/08 (50 m). The Boomer SBP operates in a frequency range of 85-115 kHz and 2-22 kHz, respectively, and sound pressure levels of up to 232 dB (typically operated at <200 dB re1µPa @ 1 m) which would be used in the nearshore shallower area. The SBP will be towed behind a small survey vessel using 20 m spacing of main lines and cross lines at 100 m spacing.	A SBP boomer may also be used across area A and B of the proposed MUL area where required, to a suitable percentage coverage as part of the geophysical survey. This activity is anticipated to occur within daylight hours over a period of up to 10 days.
	SBP - sparker	A SBP sparker is an instrument used to image sediment and rock layers beneath the seafloor, it has a similar purpose to that of the boomer described above but is designed when deeper penetration is required. The applied Acoustics Dual 400 Tip is an indicative example of a sparker system used in sub-bottom profiling. Reflected sound signals are recorded using a separate hydrophone such as the Applied acoustics HYD-360/08 (50 m) or a multi-channel hydrophone such as the Geometrics GeoEel LH-16™ Digital Streamer. The sparker source has a frequency range of between 0.5-5 kHz and sound pressure levels in the range of 205-211 dB re1µPa @ 1m. The SBP will be towed behind a small survey vessel using 20 m spacing of main lines and cross lines at 100 m spacing.	A SBP sparker may also be used across area A and B of the proposed MUL area where required, to a suitable percentage coverage as part of the geophysical survey. This activity is anticipated to occur within daylight hours over a period of up to 10 days.
	MBES	A bathymetric survey will be conducted using multibeam echo sounders, a type of sonar frequently used to map bathymetry. These systems may be mounted on a dedicated survey vessel or towed behind a smaller vessel, depending on site conditions and	MBES may also be used area A and B of the proposed MUL area where required, to a suitable percentage coverage as part of the geophysical survey. This activity is

Survey	Method	Method details	Sampling effort
		water depths. Multibeam systems emit wide acoustic signals to generate high-resolution images, creating three-dimensional maps of the seabed. Line spacing will be between 5 and 20 m, depending on depth. The operating frequencies emitted from MBES will be 300-700 kHz, with a peak operating frequency of approximately 400 kHz. Exposure time is approx. 0.05 ms per 1 ms for multibeam operating with 200-400 kHz, or 0.05 per 0.3 ms for higher frequencies (>400 kHz). Sound pressure levels will be approximately 215-220 dB re 1µPa @ 1m.	anticipated to occur within daylight hours over a period of up to 10 days.
	Marine Refraction seismic	Marine refraction surveys use controlled seismic sources, such as air guns or weight drops, to generate seismic waves that travel through sediment and rock layers. Arrays of hydrophones or geophones deployed on the seabed record the refracted seismic waves as they bend and travel along subsurface interfaces. By analysing the travel times and velocities of these refracted waves, detailed models of sediment thickness, bedrock depth, and structural features can be developed. Airgun impulse energy is mostly concentrated within low frequencies, with peak frequencies between 5-90 kHz. Source levels are predicted to be within the range of 186-220 dB re 1µPa @1m.	Marine Refraction Seismic surveys may be undertaken across both areas of the MUL to a suitable percentage coverage as part of the geophysical survey. This activity is anticipated to occur within daylight hours over a period of up to 8 days.
	Marine ERT	ERT surveys are conducted to investigate the electrical properties of subsurface sediments and rocks, used to image the subsurface beneath the seabed or coastline by measuring variations in electrical resistance. The technique involves deploying a series of electrodes along the seabed, either towed or fixed. As a non-invasive, non-seismic geophysical method, marine ERT produces no significant underwater noise and has minimal environmental impact.	Maximum 20 ERT lines of 315 m length line with diameter of 20 mm. This activity is anticipated to occur within daylight hours over a period of up to 8 days. Applies across both areas of the MUL.

Survey	Method	Method details	Sampling effort
Marine environmental/ecological (up to 5 days)	Benthic ecology samples (including subtidal and intertidal habitats surveys)	Identify benthic communities and habitats at the site, intertidal sample locations may be subject to walkover/drone survey in advance of sampling. A day grab is an instrument used for sampling soft seabed sediments. When deployed overboard it is lowered on a winch to the seabed where the jaws open to take a small (approx. 5L) sample of the surface sediment (top 20 cm). A Hammon grab is a very similar type of sampler, but the jaw mechanism is slightly different which allows it to sample coarser sediments (e.g. gravel and shelly sediments). The samples retained can then be analysed to obtain an overview of the sediment fauna, and particle size. Both samplers are routinely used for surveillance monitoring to support a number of EU Directives such as the Habitats Directive and Water Framework Directive. Day or Hammon grabs do not introduce noise into the underwater environment other than that produced from a slight impact with the grab making contact with the seabed.	There will be up to 20 no. dedicated subtidal benthic ecology grab sampling locations within the proposed MUL area and multiple samples (max 4) may be taken at each location. Samples would be of surface area 0.1 m^2. Applies across both areas of the MUL.
	Seabed imagery (Remotely Operated Vehicles [ROV] surveys)	Underwater camera systems or ROVs may be used for visual inspection of the existing benthic conditions. High quality video recordings and stills may be collected for further analysis and confirmation of suitable conditions for further intrusive activities (e.g. benthic sampling or geotechnical works).	Subtidal sample locations may be subject to drop down video in advance of sampling. Applies across both areas of the MUL.
	Intertidal coring and walkover survey	For intertidal sediment assessment a 0.01 m^2 hand core taken to a depth of 20 cm for benthic faunal analysis will be used. Additional surveys of intertidal hard strata may also be carried out by conducting walk over surveys of the relevant hard strata to record biotopes and species present.	There will be up to 12 no. dedicated intertidal coring/grab locations if shoreline conditions allow for sediment sampling. Applies across both areas of the MUL.

Survey	Method	Method details	Sampling effort
Archaeology (up to 5 days)	Walkover	Intertidal walkover to be undertaken at low tide to assess for the presence of sensitive archaeological features. Survey methodology may also involve the use of a metal detector along the foreshore. Pending the results of geophysical surveys there may be a requirement for further archaeological surveys (i.e. underwater video, dive surveys), including the groyne locations.	To be confirmed, pending the results of the geophysical surveys. Applies across both areas of the MUL.
Geotechnical (up to 16 weeks)	Drop-down video	Drop-down video survey to inspect the seabed and identify any sensitive habitats in the vicinity without disturbance to the seabed.	There will be up to **30 transects** of up to 30 m each using a drop down camera and video surveillance Applies across both areas of the MUL.
	Boreholes	Boreholes may be up to 10 m below bed level but some may be terminated if sufficient bedrock is encountered. The boreholes will be carried out using methods through the seabed sediment, with rotary coring used to advance through the bedrock. The typical frequencies emitted from rotary drilling are between 0.001-0.120 kHz and a recorded sound pressure of approximately 145 dB re1µPa @1m. Marine rotary drilling involves rotating a drill bit attached to a drill string and applying downward pressure to cut through the rock formations. Geotechnical sampling tools, including push and piston samples, can then be deployed into the ground to recover intact material. All drilling equipment used will follow the ISO and API technical specifications for drilling equipment. Boreholes will be drilled from a jack-up barge to maintain stability when drilling. Each location would require the 4 legs to penetrate the seabed and cause a temporary disturbance on each occasion. Each leg is typically less than 1 m^2 in footprint.	A maximum of 107 no. boreholes of a diameter of 300 mm will be required within both areas of the MUL, including approximately 41 no. for the revetment and 46 no. for the groynes on the east side; and a maximum of 20 no. for the embankment and pumping stations on the west side.

Survey	Method	Method details	Sampling effort
	CPT	The CPT is a geotechnical investigation method used to determine the properties of soils and delineate soil stratigraphy, offering a continuous profile of soil parameters. The CPT rig, often mounted on a truck or a tracked vehicle, uses hydraulic rams to push the cone into the ground. The cone typically has a cross-sectional area of 10 or 15 cm^2. CPTs are to progress to a maximum depth of 10m but will be terminated when bedrock is encountered. In the CPT, an instrumented electronic probe (cone penetrometer) is situated at the front end of a string of steel rods that are hydraulically pushed into the ground at a constant rate of 20 mm/s to measure soil response, geo-stratigraphy, and engineering parameters. A CPT vehicle or hydraulic ram set are often used to provide the reaction and pushing force. The equipment used will conform to relevant international standards, such as ISO, ensuring consistent and reliable geotechnical data.	180 no. CPTs will be conducted of a diameter of 44 mm. Applies across both areas of the MUL.
	Grab samples	Grab samples using 0.1 m^2 grabs will be collected for grading, loss on ignition and assessment of benthic community.	A maximum of 32 no. grab samples of surface area 0.1 m^2 will be collected within both areas of the MUL.
	Metocean monitoring buoys	Metocean monitoring buoys are floating sensors with an anchorage system secured on the seabed. The buoys record various metocean conditions through the following monitoring equipment: • conductivity, temperature, depth sensors • optical salinity sensor • Acoustic Doppler Current Profiler (ADCPs operating in the range of 600 kHz or 1 MHz will be used. The instrument emits low amplitude “pings” of sound at a sampling rate of 1-minute average every 10	Up to **two buoys** will be placed within the MUL area.

Survey	Method	Method details	Sampling effort
		minutes. These pings will be emitted in a narrow sound beam (typically a few degrees in width) with a typical echo intensity profile of 80 dB (+/- 1.5 dB)) • optical or electrochemical dissolved oxygen sensor • pH sensor/probe • turbidity sensor • turbidity meter/sediment trap. Metocean monitoring buoys will be anchored with two anchors per buoy. Anchors will have a maximum footprint of 2 m^2 each. These will be secured by either 2 x 20 kg weights or could be housed within a trawl resistant frame that will lie on the seabed with dimensions of approximately 2 m x 2 m x 1 m.	

Table 2.2: Predicted time and footprint of each survey activity

Survey activity	Total time for activity		Maximum number of samples	Footprint per sample (m^2)	Maximum total footprint per activity (m^2)
Geophysical survey	Up to 4 months	Up to 10 days	Side Scan Sonar 20 m spacing of main lines and 100 m spacing of cross lines with 25% overlap onto neighbouring lines	-	Suitable percentage cover of the MUL area
		Up to 10 days	Magnetometer 20 m spacing of main lines and 100 m spacing of cross lines with 25% overlap onto neighbouring lines		
		Up to 10 days	Sub-bottom Profiling 20 m spacing of main lines and 100 m spacing of cross lines with 25% overlap onto neighbouring lines		
		Up to 10 days	Multibeam Echosounder 5 -20 m line spacing		

Survey activity	Total time for activity	Maximum number of samples	Footprint per sample (m^2)	Maximum total footprint per activity (m^2)
Marine refraction seismic	Up to 8 days	20 m line spacing	-	Suitable percentage cover of the MUL area
Marine ERT	Up to 8 days	Maximum 20 ERT lines of 315m length	6.3	126
Marine Environmental / Ecological	Up to 5 days	Subtidal Maximum 80	0.1	8
		Intertidal coring Maximum 12	0.01	0.12
Geotechnical	Up to 4 months	Drop down video 30 transects	-	Suitable percentage cover of the MUL area
		Boreholes Maximum 107	0.071	7.597
		CPT 180	0.1	18
		Grab samples Maximum 32	0.1	3.2
Metocean monitoring buoy anchors	Maximum of 6 months	Two buoys with two anchors per buoy	4	8

2.3 General survey requirements

All appointed survey contractors shall obtain and comply with all necessary marine operational permits including routine and customary vessel/crew/equipment clearances from Customs Agencies, Port Authorities, Marine Survey Office, etc.

2.3.1 Quality assurance

Each of the appointed survey contractors shall comply with the following as a minimum:

- Quality and environmental management systems based on ISO9001:2015 and ISO14001
- Provision of site and activity specific method statements for all the marine operations within their scope
- Provision of quality management plans for all the marine operations.

2.3.2 Health & safety

Health, safety, environment, and welfare considerations will be a priority in the evaluation of possible contractors for the various survey scopes and will be actively managed during the survey work.

