

# NATURA IMPACT STATEMENT

## Foynes Island: Marine Site Investigations



NI2542 Foynes Island  
Marine SI  
NIS  
F01  
March 2024

### Document Status

Version	Purpose of document	Authored by	Reviewed by	Approved by	Review date
F01	Internal review	SOH		JMC	29.03.24

### Approval for issue

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2024-03-28

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# 1 INTRODUCTION

This Natura Impact Statement (NIS) has been prepared by RPS on behalf of Shannon Foynes Port Company (SFPC). This report is intended to assist the Maritime Area Regulatory Authority (MARA), a body established under the aegis of the Department of Housing, Local Government and Heritage (“DHLGH”), in its role as a Competent Authority, fulfilling its duties in accordance with European Communities (Natural Habitats) Regulations (S.I. No. 94 of 1997) under Regulation 31 (Annex 1.2).

This report has been prepared to accompany an application for a Marine Usage Licence by SFPC and is an examination of whether, in view of best scientific knowledge and applying the precautionary principle, the Proposed Development, either individually or in combination with other plans or projects, may adversely affect the integrity of any European site(s). The assessment will be carried out in accordance with the legal context outlined in Section 1.2.

## 1.1 Appropriate Assessment

With the introduction of the Habitats Directive (Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora) came the obligation to establish the Natura 2000 network of Sites of Community Interest (SCIs), comprising a network of areas of highest biodiversity importance for rare and threatened habitats and species across the European Union (EU).

The Natura 2000 network of sites comprises Special Areas of Conservation (SACs, including candidate SACs or cSACs) designated under legislation transposing the obligations under Directive 92/43/EEC, and Special Protection Areas (SPAs, including proposed SPAs) classified under the Birds Directive (Directive 2009/147/EC on the conservation of wild birds) and designated under Irish legislation. SACs and SPAs make up the pan-European network of Natura 2000 sites in Ireland and they are referred to as European sites.

In this report, cSACs and SACs are referred to as SACs throughout the appraisal, and there is no distinction made between candidate sites and designated sites as the appropriate assessment procedure does not treat them differently. For the purposes of an appropriate assessment conducted under 2011 Regulations, they are one and the same.

SACs are designated for the conservation of Annex I habitats (including priority types which are in danger of disappearance) and Annex II species (other than birds). SPAs are designated for the conservation of Annex I birds and other regularly occurring migratory birds and their habitats. The annexed habitats and species for which each site is designated correspond to the Qualifying Interests (QIs) of the sites in the case of SACs, and Special Conservation Interests (SCIs) of the sites in the case of SPAs. From these qualifying interests, the Conservation Objectives (COs) of the site are derived.

### 1.1.1 The Habitats Directive

Article 6(3) of the Habitats Directive requires that–

*Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site’s conservation objectives. In the light of 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 general public.*

## 1.1.2 Domestic Legislation

For the purposes of applications for planning permission, Part XAB of the 2000 Act implemented the obligations under Article 6(3) into Irish law. In relation to other consent regimes, the provisions of the European Communities (Birds and Natural Habitats) Regulations 2011, as amended (“the 2011 Regulations”), transpose those obligations.

This report has not been drafted in support of an application for planning permission, and so the provisions of the 2011 Regulations are applicable. This is reinforced within Article 33 of the Maritime Area Planning Act (MAP Act) 2021, which requires that no proposal contravene the provisions of the Habitats or Birds Directives.

### 1.1.2.1 Screening

Regulation 42 of the 2011 Regulations requires inter alia that screening for appropriate assessment of a project, and which is not directly connected with or necessary to the management of the site as a European Site, shall be carried out by the public authority to assess, in view of best scientific knowledge and in view of the conservation objectives of the site, if that project, individually or in combination with other plans or projects is likely to have a significant effect on the European site.

### 1.1.2.2 Appropriate Assessment

Regulation 42 of the 2011 Regulations requires inter alia that a public authority shall determine that an appropriate assessment of a project is required where the 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, that the project, individually or in combination with other plans or projects, will have a significant effect on a European site.

## 1.1.3 UK Departure from the EU

It is recognised that following the United Kingdom's departure from the European Union, SACs and SPAs in the UK are no longer considered "Natura 2000 sites" for the purpose of an assessment pursuant to Article 6(3) of the Habitats Directive. However, pursuant to the UK's Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, those sites still retain the same protection under UK law as they did prior to the UK's exit from the EU. They are now referred to as the UK National Site Network.

In those circumstances, and consistent with Ireland's obligations as a signatory to the Bern Convention on the Conservation of European Wildlife and Natural Habitats, to which the Birds and Habitats Directives give effect, and in order to ensure the highest level of protection for the species and habitats protected by those Directives, this SISAA Report includes relevant UK sites formerly forming part of the Natura 2000 network of sites protected under those Directives.

## 1.1.4 The Appropriate Assessment Process

According to European Commission guidance documents ‘*Assessment of plans and projects in relation to Natura 2000 sites*’ (EC, 2021); ‘*Guidance document on wind energy developments and EU nature legislation*’ (EC, 2020); and ‘*Managing Natura 2000 sites: The Provisions of Article 6 of the ‘Habitats’ Directive 92/43/EEC*’ (EC, 2019); the obligations arising under Article 6 establish a step-wise procedure as illustrated in **Figure 1.1**<sup>Error! Reference source not found.</sup>

The first part of this procedure consists of a pre-assessment stage (‘screening’) to determine whether, firstly, a plan or project is directly connected with or necessary to the management of the site, and secondly, whether it is likely to have a significant effect on the site; it is governed by Article 6(3), first sentence.

The second part of the procedure, governed by Article 6(3), second sentence, relates to the appropriate assessment and the decision of the competent national authorities.

A third part of the procedure (governed by Article 6(4)) comes into play if, despite adverse effects on the integrity of the site concerned, it is proposed not to reject a plan or project but to give it further consideration. In this case Article 6(4) allows for derogations from Article 6(3) under certain conditions.

The extent to which the sequential steps of Article 6(3) apply to a given plan or project depends on several factors, and in the sequence of steps, each step is influenced by the previous step. The order in which the steps are followed is therefore essential for the correct application of Article 6(3).

Each step determines whether a further step in the process is required. If, for example, the conclusion at the end of a Habitats Directive stage one screening appraisal is that significant effects on European sites can be excluded in the absence of any best practice or targeted measures intended to avoid or reduce the harmful effects of the proposed surveys on European sites, there is no requirement to proceed to the next step.

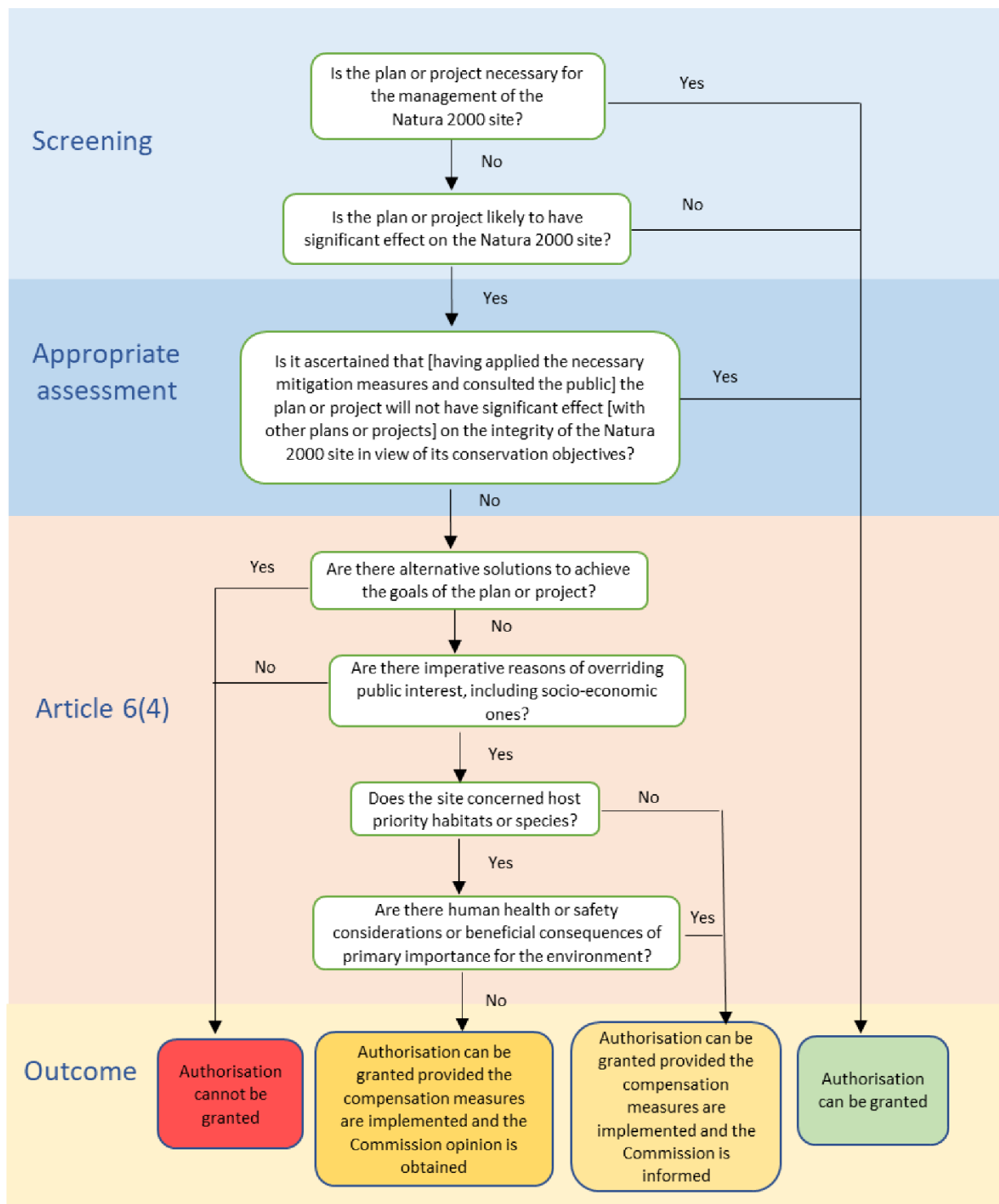


Figure 1.1: Step-wise procedure of Article 6 of the Habitats Directive (from EC, 2021)



## **1.2 Document Structure**

### **1.2.1 Objective of the Document**

The purpose of this NIS document is to provide the competent authority with information to assist them in carrying out an assessment of the implications of the proposed marine site investigation works as part of the proposed Foynes Island Deepwater Development on European sites in view of their conservation objectives.

This exercise has been conducted on behalf of SFPC in support of an application to MARA for a Marine Usage License.

This report seeks to assist MARA as public authorities under the 2011 Regulations and Section 33 of the MAP Act 2021, in fulfilling their obligations to conduct an appropriate assessment.

### **1.2.2 Methodology and Guidance**

Section 2 of the NIS report sets out the methodology followed, and guidance documents used in conducting a screening appraisal for appropriate assessment and subsequent appraisal for appropriate assessment of the implications of the Proposed Development on European sites.

### **1.2.3 Proposed Development**

Section 3 of the NIS report describes the Proposed Development, the general methodology sequence and activities to be undertaken.

### **1.2.4 Stage 2 Appropriate Assessment**

Section 4 of the report contains a summary of the findings of the AA screening assessment and more detailed examination and analysis of the implications of the Proposed Development on the Conservation Objectives of those European sites where the possibility of Likely Significant Effects (LSEs) could not be excluded at the screening stage in the absence of further evaluation and analysis, including mitigation measures.