Appointed contractors will be required to comply with all legislation relevant to the activities within their scope of work.

Project/survey specific Health, Safety and Environment (HSE) plans will be put in place which will form part of the survey project execution plans.

2.3.3 Working hours

The working hours for the SI works are proposed to be from 8am to 8pm. It is anticipated that the main SI works will be carried out over a period of up to four months including mobilisation and demobilisation. While metocean monitoring buoy deployment will be for period of up to two years, the devices will be autonomous apart from maintenance visits every two to four months. Such maintenance visits will occur during daylight hours only.

Weather conditions and/or sea-state will impact on the working hours, and it may be necessary to temporarily suspend operations when adverse weather conditions and/or sea-state are encountered or forecast. As such, survey plans will remain flexible to take advantage of optimal weather windows. Similarly, equipment or vessel maintenance and repair may impact on the SI works resulting in changes to the survey schedule.

2.3.4 Environmental procedures

Environmental procedures to be followed by the appointed survey contractors are detailed within Section 5.2.12 of the separate Supporting Information for Screening for Environmental Impact Assessment (SISEIA) report, which also supports this MUL application.

2.3.5 Vessels

All vessels will be fit for purpose, certified and capable of safely undertaking all required survey work. Marine vessels will be governed by the provisions of the Sea Pollution Act 1991, as amended. In addition, all vessels will adhere to published guidelines and best working practices such as: the National Maritime Oil/HNS Spill Contingency Plan (NMOSCP), Marine Pollution Contingency Plan (MPCP), Chemicals Act 2008 (No. 13 of 2008), Chemicals (Amendment) Act 2010 (No. 32 of 2010) and associated regulations.

Vessels shall have a Health, Safety and Environmental Managements system which should conform to the requirements of the latest International Maritime Organisation, Safety of Life at Sea and environmental requirements for their classification and with any national requirement of the territorial or continental/Economic Exclusion Zone waters to be operated in.

The SI works will be undertaken from vessels in accordance with the relevant guidelines[1] required to manage the risk to marine mammals from man-made sound sources in Irish waters (DAHG, 2014).

[1] Relevant guidance may include the incorporation of the methods outlined in the following text, additional activity-specific mitigation is outlined in Section 6 and within the guidance document (DAHG, 2014). A3: Avoid critical habitats for marine mammals, A4: Avoid operations during key periods of species life cycles, A5: Avoid time periods when effective impact mitigation is not possible, A6: Risk minimisation measures, including minimisation of duration over which sound producing activity takes place, and minimise sound pressure and exposure levels delivered into the environment (i.e., lower impact methods), clear ramp-up procedure, bubble curtain implementation (where relevant), use of dedicated Marine Mammal Observer (MMO) (where relevant).

3 METHODOLOGY

3.1 AA guidance

This report has been completed in consideration of the EU and national guidance documents that pertain in relation to Member States' fulfilling their requirements under the EU Habitats Directive, with particular reference to Article 6(3) and 6(4) of that Directive. The methodology followed in relation to this SISAA has had regard to the following guidance:

- EC (2000), Communication from the Commission on the Precautionary Principle. Office for Official Publications of the European Communities, Luxembourg
- EC (2002), Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission
- EC (2007), Guidance document on the strict protection of animal species of Community interest under the Habitats Directive 92/43/EEC. European Commission
- DoEHLG (2009, rev. 2010), Appropriate Assessment of Plans and Projects in Ireland Guidance for Planning Authorities. Department of the Environment, Heritage and Local Government
- EC (2013), Interpretation Manual of European Union Habitats. Version EUR 28. European Commission, Luxembourg
- EC (2018), European Commission Notice C (2018) 7621 'Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC', Office for Official Publications of the European Communities, Luxembourg
- OPR (2021), Practice Note PN01: Appropriate Assessment Screening for Development Management. Office of the Planning Regulator, Dublin Ireland
- EC (2021), European Commission Notice C (2021) 6913 'Assessment of plans and projects in relation to Natura 2000 sites – Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC', Office for Official Publications of the European Communities, Luxembourg.
- European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477/2011), as amended. Government of Ireland.
- NPWS (2009, rev. 2010), Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities. National Parks & Wildlife Service, Department of Environment, Heritage and Local Government.
- NPWS (2020), Guidance on Appropriate Assessment for Planning Authorities. National Parks & Wildlife Service.
- SEAI (2026), Appropriate Assessment (NIS) Report Guidance. Sustainable Energy Authority of Ireland.
- Department of Enterprise, Tourism and Employment (2025), Screening for Appropriate Assessment Determination – Tourism Sectoral Adaptation Plan 2025–2030.
- Department of Rural and Community Development (2021), Screening for Appropriate Assessment – Our Rural Future: Rural Development Policy 2021–2025.

3.2 Stages of AA

The AA is a four-stage process with tests at each stage. The four stages are shown in Figure 3.1 below. An important aspect of the process is that the outcome at each successive stage determines whether a further stage in the process is required.

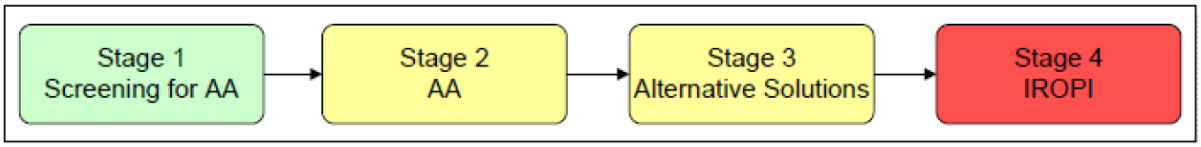


Figure 3.1: Four stages of AA

Stages 1-2 deal with the main requirements for assessment under Article 6(3) of the Habitats Directive. Stage 3 may be part of the Article 6(3) Assessment or may be a necessary precursor to Stage 4. Stage 4 is the main derogation step of Article 6(4).

The screening for AA carried out by the public authority/ competent authority (Stage 1), will determine whether an AA (Stage 2) of the proposed project is required. Stage 2 is required if it cannot be excluded, on the basis of the objective information provided at Stage 1, that the proposed project, individually or in combination with other projects or plans, will have a significant effect on a European site, in view of the site's COs. In this case, a NIS must be prepared to assist the public authority/competent authority to conduct the Stage 2 AA. If it is not possible during Stage 2 to reduce impacts to acceptable, non-significant levels by avoidance and/or mitigation, Stage 3 of the process must be undertaken which is to objectively assess whether alternative solutions exist by which the objectives of the plan or project can be achieved. If alternative solutions exist that do not have negative impacts on European sites; they should be adopted regardless of economic considerations. The process must then return to Stage 2, as any alternative proposal must be subject to a Stage 2 AA before it can be subject to the Article 6(4) test. If it can be demonstrated that all reasonable alternatives have been considered and assessed, the AA progresses to Stage 4. This final stage is undertaken when it has been determined that negative impacts on the integrity of a European site will result from a plan or project and there are no alternative solutions. At Stage 4 of the AA process, it is the characteristics of the plan or project itself that will determine whether or not the competent authority can allow it to progress. This is the determination of Imperative Reasons for Overriding Public Interest (IROPI).

While there is no prescribed form or content for reporting (DoEHLG, 2009) the methodology and format adopted in this report has been in accordance with the European Commission Methodological Guidance on the provision of Article 6(3) and 6(4) of the 'Habitats' Directive 92/43/EEC (EC, 2021) and the European Commission Guidance 'Managing Natura 2000 sites' (EC, 2018), guidance prepared by the NPWS (DoEHLG, 2009) and by the Office of the Planning Regulator (OPR, 2021).

As per DoEHLG (2009):

"The first test is to establish whether, in relation to a particular plan or project, appropriate assessment is required."

In summary, the test for the screening for AA is to assess, in view of objective scientific information, if the proposed development, individually or in combination with other

plans/projects is likely to have a significant effect on a European site. The precautionary-principle approach is required, meaning decisions must avoid deterioration and disturbances that could significantly impact the site's integrity, even where there is uncertainty regarding a likely effect. Under the Habitats Directive, a plan or project cannot be authorised if there remains reasonable scientific doubt that it will adversely affect the integrity of a European site. If there are any significant, potentially significant, or uncertain effects, it will be necessary to proceed to AA and submit an NIS.

3.3 Stage 1 screening/test of significance

This process identifies whether the proposed development is directly connected to or necessary for the management of a European site(s) and identifies whether the development is likely to have significant impacts upon a European site(s) either alone or in combination with other projects or plans.

The screening for AA will incorporate the following steps:

1. Determining whether a project or plan is directly connected with or necessary to the conservation management of any European sites
2. Describing the project or plan
3. Identifying the European sites potentially affected by the project or plan
4. Identifying and describing any potential effects of the project or plan on European sites, alone, in combination and cumulatively with other plans/projects
5. Determining the likelihood of significant effects on European sites.

The output from this stage is a determination for each European site(s) of the likelihood of not significant, significant, potentially significant, or uncertain effects. The latter three determinations will cause that site to be brought forward to Stage 2.

3.4 Desk study

Information on the receiving environment was analysed to determine the potential for significant effects to QI of the European sites with established connectivity to the works (see Section 4.4 of the SISAA). The following publications and data sources were reviewed:

- Environmental Protection Agency (EPA) online interactive mapping tools (https://gis.epa.ie/EPAMaps) and (https://gis.epa.ie/EPAMaps/Water) for water quality data including surface and ground water quality status, and river catchment boundaries
- Information on ranges of mobile QI populations in Volume 1 of NPWS' Status of EU Protected Habitats and Species in Ireland (NPWS, 2019), and associated digital shapefiles obtained from the NPWS Research Branch
- Inland Fisheries Ireland mapping (https://opendata-ifigeo.hub.arcgis.com/search?layout=grid&type=Web%2520Map%2CWeb%2520Experience%2CDashboard)
- BirdWatch Ireland (https://birdwatchireland.ie/)

- Mapping of European site boundaries and Conservation Objectives for relevant sites, available online from the NPWS included site synopsis, Natura 2000 Data form and Conservation Objective Supporting Documents where available (https://www.npws.ie/protected-sites)
- Distribution records for QI of European sites held online by the National Biodiversity Data Centre (www.biodiversityireland.ie)
- Geohive online Environmental Sensitivity Mapping tool (https://www.geohive.ie/pages/environment)
- Geological Survey Ireland (https://www.gsi.ie/en-ie/Pages/default.aspx)
- Local surveys of flora, fauna, and habitat available using the Heritage Councils mapping website (https://www.heritagemaps.ie/)
- Ordnance Survey of Ireland maps and aerial photography.
- Ireland's Marine Atlas, marine data and related information (https://atlas.marine.ie/)
- EMODnet Map Viewer, European Marine Observation and Data Network (https://emodnet.ec.europa.eu/geoviewer/).

The identification of relevant European sites to be included in this report was based on the criteria provided in OPR (2021), namely:

- Any European site within or immediately adjacent to the project area
- Identification of European sites where a Source-Pathway-Receptor (S-P-R) link exists, explained in Section 3.5.

3.5 Identification of relevant European sites

3.5.1 Source-Pathway-Receptor model

The identification of relevant European sites to be included in this report was based on the identification of the 'zone of influence' of the proposed SI works using a S-P-R model where:

- 'Source' is defined as the individual element of the proposed works that has the potential to impact on a European site, its qualifying features, and its COs
- 'Pathway' is defined as the means or route by which a source can affect the ecological receptor
- 'Receptor' is defined as QI of SACs or SPAs for which COs have been set for the European site(s) being assessed.

An S-P-R model is a standard tool used in environmental assessment. For an effect to be likely, all three elements of this mechanism must be in place. The absence or removal of one of the elements of the mechanism results in no likelihood for the effect to occur. The S-P-R model was used to identify a list of European sites, and their QIs, to which the proposed works are potentially linked. These are termed as 'relevant' sites/QIs throughout this report.

In terms of describing effects, the terminology used in this report is consistent with that contained in Table 3.4 (pp.50-52) of the EPA publication Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022).

3.5.2 Zone of influence

Determination of the project's zone of influence was achieved by assessing the project's requirements and deliverables against the ecological receptors within the project footprint, in addition to the ecological receptors that could be connected to and subsequently impacted by the project through abiotic and biotic vectors.