## 2 METHODOLOGY

### 2.1 Published guidance on Appropriate Assessment

Appropriate Assessment Guidelines for Planning Authorities have been published by the Department of the Environment Heritage and Local Government ([DEHLG, 2010a](#)) and more recently by the Office of the Planning Regulator Practice Note (PN01) ([OPR, 2021](#)). In addition to the advice available from the Department, the European Commission has published a number of documents which provide a significant body of guidance on the requirements of Appropriate Assessment, most notably including 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', which sets out the principles of how to approach decision making during the process. These principal national and European guidelines have been followed in the preparation this NIS report. The following list identifies these and other pertinent guidance documents:

- Communication from the Commission on the Precautionary Principle., Office for Official Publications of the European Communities, Luxembourg (EC, 2000);
- Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Articles 6(3) and (4) of the Habitats Directive 92/43/EEC. Office for Official Publications of the European Communities, Luxembourg (EC, 2001);
- Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC – Clarification of the concepts of: Alternative Solutions, Imperative Reasons of Overriding Public Interest, Compensatory Measures, Overall Coherence, Opinion of the Commission. Office for Official Publications of the European Communities, Luxembourg (EC, 2007);
- Estuaries and Coastal Zones within the Context of the Birds and Habitats Directives - Technical Supporting Document on their Dual Roles as Natura 2000 Sites and as Waterways and Locations for Ports. Office for Official Publications of the European Communities, Luxembourg (EC, 2009);
- Appropriate Assessment of Plans and Projects in Ireland. Guidance for Planning Authorities. Department of the Environment, Heritage and Local Government, Dublin (DEHLG, 2010a);
- Department of Environment Heritage and Local Government Circular NPW 1/10 and PSSP 2/10 on Appropriate Assessment under Article 6 of the Habitats Directive – Guidance for Planning Authorities, Dublin (DEHLG, 2010b);
- Guidance document on the implementation of the birds and habitats directive in estuaries and coastal zones with particular attention to port development and dredging. Office for Official Publications of the European Communities, Luxembourg (EC, 2011a);
- European Commission Staff Working Document 'Integrating biodiversity and nature protection into port development', Office for Official Publications of the European Communities, Luxembourg (EC, 2011b);
- European Commission Note on Setting Conservation Objectives for Natura 2000 Sites, Office for Official Publications of the European Communities, Luxembourg (EC, 2012);
- Marine Natura Impact Statements in Irish Special Areas of Conservation: A working document, National Parks and Wildlife Service, Dublin (NPWS, 2012);
- Interpretation Manual of European Union Habitats. Version EUR 28. Office for Official Publications of the European Communities, Luxembourg (EC, 2013a);
- Guidelines on Climate Change and Natura 2000. Office for Official Publications of the European Communities, Luxembourg (EC, 2013b);

- Guidance on EIS and NIS Preparation for Offshore Renewable Energy Projects. Department of Communications, Climate Action and Environment, Dublin (DCCAE, 2017);
- 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 (EC, 2019);
- Institute of Air Quality Management 'A guide to the assessment of air quality impacts on designated nature conservation sites (Version 1.1)', London (IAQM, 2020);
- European Commission Notice C(2020) 7730 'Guidance document on wind energy developments and EU nature legislation', Office for Official Publications of the European Communities, Luxembourg (EC, 2020);
- Office of the Planning Regulator Practice Note (PN01) 'Appropriate Assessment Screening for Development Management', Dublin (OPR, 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 (EC, 2021); and
- European Commission Guidance document on Assessment of plans and projects in relation to Natura 2000 sites - A summary, Office for Official Publications of the European Communities, Luxembourg (EC, 2022).

## 2.2 Likely Significant Effect

The Commission's 2018 Notice (EC, 2019) advises that the appropriate assessment procedure under Article 6(3) is triggered not by the certainty but by the likelihood of significant effects, arising from plans or projects regardless of their location inside or outside a protected site. Such likelihood exists if significant effects on the site cannot be excluded. The significance of effects should be determined in relation to the specific features and environmental conditions of the site concerned by the plan or project, taking particular account of the site's conservation objectives and ecological characteristics.

The threshold for a Likely Significant Effect ("LSE") is treated in the screening exercise as being above a *de minimis* level. A *de minimis* effect is a level of risk that is too small to be concerned with when considering ecological requirements of an Annex I habitat or a population of Annex II species present in a European site necessary to ensure their favourable conservation condition. If low level effects on habitats or individuals of species are judged to be in this order of magnitude and that judgment has been made in the absence of reasonable scientific doubt, then those effects are not considered to be LSEs.

The analysis involved in a Stage 1 screening appraisal for Appropriate Assessment is described in EC (2021) as comprising four steps:

- ascertaining whether the plan or project is directly connected with or necessary to the management of a Natura 2000 site;
- identifying the relevant elements of the plan or project and their likely impacts;
- identifying which (if any) Natura 2000 sites may be affected, considering the potential effects of the plan or project alone or in combination with other plans or projects;
- assessing whether likely significant effects on the Natura 2000 site can be ruled out, in view of the site's conservation objectives.

Case law of the Court of Justice of the European Union (CJEU) has confirmed that a significant effect is triggered when:

- there is a probability or a risk of a plan or project having a significant effect on a European site;
- the plan is likely to undermine the site's conservation objectives; and
- a significant effect cannot be excluded on the basis of objective information.

EC (2021) defines a LSE as being “any effect that may reasonably be predicted as a consequence of a plan or project that would negatively and significantly affect the conservation objectives established for the habitats and species significantly present on the Natura 2000 site. This can result from either on-site or off-site activities, or through combinations with other plans or projects”.

The requirement that the effect in question be ‘significant’ exists in order to lay down a *de minimis* or negligible threshold – thus, plans or projects that have imperceptible or no appreciable effects on the site are thereby excluded.

## 2.3 Mitigation Measures

In determining whether or not likely significant effects will occur or can be excluded in the Stage 1 appraisal, measures intended to avoid or reduce the harmful effects of the Proposed Development on European sites, (i.e. “mitigation measures”) or best practice measures have not been taken into account in this screening stage appraisal. This approach is consistent with up-to-date EU guidance (EU,2019; EC,2021; EC, 2022) and the case law of the Court of Justice of the European Union (CJEU).

EC (2001) states that “project and plan proponents are often encouraged to design mitigation measures into their proposals at the outset. However, it is important to recognise that the screening assessment should be carried out in the absence of any consideration of mitigation measures that form part of a project or plan and are designed to avoid or reduce the impact of a project or plan on a Natura 2000 site”. This direction in the European Commission’s guidance document is unambiguous in that it does not permit the inclusion of mitigation at screening stage.

In April 2018, the Court of Justice of the European Union issued a ruling in case C-323/17 *People Over Wind & Peter Sweetman v Coillte Teoranta* (“People Over Wind”) that Article 6(3) of Directive 92/43/EEC must be interpreted as meaning that, in order to determine whether it is necessary to carry out, subsequently, an appropriate assessment of the implications, for a site concerned, of a plan or project, it is not appropriate, at the screening stage, to take account of the measures intended to avoid or reduce the harmful effects of the plan or project on that site.

The judgment in *People Over Wind* is reaffirmed in up-to-date EC guidance documents which refers to CJEU Case C-323/17.

More recently, the decision of the CJEU in case C-721/21 (*Eco Advocacy CLG v An Bord Pleanála*), delivered in June 2023, found that Article 6(3) of Directive 92/43 must be interpreted as meaning that:

“in order to determine whether it is necessary to carry out an appropriate assessment of the implications of a plan or project for a site, account may be taken of the features of that plan or project which involve the removal of contaminants and which therefore may have the effect of reducing the harmful effects of the plan or project on that site, where those features have been incorporated into that plan or project as standard features, inherent in such a plan or project, irrespective of any effect on the site.” (Para. 53(3) of the Judgement).

This recent judgement therefore clarifies that features which have been incorporated into a project as standard features, inherent in that project, and irrespective of any effect on any European site may be taken into account for the purposes of a Stage 1 Screening for Appropriate Assessment under Article 6(3) of the Directive.

Measures intended to avoid or reduce the harmful effects of the Project on European sites have not been considered at the screening stage of the assessment (see previously submitted Foynes Island Marine SI SISAA Report (RPS 2023)).

## 2.4 Consideration of *ex-situ* effects

EC (2019) advises that Member States, both in their legislation and in their practice, allow for the Article 6(3) safeguards to be applied to any development pressures, including those which are external to European sites but which are likely to have significant effects on any of them.

The CJEU developed this point when it issued a ruling in case C-461/17 (“Brian Holohan and Others v An Bord Pleanála”) that determined inter alia that Article 6(3) of Directive 92/43/EEC must be interpreted as meaning that an appropriate assessment must on the one hand, catalogue the entirety of habitat types and species for which a site is protected, and, on the other, identify and examine both the implications of the proposed project for the species present on that site, and for which that site has not been listed, and the implications for habitat types and species to be found outside the boundaries of that site, provided that those implications are liable to affect the conservation objectives of the site.

In that regard, consideration has been given in this Habitats Directive appraisal to implications for habitats and species located both inside and outside of the European sites considered in the screening appraisal with reference to those sites’ Conservation Objectives where effects upon those habitats and/or species are liable to affect the conservation objectives of the sites concerned.

## 2.5 Conservation Objectives

The conservation objectives for each European site are to maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the site has been selected. The favourable conservation status of a habitat is achieved when:

- its natural range, and area it covers within that range, are stable or increasing;
- the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future; and
- the conservation status of its typical species is favourable.

The favourable conservation status (or condition, at a site level) of a species is achieved when:

- population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats;
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future; and
- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

EC (2022) advises that an assessment should be done for all of the designating features (species, habitat types) that are significantly present on the site (habitats and species with A, B or C, but not D, site assessment in the Standard Data Form for the site) in view of their conservation objectives. EC (2022) additionally notes that “*the lack of site-specific conservation objectives or the establishment of conservation objectives, which are not in line with the required standard, as specified in the Commission note on “Setting conservation objectives of Natura 2000 sites” (EC, 2012), jeopardises compliance with the requirements of Article 6(3)*”.

### 2.5.1 Site-Specific Conservation Objectives

NPWS began preparing detailed Site-Specific Conservation Objectives (SSCOs) for European sites in 2011. The European sites within closest proximity to the Proposed Development which are considered in some detail in this NIS report have all had SSCO documents set. The published SSCO documents are as described in Section 4.1 of this document.

The published SSCO documents note that an appropriate assessment based on the most up to date conservation objectives will remain valid even if the targets are subsequently updated, providing they were the most recent objectives available when the assessment was carried out. It is essential that the date and version are included when objectives are cited.

The most up-to-date Conservation Objectives for the European sites being considered, and details in relation to the Qualifying Interests and Special Conservation Interests of these European sites is based on publicly available data on these European Sites, sourced from the [NPWS website](#) in December 2023.

## 2.6 In-combination Effects

Article 6(3) of the Habitats Directive requires that in-combination effects with other plans or projects are also considered. As set out in the Commission's 2018 Notice (EC, 2019), significance will vary depending on factors such as magnitude of impact, type, extent, duration, intensity, timing, probability, cumulative effects and the vulnerability of the habitats and species concerned. Whilst the Directive does not explicitly define which other plans and projects are within the scope of the in-combination provision of Article 6(3), it is important to note that the underlying intention of this provision is to take account of cumulative impacts, and these will often only occur over time.

In that context, one can consider plans or projects which are completed, approved but uncompleted, or proposed. EC (2019) specifically advises [on p43] that "*as regards other proposed plans or projects, on grounds of legal certainty it would seem appropriate to restrict the in-combination provision to those which have been actually proposed, i.e. for which an application for approval or consent has been introduced*".

## 3 THE PROPOSED DEVELOPMENT

### 3.1 Wider Context

The proposed development is limited to proposed marine site investigation (SI) works within a number of areas surrounding Foynes Island, Foynes, Co. Limerick. The site boundary of the works is illustrated in Figure 3.1.

The scale of the SI works is commensurate with the level of detail required to facilitate the preliminary and detailed design and environmental assessment of the development for the statutory consents of the proposed project which comprises the development of a new deepwater port and access bridge at Foynes Island.

The quantity of boreholes required is based on the requirement for the following infrastructure within the wider port development proposals:

- 800m long open pile quay structure;
- Development of port operations behind the full length of the quay structure;
- Bridge landing position moved to the north of the orchard on the Island; and
- Road corridor notionally amended to meet new bridge landing point.

Boreholes/assumed depths may be refined further by site surveys, subsequent design changes and requirements arising as a result of the environmental assessment.

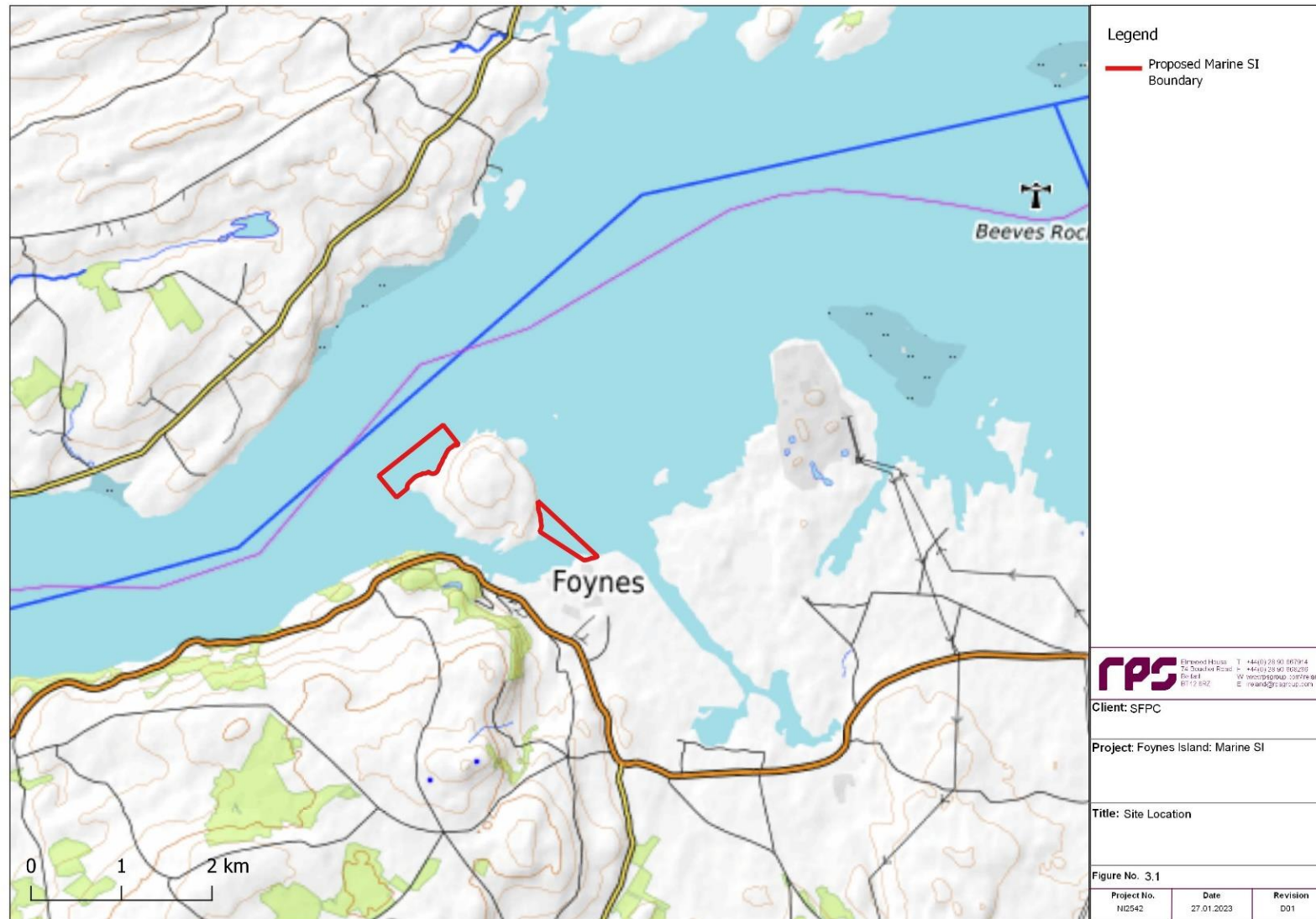
### 3.2 Marine Geophysical Survey

A marine geophysical survey will be carried out and will cover the full area of the development footprint under water (where accessible). The aims of the survey are to:

- Identify and map potential geohazards;
- Identify and map potential archaeological sites and features;
- Facilitate the development of a ground model in support of the wider design; and
- Provide data and information in support of option development and Environmental Impact Assessment.

A range of instruments will be deployed for this survey including:

- GNSS positioning;
- Motion Reference Unit;
- Multibeam Echosounder;
- Sound Velocity Profiler;
- Sub-bottom Profiler, chirp;
- Side-scan Sonar, dual frequency, low and high;
- Magnetometer, caesium;
- Navigation, acquisition and processing suite;
- Post-processing navigation suite; and
- Charting software.



**Figure 3.1: Location of the proposed Marine SI Works**



The survey will be undertaken by a competent and experienced marine hydrographer and will use a Department of Marine licenced survey vessel capable of accessing all survey areas at high water. Main lines will be spaced at 20m apart in shallow waters, increasing to 50m spacing in deeper water. Cross lines will be spaced at 200m apart. Additional infill lines in shallow areas may be required to allow for full device-suite coverage at 100% and greater, thus ensuring there are no data gaps.

### 3.3 Marine Site Investigations

Proposed marine SI works include the follow main components over 2 phases, phase 1 pre-planning to inform preliminary design and environmental assessment and phase 2 to inform detailed design post planning:

#### AREA 1 – Piled Quay and Reclamation Area Geotechnical Boreholes

- 71nr. boreholes in Phase 1 (pre-planning) Q1/Q2 2024
- 62nr. boreholes in Phase 2 (post Planning) 2026

#### AREA 2 – Bridge Crossing Area Geotechnical Boreholes

- 8nr. boreholes in Phase 1
- 22nr. boreholes in Phase 2

#### 3.3.1 Boreholes

The proposed borehole locations are illustrated at Figure 3.2.

Boreholes will consist of cable percussion drilling through soft estuarine overburden, with follow-on rotary coring for recovery of firm granular/till material and bedrock.

The boreholes are to be drilled firstly using cable percussive techniques. If rock is to be penetrated, then rotary drilling will follow on. The machinery to be used is approximately 2m tall when it is in transit and approximately 7m tall when the borehole is being driven. The machinery will be supported by a suitable jack-up barge. A typical jack-up barge arrangement will be similar to that shown in Figure 3.3.

For each borehole the footprint of the works on the foreshore will be four approximately 1 m<sup>2</sup> legs of the jack-up barge and the 200mm (8") temporary steel casing. The 200mm steel casing is the diameter of the borehole.

There will be no permanent structures, all site investigation will be facilitated by temporary works. The moving marine plant will remain on site for the duration of the works.

Associated sampling and testing (both in-situ and geotechnical/geo-environmental laboratory testing).

Proposed marine SI works will not require access to Foynes Island itself and will be conducted entirely from vessels within the marine environment.

#### 3.3.2 Surface Grab Sample

It is proposed to collect surface grab samples from 16 locations within the immediate footprint of the proposed development. It is expected that 12 of these sample locations will occur in the subtidal area, and 4 locations in the intertidal area. In addition, a subtidal reef habitat has been identified along the centre of the main Shannon channel which is immediately adjacent to the development. It is expected that 10 drop down video locations will be surveyed within and adjacent to this reef community. A walkover survey will be undertaken on the hard-benthos intertidal areas within and immediately adjacent to the footprint of the hardstand area.

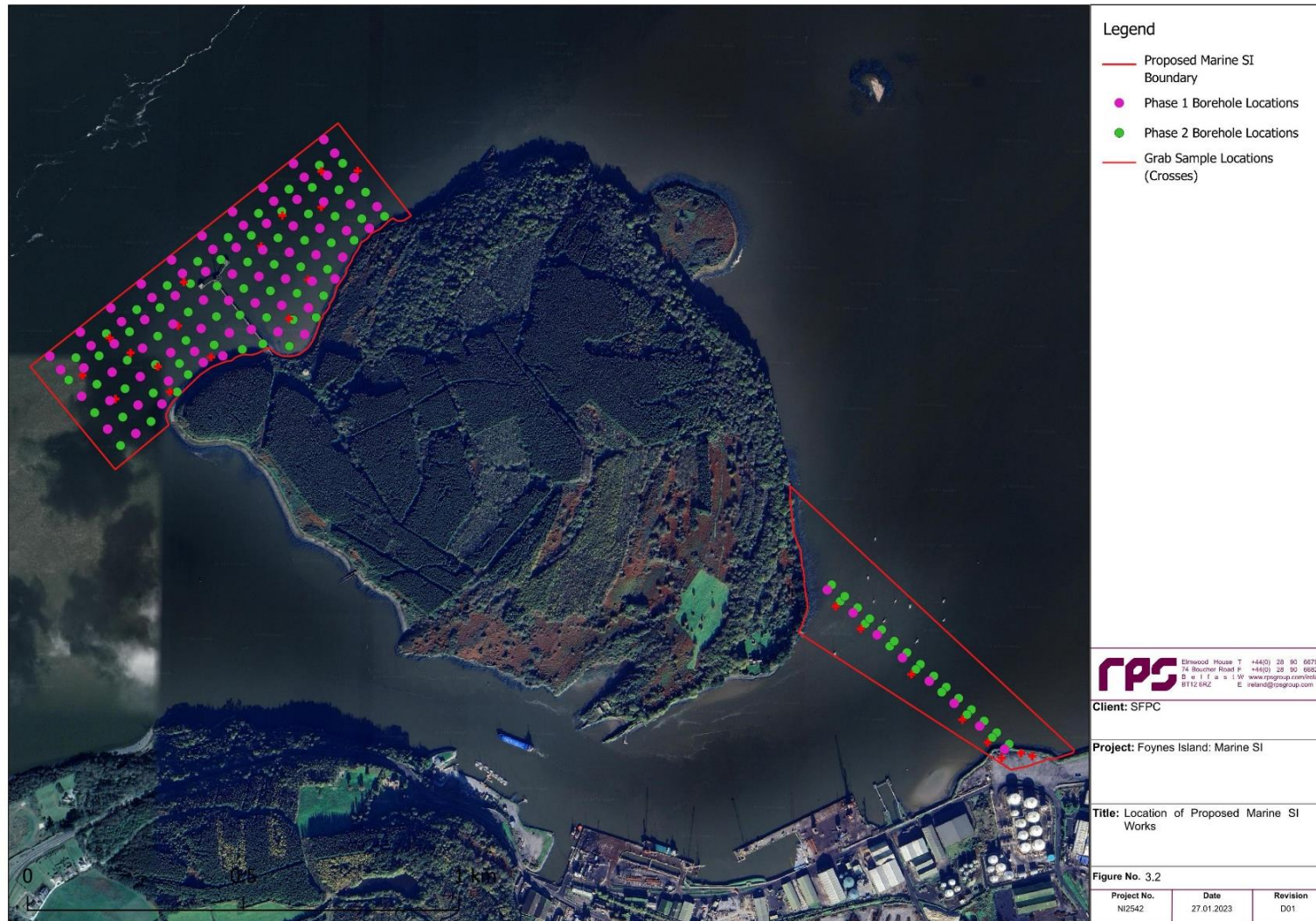
It is proposed to collect benthic faunal samples from 8 locations within the vicinity of the proposed bridge location. It is expected that 5 of these sample locations will occur in the subtidal area and 3 will occur in the intertidal area at the southern landfall point of the bridge. A walkover survey will be undertaken along the hard-benthos intertidal areas at both landfall locations of the bridge.

Subtidal sampling will involve the following:

- Single 0.1m<sup>2</sup> grab samples collected at each of the subtidal sampling stations;
- An additional grab will be collected for Grainsize and Loss on Ignition;
- Ancillary information will be recorded on pre-prepared data record sheets;
- Samples will be positioned using the vessel's GPS. Sample positions will be recorded when on site;
- Photographs will be taken of each sample; and
- Drop down video footage will be collected from circa 5-10 locations within and adjacent to an extensive reef area located within Lower Shannon SAC.

Intertidal sampling will include the following:

- Single stove-pipe core (0.028m<sup>2</sup>) will be collected at each intertidal sample station;
- A surface scrape will be collected at each site;
- Ancillary information will be recorded on pre-prepared data record sheets;
- Samples will be positioned using a hand-held GPS. Sample positions will be recorded when on site; and
- Photographs of the site will be collected at each location.



**Figure 3.2: Location of the proposed Marine SI Boreholes**



**Figure 3.3: Typical Jack-up Barge Arrangement for Marine SI Works**

## 4 STAGE TWO APPRAISAL TO INFORM AN APPROPRIATE ASSESSMENT OF IMPLICATIONS ON EUROPEAN SITES

### 4.1 Conclusions of the SISAA Report

The applicants supporting information for Screening for Appropriate Assessment (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 Development.

The Proposed Development is stated in the SISAA report as being 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 in accordance with the 'Holohan' judgment (refer Section 2.4 above). '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 Qualifying Interests (of SACs) for which conservation objectives 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.

Possible direct and indirect effects arising as a result of activities undertaken as part of the Proposed Development were discussed under the following themes:

- Direct Effects
  - Habitat loss and alteration ("Habitat Loss")
- Indirect Effects
  - Water quality and habitat deterioration ("Water Quality")
  - Underwater noise and acoustic disturbance or displacement ("Underwater Disturbance")
  - Aerial noise and visual disturbance or displacement ("Aerial Disturbance")

Having regard to the methodology employed and the findings of the appraisal and having applied the precautionary principle it was concluded that a Natura Impact Statement was required, to assess the implications of the proposed project, in relation to its potential to give rise to likely significant effects on the conservation objectives of a number of European sites as outlined below, either alone or in combination with other projects:

- **Habitat Loss** of Annex I habitats of the Lower River Shannon SAC and wetland habitats of the River Shannon and River Fergus Estuaries SPA;
- **Water quality effects** on Annex I habitats of Lower River Shannon SAC, wetland habitats and SCI bird populations of the River Shannon and River Fergus Estuaries SPA;
- **Underwater noise and vibrational disturbance** of Annex II QI species of the Lower River Shannon SAC; and
- **Aerial noise and visual disturbance** of Annex II QI species of the Lower River Shannon SAC and SCI bird populations of the River Shannon and River Fergus Estuaries SPA.

The location of the relevant European Sites, in the context of the Proposed Development boundary, are illustrated in Figure 4.1. Conservation objectives of these sites are detailed within Table 4-1: Qualifying Interests and Conservation objectives of European sites considered, below.

## 4.2 Screening For Appropriate Assessment

The SISAA report, and associated conclusions as set out above, was submitted to MARA in association with the Marine Usage License application (Ref. LIC230014). The proposed Marine SI project was subsequently subject to a Screening for Appropriate Assessment and associated determination by MARA (MARA 2024).