The proximity of the works to European sites, and more importantly, QIs of the European sites, is of importance when identifying potentially likely significant effects. In accordance with the OPR AA Screening Guidelines (2021), the S-P-R model has been used to identify the zone of influence to ensure that relevant European sites are identified. The S-P-R model minimises the risk of overlooking distant or obscure effect pathways, while also avoiding an over reliance on buffer zones (e.g., 15km), within which all European sites should be considered. This approach follows the DoEHLG (2009) guidance on AA which states that:

"*For projects, the distance could be much less than 15 km, and in some cases less than 100m, but this must be evaluated on a case-by-case basis with reference to the nature, size and location of the project, and the sensitivities of the ecological receptors, and the potential for in combination effects*" (DoEHLG, 2009).

The zone of influence of the works on mobile species (e.g., birds, mammals, and fish), and static species and habitats (e.g., saltmarshes, woodlands, and flora) is considered differently. Mobile species have 'range' outside of the European sites in which they are QI. The range of mobile QI species varies considerably, from several metres (e.g., in the case of whorl snails *Vertigo* spp.), to hundreds of kilometres (in the case of migratory wetland birds). A project's zone of influence may extend well beyond the project boundary and can impact or have an effect on static species and habitats remote from the proposed works; for example, where an aquatic QI habitat or plant is located many kilometres downstream from a pollution source. In particular, hydrological linkages between the proposed works and European sites (and their QIs) can occur over significant distances; however, any effect will be site-specific depending on the receiving water environment and nature of the potential impact.

To this end, the zone of influence for this project extends outside of the immediate proposed MUL area to include ecological receptors connected to the SI works through proximity and connectivity through features such as watercourses and waterbodies in addition to potential connectivity through land and air.

4 STAGE TWO APPRAISAL TO INFORM AN AA OF IMPLICATIONS ON EUROPEAN SITES

4.1 Conclusions of the SISAA report

The SISAA report was completed in compliance with EU and Irish law and the relevant European Commission and national guidelines to determine whether or not Likely Significant Effects on any European site could be excluded as a result of the proposed SI works.

The proposed SI works, as stated in the SISAA, are not directly connected with or necessary to the management of any European site.

The possibility of significant effects was considered using a source-pathway-receptor model, where 'Source' was defined as the individual elements of the proposed works that have the potential to affect the identified ecological receptors both within the European site and outside of it based on site connectivity. 'Pathway' was defined as the means or route by which a source can affect the ecological receptor. 'Ecological receptor' was defined as the Special Conservation Interests (for SPAs) or QIs for which COs have been set for the European sites under consideration. Each element can exist independently however an effect is created when there is a linkage between the source, pathway and receptor.

The SISAA report concluded that it could not be ruled out that the proposed SI works had the potential to give rise to likely significant effects on COs of European sites.

Based on the Appropriate Assessment screening and determination undertaken by MARA, additional sites have been included in this report as in their opinion it could not be ruled out that the proposed SI works didn't have the potential to give rise to likely significant effects on designated SPA and SAC sites. Possible direct and indirect effects resulting from the proposed SI works, either alone or in combination with other projects, were identified as:

- Habitat loss, alteration, fragmentation and disturbance of Annex I habitats
- Underwater noise on Annex II QI species
- Above water noise, vibration and lighting disturbance on Annex II QI species
- Collision risk on Annex II QI species.

The location of the relevant European sites in relation to the SI works MUL area is shown in Figure 4.1 and Figure 4.2.

Table 4.1 identifies the SI works associated with each impact, and the receptors with the potential to be affected. The impact pathways assessed within this NIS comprise habitat loss, habitat disturbance, sediment disturbance and water quality effects, underwater noise and vibration, above-water disturbance, and vessel collision risk.

The relevant COs and QIs of the designated sites of concern are provided in Table 4.2, listing the relevant sites' QIs, their attributes and targets.

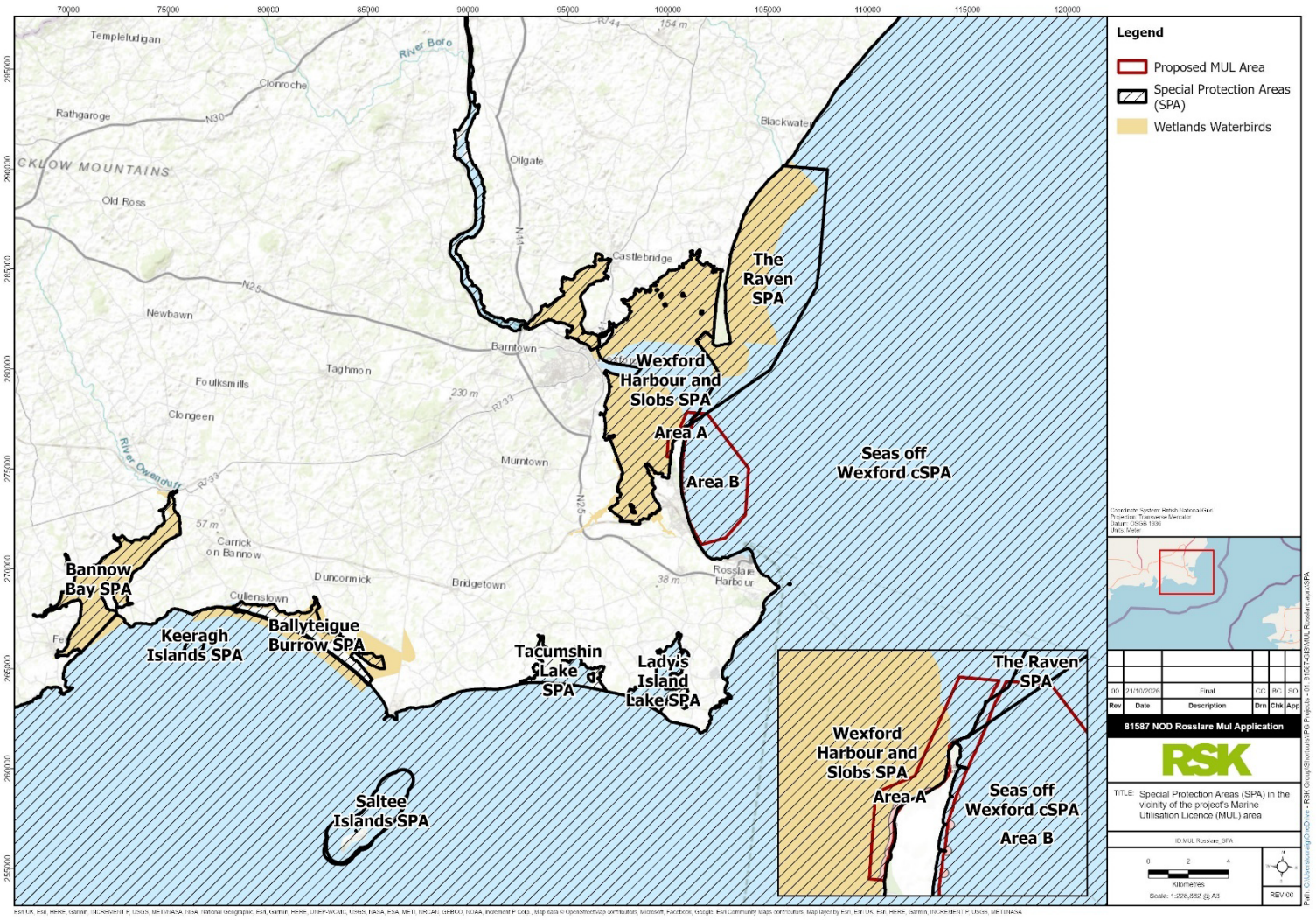


Figure 4.1: SPA sites in relevant to the MUL area

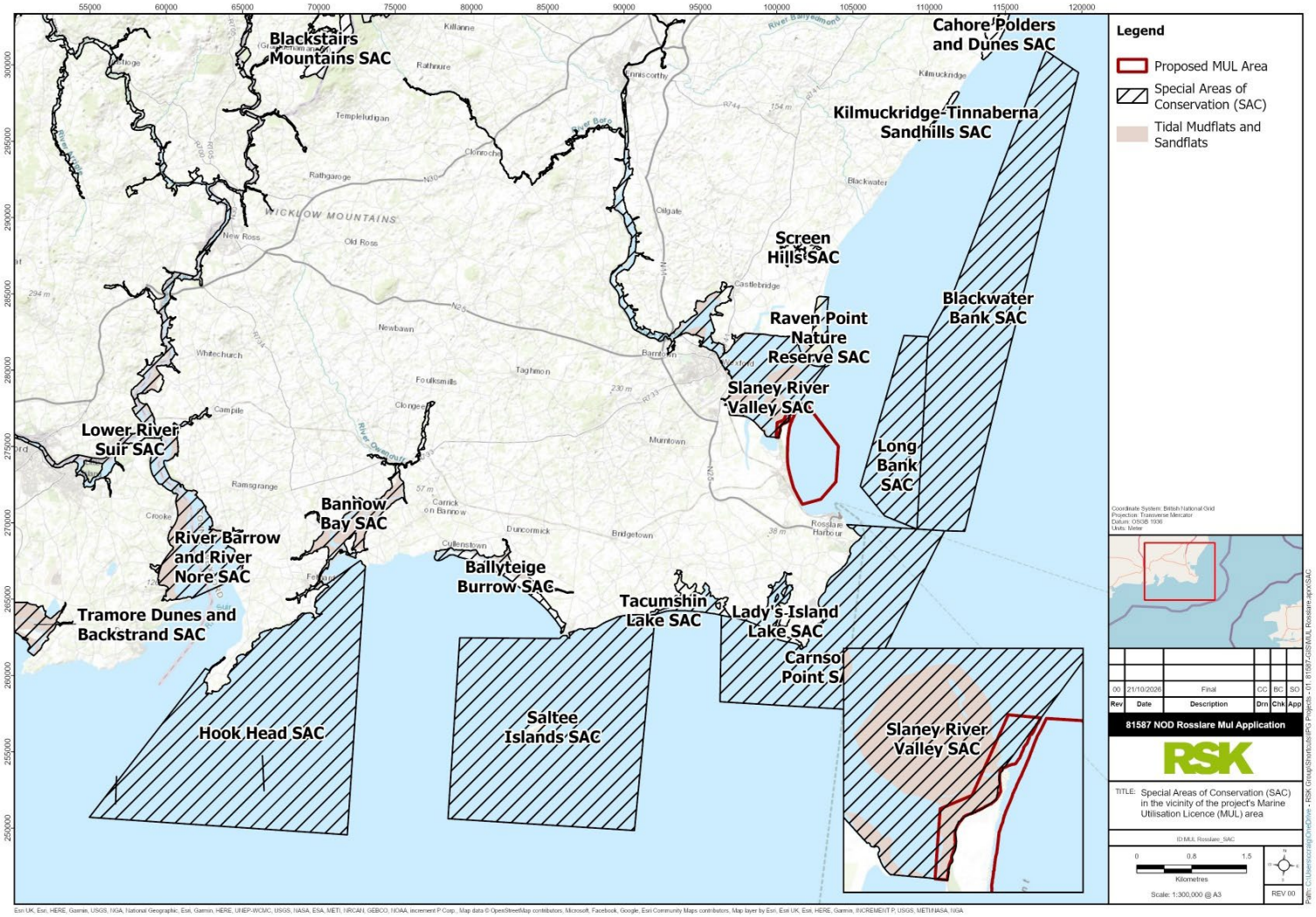


Figure 4.2: SAC sites in relation to the MUL area

Table 4.1: Source-Pathway-Receptor assessment for the works

Impact	Potential source of impact	Description of effect pathway	Relevant receptors
Above-water noise, vibration, lighting, and human presence-related species disturbance	Jack-up barge and vessel activity associated with the SI works	Potential for direct impacts by disturbing species, leading to displacement from the area	Marine mammals Otter Birds
Habitat loss, alteration, and fragmentation	Interactions with the seabed resulting from geotechnical surveys, deployment of seabed equipment, and marine environmental sediment sampling	Potential for direct effects on sensitive habitats and indirect effects to species which rely on those habitats for feeding and/or breeding	Marine habitats Marine mammals Otter Fish Birds
Increased Suspended Sediment Concentrations (SSC)	Interactions with the seabed resulting from geotechnical surveys, deployment of seabed equipment, and marine environmental sediment sampling	Potential for direct effects on sensitive habitats and indirect effects to species which rely on those habitats for feeding and/or breeding	Marine habitats Marine mammals Otter Fish Birds
Underwater noise, including injury and or displacement of Annex II marine species from underwater noise and/or the presence of increased marine traffic	Noise emissions and increased marine traffic from survey equipment and vessels associated with the SI works	Potential for direct effects on species in the marine environment including injury, disturbance and/or displacement	Marine mammals Otter Fish Birds
	May cause injury and/or displacement of Annex II marine species		
Entanglement, including injury and/or disturbance of Annex II marine species from the presence of towed gear and seabed gear	Risk of entanglement from the towed and seabed equipment associated with the geophysical and geotechnical survey works	Potential for direct effects on species in the marine environment including injury, disturbance and/or displacement	Marine mammals
	May cause injury and/or displacement of Annex II marine species		

Impact	Potential source of impact	Description of effect pathway	Relevant receptors
Accidental pollution event	Jack-up barge and vessel activity associated with the SI works	Potential for direct effects on marine habitats and species, and indirect effects through contamination of supporting habitats	Marine habitats Marine mammals Otter Fish Birds
Collision with survey vessels	Vessel activity associated with the SI works	Potential for direct effects to large species in the marine environment	Marine mammals Otter
Invasive non-native species	Transport from equipment	Potential introduction of non-native invasive species	Marine habitats Marine mammals Otter Fish Birds

Table 4.2: Qualifying interests and conservation objectives of the European sites considered

Relevant qualifying interests for which site has been selected2	Attribute	Relevant conservation objectives
Slaney River Valley SAC (000781)		
Estuaries [1130]	Habitat area	The permanent habitat area is stable or increasing, subject to natural processes
	Community distribution	The following community types should be maintained in, or restored to, a natural condition: Mixed sediment community complex; Estuarine muds dominated by polychaetes and crustaceans community complex; and Sand dominated by polychaetes community complex
Mudflats and sandflats not covered by seawater at low tide [1140]	Habitat area	The permanent habitat area is stable or increasing, subject to natural processes
	Community distribution	The following community types should be maintained in a natural condition: Estuarine muds dominated by polychaetes and crustaceans community complex; and Sand dominated by polychaetes community complex
Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330][1]	Habitat area	Area stable or increasing, subject to natural processes, including erosion and succession
	Habitat distribution	No decline or change in habitat distribution
	Physical structure: sediment supply	Maintain/restore natural circulation of sediments and organic matter, without any physical obstructions
	Physical structure: creeks and pans	Maintain/restore creek and pan structure, subject to natural processes, including erosion and succession
	Physical structure: flooding regime	Maintain natural tidal regime
	Vegetation structure: zonation	Maintain range of coastal habitats including transitional zones, subject to natural processes including erosion and succession
	Vegetation structure: vegetation height	Maintain structural variation within sward

Relevant qualifying interests for which site has been selected2	Attribute	Relevant conservation objectives
	Vegetation structure: vegetation cover	Maintain more than 90% area outside creeks vegetated
	Vegetation composition: typical species and sub-communities	Maintain range of subcommunities with typical species listed in McCorry and Ryle (2009)
	Vegetation structure: negative indicator species- *Spartina anglica*	No significant expansion of common cordgrass (*Spartina anglica*), with an annual spread of less than 1% where it is known to occur.
Mediterranean salt meadows (*Juncetalia maritimi*) [1410][1]	Habitat area	Area stable or increasing, subject to natural processes, including erosion and succession.
	Habitat distribution	No decline or change in habitat distribution, subject to natural processes
	Physical structure: sediment supply	Maintain natural circulation of sediments and organic matter, without any physical obstructions
	Physical structure: creeks and pans	Maintain creek and pan structure, subject to natural processes, including erosion and succession
	Physical structure: flooding regime	Maintain natural tidal regime
	Vegetation structure: zonation	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession
	Vegetation structure: vegetation height	Maintain structural variation in the sward
	Vegetation structure: vegetation cover	Maintain more than 90% of the area outside of creeks vegetated
	Vegetation composition: typical species	Maintain range of subcommunities with typical species listed in McCorry and Ryle (2009)

Relevant qualifying interests for which site has been selected2	Attribute	Relevant conservation objectives
	Vegetation structure: negative indicator species - *Spartina anglica*	There is no record of common cordgrass (*Spartina anglica*) in the SAC and its establishment should be prevented
Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260]	Habitat area	Area stable at 12.6km or increasing, subject to natural processes
	Habitat distribution	No decline, subject to natural processes
	Hydrological regime: river flow	Maintain appropriate hydrological regimes
	Hydrological regime: tidal influence	Maintain natural tidal regime
	Substratum composition: particle size range	For the tidal sub-type, the substratum of the channel must be dominated by particles of sand to gravel, with silt at the river margins
	Water quality: nutrients	The concentration of nutrients in the water column must be sufficiently low to prevent changes in species composition or habitat condition
	Vegetation composition: typical species	Typical species of the relevant habitat sub-type reach favourable status
	Floodplain connectivity	The area of active floodplain at and upstream of the habitat must be maintained
Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]	Habitat area	Area stable or increasing, subject to natural processes, at least 146.17ha for sub-sites surveyed
	Habitat distribution	No decline
	Woodland size	Area stable or increasing. Where topographically possible, "large" woods at least 25ha in size and “small” woods at least 3ha in size
	Woodland structure: cover and height	Diverse structure with a relatively closed canopy containing mature trees; subcanopy layer with semi-mature trees and shrubs; and well-developed herb layer
	Woodland structure: community diversity and extent	Maintain diversity and extent of community types

Relevant qualifying interests for which site has been selected2	Attribute	Relevant conservation objectives
	Woodland structure: natural regeneration	Seedlings, saplings and pole age-classes occur in adequate proportions to ensure survival of woodland canopy
	Woodland structure: dead wood	At least 30m³/ha of fallen timber greater than 10cm diameter; 30 snags/ha; both categories should include stems greater than 40cm diameter
	Woodland structure: veteran trees	No decline
	Woodland structure: indicators of local distinctiveness	No decline
	Vegetation composition: native tree cover	No decline. Native tree cover not less than 95%
	Vegetation composition: typical species	A variety of typical native species present, depending on woodland type, including oak (*Quercus petraea)* and birch (*Betula pubescens*)
	Vegetation composition: negative indicator species	Negative indicator species, particularly non-native invasive species, absent or under control
Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0]	Habitat distribution	No decline
	Habitat area	Area stable or increasing, subject to natural processes, at least 18.7ha for sites surveyed
	Woodland size	Area stable or increasing. Where topographically possible, "large" woods at least 25ha in size and “small” woods at least 3ha in size
	Woodland structure: cover and height	Diverse structure with a relatively closed canopy containing mature trees; subcanopy layer with semi- mature trees and shrubs; and well-developed herb layer
	Woodland structure: community diversity and extent	Maintain diversity and extent of community types
	Woodland structure: natural regeneration	Seedlings, saplings and pole age-classes occur in adequate proportions to ensure survival of woodland canopy

Relevant qualifying interests for which site has been selected2	Attribute	Relevant conservation objectives
	Hydrological regime: flooding depth/height of water table	Appropriate hydrological regime necessary for maintenance of alluvial vegetation
	Woodland structure: dead wood	At least 30m³/ha of fallen timber greater than 10cm diameter; 30 snags/ha; both categories should include stems greater than 40cm diameter (greater than 20cm diameter in the case of alder)
	Woodland structure: veteran trees	No decline
	Woodland structure: indicators of local distinctiveness	No decline
	Vegetation composition: native tree cover	No decline. Native tree cover not less than 95%
	Vegetation composition: typical species	A variety of typical native species present, depending on woodland type, including alder (*Alnus glutinosa*), willows (*Salix* spp) and, locally, oak (*Quercus robur*) and ash (*Fraxinus excelsior*)
	Vegetation composition: negative indicator species	Negative indicator species, particularly non-native invasive species, absent or under control
Freshwater pearl mussel (*Margaritifera margaritifera)* [1029]	NA	The status of this species as a qualifying Annex II species for the Slaney River Valley SAC is currently under review. The outcome of this review will determine whether a site-specific conservation objective is set for this species.
Sea lamprey (*Petromyzon marinus*) [1095]	Distribution: extent of anadromy	Greater than 75% of main stem length of rivers accessible from estuary
	Population structure of juveniles	At least three age/size groups present
	Juvenile density in fine sediment	Juvenile density at least 1/m²
	Extent and distribution of spawning habitat	No decline in extent and distribution of spawning beds Improved dispersal of spawning beds into areas upstream of barriers
	Availability of juvenile habitat	More than 50% of sample sites positive

Relevant qualifying interests for which site has been selected2	Attribute	Relevant conservation objectives
Brook lamprey (*Lampetra planeri)* [1096]	Distribution	Access to all water courses down to first order streams
	Population structure of juveniles	At least three age/size groups of brook/river lamprey present
	Juvenile density in fine sediment	Mean catchment juvenile density of brook/river lamprey at least 2/m²
	Extent and distribution of spawning habitat	No decline in extent and distribution of spawning bed
	Availability of juvenile habitat	More than 50% of sample sites positive
River lamprey (*Lampetra fluviatilis)* [1099]	Distribution	Greater than 75% of main stem and major tributaries down to second order accessible from estuary
	Population structure of juveniles	At least three age/size groups of river/brook lamprey present
	Juvenile density in fine sediment	Mean catchment juvenile density of river/brook lamprey at least 2/m²
	Extent and distribution of spawning habitat	No decline in extent and distribution of spawning beds
	Availability of juvenile habitat	More than 50% of sample sites positive
Twaite shad (*Alosa fallax*) [1103]	Distribution	Greater than 75% of main stem length of rivers accessible from estuary
	Population structure of – age classes	More than one age class present
	Extent and distribution of spawning habitat	No decline in extent and distribution of spawning habitats
	Water quality	No lower than 5mg/l
	Spawning habitat quality	Maintain stable gravel substrate with very little fine material, free of filamentous algal (macroalgae) growth and macrophyte (rooted higher plants) growth
Atlantic salmon (*Salmo salar*) [1106]	Distribution: extent of anadromy	100% of river channels down to second order accessible from estuary
	Adult spawning fish	Conservation Limit (CL) for each system consistently exceeded

Relevant qualifying interests for which site has been selected2	Attribute	Relevant conservation objectives
	Salmon fry abundance	Maintain or exceed 0+ fry mean catchment-wide abundance threshold value. Currently set at 17 salmon fry/5 min sampling
	Out-migrating smolt abundance	No significant decline
	Number and distribution of redds	No decline in number and distribution of spawning redds due to anthropogenic causes
	Water quality	At least Q4 at all sites sampled by EPA
Otter (*Lutra lutra*)[1355]	Distribution	No significant decline
	Extent of terrestrial habitat	No significant decline. Area mapped and calculated as 64.7ha above high water mark (HWM); 453.4ha along river banks/ around ponds
	Extent of marine habitat	No significant decline. Area mapped and calculated as 534.7ha
	Extent of freshwater (river) habitat	No significant decline. Length mapped and calculated as 264.1km
	Extent of freshwater (lake/lagoon) habitat	No significant decline. Area mapped and calculated as 0.4ha
	Couching sites and holts	No significant decline
	Fish biomass available	No significant decline
	Barriers to connectivity	No significant decline
Harbour seal (*Phoca vitulina*) [1365]	Access to suitable habitat	Species range within the site should not be restricted by artificial barriers to site use
	Breeding behaviour	The breeding sites should be maintained in a natural condition
	Moulting behaviour	The moult haul-out sites should be maintained in a natural condition
	Resting behaviour	The resting haul-out sites should be maintained in a natural condition
	Disturbance	Human activities should occur at levels that do not adversely affect the harbour seal population at the site