This Screening for Appropriate Assessment and determination identified the following potential pathways for likely significant effects arising as a result of the proposed Marine SI works:

- Physical disturbance and habitat loss (analogous to habitat loss effects, as discussed within the SISAA Report).
- Increased suspended sediment concentrations (analogous to water quality effects, as discussed within the SISAA Report).
- Visual and above water noise disturbance (analogous to the aerial noise and visual disturbance, as discussed within the SISAA Report).
- Disturbance from underwater noise (analogous to underwater noise and vibrational disturbance, as discussed within the SISAA Report).

The conclusions of the Screening for Appropriate Assessment agreed with those set out in the SISAA Report, in respect of potential likely significant effects to the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA. However the Screening Assessment and determination also screened in a large number of additional SACs which were partially designated on account of the supported marine mammal populations which were deemed to also be vulnerable to disturbance associated with the effects of underwater noise arising as a result of the project.

It is noted that these additional SACs were selected based on their locations within the Management Unit or known foraging range for a given marine mammal species (JNCC 2023; Carter et al. 2022).

The potential for adverse effects upon the integrity of these more distantly situated European Sites designated on account of the supported marine mammal populations has been assessed within this Natura Impact Statement, in line with the recommendations of the Screening Assessment and these sites have been included within Table 4-1, below, in respect of the relevant (screened in) qualifying interests only.

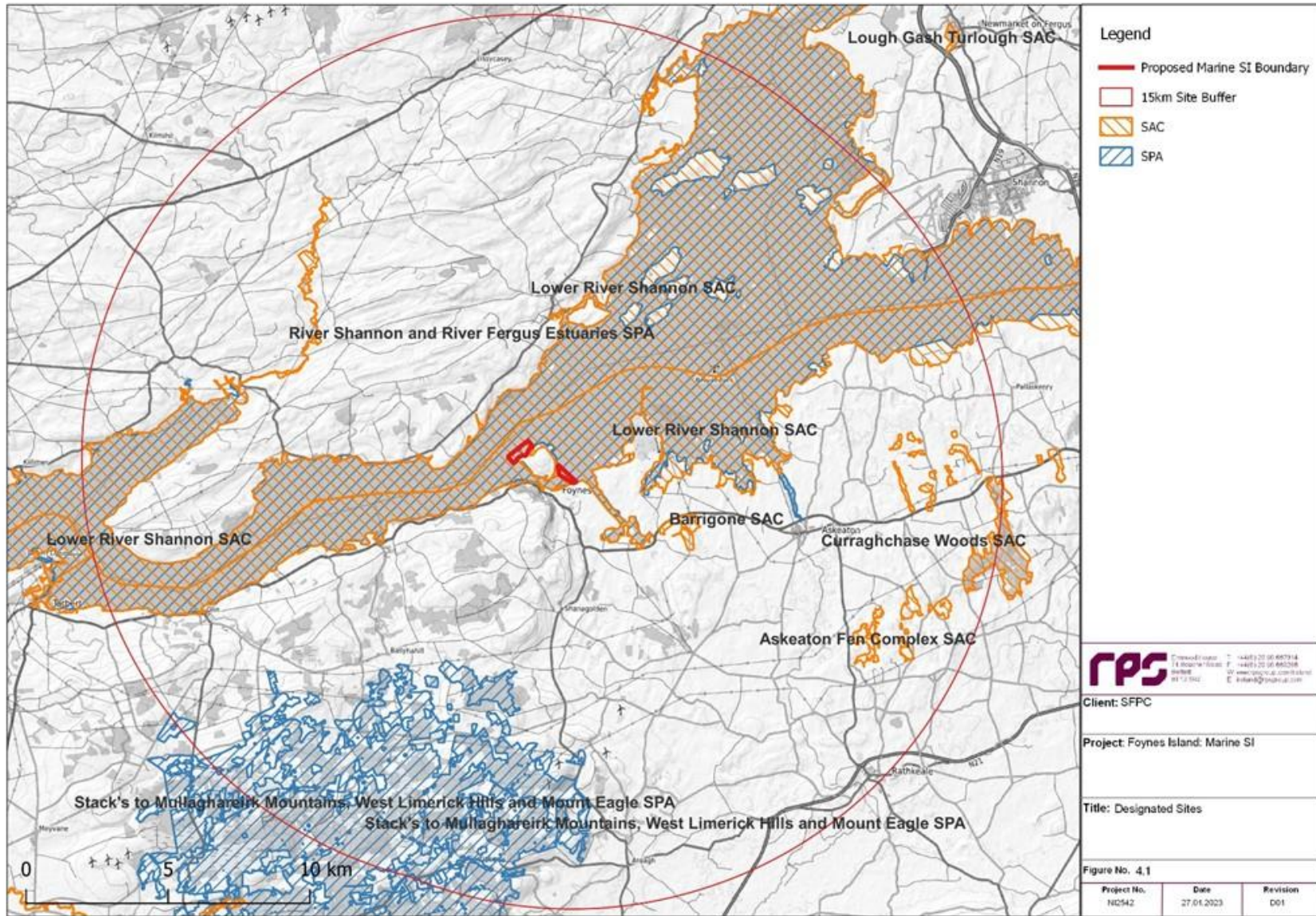


Figure 4.1 European Sites Within Proximity to the Site

**Table 4-1: Qualifying Interests and Conservation objectives of European sites considered**

Site Code	Site Name	Relevant Qualifying Interests & Conservation Objectives	Distance from proposed project																					
IE002165	Lower River Shannon SAC	<p>Conservation Objectives Specific Version 1.0 (07/08/12)                      To maintain the favourable conservation condition of the 14 no. Annex I habitat types in the SAC, as defined by a range of attributes and targets; and of 7 no. Annex II species in the SAC, as defined by a range of attributes and targets.</p> <p>Annex I Habitats  <b>Sandbanks which are slightly covered by seawater all the time [1110]</b></p> <table border="1"> <thead> <tr> <th>Attribute</th> <th>Measure</th> <th>Target</th> </tr> </thead> <tbody> <tr> <td>Habitat Distribution</td> <td>Occurrence</td> <td>The distribution of sandbanks is stable, subject to natural processes</td> </tr> <tr> <td>Habitat Area</td> <td>Hectares</td> <td>The permanent habitat area is stable or increasing, subject to natural processes</td> </tr> <tr> <td>Community Distribution</td> <td>Hectares</td> <td>Conserve the following community type in a natural condition: Subtidal sand to mixed sediment with <i>Nephtys spp.</i> community complex</td> </tr> </tbody> </table> <p><b>Estuaries [1130]</b></p> <table border="1"> <thead> <tr> <th>Attribute</th> <th>Measure</th> <th>Target</th> </tr> </thead> <tbody> <tr> <td>Habitat Area</td> <td>Hectares</td> <td>The permanent habitat area is stable or increasing, subject to natural processes</td> </tr> <tr> <td>Community Distribution</td> <td>Hectares</td> <td>Conserve the following community types in a natural condition: Intertidal sand to mixed sediment with polychaetes, molluscs and crustaceans community complex; Estuarine subtidal muddy sand to mixed sediment with gammarids community complex; Subtidal sand to mixed sediment with <i>Nucula nucleus</i> community complex; Subtidal sand to mixed sediment with <i>Nephtys spp.</i> community complex; Fucoid-dominated intertidal reef community complex; Faunal turf-dominated subtidal reef community; and Anemone-dominated subtidal reef community</td> </tr> </tbody> </table> <p><b>Mudflats and sandflats not covered by seawater at low tide [1140]</b></p>	Attribute	Measure	Target	Habitat Distribution	Occurrence	The distribution of sandbanks is stable, subject to natural processes	Habitat Area	Hectares	The permanent habitat area is stable or increasing, subject to natural processes	Community Distribution	Hectares	Conserve the following community type in a natural condition: Subtidal sand to mixed sediment with <i>Nephtys spp.</i> community complex	Attribute	Measure	Target	Habitat Area	Hectares	The permanent habitat area is stable or increasing, subject to natural processes	Community Distribution	Hectares	Conserve the following community types in a natural condition: Intertidal sand to mixed sediment with polychaetes, molluscs and crustaceans community complex; Estuarine subtidal muddy sand to mixed sediment with gammarids community complex; Subtidal sand to mixed sediment with <i>Nucula nucleus</i> community complex; Subtidal sand to mixed sediment with <i>Nephtys spp.</i> community complex; Fucoid-dominated intertidal reef community complex; Faunal turf-dominated subtidal reef community; and Anemone-dominated subtidal reef community	N/A Works will take place within the SAC boundary.
Attribute	Measure	Target																						
Habitat Distribution	Occurrence	The distribution of sandbanks is stable, subject to natural processes																						
Habitat Area	Hectares	The permanent habitat area is stable or increasing, subject to natural processes																						
Community Distribution	Hectares	Conserve the following community type in a natural condition: Subtidal sand to mixed sediment with <i>Nephtys spp.</i> community complex																						
Attribute	Measure	Target																						
Habitat Area	Hectares	The permanent habitat area is stable or increasing, subject to natural processes																						
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Site Code	Site Name	Relevant Qualifying Interests & Conservation Objectives			Distance from proposed project
		Attribute	Measure	Target	
		Habitat Area	Hectares	The permanent habitat area is stable or increasing, subject to natural processes	
		Community Distribution	Hectares	Conserve the following community types in a natural condition: Intertidal sand with <i>Scolelepis squamata</i> and <i>Pontocrates spp.</i> community; and Intertidal sand to mixed sediment with polychaetes, molluscs and crustaceans community complex	
		<b>Coastal lagoons [1150]</b>			
		Attribute	Measure	Target	
		Habitat Area	Hectares	Area stable or increasing, subject to natural processes. Favourable reference area 33.4ha- Shannon Airport Lagoon 24.2ha; Cloonconeen Pool 3.9ha; Scattery Lagoon 2.8ha; Quayfield and Poulaweala Loughs 2.5ha	
		Habitat Distribution	Occurrence	No decline, subject to natural processes	
		Salinity Regime	Practical salinity units (psu)	Median annual salinity and temporal variation within natural ranges	
		Hydrological regime	Metres	Annual water level fluctuations and minima within natural ranges	
		Barrier: connectivity between lagoon and sea	Permeability	Appropriate hydrological connections between lagoons and sea, including where necessary, appropriate management	
		Water quality: chlorophyll a	µg/L	Annual median chlorophyll a within natural ranges and less than 5µg/L	
		Water quality: Molybdate Reactive Phosphorus (MRP)	mg/L	Annual median MRP within natural ranges and less than 0.1mg/L	
		Water quality: Dissolved Inorganic Nitrogen (DIN)	mg/L	Annual median DIN within natural ranges and less than 0.15mg/L	
		Depth of macrophyte colonisation	Metres	Macrophyte colonisation to maximum depth of lagoons	
		Typical plant species	number and m2	Maintain number and extent of listed lagoonal specialists, subject to natural variation	