Relevant qualifying interests for which site has been selected2	Attribute	Relevant conservation objectives
Wexford Harbour and Slobs SPA (004076)		
Little grebe (*Tachybaptus ruficollis*) [A004]	Population trend	Long term population trend stable or increasing
	Distribution	There should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation
Great crested grebe (*Podiceps cristatus*) [A005]	Population trend	Long term population trend stable or increasing
	Distribution	There should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation
Cormorant (*Phalacrocorax carbo*) [A017]	Population trend	Long term population trend stable or increasing
	Distribution	There should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation
Grey heron (*Ardea cinerea*) [A028]	Population trend	Long term population trend stable or increasing
	Distribution	There should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation
Bewick's swan (*Cygnus columbianus bewickii*) [A037]	Population trend	Long term population trend stable or increasing
	Distribution	There should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation
Whooper swan (*Cygnus cygnus*) [A038]	Population trend	Long term population trend stable or increasing
	Distribution	There should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation
	Population trend	Long term population trend stable or increasing

Relevant qualifying interests for which site has been selected2	Attribute	Relevant conservation objectives
Light-bellied brent Goose (*Branta bernicla hrota*) [A046]	Distribution	There should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation
Shelduck (*Tadorna tadorna*) [A048]	Population trend	Long term population trend stable or increasing
	Distribution	There should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation
Teal (*Anas crecca*) [A052]	Population trend	Long term population trend stable or increasing
	Distribution	There should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation
Mallard (*Anas platyrhynchos*) [A053]	Population trend	Long term population trend stable or increasing
	Distribution	There should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation
Pintail (*Anas acuta*) [A054]	Population trend	Long term population trend stable or increasing
	Distribution	There should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation
Scaup (*Aythya marila*) [A062]	Population trend	Long term population trend stable or increasing
	Distribution	There should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation
Goldeneye (*Bucephala clangula*) [A067]	Population trend	Long term population trend stable or increasing
	Distribution	There should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation
	Population trend	Long term population trend stable or increasing

Relevant qualifying interests for which site has been selected2	Attribute	Relevant conservation objectives
Red-breasted merganser (*Mergus serrator*) [A069]	Distribution	There should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation
Hen harrier (*Circus cyaneus*) [A082]	Roost attendance: individual hen harriers	No significant decline
	Suitable foraging habitat	No significant decline
	Roost site: condition	The roost site should be maintained in a suitable condition
	Disturbance at the roost site	Human activities should occur at levels that do not adversely affect the Hen Harrier winter roost population
Coot (*Fulica atra*) [A125]	Population trend	Long term population trend stable or increasing
	Distribution	There should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation
Oystercatcher (*Haematopus ostralegus*) [A130]	Population trend	Long term population trend stable or increasing
	Distribution	There should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation
Golden plover (*Pluvialis apricaria*) [A140]	Population trend	Long term population trend stable or increasing
	Distribution	There should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation
Grey plover (*Pluvialis squatarola*) [A141]	Population trend	Long term population trend stable or increasing
	Distribution	There should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation
Lapwing	Population trend	Long term population trend stable or increasing

Relevant qualifying interests for which site has been selected2	Attribute	Relevant conservation objectives
(*Vanellus vanellus*) [A142]	Distribution	There should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation
Knot (*Calidris canutus*) [A143]	Population trend	Long term population trend stable or increasing
	Distribution	There should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation
Sanderling (*Calidris alba*) [A144]	Population trend	Long term population trend stable or increasing
	Distribution	There should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation
Dunlin (*Calidris alpina*) [A149]	Population trend	Long term population trend stable or increasing
	Distribution	There should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation
Black-tailed godwit (*Limosa limosa*) [A156]	Population trend	Long term population trend stable or increasing
	Distribution	There should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation
Bar-tailed godwit (*Limosa lapponica*) [A157]	Population trend	Long term population trend stable or increasing
	Distribution	There should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation
Curlew (*Numenius arquata*) [A160]	Population trend	Long term population trend stable or increasing
	Distribution	There should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation
Redshank (*Tringa totanus*) [A162]	Population trend	Long term population trend stable or increasing
	Distribution	There should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation

Relevant qualifying interests for which site has been selected2	Attribute	Relevant conservation objectives
Black-headed gull (*Chroicocephalus ridibundus*) [A179]	Population trend	Long term population trend stable or increasing
	Distribution	There should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation
Lesser black-backed Gull (*Larus fuscus*) [A183]	Population trend	Long term population trend stable or increasing
	Distribution	There should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation
Greenland white-fronted goose (*Anser albifrons flavirostris*) [A395]	Population trend	Long term population trend stable or increasing
	Distribution	There should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation
Wigeon (*Mareca penelope*) [A855]	Population trend	Long term population trend stable or increasing
	Distribution	There should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation
Little tern (*Sternula albifrons*) [A885]	Population trend	Long term population trend stable or increasing
	Distribution	There should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation
Wetland and Waterbirds [A999]	Wetland habitat area	The permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 4,241ha, other than that due to natural patterns of variation
Carnsore Point SAC (002269)		
Harbour porpoise (*Phocoena phocoena*) [1351]	Access to suitable habitat	Species range within the site should not be restricted by artificial barriers to site use
	Disturbance	Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site

Relevant qualifying interests for which site has been selected2	Attribute	Relevant conservation objectives
Blackwater Bank SAC (002953)		
Harbour porpoise (*Phocoena phocoena*) [1351]	Access to suitable habitat	Species range within the site should not be restricted by artificial barriers to site use
	Disturbance	Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site
Saltee Island SAC (00707)		
Grey seal (*Halichoerus grypus*) [1364]	Access to suitable habitat	Species range within the site should not be restricted by artificial barriers to site use
	Disturbance	Human activities should occur at levels that do not adversely affect the grey seal population
Hook Head SAC (000764)		
Common bottlenose dolphin (*Tursiops truncatus*) [1349]	Access to suitable habitat	Species range within the site should not be restricted by artificial barriers to site use
	Disturbance	Human activities should occur at levels that do not adversely affect the Bottlenose Dolphin population at the site
Harbour porpoise (*Phocoena phocoena*) [1351]	Access to suitable habitat	Species range within the site should not be restricted by artificial barriers to site use
	Disturbance	Human activities should occur at levels that do not adversely affect the Harbour Porpoise community at the site
River Barrow and River Nore SAC (002162)		
Sea lamprey (*Petromyzon marinus*) [1095]	Distribution: extent of anadromy	Greater than 75% of main stem length of rivers accessible from estuary
	Population structure of juveniles	At least three age/size groups present
	Juvenile density in fine sediment	Juvenile density at least 1/m²
	Extent and distribution of spawning habitat	No decline in extent and distribution of spawning beds

Relevant qualifying interests for which site has been selected2	Attribute	Relevant conservation objectives
	Availability of juvenile habitat	More than 50% of sample sites positive
River lamprey (*Lampetra fluviatilis*) [1099]	Distribution: extent of anadromy	Greater than 75% of main stem length of rivers accessible from estuary
	Population structure of juveniles	At least three age/size groups present
	Juvenile density in fine sediment	Mean catchment juvenile density of brook/river lamprey at least 2/m²
	Extent and distribution of spawning habitat	No decline in extent and distribution of spawning beds
	Availability of juvenile habitat	More than 50% of sample sites positive
Twaite shad (*Alosa fallax fallax*) [1103]	Distribution: extent of anadromy	Greater than 75% of main stem length of rivers accessible from estuary
	Population structure of juveniles	More than one age class present
	Extent and distribution of spawning habitat	No decline in extent and distribution of spawning beds
	Water quality: oxygen levels	No lower than 5mg/l
	Spawning habitat quality: Filamentous algae; macrophytes; sediment	Maintain stable gravel substrate with very little fine material, free of filamentous algal (macroalgae) growth and macrophyte (rooted higher plants) growth
Salmon (*Salmo salar*) [1106]	Distribution: extent of anadromy	100% of river channels down to second order accessible from estuary
	Adult spawning fish	Conservation limit (CL) for each system consistently exceeded
	Salmon fry abundance	Maintain or exceed 0+ fry mean catchment-wide abundance threshold value. Currently set at 17 salmon fry/5 min sampling
	Out-migrating smolt abundance	No significant decline
	Number and distribution of redds	No decline in number and distribution of spawning redds due to anthropogenic causes
	Water quality	At least Q4 at all sites sampled by EPA

Relevant qualifying interests for which site has been selected2	Attribute	Relevant conservation objectives
Seas off Wexford cSPA (004237)		
Red-throated diver (*Gavia stellata*) [A001]	Population trend	Long term SPA population trend is stable or increasing
	Distribution	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population
Fulmar (*Fulmarus glacialis*) [A009]	Population trend	Long term SPA population trend is stable or increasing
	Distribution	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population
Manx shearwater (*Puffinus puffinus*) [A013]	Population trend	Long term SPA population trend is stable or increasing
	Distribution	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population
Gannet (*Morus bassanus*) [A016]	Population trend	Long term SPA population trend is stable or increasing
	Distribution	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population
Cormorant (*Phalacrocorax carbo*) [A017]	Population trend	Long term SPA population trend is stable or increasing
	Distribution	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population
Shag (*Phalacrocorax aristotelis*) [A018]	Population trend	Long term SPA population trend is stable or increasing
	Distribution	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population
	Population trend	Long term SPA population trend is stable or increasing

Relevant qualifying interests for which site has been selected2	Attribute	Relevant conservation objectives
Common scoter (*Melanitta nigra*) [A065]	Distribution	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population
Mediterranean gull (*Larus melanocephalus*) [A176]	Population trend	Long term SPA population trend is stable or increasing
	Distribution	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population
Black-headed gull (*Chroicocephalus ridibundus*) [A179]	Population trend	Long term SPA population trend is stable or increasing
	Distribution	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population
Lesser black-backed gull (*Larus fuscus*) [A183]	Population trend	Long term SPA population trend is stable or increasing
	Distribution	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population
Herring gull (*Larus argentatus*) [A184]	Population trend	Long term SPA population trend is stable or increasing
	Distribution	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population
Kittiwake (*Rissa tridactyla*) [A188]	Population trend	Long term SPA population trend is stable or increasing
	Distribution	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population
	Population trend	Long term SPA population trend is stable or increasing

Relevant qualifying interests for which site has been selected2	Attribute	Relevant conservation objectives
Sandwich tern (*Sterna sandvicensis*) [A191]	Distribution	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population
Roseate tern (*Sterna dougallii*) [A192]	Population trend	Long term SPA population trend is stable or increasing
	Distribution	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population
Common tern (*Sterna hirundo*) [A193]	Population trend	Long term SPA population trend is stable or increasing
	Distribution	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population
Arctic tern (*Sterna paradisaea*) [A194]	Population trend	Long term SPA population trend is stable or increasing
	Distribution	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population
Little tern (*Sterna albifrons*) [A195]	Population trend	Long term SPA population trend is stable or increasing
	Distribution	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population
Guillemot (*Uria aalge*) [A199]	Population trend	Long term SPA population trend is stable or increasing
	Distribution	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population
Razorbill (*Alca torda*) [A200]	Population trend	Long term SPA population trend is stable or increasing
	Distribution	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population
	Population trend	Long term SPA population trend is stable or increasing

Relevant qualifying interests for which site has been selected2	Attribute	Relevant conservation objectives
Puffin (*Fratercula arctica*) [A204]	Distribution	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population
The Raven SPA (004019)		
Red-throated diver (*Gavia stellata*) [A001]	Population trend	Long term population trend stable or increasing
	Distribution	There should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation
Cormorant (*Phalacrocorax carbo*) [A017]	Population trend	Long term population trend stable or increasing
	Distribution	There should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation
Common scoter (*Melanitta nigra*) [A065]	Population trend	Long term population trend stable or increasing
	Distribution	There should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation
Grey plover (*Pluvialis squatarola*) [A141]	Population trend	Long term population trend stable or increasing
	Distribution	There should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation
Sanderling (*Calidris alba*) [A144]	Population trend	Long term population trend stable or increasing
	Distribution	There should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation
Greenland white-fronted Goose (*Anser albifrons flavirostris*) [A395]	Population trend	Long term population trend stable or increasing
	Distribution	There should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation

Relevant qualifying interests for which site has been selected2	Attribute	Relevant conservation objectives
Wetlands [A999]	Wetland habitat area	The permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 4,207ha, other than that due to natural patterns of variation
Lady's Island Lake SPA (004009)		
Black-headed gull (*Chroicocephalus ridibundus*) [A179]	Population trend	Long term population trend stable or increasing
	Distribution	Sufficient availability of suitable nesting sites throughout the SPA to maintain a stable or increasing population
Sandwich tern (*Sterna sandvicensis*) [A191]	Population trend	Long term population trend stable or increasing
	Distribution	Sufficient availability of suitable nesting sites throughout the SPA to maintain a stable or increasing population
Roseate tern (*Sterna dougallii*) [A192]	Population trend	Long term population trend stable or increasing
	Distribution	Sufficient availability of suitable nesting sites throughout the SPA to maintain a stable or increasing population
Common tern (*Sterna hirundo*) [A193]	Population trend	Long term population trend stable or increasing
	Distribution	Sufficient availability of suitable nesting sites throughout the SPA to maintain a stable or increasing population
Arctic tern (*Sterna paradisaea*) [A194]	Population trend	Long term population trend stable or increasing
	Distribution	Sufficient availability of suitable nesting sites throughout the SPA to maintain a stable or increasing population
Tacumshin Lake SPA (004092)		
	Winter population trend	Long term winter population trend is stable or increasing

Relevant qualifying interests for which site has been selected2	Attribute	Relevant conservation objectives
Whooper swan (*Cygnus cygnus*) [A038]	Winter spatial distribution	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target
Bewick's swan (*Cygnus columbianus bewickii*) [A037]	Winter population trend	Long term winter population trend is stable or increasing
	Winter spatial distribution	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target
Saltee Islands SPA (004002)		
Fulmar (*Fulmarus glacialis*) [A009]	Population trend	No significant decline
	Distribution	No significant decline
Gannet (*Morus bassanus*) [A016]	Population trend	No significant decline
	Distribution	No significant decline
Cormorant (*Phalacrocorax carbo*) [A017]	Population trend	No significant decline
	Distribution	No significant decline
Lesser Black-backed Gull (*Larus fuscus*) [A183]	Population trend	No significant decline
	Distribution	No significant decline
Herring Gull (*Larus argentatus*) [A184]	Population trend	No significant decline
	Distribution	No significant decline
Kittiwake (*Rissa tridactyla*) [A188]	Population trend	No significant decline
	Distribution	No significant decline

Relevant qualifying interests for which site has been selected2	Attribute	Relevant conservation objectives
Guillemot (*Uria aalge*) [A199]	Population trend	No significant decline
	Distribution	No significant decline
Razorbill (*Alca torda*) [A200]	Population trend	No significant decline
	Distribution	No significant decline
Puffin (*Fratercula arctica*) [A204]	Population trend	No significant decline
	Distribution	No significant decline
Ballyteigue Burrow SPA (004020)		
Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]	Population trend	Long term population trend stable or increasing
	Distribution	There should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation

NA = not available as part of the CO document for the relevant European site.

[1] While Atlantic and Mediterranean salt meadows are listed as a QI on the NPWS site, they are not listed as a qualifying feature within the CO document, the extend of the habitat per McCorry and Ryle (2009) within the Bay area, is assessed as being favourable. Indicative COs have been included based on neighbouring sites.

5 LIKELY SIGNIFICANT EFFECTS IDENTIFIED IN SCREENING FOR APPROPRIATE ASSESSMENT

Of the potential impact sources and pathways as identified in Table 4.1, the SISAA concluded that the potential for impact on European sites from the following could not be ruled out and required further assessment:

- Habitat loss, disturbance, alteration and/or fragmentation (including suspended sediment/water quality impacts)
- Underwater noise impacts

Based on MARAs Appropriate Assessment screening and determination the potential for impact on European sites could not also be fully be ruled out and required further assessment for the following potential impact pathways in addition to those identified in the SISAA:

- Above water noise, vibration and lighting
- Collision risk.

5.1 Habitat loss or disturbance

In the vicinity of the MUL area (area A and B) are the Slaney River Valley SAC, the Raven SPA, the Seas off Wexford cSPA and Wexford Harbour and Slobs SPA. Of the seven Annex I habitat types selected for protection as part of the Slaney River Valley SAC (see Table 4.2), four are categorised as being 'Coastal and Halophytic' in their distributions, while the remaining three habitats are categorised as freshwater and forests. The Wexford Harbour and Slobs SPA has one Annex I habitat type selected for protection, wetlands and waterbirds. The following additional designated sites have been included for mobile QI species that may rely on these habitats for feeding and/or breeding, including:

- Carnsore Point SAC
- Blackwater Bank SAC
- Saltee Islands SAC
- Hook Head SAC
- River Barrow and River Nore SAC
- Lady's Island Lake SPA
- Tacumshin Lake SPA
- Saltee Islands SPA
- Ballyteigue Burrow SPA

The distribution of all QI habitats and species within the SACs and SPAs are presented in Table 4.2 above. The marine based geotechnical works may impact on annexed habitats within a small section of the designated sites within the MUL area. Mudflats and sandflats not covered by seawater at low tide [1140], Atlantic salt meadows [1330] and

wetland [A999] may occur within the MUL area (area A), where the marine elements of the SI works will occur.

As identified in Table 4.1, there is the potential for loss and/or disturbance to these marine habitats as a result of geotechnical sampling; which has potential to impact QI bird species from designated sites further afield. In addition to temporary direct habitat loss when taking samples, there will also be temporary habitat loss due to the four feet of the jack-up barge used to conduct sampling, the anchoring of the metocean monitoring buoys and placement of seabed equipment during some geophysical surveys.

The substrate in the MUL area is dominated by infralittoral fine sand or muddy sand substrate with water depths up to 7 m below chart datum. The Slaney River Valley SAC and the Wexford Harbour and Slobs SPA have Annex I marine habitats QIs that overlap the MUL area (notably area A); mudflats and sandflats not covered by seawater at low tide and wetlands (Table 4.2).

The vast majority of the sampling will occur in area consisting of sandy mud, muddy sand and slightly gravelly sandy mud sediment. Very few samples may occur within Annex I mudflats and sandflats not covered by seawater at low tide and wetland habitats; it is noted that all sampling within area A of the MUL area will occur within these habitats. Sampling within areas of Atlantic salt meadow habitat will be avoided, removing the potential for disturbance to this habitat within the MUL area. Sampling may result in localised and short-term displacement of sediment, leading to suspended sediment and impacting water quality and QI species habitats.

See Table 2.2 for the full list of sampling that may cause removal of substrate within the MUL area. The feet of the jack-up rig will cover an area of 1 m^2 each (for a combined total of 4 m^2 per sample), while the boreholes themselves will be drilled within a steel casing 300 mm in diameter. Table 5.1 shows the estimated maximum number of boreholes within each Annex I habitats based on NPWS habitat mapping of the SAC and SPA (Figure 4.1 and Figure 4.2, NPWS, 2011; 2012). It is noted that since the entire area A of the MUL area is mapped as Annex I mudflats and sandflats not covered by seawater at low tide and wetland habitats, there is a redundant count of the 20 samples that may occur within mudflats, sandflats and wetland, meaning that the total area affected for each habitat type can be considered an absolute maximum based on final siting of the sampling locations.

Table 5.1: Predicted area of impact of the borehole samples on protected habitats

Annex I habitat	Maximum number of boreholes proposed	Total area of proposed boreholes (m^2)*	Total cumulative area of jack-up barge feet (m^2)	Total area affected (m^2)	Total Annex I Habitat within SAC (ha)	Percentage of total area affected (%) [boreholes only]
Mudflats and sandflats [1140]	20	1.42	80	81.42	1,027	0.0007927945 [0.00001]
Wetland [A999]	20	1.42	80	81.42	4,241	0.0002 [0.000003]

As shown in Table 5.1, the total impact area of the boreholes will be extremely small and represent an extremely small proportion of the total area of the relevant Annex I habitats within the SAC. In addition, no permanent losses of relevant Annex I habitats are expected to arise as a result of the SI works, and suspended sediment is expected to return to a normal value shortly after the activities are ceased. The vast majority of the area affected will be from the jack-up barge feet with a significantly smaller area being impacted by the 300mm diameter boreholes.

The impacts associated with the jack-up barge feet will be temporary in nature and will not create any long term impact on the seabed or wetlands beyond the period of deployment. These potential impacts are anticipated to be similar to those of a boat anchor within the relevant habitats and will not cause any non-temporary or large scale alterations to the habitat. As such, it is considered that the proposed use of the jack-up barge and associated feet will not give rise to any significant loss of habitat and associated species within the relevant designated sites.

Each borehole sample will involve the disturbance of seabed 300mm in diameter. Direct disturbance will be temporary in nature as is it anticipated that the removed habitat will be quickly and naturally filled by surrounding sediment following completion of sampling. For all habitat types affected by borehole sampling, the area over which effects will occur are extremely small in the context of the areas of relevant Annex I habitat supported by the SAC and SPA, being an extremely small percentage as listed in Table 5.1.

The proposed use of anchors for the metocean monitoring buoys will be of a footprint area up to 2 m^2 per anchor, for a total of two anchors per buoy, equating to a total maximum footprint of 16 m^2. The buoys are due to be placed in the MUL area such that no overlap with Annex I habitats associated with the sites is foreseen. As such, it is considered that the proposed use of the anchors will not give rise to any significant loss of habitat within the Slaney River Valley SAC, the Raven SPA, the Seas off Wexford cSPA or the Wexford Harbour and Slobs SPA.

The placement of temporary survey equipment on the seabed and wetlands during some geophysical surveys is likewise expected to be localised and temporary in nature, disturbing a very small proportion of the sediment.

Such small-scale and temporary effects are not considered representative of an adverse impact upon the integrity of the qualifying features of the European sites. It is not predicted that such effects could give rise to any wider impacts to the favourable structure and functioning of the wider area of Annex I mudflat, sandflat or wetland qualifying habitats and the QI species that rely on them (e.g. birds, migratory fish, marine mammals, otters)).

As such, it is considered that the temporary impacts associated with borehole creation, metocean monitoring buoy anchoring and deployment of seabed equipment associated with geophysical surveys within areas of Annex I habitats within the designated sites would not give rise to a significant habitat loss effect upon the European sites.

Proposed grab and intertidal core sampling will involve the removal of a maximum of 0.1m^2 surface area of material from each sample location. It is considered that such small-scale sampling area will have no potential to give rise to significant effects upon any Annex I habitats within the SAC and SPAs. Likewise, the cone penetration tests will

be of a diameter of 44 mm, meaning that these samples will also be of such small scale to have no potential significant effects on any Annex I habitats within the SAC or SPAs.

Proposed SI works have the potential to impact sediment distribution temporarily during intrusive sampling, increasing the potential for indirect impacts such as localised smothering of sensitive habitats (e.g. wetlands) and potentially affecting mobile species feeding and breeding grounds. However, due to the small-scale of the QI habitats being impacted (area A), the relative high activity of the coastline, the temporary nature of the works and the short restoration period of the sediment dispersal, mobile QI species are not expected to be significantly impacted during the works.

On the basis of the assessment presented here, it is considered that the SI works will not have potential to give rise to any adverse impacts upon the integrity of European sites through habitat loss. This conclusion is made without the consideration of applying any mitigation measures.

5.2 Underwater noise

As listed in Table 4.1, noise-generation resulting from the SI works has the potential to affect some mobile marine QI species of a European SAC and SPA sites, including:

- Slaney River Valley SAC
- Carnsore Point SAC
- Blackwater Bank SAC
- Saltee Islands SAC
- Hook Head SAC
- River Barrow and River Nore SAC
- Seas off Wexford cSPA
- The Raven SPA
- Wexford Harbour and Slobs SPA
- Lady's Island Lake SPA
- Saltee Islands SPA.