Site Code	Site Name	Relevant Qualifying Interests & Conservation Objectives	Distance from proposed project												
		<p>Typical animal species    number                      Maintain listed lagoon specialists, subject to natural variation</p> <p>Negative indicator        Number and % cover        Negative indicator species absent or under control species</p>													
		<p><b>Large shallow inlets and bays [1160]</b></p> <table border="1"> <thead> <tr> <th data-bbox="568 480 869 515">Attribute</th> <th data-bbox="869 480 1182 515">Measure</th> <th data-bbox="1182 480 1854 515">Target</th> </tr> </thead> <tbody> <tr> <td data-bbox="568 515 869 582">Habitat Area</td> <td data-bbox="869 515 1182 582">Hectares</td> <td data-bbox="1182 515 1854 582">The permanent habitat area is stable or increasing, subject to natural processes.</td> </tr> <tr> <td data-bbox="568 582 869 968">Community Distribution</td> <td data-bbox="869 582 1182 968">Hectares</td> <td data-bbox="1182 582 1854 968">Conserve the following community types in a natural condition: Intertidal sand with <i>Scolelepis squamata</i> and <i>Pontocrates</i> spp. community; Intertidal sand to mixed sediment with polychaetes, molluscs and crustaceans community complex; Subtidal sand to mixed sediment with <i>Nucula nucleus</i> community complex; Subtidal sand to mixed sediment with <i>Nephtys</i> spp. community complex; Furoid-dominated intertidal reef community complex; Mixed subtidal reef community complex; Faunal turf-dominated subtidal reef community; Anemone- dominated subtidal reef community; and Laminaria- dominated community complex</td> </tr> </tbody> </table>	Attribute	Measure	Target	Habitat Area	Hectares	The permanent habitat area is stable or increasing, subject to natural processes.	Community Distribution	Hectares	Conserve the following community types in a natural condition: Intertidal sand with <i>Scolelepis squamata</i> and <i>Pontocrates</i> spp. community; Intertidal sand to mixed sediment with polychaetes, molluscs and crustaceans community complex; Subtidal sand to mixed sediment with <i>Nucula nucleus</i> community complex; Subtidal sand to mixed sediment with <i>Nephtys</i> spp. community complex; Furoid-dominated intertidal reef community complex; Mixed subtidal reef community complex; Faunal turf-dominated subtidal reef community; Anemone- dominated subtidal reef community; and Laminaria- dominated community complex				
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Habitat Area	Hectares	The permanent habitat area is stable or increasing, subject to natural processes.													
Community Distribution	Hectares	Conserve the following community types in a natural condition: Intertidal sand with <i>Scolelepis squamata</i> and <i>Pontocrates</i> spp. community; Intertidal sand to mixed sediment with polychaetes, molluscs and crustaceans community complex; Subtidal sand to mixed sediment with <i>Nucula nucleus</i> community complex; Subtidal sand to mixed sediment with <i>Nephtys</i> spp. community complex; Furoid-dominated intertidal reef community complex; Mixed subtidal reef community complex; Faunal turf-dominated subtidal reef community; Anemone- dominated subtidal reef community; and Laminaria- dominated community complex													
		<p><b>Reefs [1170]</b></p> <table border="1"> <thead> <tr> <th data-bbox="568 1023 869 1058">Attribute</th> <th data-bbox="869 1023 1182 1058">Measure</th> <th data-bbox="1182 1023 1854 1058">Target</th> </tr> </thead> <tbody> <tr> <td data-bbox="568 1058 869 1125">Habitat Distribution</td> <td data-bbox="869 1058 1182 1125">Occurrence</td> <td data-bbox="1182 1058 1854 1125">The distribution of Reefs is stable, subject to natural processes</td> </tr> <tr> <td data-bbox="568 1125 869 1192">Habitat Area</td> <td data-bbox="869 1125 1182 1192">Hectares</td> <td data-bbox="1182 1125 1854 1192">The permanent habitat area is stable, subject to natural processes.</td> </tr> <tr> <td data-bbox="568 1192 869 1350">Community Distribution</td> <td data-bbox="869 1192 1182 1350">Hectares</td> <td data-bbox="1182 1192 1854 1350">Conserve the following reef community types in a natural condition: Furoid-dominated intertidal reef community complex; Mixed subtidal reef community complex; Faunal turf-dominated subtidal reef community; Anemone- dominated subtidal reef</td> </tr> </tbody> </table>	Attribute	Measure	Target	Habitat Distribution	Occurrence	The distribution of Reefs is stable, subject to natural processes	Habitat Area	Hectares	The permanent habitat area is stable, subject to natural processes.	Community Distribution	Hectares	Conserve the following reef community types in a natural condition: Furoid-dominated intertidal reef community complex; Mixed subtidal reef community complex; Faunal turf-dominated subtidal reef community; Anemone- dominated subtidal reef	
Attribute	Measure	Target													
Habitat Distribution	Occurrence	The distribution of Reefs is stable, subject to natural processes													
Habitat Area	Hectares	The permanent habitat area is stable, subject to natural processes.													
Community Distribution	Hectares	Conserve the following reef community types in a natural condition: Furoid-dominated intertidal reef community complex; Mixed subtidal reef community complex; Faunal turf-dominated subtidal reef community; Anemone- dominated subtidal reef													

Site Code	Site Name	Relevant Qualifying Interests & Conservation Objectives	Distance from proposed project
		community; and Laminaria- dominated community complex.	
		<b>Perennial vegetation of stony banks [1220]</b>	
		Attribute Measure Target	
		Habitat Area Hectares Area stable or increasing, subject to natural processes, including erosion and succession	
		Habitat Distribution Occurrence No decline, or change in habitat distribution, subject to natural processes	
		Physical structure: Presence/ absence of physical barriers Maintain the natural circulation of sediment and organic matter, without any physical obstructions	
		Vegetation structure: Occurrence Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	
		Vegetation composition: Percentage cover at a typical species and sub-communities representative sample of monitoring stops Maintain the typical vegetated shingle flora including the range of sub- communities within the different zones	
		Vegetation composition: Percentage cover Negative indicator species (including non-natives) to represent less than 5% cover	
		<b>Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]</b>	
		Attribute Measure Target	
		Habitat length Kilometres Area stable or increasing, subject to natural processes, including erosion. For sub- sites mapped: Kilbaha- 4.1km; Ladder Rock- 1.0km; Moyarta- 0.9km; Lisheencrony- 1.1km; Burrane- 0.2km; Kerry Head- 33.4km; Ballybunion- 15.6km; Kilclogher- 4.9km; Loop Head- 6.1km	

Site Code	Site Name	Relevant Qualifying Interests & Conservation Objectives			Distance from proposed project
		Habitat Distribution	Occurrence	No decline, or change in habitat distribution, subject to natural processes	
		Physical structure: functionality and hydrological regime	Occurrence of artificial barriers	No alteration to natural functioning of geomorphological and hydrological processes due to artificial structures	
		Vegetation structure: zonation	Occurrence	Maintain range of sea cliff habitat zonations including transitional zones, subject to natural processes including erosion and succession	
		Vegetation structure: vegetation height	Centimetres	Maintain structural variation within sward	
		Vegetation composition: typical species and sub-communities	Percentage cover at a representative sample of monitoring stops	Maintain range of sub- communities with typical species listed in the Irish Sea cliff survey (Barron et al., 2011)	
		Vegetation composition: negative indicator species	Percentage	Negative indicator species (including non-natives) to represent less than 5% cover	
		Vegetation composition: bracken and woody species	Percentage	Cover of bracken ( <i>Pteridium aquilinum</i> ) on grassland and/or heath to be less than 10%. Cover of woody species on grassland and/or heath to be less than 20%	
		<b>Salicornia and other annuals colonising mud and sand [1310]</b>			
		Attribute	Measure	Target	
		Habitat Area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession. For sub-sites mapped: Carrigafoyle - 0.005ha; Inishdea, Owenshere - 0.003ha; Knock - 0.029ha; Querin - 0.185ha; Rinevilla Bay - 0.001ha	
		Habitat Distribution	Occurrence	No decline, or change in habitat distribution, subject to natural processes	
		Physical structure: sediment supply	Presence/ absence of physical barriers	Maintain natural circulation of sediments and organic matter, without any physical obstructions	
		Physical structure: creeks and pans	Occurrence	Maintain/restore creek and pan structure, subject to natural processes, including erosion and succession	

Site Code	Site Name	Relevant Qualifying Interests & Conservation Objectives	Distance from proposed project
		Physical structure: flooding regime Hectares flooded; frequency Maintain natural tidal regime	
		Vegetation structure: zonation Occurrence Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	
		Vegetation structure: vegetation height Centimeters Maintain structural variation within sward	
		Vegetation structure: vegetation cover Percentage cover at a representative sample of monitoring stop Maintain more than 90% of area outside creeks vegetated	
		Vegetation composition: typical species and sub-communities Percentage cover Maintain the presence of species-poor communities with typical species listed in Saltmarsh Monitoring Project (McCorry and Ryle, 2009)	
		Vegetation structure: negative indicator species- <i>Spartina anglica</i> Hectares No significant expansion of common cordgrass ( <i>Spartina anglica</i> ), with an annual spread of less than 1%	
		<b>Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) [1330]</b>	
		Attribute	Measure
		Habitat Area	Hectares
			Target
			Area stable or increasing, subject to natural processes, including erosion and succession. For sub-sites mapped: Carrigafoyle- 6.774ha; Barrigone, Aughinish- 10.288ha; Beagh- 0.517ha; Bunratty- 26.939ha; Shepperton, Fergus Estuary- 37.925ha; Inishdea, Owenshere- 18.127ha; Killadysert, Inishcorker- 2.604ha; Knock- 0.576ha; Querin- 3.726ha; Rinevilla Bay- 11.883ha
		Habitat Distribution	Occurrence
			No decline or change in habitat distribution, subject to natural processes.
		Physical structure: sediment supply	Presence/ absence of physical barriers
			Maintain natural circulation of sediments and organic matter, without any physical obstructions
		Physical structure: creeks and pans	Occurrence
			Maintain creek and pan structure, subject to natural processes, including erosion and succession

Site Code	Site Name	Relevant Qualifying Interests & Conservation Objectives			Distance from proposed project
		Physical structure: flooding regime	Hectares flooded; frequency	Maintain natural tidal regime	
		Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	
		Vegetation structure: vegetation height	Centimetres	Maintain structural variation within sward	
		Vegetation structure: vegetation cover	Percentage cover at a representative sample of monitoring stops	Maintain more than 90% of the saltmarsh area vegetated	
		Vegetation composition: typical species and sub-communities	Percentage cover at a representative sample of monitoring stop	Maintain range of sub- communities with typical species listed in Saltmarsh Monitoring Project (McCorry and Ryle, 2009)	
		Vegetation structure: negative indicator species- <i>Spartina anglica</i>	Hectares	No significant expansion of common cordgrass ( <i>Spartina anglica</i> ), with an annual spread of less than 1%	
		<b>Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410]</b>			
		Attribute	Measure	Target	
		Habitat Area	Hectares	Area increasing, subject to natural processes, including erosion and succession. For sub-sites mapped: Carrigafoyle- 4.193ha; Barrigone, Aughinish- 2.407ha; Bunratty- 0.865ha; Inishdea, Owenshere- 11.609ha; Killadysert, Inishcorker- 0.705ha; Knock- 0.143ha, Querin- 0.008ha; Rinevilla Bay- 2.449ha	
		Habitat Distribution	Occurrence	No decline, or change in habitat distribution, subject to natural processes	
		Physical structure: sediment supply	Presence/absence of physical barriers	Maintain natural circulation of sediments and organic matter, without any physical obstructions	

Site Code	Site Name	Relevant Qualifying Interests & Conservation Objectives	Distance from proposed project
		Physical structure: creeks and pans Occurrence Maintain/restore creek and pan structure, subject to natural processes, including erosion and succession	
		Physical structure: flooding regime Hectares flooded; frequency Maintain natural tidal regime	
		Vegetation structure: zonation Occurrence Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	
		Vegetation structure: vegetation height Centimetres Maintain structural variation within sward	
		Vegetation structure: vegetation cover Percentage cover at a representative sample of monitoring stops Maintain more than 90% of area outside creeks vegetated	
		Vegetation composition: typical species Percentage cover Maintain range of sub-communities with typical species listed in Saltmarsh Monitoring Project (McCorry and Ryle, 2009)	
		Vegetation structure: negative indicator species - <i>Spartina anglica</i> Hectares No significant expansion of common cordgrass ( <i>Spartina anglica</i> ), with an annual spread of less than 1%	
		<b>Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation [3260]</b>	
		Attribute	Measure
		Habitat Area	Kilometres
		Habitat Distribution	Occurrence
		Hydrological regime: river flow	Metres per second
		Hydrological regime: tidal influence	Daily water level fluctuations - metres
		Hydrological regime: freshwater seepages	Metres per second
		Substratum composition: particle size range	Millimetres
			Target
			Area stable or increasing, subject to natural processes
			No decline, subject to natural processes
			Maintain appropriate hydrological regimes
			Maintain natural tidal regime
			Maintain appropriate freshwater seepage regimes
			The substratum should be dominated by the particle size ranges, appropriate to the habitat sub-type (frequently sands, gravels and cobbles)

Site Code	Site Name	Relevant Qualifying Interests & Conservation Objectives	Distance from proposed project																																										
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		Physical structure: bare ground Percentage Not more than 10% bare ground	
		<b>Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) [91E0]</b>	
		Attribute Measure Target	
		Habitat Area Hectares Area stable or increasing, subject to natural processes, at least c.8.5ha for sites surveyed	
		Habitat Distribution Occurrence No decline	
		Woodland size Hectares 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 Percentage and metres 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 Hectares Maintain diversity and extent of community types	
		Woodland structure: natural regeneration Seedling: sapling: pole ratio Seedlings, saplings and pole age-classes occur in adequate proportions to ensure survival of woodland canopy	
		Hydrological regime: flooding depth/height of water table Metres Appropriate hydrological regime necessary for maintenance of alluvial vegetation	
		Woodland structure: dead wood m2 woodland structure: dead wood At least 30m <sup>3</sup> /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 Number per hectare No decline	
		Woodland structure: indicators of local distinctiveness Occurrence No decline	

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		<p>Vegetation composition: Percentage native tree cover      No decline. Native tree cover not less than 95%</p> <p>Vegetation composition: Occurrence typical species      A variety of typical native species present, depending on woodland type, including alder (<i>Alnus glutinosa</i>), willows (<i>Salix spp</i>) and, locally, oak (<i>Quercus robur</i>) and ash (<i>Fraxinus excelsior</i>)</p> <p>Vegetation composition: Occurrence negative indicator species      Negative indicator species, particularly non-native invasive species, absent or under control</p> <p><b><i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029]</b></p> <table border="1"> <thead> <tr> <th>Attribute</th> <th>Measure</th> <th>Target</th> </tr> </thead> <tbody> <tr> <td>Distribution</td> <td>Kilometres</td> <td>Maintain at 7km.</td> </tr> <tr> <td>Population size</td> <td>Number of adult mussels</td> <td>Restore to 10,000 adult mussels</td> </tr> <tr> <td>Population structure: recruitment</td> <td>Percentage per size class</td> <td>Restore to least 20% of population no more than 65mm in length; and at least 5% of population no more than 30mm in length</td> </tr> <tr> <td>Population structure: adult mortality</td> <td>Percentage</td> <td>No more than 5% decline from previous number of live adults counted; dead shells less than 1% of the adult population and scattered in distribution</td> </tr> <tr> <td>Habitat extent</td> <td>kilometres</td> <td>Restore suitable habitat in more than 3.3km (see map 15) and any additional stretches necessary for salmonid spawning</td> </tr> <tr> <td>Water quality: macroinvertebrate and phytobenthos (diatoms)</td> <td>Ecological quality ratio (EQR)</td> <td>Restore water quality- macroinvertebrates: EQR greater than 0.90; phytobenthos: EQR greater than 0.93</td> </tr> <tr> <td>Substratum quality: filamentous algae (macroalgae), macrophytes (rooted higher plants)</td> <td>Percentage</td> <td>Restore substratum quality- filamentous algae: absent or trace (&lt;5%)</td> </tr> </tbody> </table>	Attribute	Measure	Target	Distribution	Kilometres	Maintain at 7km.	Population size	Number of adult mussels	Restore to 10,000 adult mussels	Population structure: recruitment	Percentage per size class	Restore to least 20% of population no more than 65mm in length; and at least 5% of population no more than 30mm in length	Population structure: adult mortality	Percentage	No more than 5% decline from previous number of live adults counted; dead shells less than 1% of the adult population and scattered in distribution	Habitat extent	kilometres	Restore suitable habitat in more than 3.3km (see map 15) and any additional stretches necessary for salmonid spawning	Water quality: macroinvertebrate and phytobenthos (diatoms)	Ecological quality ratio (EQR)	Restore water quality- macroinvertebrates: EQR greater than 0.90; phytobenthos: EQR greater than 0.93	Substratum quality: filamentous algae (macroalgae), macrophytes (rooted higher plants)	Percentage	Restore substratum quality- filamentous algae: absent or trace (<5%)	
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		Substratum quality: Occurrence sediment	Restore substratum quality- stable cobble and gravel substrate with very little fine material; no artificially elevated levels of fine sediment
		Substratum quality: Redox potential oxygen availability	Restore to no more than 20% decline from water column to 5cm depth in substrate
		Hydrological regime: flow Metres per second variability	Restore appropriate hydrological regimes
		Host fish Number	Maintain sufficient juvenile salmonids to host glochidial larvae
		<b><i>Petromyzon marinus</i> (Sea Lamprey) [1095]</b>	
		Attribute Measure	Target
		Distribution: extent of anadromy	% of river accessible Greater than 75% of main stem length of rivers accessible from estuary
		Population structure of juveniles	Number of age/size groups At least three age/size groups present
		Juvenile density in fine sediment	Juveniles/m <sup>2</sup> Juvenile density at least 1/m <sup>2</sup>
		Extent and distribution of spawning habitat	m <sup>2</sup> and occurrence No decline in extent and distribution of spawning beds
		Availability of juvenile habitat	Number of positive sites in 3rd order channels (and greater), downstream of spawning areas More than 50% of sample sites positive
		<b><i>Lampetra planeri</i> (Brook Lamprey) [1096]</b>	
		Attribute Measure	Target
		Distribution	% of river accessible Access to all water courses down to first order streams
		Population structure of juveniles	Number of age/size groups At least three age/size groups of brook/river lamprey present
		Juvenile density in fine sediment	Juveniles/m <sup>2</sup> Mean catchment juvenile density of brook/river lamprey at least 2/m <sup>2</sup>
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IE004077	River Shannon and River Fergus Estuaries SPA	<p>Conservation Objectives Specific Version 1.0 (17/09/12)</p> <p>To maintain the favourable conservation condition of –</p> <p>21 no. overwintering species in the SPA, as defined by 2 no. attributes and targets;</p> <p>1 no. breeding species Cormorant, as defined by a wider range of attributes and targets; and</p> <p>wetland habitats in the SPA as a resource for the regularly-occurring migratory waterbirds that utilise it, as defined by 1 no. attribute and target.</p>	N/A Works will take place within the SPA boundary																																										