The SISAA concluded that it could not be ruled out that there may be significant effects from the noise generated by the geophysical surveys on fish, harbour seals, otters, and harbour porpoise. Following MARAs review of the SISAA/NIS and comments received through the AA screening and determination during the MUL application process, diving seabirds, grey seals and common bottlenose dolphins have been included in this assessment.

Telemetry data indicates that harbour seals have been recorded along the south-east coast of Ireland; predominantly in sheltered estuaries, sand or mudflats with limited human disturbance (NPWS, 2025). The Slaney River Valley SAC is inhabited by at least 27 individuals regularly (NPWS, 2015) and is an important site for breeding, moulting and resting. Whereas, the closest designated site with grey seals (*Halichoerus grypus*) as a QI species is the Saltee Islands SAC located 14km away on the southern coast of Ireland.

Otters have been recorded within the Slaney River Valley SAC. Evidence suggests that otters forage within 80m of the shoreline and will regularly commute across open water and estuaries (NPWS, 2007). However, very few sightings have been recorded along the Rosslare coast, with none reported in the last 12 months.

The Slaney River Valley SAC is used by several of Ireland's native diadromous fish species listed on Annex II of the Habitats Directive, as they pass through to or from freshwater spawning grounds or use the area for feeding during maturation. These species include twaite shad, sea lamprey, brook lamprey, river lamprey and Atlantic salmon who are a QI of the European site. Diving seabirds have the potential for ex situ connectivity to the MUL area from various surrounding SPAs, and the potential impacts that underwater noise may cause during their time foraging underwater.

Few sightings of harbour porpoise have been reported along the Rosslare coast in relation to the MUL area, potentially with individuals being in association with populations of the Carnsore Point and Blackwater Bank SAC. Most recent sightings have been made north of the proposed MUL area in September 2025 and March 2026, and south of the proposed MUL area during the months of May, June and September 2025 (Marine Institute, 2026).

The closest European site with common bottlenose dolphins as a QI is the Hook Head SAC located 29km from the MUL area. This is a highly mobile species with recorded linear coastal ranges of 650km (Wood, 1998) and potential for ex situ connectivity to the proposed site.

Underwater noise is a temporary effect, with noise levels dropping near-instantly to pre-existing levels upon the cessation of noise sources. The natural soundscape of the Rosslare and Wexford Harbour is considered to be noisy – a mix of biological sound such as fish and marine mammals, current flow and turbulence, rain and wind/storm noise, and noise from human activities such as shipping and leisure activities.

When assessing the potential impact of underwater noise sources on the marine environment a range of variables such as source level, frequency, duration, and directivity influence received sound levels. Increasing the distance from the sound source usually results in attenuation with distance. The factors that affect the way noise propagates underwater include; water column depth, pressure, temperature gradients, salinity, as well as water surface and seabed type and thickness. When sound encounters the seabed the amount of noise/sound reflected back depends on the composition of the seabed. Mud or other soft sediment will reflect less than rock. The water depth within the MUL area ranges up to 7m below chart datum with a mixed substrate type of muds, sands, and coarse gravels. All factors listed above reduce the propagation of the sound, decreasing the zone of influence of the geophysical survey.

Auditory injury in pinnipeds and cetaceans can be defined as a Permanent Threshold Shift (PTS) leading to non-reversible auditory injury, or as a Temporary Threshold Shift (TTS) in hearing sensitivity, which can have negative effects on the ability to use natural sounds (e.g. to communicate, navigate, locate prey) for a period of minutes, hours, or days. With increasing distance from the sound source, where it is audible to the animal, the effect is expected to diminish through identifiable stages (i.e. PTS or TTS in hearing, avoidance, masking, reduced vocalisation) to a point where no significant response occurs. Factors such as local propagation and individual hearing ability can influence the actual effect (DAHG, 2014). The underwater noise threshold levels for marine mammals as given in international guidance is shown in Table 5.2. The expected sound properties of the relevant survey activities are presented in Table 5.4.

Table 5.2: TTS- and PTS-onset thresholds for marine mammals exposed to non-impulsive noise

Marine mammal hearing group	TTS onset: SEL (weighted) dB re 1 µPa2s	PTS onset: SEL (weighted) dB re 1 µPa2s
Low frequency cetaceans (baleen whales)	179	199
High frequency cetaceans (most dolphin species)	178	198
Very high frequency cetaceans (harbour porpoise)	153	173
Phocid carnivores (seal species)	181	201
Other carnivores (otters)	199	219

Notes: SEL = Sound Exposure Level

Sources: Southall et al. (2019)

Fish vary widely in their sensitivity to underwater noise, and their susceptibility depends on how they detect sound, whether through particle motion only or through combined pressure and particle-motion mechanisms. The Sound Exposure Guidelines for Fishes (Popper et al., 2014) highlight that different functional groups of fish experience different risks from noise exposure, with some species more prone to physiological injury or behavioural disturbance than others, depending on the characteristics of the sound source. Their sensitivity to sound varies greatly across species, Atlantic salmon for instance, is not as sensitive to higher frequency sounds when compared to other swim bladder species (i.e. Atlantic cod). Table 5.3 details sound exposure guidelines for fish species.

Table 5.3: Sound exposure guidelines for fish species

Type of fish	Mortality and potential mortal injury	Recoverable injury	TTS	Masking	Behaviour
No swim bladder (sensitive in particle motion detection)	>219 dB SEL_{cum} >213 dB peak	>216 dB SEL_{cum} >213 dB peak	>>186 dB SEL_{cum}	(N) Low (I) Low (F) Low	(N) High (I) Moderate (F) Low
Swim bladder not involved in hearing (sensitive to particle motion)	210 dB SEL_{cum} <207 dB peak	203 dB SEL_{cum} >207 dB peak	>>186 dB SEL_{cum}	(N) Low (I) Low (F) Low	(N) High (I) Moderate (F) Low

Type of fish	Mortality and potential mortal injury	Recoverable injury	TTS	Masking	Behaviour
Swim bladder involved in hearing (pressure detection)	207 dB SEL_{cum} >207 dB peak	203 dB SEL_{cum} >207 dB SEL_{cum}	186 dB SEL_{cum}	(N) Low (I) Low (F) Moderate	(N) High (I) High (F) Moderate

Source: Popper et al. (2014).

Notes: Based on modelling for seismic airguns. All criteria are presented as sound pressure even for fish without swim bladders since no data for particle motion exist. Relative risk (high, moderate, low) is given for animals at three distances from the source defined in relative terms as near (N), intermediate (I), and far (F).

Table 5.4: Expected noise parameters for survey activities

Survey activity	Frequency range (kHz)	Source level (dB re 1 µPa)
ADCP	600-1000	80 (+/- 1.5)
Rotary drilling	0.001-0.120	145
SSS	100-1000	-
SBP – boomer	Parametric (2-10) Boomer (0.05-5) Sparker (0.05-5)	- 205-211 205-211
MBES	300-700	215-220
Marine refraction seismic	5-90	186-220

The ADCP devices produce some high frequency sounds that are within the hearing range of marine mammal species. The proposed ADCP device installation will be temporary in nature and will emit a narrow sound beam (typically a few degrees in width) with a typical echo intensity profile of 80 dB (+/- 1.5 dB). As such, it is extremely unlikely that the sounds could cause hearing impacts on marine mammals and fish species.

The type of coring and or drilling proposed as well as the size of the boreholes mean that sound levels from the activity is unlikely to exceed previously recorded level of similar setups with source levels of 130-147 dB SPL1 (re 1 µPa) (Erbe & McPherson, 2017). Recent measurements of geotechnical drilling in shallow waters (Huang Long-Fei et al. 2023) recorded an SPL of 155.9 dB re 1µPa rms @ 1 m at a peak frequency of 45 Hz. These levels are below the source levels of even quiet vessels and at modest ranges of c. 100 m, below the commonly used 160 dB SPL2 limit for behavioural effect for marine mammals. Considering that the weighted source level of the drilling/boring (145 dB SPL) is below the TTS or PTS onset levels for all marine mammal species as listed in Table

5.2 and fish species (Table 5.3). It is therefore unlikely that the drilling/boring could cause hearing impacts or significant disturbance to noise sensitive species.

The geophysical survey will utilise active acoustic instruments. Active acoustic instruments, such as those proposed on this survey, operate by emitting extremely short pulses and are mostly directional or omni-directional (e.g. sparker) (Ruppell et al., 2022). While the range of the geophysical equipment will have a range limited principally by water depth and attenuation particularly of high frequency sources. Coupled with the narrow beam angle and short duty cycles ('on' for microseconds or milliseconds per second) means that surveying sonars have relatively low acoustic range.

The SSS and MBES operate at higher frequency acoustic survey methods, with acoustic ranges above the hearing sensitive range for marine mammals and fish species, therefore it is considered unlikely to cause hearing impacts to such species.

The SBP and marine refraction seismic survey methods fall within the sensitive hearing range of marine mammals and certain fish species. Since the noise levels from these sources exceed TTS and PTS thresholds, there is the potential for underwater noise generated during the SBP and marine refraction seismic surveys to result in injury and/or disturbance to marine mammals in the vicinity of the SI works. There is further potential for localised disturbance to fish species. The estimated zone of audibility for all species is largest for these lower frequency sources, which propagate over longer distances relative to the rapidly attenuating high frequencies. Thus species, if very close to the survey vessel during SI works may be disturbed, or at worse, auditory injury may be induced. As such, impacts from this source are considered to have potential to give rise to auditory injury to QI noise sensitive species.

Only those bird species where their feeding ecology involves extensive time underwater have the potential for prolonged exposure to underwater noise. Some species are at a higher risk to noise sources either because they enter the water by plunge diving directly from the air (e.g. gannets), and therefore may not be able to detect noise prior to exposure, or they spend a relatively long time underwater and/or dive to a deep depth (e.g. auks, scoter). Other species of seabird (e.g. terns, gulls, shearwaters) only have very shallow diving depths and spend a short time underwater; thereby inherently minimising any exposure. Many species of wader and wildfowl that contribute to SPAs are unlikely to be affected, as they do not fully immerse their bodies in water when they are feeding (e.g. by wading or dabbling). A number of European sites have been considered for birds where there exists the potential for direct or indirect impacts as a result of the proposed survey works.

Even for those species that are potentially at higher risk to noise exposure (e.g. auks), such exposure will be inherently minimised by the nature of the survey and the locations in which it is taking place. Factors inherently reducing risk from underwater noise to seabirds (several of which are also applicable to marine mammals and fish) are summarised below.

- Natural flight response: most surface-diving diving birds (such as e.g. auks, scoter) will, in response to moving vessels, fly out of the way, due to natural evasion behaviour. This will therefore increase the distance between them and the highest sound levels.

- Exposure to sound: the sound pressure levels from the survey's acoustic sources are expected to attenuate rapidly in water. Furthermore, transducer-based acoustic sources will target sound directly downwards to the seabed from a close distance and in a narrow band. To be subjected to maximum noise levels, birds would therefore have to be within very close proximity to the sound source. In practice this would require them to be either near or under the hull of the moving vessel or towfish. Both of these scenarios are considered unlikely. The soft start procedure will allow animals to move away from the area, or curtail a deep dive, in response to gradually increasing underwater noise levels.

Continuous sources (i.e. survey vessels) are shown as almost 20 dB lower than the continuous noise threshold. Taking this and directionality into account there is no significant risk to marine mammals, diving seabirds or fish from this continuous noise source.

Adverse effects upon QI noise sensitive species associated with the relevant identified European SAC and SPA sites, as a result of underwater noise and vibrational effects cannot be excluded in the absence of mitigation measures in respect of the proposed SBP and marine refraction seismic surveys only.

5.3 Above water noise, vibration and lighting

Temporary disturbance arising from above-water noise, vibration, lighting, vessel movements and personnel activity has the potential to result in short-term displacement or avoidance behaviour by mobile bird species, otters and seals within the vicinity of the MUL area. Connectivity is identified with the QIs based on the known foraging and movement ecology of the relevant bird species; including the following designated sites:

- Seas of Wexford SPA,
- The Raven SPA
- Wexford Harbour and Slobs SPA
- Lady's Island Lake SPA
- Tacumshin Lake SPA
- Saltee Islands SPA
- Ballyteigue Burrow SPA
- The Raven SPA,

Wintering waterbirds associated with the SPA's listed above generally undertake more localised movements between roosting and feeding areas.