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		<p>Special Conservation Interests</p> <p><b>Cormorant (<i>Phalacrocorax carbo</i>) [A017]</b></p> <table border="1"> <thead> <tr> <th data-bbox="568 379 869 416">Attribute</th> <th data-bbox="869 379 1182 416">Target</th> <th data-bbox="1182 379 1854 416">Measure</th> </tr> </thead> <tbody> <tr> <td data-bbox="568 416 869 515">Breeding population abundance: apparently occupied nests (AONs)</td> <td data-bbox="869 416 1182 453">Number</td> <td data-bbox="1182 416 1854 453">No significant decline</td> </tr> <tr> <td data-bbox="568 515 869 552">Productivity rate</td> <td data-bbox="869 515 1182 552">Mean number</td> <td data-bbox="1182 515 1854 552">No significant decline</td> </tr> <tr> <td data-bbox="568 552 869 616">Distribution: breeding colonies</td> <td data-bbox="869 552 1182 616">Number; location; area (hectares)</td> <td data-bbox="1182 552 1854 616">No significant decline</td> </tr> <tr> <td data-bbox="568 679 869 716">Prey biomass available</td> <td data-bbox="869 679 1182 716">Kilogrammes</td> <td data-bbox="1182 679 1854 716">No significant decline</td> </tr> <tr> <td data-bbox="568 748 869 812">Barriers to connectivity</td> <td data-bbox="869 748 1182 812">Number; location; shape; area (hectares)</td> <td data-bbox="1182 748 1854 812">No significant increase</td> </tr> <tr> <td data-bbox="568 812 869 877">Disturbance at the breeding site</td> <td data-bbox="869 812 1182 849">Level of impact</td> <td data-bbox="1182 812 1854 877">Human activities should occur at levels that do not adversely affect the breeding cormorant population</td> </tr> <tr> <td data-bbox="568 877 869 914">Population trend</td> <td data-bbox="869 877 1182 914">Percentage change</td> <td data-bbox="1182 877 1854 914">Long term population trend stable or increasing</td> </tr> <tr> <td data-bbox="568 946 869 983">Distribution</td> <td data-bbox="869 946 1182 1010">Range, timing and intensity of use of areas</td> <td data-bbox="1182 946 1854 1038">There should be no significant decrease in the range, timing or intensity of use of areas by cormorant other than that occurring from natural patterns of variation</td> </tr> </tbody> </table> <p><b>Wintering Waterbirds</b> including: Cormorant (<i>Phalacrocorax carbo</i>) [A017], Whooper Swan (<i>Cygnus cygnus</i>) [A038], Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046], Shelduck (<i>Tadorna tadorna</i>) [A048], Wigeon (<i>Anas penelope</i>) [A050], Teal (<i>Anas crecca</i>) [A052], Pintail (<i>Anas acuta</i>) [A054], Shoveler (<i>Anas clypeata</i>) [A056], Scaup (<i>Aythya marila</i>) [A062], Ringed Plover (<i>Charadrius hiaticula</i>) [A137], Golden Plover (<i>Pluvialis apricaria</i>) [A140], Grey Plover (<i>Pluvialis squatarola</i>) [A141], Lapwing (<i>Vanellus vanellus</i>) [A142], Knot (<i>Calidris canutus</i>) [A143], Dunlin (<i>Calidris alpina</i>) [A149], Black-tailed Godwit (<i>Limosa limosa</i>) [A156], Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157], Curlew (<i>Numenius arquata</i>) [A160], Redshank (<i>Tringa totanus</i>) [A162], Greenshank (<i>Tringa nebularia</i>) [A164] and Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179]</p> <table border="1"> <thead> <tr> <th data-bbox="568 1297 869 1334">Attribute</th> <th data-bbox="869 1297 1182 1334">Target</th> <th data-bbox="1182 1297 1854 1334">Measure</th> </tr> </thead> <tbody> <tr> <td data-bbox="568 1350 869 1386">Population trend</td> <td data-bbox="869 1350 1182 1386">Percentage change</td> <td data-bbox="1182 1350 1854 1386">Long term population trend stable or increasing</td> </tr> </tbody> </table>	Attribute	Target	Measure	Breeding population abundance: apparently occupied nests (AONs)	Number	No significant decline	Productivity rate	Mean number	No significant decline	Distribution: breeding colonies	Number; location; area (hectares)	No significant decline	Prey biomass available	Kilogrammes	No significant decline	Barriers to connectivity	Number; location; shape; area (hectares)	No significant increase	Disturbance at the breeding site	Level of impact	Human activities should occur at levels that do not adversely affect the breeding cormorant population	Population trend	Percentage change	Long term population trend stable or increasing	Distribution	Range, timing and intensity of use of areas	There should be no significant decrease in the range, timing or intensity of use of areas by cormorant other than that occurring from natural patterns of variation	Attribute	Target	Measure	Population trend	Percentage change	Long term population trend stable or increasing	
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IE002172	Blasket Islands SAC	<p>Conservation Objectives Specific Version 1.0 (07/04/14) To maintain the favourable conservation condition of the 4 no. Annex I habitat types in the SAC, as defined by a range of attributes and targets; and of 2 no. Annex II species in the SAC, as defined by a range of attributes and targets.</p> <p>Annex II Species <b>Harbour porpoise (<i>Phocoena phocoena</i>) [1351]</b></p> <table border="1"> <tr> <td>Attribute</td> <td>Target</td> <td>Measure</td> </tr> <tr> <td>Access to suitable habitat</td> <td>Number of artificial barriers</td> <td>Species range within the site should not be restricted by artificial barriers to site use.</td> </tr> <tr> <td>Disturbance</td> <td>Level of impact</td> <td>Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site.</td> </tr> </table> <p><b>Grey seal (<i>Halichoerus grypus</i>) [1364]</b></p> <table border="1"> <tr> <td>Attribute</td> <td>Target</td> <td>Measure</td> </tr> <tr> <td>Access to suitable habitat</td> <td>Number of artificial barriers</td> <td>Species range within the site should not be restricted by artificial barriers to site use.</td> </tr> <tr> <td>Breeding behaviour</td> <td>Breeding sites</td> <td>Conserve the breeding sites in a natural condition.</td> </tr> <tr> <td>Moulting behaviour</td> <td>Moult haul-out sites</td> <td>Conserve the moult haul-out sites in a natural condition.</td> </tr> <tr> <td>Resting behaviour</td> <td>Resting haul-out sites</td> <td>Maintain the resting haul-out sites in a natural condition.</td> </tr> </table>	Attribute	Target	Measure	Access to suitable habitat	Number of artificial barriers	Species range within the site should not be restricted by artificial barriers to site use.	Disturbance	Level of impact	Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site.	Attribute	Target	Measure	Access to suitable habitat	Number of artificial barriers	Species range within the site should not be restricted by artificial barriers to site use.	Breeding behaviour	Breeding sites	Conserve the breeding sites in a natural condition.	Moulting behaviour	Moult haul-out sites	Conserve the moult haul-out sites in a natural condition.	Resting behaviour	Resting haul-out sites	Maintain the resting haul-out sites in a natural condition.	116km (closest hydrological connection)
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IE000328	Slyne Head Islands SAC	<p>Conservation Objectives Specific Version 1.0 (13/08/12) To maintain the favourable conservation condition of the 1 no. Annex I habitat types in the SAC, as defined by a range of attributes and targets; and of 1 no. Annex II species in the SAC, as defined by a range of attributes and targets.</p> <p>Annex II Species <b>Grey seal (<i>Halichoerus grypus</i>) [1364]</b></p> <table border="0"> <thead> <tr> <th>Attribute</th> <th>Target</th> <th>Measure</th> </tr> </thead> <tbody> <tr> <td>Access to suitable habitat</td> <td>Number of artificial barriers</td> <td>Species range within the site should not be restricted by artificial barriers to site use.</td> </tr> <tr> <td>Breeding behaviour</td> <td>Breeding sites</td> <td>Conserve the breeding sites in a natural condition.</td> </tr> <tr> <td>Moulting behaviour</td> <td>Moult haul-out sites</td> <td>Conserve the moult haul-out sites in a natural condition.</td> </tr> <tr> <td>Resting behaviour</td> <td>Resting haul-out sites</td> <td>Maintain the resting haul-out sites in a natural condition.</td> </tr> <tr> <td>Disturbance</td> <td>Level of impact</td> <td>Human activities should occur at levels that do not adversely affect the grey seal population at the site.</td> </tr> </tbody> </table>	Attribute	Target	Measure	Access to suitable habitat	Number of artificial barriers	Species range within the site should not be restricted by artificial barriers to site use.	Breeding behaviour	Breeding sites	Conserve the breeding sites in a natural condition.	Moulting behaviour	Moult haul-out sites	Conserve the moult haul-out sites in a natural condition.	Resting behaviour	Resting haul-out sites	Maintain the resting haul-out sites in a natural condition.	Disturbance	Level of impact	Human activities should occur at levels that do not adversely affect the grey seal population at the site.	155km (closest hydrological connection)
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IE003074	Slyne Head Peninsula SAC	<p>Conservation Objectives Specific Version 1.0 (05/02/15) To maintain the favourable conservation condition of the 18 no. Annex I habitat types in the SAC, as defined by a range of attributes and targets; and of 3 no. Annex II species in the SAC, as defined by a range of attributes and targets.</p> <p>Annex II Species <b>Common Bottlenose Dolphin (<i>Tursiops truncatus</i>) [1349]</b></p> <table border="0"> <thead> <tr> <th>Attribute</th> <th>Target</th> <th>Measure</th> </tr> </thead> <tbody> <tr> <td>Access to suitable habitat</td> <td>Number of artificial barriers</td> <td>Species range within the site should not be restricted by artificial barriers to site use</td> </tr> </tbody> </table>	Attribute	Target	Measure	Access to suitable habitat	Number of artificial barriers	Species range within the site should not be restricted by artificial barriers to site use	155km (closest hydrological connection)												
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Disturbance	Level of impact	Human activities should occur at levels that do not adversely affect the bottlenose dolphin population at the site																						
IE002998	West Connacht Coast SAC	<p>Conservation Objectives Specific Version 1.0 (02/11/15) To maintain the favourable conservation condition of 2 no. Annex II species in the SAC, as defined by a range of attributes and targets.</p> <p>Annex II Species <b>Common Bottlenose Dolphin (<i>Tursiops truncatus</i>) [1349]</b></p> <table border="1"> <thead> <tr> <th>Attribute</th> <th>Target</th> <th>Measure</th> </tr> </thead> <tbody> <tr> <td>Access to suitable habitat</td> <td>Number of artificial barriers</td> <td>Species range within the site should not be restricted by artificial barriers to site use</td> </tr> <tr> <td>Habitat use: critical areas</td> <td>Location and hectares</td> <td>Critical areas, representing habitat used preferentially by bottlenose dolphin, should be maintained in a natural condition.</td> </tr> <tr> <td>Disturbance</td> <td>Level of impact</td> <td>Human activities should occur at levels that do not adversely affect the bottlenose dolphin population at the site</td> </tr> </tbody> </table> <p><b>Harbour porpoise (<i>Phocoena phocoena</i>) [1351]</b></p> <table border="1"> <thead> <tr> <th>Attribute</th> <th>Target</th> <th>Measure</th> </tr> </thead> <tbody> <tr> <td>Access to suitable habitat</td> <td>Number of artificial barriers</td> <td>Species range within the site should not be restricted by artificial barriers to site use.</td> </tr> <tr> <td>Disturbance</td> <td>Level of impact</td> <td>Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site.</td> </tr> </tbody> </table>	Attribute	Target	Measure	Access to suitable habitat	Number of artificial barriers	Species range within the site should not be restricted by artificial barriers to site use	Habitat use: critical areas	Location and hectares	Critical areas, representing habitat used preferentially by bottlenose dolphin, should be maintained in a natural condition.	Disturbance	Level of impact	Human activities should occur at levels that do not adversely affect the bottlenose dolphin population at the site	Attribute	Target	Measure	Access to suitable habitat	Number of artificial barriers	Species range within the site should not be restricted by artificial barriers to site use.	Disturbance	Level of impact	Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site.	161km (closest hydrological connection)
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Site Code	Site Name	Relevant Qualifying Interests & Conservation Objectives	Distance from proposed project																		
IE000278	Inishbofin and Inishshark SAC	<p>Conservation Objectives Specific Version 1.0 (29/04/15) To maintain the favourable conservation condition of the 4 no. Annex I habitat types in the SAC, as defined by a range of attributes and targets; and of 1 no. Annex II species in the SAC, as defined by a range of attributes and targets.</p> <p>Annex II Species <b>Grey seal (<i>Halichoerus grypus</i>) [1364]</b></p> <table border="1"> <thead> <tr> <th>Attribute</th> <th>Target</th> <th>Measure</th> </tr> </thead> <tbody> <tr> <td>Access to suitable habitat</td> <td>Number of artificial barriers</td> <td>Species range within the site should not be restricted by artificial barriers to site use.</td> </tr> <tr> <td>Breeding behaviour</td> <td>Breeding sites</td> <td>Conserve the breeding sites in a natural condition.</td> </tr> <tr> <td>Moulting behaviour</td> <td>Moult haul-out sites</td> <td>Conserve the moult haul-out sites in a natural condition.</td> </tr> <tr> <td>Resting behaviour</td> <td>Resting haul-out sites</td> <td>Maintain the resting haul-out sites in a natural condition.</td> </tr> <tr> <td>Disturbance</td> <td>Level of impact</td> <td>Human activities should occur at levels that do not adversely affect the grey seal population at the site.</td> </tr> </tbody> </table>	Attribute	Target	Measure	Access to suitable habitat	Number of artificial barriers	Species range within the site should not be restricted by artificial barriers to site use.	Breeding behaviour	Breeding sites	Conserve the breeding sites in a natural condition.	Moulting behaviour	Moult haul-out sites	Conserve the moult haul-out sites in a natural condition.	Resting behaviour	Resting haul-out sites	Maintain the resting haul-out sites in a natural condition.	Disturbance	Level of impact	Human activities should occur at levels that do not adversely affect the grey seal population at the site.	176km (closest hydrological connection)
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IE000495	Duvillaun Islands SAC	<p>Conservation Objectives Specific Version 1.0 (16/12/13) To maintain the favourable conservation condition of 2 no. Annex II species in the SAC, as defined by a range of attributes and targets.</p> <p>Annex II Species <b>Common Bottlenose Dolphin (<i>Tursiops truncatus</i>) [1349]</b></p> <table border="1"> <thead> <tr> <th>Attribute</th> <th>Target</th> <th>Measure</th> </tr> </thead> <tbody> <tr> <td>Access to suitable habitat</td> <td>Number of artificial barriers</td> <td>Species range within the site should not be restricted by artificial barriers to site use</td> </tr> <tr> <td>Habitat use: critical areas</td> <td>Location and hectares</td> <td>Critical areas, representing habitat used preferentially by bottlenose dolphin, should be maintained in a natural condition.</td> </tr> <tr> <td>Disturbance</td> <td>Level of impact</td> <td>Human activities should occur at levels that do not adversely affect the bottlenose dolphin population at the site</td> </tr> </tbody> </table> <p><b>Grey seal (<i>Halichoerus grypus</i>) [1364]</b></p>	Attribute	Target	Measure	Access to suitable habitat	Number of artificial barriers	Species range within the site should not be restricted by artificial barriers to site use	Habitat use: critical areas	Location and hectares	Critical areas, representing habitat used preferentially by bottlenose dolphin, should be maintained in a natural condition.	Disturbance	Level of impact	Human activities should occur at levels that do not adversely affect the bottlenose dolphin population at the site	229km (closest hydrological connection)						
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IE000507	Inishkea Islands SAC	<p>Conservation Objectives Specific Version 1.0 (25/04/15) To maintain the favourable conservation condition of the 1 no. Annex I habitat types in the SAC, as defined by a range of attributes and targets; and of 2 no. Annex II species in the SAC, as defined by a range of attributes and targets.</p> <p>Annex II Species <b>Grey seal (<i>Halichoerus grypus</i>) [1364]</b></p> <table border="1"> <thead> <tr> <th>Attribute</th> <th>Target</th> <th>Measure</th> </tr> </thead> <tbody> <tr> <td>Access to suitable habitat</td> <td>Number of artificial barriers</td> <td>Species range within the site should not be restricted by artificial barriers to site use.</td> </tr> <tr> <td>Breeding behaviour</td> <td>Breeding sites</td> <td>Conserve the breeding sites in a natural condition.</td> </tr> <tr> <td>Moulting behaviour</td> <td>Moult haul-out sites</td> <td>Conserve the moult haul-out sites in a natural condition.</td> </tr> <tr> <td>Resting behaviour</td> <td>Resting haul-out sites</td> <td>Maintain the resting haul-out sites in a natural condition.</td> </tr> <tr> <td>Disturbance</td> <td>Level of impact</td> <td>Human activities should occur at levels that do not adversely affect the grey seal population at the site.</td> </tr> </tbody> </table>	Attribute	Target	Measure	Access to suitable habitat	Number of artificial barriers	Species range within the site should not be restricted by artificial barriers to site use.	Breeding behaviour	Breeding sites	Conserve the breeding sites in a natural condition.	Moulting behaviour	Moult haul-out sites	Conserve the moult haul-out sites in a natural condition.	Resting behaviour	Resting haul-out sites	Maintain the resting haul-out sites in a natural condition.	Disturbance	Level of impact	Human activities should occur at levels that do not adversely affect the grey seal population at the site.	233km (closest hydrological connection)
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Breeding behaviour	Breeding sites	Conserve the breeding sites in a natural condition.																			
Moulting behaviour	Moult haul-out sites	Conserve the moult haul-out sites in a natural condition.																			
Resting behaviour	Resting haul-out sites	Maintain the resting haul-out sites in a natural condition.																			
Disturbance	Level of impact	Human activities should occur at levels that do not adversely affect the grey seal population at the site.																			
IE000101	Roaringwater Bay and Islands SAC	<p>Conservation Objectives Specific Version 1.0 (19/07/11) To maintain the favourable conservation condition of the 5 no. Annex I habitat types in the SAC, as defined by a range of attributes and targets; and of 3 no. Annex II species in the SAC, as defined by a range of attributes and targets.</p> <p>Annex II Species <b>Harbour porpoise (<i>Phocoena phocoena</i>) [1351]</b></p> <table border="1"> <thead> <tr> <th>Attribute</th> <th>Target</th> <th>Measure</th> </tr> </thead> <tbody> </tbody> </table>	Attribute	Target	Measure	225km (closest hydrological connection)															
Attribute	Target	Measure																			

Site Code	Site Name	Relevant Qualifying Interests & Conservation Objectives	Distance from proposed project																		
		<p>Access to suitable habitat Number of artificial barriers Species range within the site should not be restricted by artificial barriers to site use.</p> <p>Disturbance Level of impact Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site.</p> <p><b>Grey seal (<i>Halichoerus grypus</i>) [1364]</b></p> <table border="1"> <thead> <tr> <th>Attribute</th> <th>Target</th> <th>Measure</th> </tr> </thead> <tbody> <tr> <td>Access to suitable habitat</td> <td>Number of artificial barriers</td> <td>Species range within the site should not be restricted by artificial barriers to site use.</td> </tr> <tr> <td>Breeding behaviour</td> <td>Breeding sites</td> <td>Conserve the breeding sites in a natural condition.</td> </tr> <tr> <td>Moulting behaviour</td> <td>Moult haul-out sites</td> <td>Conserve the moult haul-out sites in a natural condition.</td> </tr> <tr> <td>Resting behaviour</td> <td>Resting haul-out sites</td> <td>Maintain the resting haul-out sites in a natural condition.</td> </tr> <tr> <td>Disturbance</td> <td>Level of impact</td> <td>Human activities should occur at levels that do not adversely affect the grey seal population at the site.</td> </tr> </tbody> </table>	Attribute	Target	Measure	Access to suitable habitat	Number of artificial barriers	Species range within the site should not be restricted by artificial barriers to site use.	Breeding behaviour	Breeding sites	Conserve the breeding sites in a natural condition.	Moulting behaviour	Moult haul-out sites	Conserve the moult haul-out sites in a natural condition.	Resting behaviour	Resting haul-out sites	Maintain the resting haul-out sites in a natural condition.	Disturbance	Level of impact	Human activities should occur at levels that do not adversely affect the grey seal population at the site.	
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Disturbance	Level of impact	Human activities should occur at levels that do not adversely affect the grey seal population at the site.																			
IE003000	Rockabill to Dalkey Island SAC	<p>Conservation Objectives Specific Version 1.0 (07/04/13)</p> <p>To maintain the favourable conservation condition of the 1 no. Annex I habitat types in the SAC, as defined by a range of attributes and targets; and of 1 no. Annex II species in the SAC, as defined by a range of attributes and targets.</p> <p>Annex II Species</p> <p><b>Harbour porpoise (<i>Phocoena phocoena</i>) [1351]</b></p> <table border="1"> <thead> <tr> <th>Attribute</th> <th>Target</th> <th>Measure</th> </tr> </thead> <tbody> <tr> <td>Access to suitable habitat</td> <td>Number of artificial barriers</td> <td>Species range within the site should not be restricted by artificial barriers to site use.</td> </tr> <tr> <td>Disturbance</td> <td>Level of impact</td> <td>Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site.</td> </tr> </tbody> </table>	Attribute	Target	Measure	Access to suitable habitat	Number of artificial barriers	Species range within the site should not be restricted by artificial barriers to site use.	Disturbance	Level of impact	Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site.	607km (closest hydrological connection)									
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Access to suitable habitat	Number of artificial barriers	Species range within the site should not be restricted by artificial barriers to site use.																			
Disturbance	Level of impact	Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site.																			
UK0030398	North Anglesey Marine / Gogledd Mon Forol SAC	Draft Conservation Objectives (January 2016)	629km (closest hydrological connection)																		