The Slaney River Valley SAC and Saltee Islands SAC is considered in relation to harbour seal and grey seal. The Slaney River Valley SAC has also been considered due to the presence of otters.

Seabird QI species associated with Saltee Islands SPA are capable of undertaking extensive foraging movements within coastal and offshore waters, with mean maximum foraging ranges extending from tens to hundreds of kilometres from breeding colonies depending on the species (Woodward et al., 2019).

Ringed plover, dunlin and sanderling typically forage within 5km of roost sites (Goodship and Furness, 2022; Dias et al., 2006; Field et al., 1998), while gadwall typically forage within 2.5km of roost locations (McDuie, 2019). Teal, pintail and shoveler commonly forage within 1-10km of roost sites (Johnston et al., 2014), while grey plover typically forage within 5-10km of roost locations (Clausen and Bregnballe, 2022). Light-bellied Brent Goose associated with Ballyteigue Burrow SPA may utilise habitats within the wider coastal area surrounding roost locations. Consequently, individuals from these SPAs may occasionally utilise habitats within or adjacent to the MUL area during foraging or commuting movements.

Otters are highly mobile and use coastal, estuarine and freshwater habitats for foraging and commuting, often exploiting extensive linear habitats and moving considerable distances from resting sites. Similarly, harbour and grey seals utilise extensive coastal and offshore foraging areas, with movements extending well beyond designated site boundaries.

Any disturbance or displacement effects on these receptors would be temporary, localised and restricted to a small proportion of available habitat, occurring only for the duration of the survey activities and ceasing upon completion of the SI works.

5.4 Risk of collision

The proposed SI works will require the use of a small survey vessel (approximately 16m in length), a jack-up drilling platform, and associated marine plant operating within the nearshore MUL area for a temporary period of up to 16 weeks. The physical presence and movement of these vessels has the potential to present a collision risk to marine mammals occurring within the survey area.

Vessel strikes are a recognised source of injury and mortality in marine mammals, including cetaceans and pinnipeds (Schoeman et al., 2020). More serious incidents are typically associated with larger vessels and higher vessel speeds, while smaller marine mammals are generally considered sufficiently mobile to avoid slow-moving vessels where detection occurs at an appropriate distance (Schoeman et al., 2020). Injuries resulting from vessel strike can range from minor physical trauma to severe injury or mortality, depending on the size and speed of the vessel and the species involved (Sea Watch Foundation, 2009).

Marine mammal QIs with potential to occur within the vicinity of the proposed works include harbour seal associated with the Slaney River Valley SAC, grey seal associated with the Saltee Islands SAC, harbour porpoise associated with both the Carnsore Point SAC and Hook Head SAC, and bottlenose dolphin associated with the Hook Head SAC. These species may occasionally utilise the nearshore waters within and adjacent to the MUL area for foraging, commuting or other behavioural activities.

The risk of collision is considered low due to the temporary nature of the SI works, the limited number of vessels involved, the relatively small size of the survey craft, the limited water depth (approximately 7m) and close proximity to the shore within the MUL area, and the fact that survey activities will be undertaken at slow working speeds. Marine mammals occurring within the area are highly mobile and are generally capable of moving away from approaching vessels; with experience navigating within the busy Rosslare Harbour. Consequently, while a collision risk pathway cannot be entirely excluded, the

likelihood of a vessel strike occurring is considered low and any potential effects would be localised and temporary.

The potential for injury to marine mammals resulting from collision with survey vessels is considered to be low. Given the temporary nature of the works, limited vessel numbers, slow operational speeds and the mobility of marine mammals present in the area, significant effects are not anticipated. Any potential effects would be localised, temporary and restricted to the duration of the survey activities.

6 MITIGATION MEASURES

The assessment undertaken in Section 5 considered the potential effects of the proposed SI works on the QIs and conservation objectives of the relevant European sites. While the majority of identified effects were determined to be temporary, localised and not significant, specific mitigation measures are required in relation to underwater noise and vibration effects associated with geophysical surveys.

The measures outlined in Table 6.1 form part of the project commitment and will be implemented throughout the duration of the SI works. Collectively, these measures will avoid, reduce and manage potential impacts on qualifying habitats and species and ensure that the proposed SI works will not adversely affect the integrity of any European site, either alone or in combination with other plans or projects.

The proposed factored in measures and mitigation measures are set out in Table 6.1.

Table 6.1: Factored in measures and mitigation measures

European site	Receptor/ QI	Potential impact	Summary of proposed mitigation
Carnsore Point SAC, Blackwater Bank SAC, Hook Head SAC, Saltee Islands SAC	Harbour porpoise; reef and sandbank habitats (where relevant)	Underwater noise, habitat disturbance, vessel interactions	Survey Marine Mammal Mitigation Plan (MMMP): The following mitigation measures will be employed. These mitigation measures are in line with best practice guidance (NPWS, 2014): • A qualified MMO will be on board the survey vessel to monitor marine mammal activity and log all events • pre-start monitoring: relevant operations shall not commence if marine mammals are detected within a 500 m radial distance of the vessel (a conservative range which accounts for the maximum likely zone of influence for potential injury from geophysical surveys of 130 m) • survey operations shall only commence in daylight hours where effective visual monitoring by the MMOs has been achieved. Where effective visual monitoring is not possible, the sound-producing activities shall be postponed until effective visual monitoring has been completed • ramp up: following the pre-start monitoring, a ramp-up procedure will take place or a period of 20 minutes for all relevant survey equipment • where the duration of a survey line or station change will be greater than 40 minutes, the activity shall, on completion of the line/station being surveyed, either shut down and

European site	Receptor/ QI	Potential impact	Summary of proposed mitigation
			undertake a full pre-start monitoring and ramp-up procedure or reduce the sound energy output to a lower state with an output peak SPL of 165-170 dB re 1µPa @1m, and then undertake the full ramp up procedure • if there is a break in sound output for a period of 5-10 minutes the MMO will be required to check that no marine mammals are observed within the monitored zone prior to recommencement of the sound sources at full power. Where a marine mammal is observed within the 500 m monitored zone during such a break, then all pre-start monitoring and a subsequent ramp-up procedure shall recommence as in a normal start-up operation • if there is a break in sound output for a period greater than 10 minutes, then all pre-start monitoring and a subsequent ramp-up procedure will be undertaken.
Slaney River Valley SAC	Otter; estuarine and intertidal habitats	Habitat disturbance, water quality impacts, above-water disturbance	Works restricted to minimum footprint; pollution prevention procedures; sediments allowed to settle naturally; daytime working where practicable; vessel activity limited to survey requirements. • Geotechnical and environmental sampling will be limited to the locations and quantities identified within the application. • Disturbance associated with boreholes, CPTs, grab samples and temporary seabed equipment will be temporary and localised. • Sampling locations will be informed by pre-survey investigations including drop-down video surveys where applicable. • Appointed contractors will comply with project-specific environmental procedures and pollution prevention measures. • All vessels will operate in accordance with the requirements set out in Section 2.3.5.
River Barrow and River Nore SAC	Otter and supporting aquatic habitats	Water quality impacts, disturbance	Pollution prevention measures; minimisation of seabed disturbance; localised and temporary works footprint; emergency spill response procedures.

European site	Receptor/ QI	Potential impact	Summary of proposed mitigation
Seas off Wexford cSPA	Red-throated diver, tern species, seaduck assemblages and other SCI bird species	Above-water disturbance, vessel activity, underwater noise	Limited vessel numbers; temporary works; daylight working where practicable; survey duration minimised; vessel routes and activities restricted to operational requirements.
The Raven SPA, Wexford Harbour and Slobs SPA, Lady's Island Lake SPA, Tacumshin Lake SPA, Saltee Islands SPA, Ballyteigue Burrow SPA	SCI bird species and supporting habitats	Above-water noise, visual disturbance and vessel activity	Temporary and localised works; vessel numbers minimised; lighting restricted to navigational and operational safety requirements; activities confined to defined survey areas.
All European Sites	Relevant habitats and species within connectivity range of the works	Accidental pollution event	Compliance with pollution prevention procedures; spill kits maintained onboard; emergency response procedures implemented; contractor environmental management measures followed.

7 SUMMARY AND CONCLUSIONS

7.1 Screening for AA

Having regard to the relevant legislation, and the methodology followed, the SISAA report was developed to evaluate whether or not the SI works could result in LSEs on the integrity of any European sites.

The Stage 1 Screening for Appropriate Assessment identified potential impact pathways between the proposed SI works and a number of European sites through habitat loss, habitat alteration, habitat fragmentation, habitat disturbance, sediment disturbance and water quality effects, underwater noise and vibration. The Appropriate Assessment screening and determination undertaken by MARA identified additional potential impact pathways for above-water disturbance, and vessel collision risk and these have also been included within this NIS. On the basis of objective scientific information, likely significant effects could not be excluded for the following European sites, which were therefore brought forward to Stage 2 Appropriate Assessment. The European sites and impact pathways considered within this Natura Impact Statement are summarised in Table 7.1.

Accordingly, these impact pathways were assessed in detail within the Stage 2 Appropriate Assessment presented in this Natura Impact Statement.

Table 7.1: European Sites and Impact Pathways Subject to Appropriate Assessment

European Site	Impact Pathway(s) Considered Within the NIS
Carnsore Point SAC	Habitat loss, alteration, fragmentation and disturbance Underwater noise and vibration Collision risk
Blackwater Bank SAC	
Hook Head SAC	
Slaney River Valley SAC	Habitat loss, alteration, fragmentation and disturbance Underwater noise and vibration Above-water noise, vibration and lighting Vessel collision risk
Saltee Islands SAC	
River Barrow and River Nore SAC	Habitat loss, alteration, fragmentation and disturbance Underwater noise and vibration
Seas off Wexford cSPA	Habitat loss, alteration, fragmentation and disturbance Underwater noise and vibration Above-water noise, vibration and lighting
The Raven SPA	
Wexford Harbour and Slobs SPA	
Lady's Island Lake SPA	
Tacumshin Lake SPA	Habitat loss, alteration, fragmentation and disturbance

European Site	Impact Pathway(s) Considered Within the NIS
Ballyteigue Burrow SPA	Above-water noise, vibration and lighting
Saltee Islands SPA	Habitat loss, alteration, fragmentation and disturbance Underwater noise and vibration Above-water noise, vibration and lighting

7.2 Natura Impact Statement

The assessment presented in Section 5 considered the potential effects of the proposed SI works on the QIs and conservation objectives of the relevant European sites; both alone and in combination with other plans and projects.

The assessment concluded, beyond reasonable scientific doubt, that habitat loss, alteration, fragmentation and disturbance, sediment disturbance and water quality effects arising from the proposed SI works will be temporary and localised. Similarly, above-water noise, vibration, lighting and visual disturbance associated with survey vessels and SI activities will be temporary, intermittent and localised and the potential for collision risk on marine species is considered to be low due to the localised and temporary nature of the proposed activities which would be restricted to the relatively short duration of the survey activities. These effects will not adversely affect the conservation objectives of any European sites.

The NIS identified potential for adverse effects from underwater noise and vibration generated by certain geophysical survey activities on noise-sensitive QIs in the absence of mitigation measures. The mitigation measures outlined in Section 6, including implementation of a MMMP, will effectively mitigate and reduce potential adverse impacts from underwater noise and vibration and ensure no adverse effect on the integrity of any European sites.

In the light of the best scientific knowledge in the field, all aspects of the proposed SI works – by themselves or in combination with other plans or projects – may affect the relevant European sites have been considered. The SISAA Report and this NIS provide sufficient information to enable MARA to make complete, precise and definitive findings and conclusions; determining beyond reasonable scientific doubt that the proposed development will not adversely affect the integrity of the relevant European sites.

It is therefore concluded, beyond reasonable scientific doubt, that the proposed SI works, either alone or in combination with other plans or projects, will not adversely affect the integrity of any European site in view of the conservation objectives of those sites.

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