Site Code	Site Name	Relevant Qualifying Interests & Conservation Objectives	Distance from proposed project
		<p>To avoid deterioration of the habitats of the harbour porpoise or significant disturbance to the harbour porpoise, thus ensuring that the integrity of the site is maintained and the site makes an appropriate contribution to maintaining Favourable Conservation Status (FCS) for the UK harbour porpoise. To ensure for harbour porpoise that, subject to natural change, the following attributes are maintained or restored in the long term:</p> <ol style="list-style-type: none"> <li>1. The species is a viable component of the site.</li> <li>2. There is no significant disturbance of the species.</li> <li>3. The supporting habitats and processes relevant to harbour porpoises and their prey are maintained.</li> </ol>	
UK0030396	Bristol Channel Approaches / Dynesfeydd Mor Hafren SAC	<p>Draft Conservation Objectives (January 2016)</p> <p>To avoid deterioration of the habitats of the harbour porpoise or significant disturbance to the harbour porpoise, thus ensuring that the integrity of the site is maintained and the site makes an appropriate contribution to maintaining Favourable Conservation Status (FCS) for the UK harbour porpoise. To ensure for harbour porpoise that, subject to natural change, the following attributes are maintained or restored in the long term:</p> <ol style="list-style-type: none"> <li>1. The species is a viable component of the site.</li> <li>2. There is no significant disturbance of the species.</li> <li>3. The supporting habitats and processes relevant to harbour porpoises and their prey are maintained.</li> </ol>	530km (closest hydrological connection)
UK0030399	North Channel SAC	<p>Conservation Objectives (March 2019)</p> <p>To ensure for harbour porpoise that, subject to natural change, the following attributes are maintained or restored in the long term:</p> <ol style="list-style-type: none"> <li>1. The species is a viable component of the site.</li> <li>2. There is no significant disturbance of the species.</li> <li>3. The supporting habitats and processes relevant to harbour porpoises and their prey are maintained.</li> </ol>	706km (closest hydrological connection)
UK0030397	West Wales Marine / Gorllewin Cymru Forol SAC	<p>Draft Conservation Objectives (January 2016)</p> <p>To avoid deterioration of the habitats of the harbour porpoise or significant disturbance to the harbour porpoise, thus ensuring that the integrity of the site is maintained and the site makes an appropriate</p>	513km (closest hydrological connection)

Site Code	Site Name	Relevant Qualifying Interests & Conservation Objectives	Distance from proposed project
		<p>contribution to maintaining Favourable Conservation Status (FCS) for the UK harbour porpoise. To ensure for harbour porpoise that, subject to natural change, the following attributes are maintained or restored in the long term:</p> <ol style="list-style-type: none"> <li>1. The species is a viable component of the site.</li> <li>2. There is no significant disturbance of the species.</li> <li>3. The supporting habitats and processes relevant to harbour porpoises and their prey are maintained.</li> </ol>	
FR2500084	Récifs et lands de la Hague SAC	<p>No published Conservation Objectives.  <b>Harbour porpoise (<i>Phocoena phocoena</i>) [1351]</b>  It is assumed that relevant conservation objectives for this species, as set out in respect of other SACs designated for harbour porpoise, as above.</p>	817km (closest hydrological connection)
FR2502019	Anse de Vauville SAC	<p>No published Conservation Objectives.  <b>Harbour porpoise (<i>Phocoena phocoena</i>) [1351]</b>  It is assumed that relevant conservation objectives for this species, as set out in respect of other SACs designated for harbour porpoise, as above.</p>	812km (closest hydrological connection)
FR2502018	Banc et récifs de Surtainville SAC	<p>No published Conservation Objectives.  <b>Harbour porpoise (<i>Phocoena phocoena</i>) [1351]</b>  It is assumed that relevant conservation objectives for this species, as set out in respect of other SACs designated for harbour porpoise, as above.</p>	817km (closest hydrological connection)
FR2500079	Chausey SAC	<p>No published Conservation Objectives.  <b>Harbour porpoise (<i>Phocoena phocoena</i>) [1351]</b>  It is assumed that relevant conservation objectives for this species, as set out in respect of other SACs designated for harbour porpoise, as above.</p>	840km (closest hydrological connection)
FR2500077	Baie du Mont Saint-Michel SAC	<p>No published Conservation Objectives.  <b>Harbour porpoise (<i>Phocoena phocoena</i>) [1351]</b>  It is assumed that relevant conservation objectives for this species, as set out in respect of other SACs designated for harbour porpoise, as above.</p>	865km (closest hydrological connection)
FR5300061	Estuaire de la Rance SAC	<p>No published Conservation Objectives.  <b>Harbour porpoise (<i>Phocoena phocoena</i>) [1351]</b>  It is assumed that relevant conservation objectives for this species, as set out in respect of other SACs designated for harbour porpoise, as above.</p>	848km (closest hydrological connection)
FR5300012	Baie de Lancieux, Baie de l'Arguenon,	<p>No published Conservation Objectives.  <b>Harbour porpoise (<i>Phocoena phocoena</i>) [1351]</b></p>	840km (closest hydrological connection)

Site Code	Site Name	Relevant Qualifying Interests & Conservation Objectives	Distance from proposed project
	Archipel de Saint Malo et Dinard SAC	It is assumed that relevant conservation objectives for this species, as set out in respect of other SACs designated for harbour porpoise, as above.	
FR5300011	Cap d'Erquy-Cap Fréhel SAC	No published Conservation Objectives. <b>Harbour porpoise (<i>Phocoena phocoena</i>) [1351]</b> It is assumed that relevant conservation objectives for this species, as set out in respect of other SACs designated for harbour porpoise, as above.	814km (closest hydrological connection)
FR5300066	Baie de Saint-Brieuc – Est SAC	No published Conservation Objectives. <b>Harbour porpoise (<i>Phocoena phocoena</i>) [1351]</b> It is assumed that relevant conservation objectives for this species, as set out in respect of other SACs designated for harbour porpoise, as above.	817km (closest hydrological connection)
FR5300010	Tregor Goëlo Est SAC	No published Conservation Objectives. <b>Harbour porpoise (<i>Phocoena phocoena</i>) [1351]</b> It is assumed that relevant conservation objectives for this species, as set out in respect of other SACs designated for harbour porpoise, as above.	743km (closest hydrological connection)
FR5300009	Côte de Granit rose-Sept-Iles SAC	No published Conservation Objectives. <b>Harbour porpoise (<i>Phocoena phocoena</i>) [1351]</b> It is assumed that relevant conservation objectives for this species, as set out in respect of other SACs designated for harbour porpoise, as above.	745km (closest hydrological connection)
FR2502022	Nord Bretagne DH SAC	No published Conservation Objectives. <b>Harbour porpoise (<i>Phocoena phocoena</i>) [1351]</b> It is assumed that relevant conservation objectives for this species, as set out in respect of other SACs designated for harbour porpoise, as above.	660km (closest hydrological connection)
FR5300015	Baie de Morlaix SAC	No published Conservation Objectives. <b>Harbour porpoise (<i>Phocoena phocoena</i>) [1351]</b> It is assumed that relevant conservation objectives for this species, as set out in respect of other SACs designated for harbour porpoise, as above.	748km (closest hydrological connection)
FR5300017	Abers - Côte des legends SAC	No published Conservation Objectives. <b>Harbour porpoise (<i>Phocoena phocoena</i>) [1351]</b> It is assumed that relevant conservation objectives for this species, as set out in respect of other SACs designated for harbour porpoise, as above.	702km (closest hydrological connection)
FR5300018	Ouessant-Molène SAC	No published Conservation Objectives. <b>Harbour porpoise (<i>Phocoena phocoena</i>) [1351]</b>	680km (closest hydrological connection)

NIS

Site Code	Site Name	Relevant Qualifying Interests & Conservation Objectives	Distance from proposed project
		It is assumed that relevant conservation objectives for this species, as set out in respect of other SACs designated for harbour porpoise, as above.	
FR5302006	Côtes de Crozon SAC	No published Conservation Objectives. <b>Harbour porpoise (<i>Phocoena phocoena</i>) [1351]</b> It is assumed that relevant conservation objectives for this species, as set out in respect of other SACs designated for harbour porpoise, as above.	706km (closest hydrological connection)



## 4.3 Likely Significant Effects Identified in the Screening for Appropriate Assessment.

### 4.3.1 Habitat Loss

The proposed marine site investigations work area lies within two European sites, namely the Lower River Shannon SAC and the River Shannon and River Fergus Estuaries SPA. The works area does not lie within or in proximity to any other European sites.

The proposed Marine SI works will take place within areas of the Lower River Shannon SAC which support the following Annex I habitats:

- Estuaries [1130] – 54 no. Cable percussive boreholes (Phase 1); 54 No. Cable percussive boreholes (Phase 2); and 15 Benthic grab samples.
- Mudflats and sandflats not covered by seawater at low tide [1140] - 17 Cable percussive boreholes (Phase 1); 19 Cable percussive boreholes (Phase 2); and 8 Benthic grab samples.
- Reefs [1170] - 8 Cable percussive boreholes (Phase 1); 11 Cable percussive boreholes (Phase 2); and one benthic grab sample.

The distribution of Annex I habitats within the Lower River Shannon SAC in the context of proposed borehole locations and grab samples is illustrated in Figure 4.2-4.4. Areas of mudflats and sandflats [1140] Annex I habitat are also considered to represent wetland habitat which forms a qualifying interest of the River Shannon and River Fergus Estuaries SPA.

The methodology proposed for borehole drilling will utilise a cable percussive approach through soft overburden and, where required, follow-on rotary coring for recovery of firm granular/till material and bedrock. The legs of the jack-up rig from which the works will take place will cover an area of 1m<sup>2</sup> each (for a combined total of 4m<sup>2</sup>), while the boreholes themselves will be drilled within a steel casing 200mm in diameter.

Table 4-2 details the predicted areas within each of the Annex I habitats within the Lower River Shannon SAC, to be affected by the proposed borehole drilling, at both phases. It is noted that the entire Marine SI area is mapped as being Annex I habitats: estuaries. This mapping overlaps that of the Annex I habitats reefs and mudflats and sandflats and as such boreholes within these habitats have been subtracted from the number within estuaries habitats to avoid double counting of areas.

**Table 4-2: Predicted areas of Annex I habitats within Lower River Shannon SAC to be affected by the proposed Marine SI works (both phases)**

Annex I Habitat	No. Boreholes Proposed	Total Area of Proposed Boreholes (m <sup>2</sup> )	Total Cumulative Area of Jack-up Rig Footings (m <sup>2</sup> )	Total Area Affected (m <sup>2</sup> )	Total area of Annex I Habitat within SAC (ha)	Percentage of Total Area Affected (%) [Boreholes only]
Estuaries [1130]	108	3.39	432	435.39	24,273	0.00018 [0.00000001]
Mudflats and Sandflats [1140]	36	1.13	144	145.13	8,808	0.00016 [0.000000128]
Reefs [1170]	19	0.60	76	76.6	21,421	0.000036 [0.000000028]

As reflected by the information presented in Table 4-2, the total affected areas will be extremely small and represent an extremely small proportion of the total areas of the relevant Annex I habitats supported within the SAC, in addition to wetland habitats of the River Shannon and River Fergus Estuaries SPA.

However it is noted that these total areas are not reflective of permanent losses to relevant Annex I or wetland habitats, indeed no permanent habitat losses are predicted to arise as a result of the proposed project. The vast majority of the affected area will comprise areas to be affected by the placement of the 1m<sup>2</sup> footings for the jack-up rig with a much smaller proportional area comprising that of the boreholes themselves.

Potential impacts associated with the deployment of the jack-up rig footings will be extremely short-term in nature and will only temporarily disturb the marine bed. These potential impacts are predicted to be similar to the deployment of a boat anchor within the relevant habitats and will not give rise to any alterations to these habitats beyond the minor and short-term. The areas over which these effects would occur are extremely small in the context of the areas of the relevant Annex I habitats supported across the SAC.

On this basis it is considered that the proposed use of a jack-up rig and associated footing on the estuary bed, to undertake marine SI works, will give rise to no significant loss of habitat within the Lower River Shannon SAC or the significant loss of wetland habitats within the River Shannon and River Fergus Estuaries SPA.

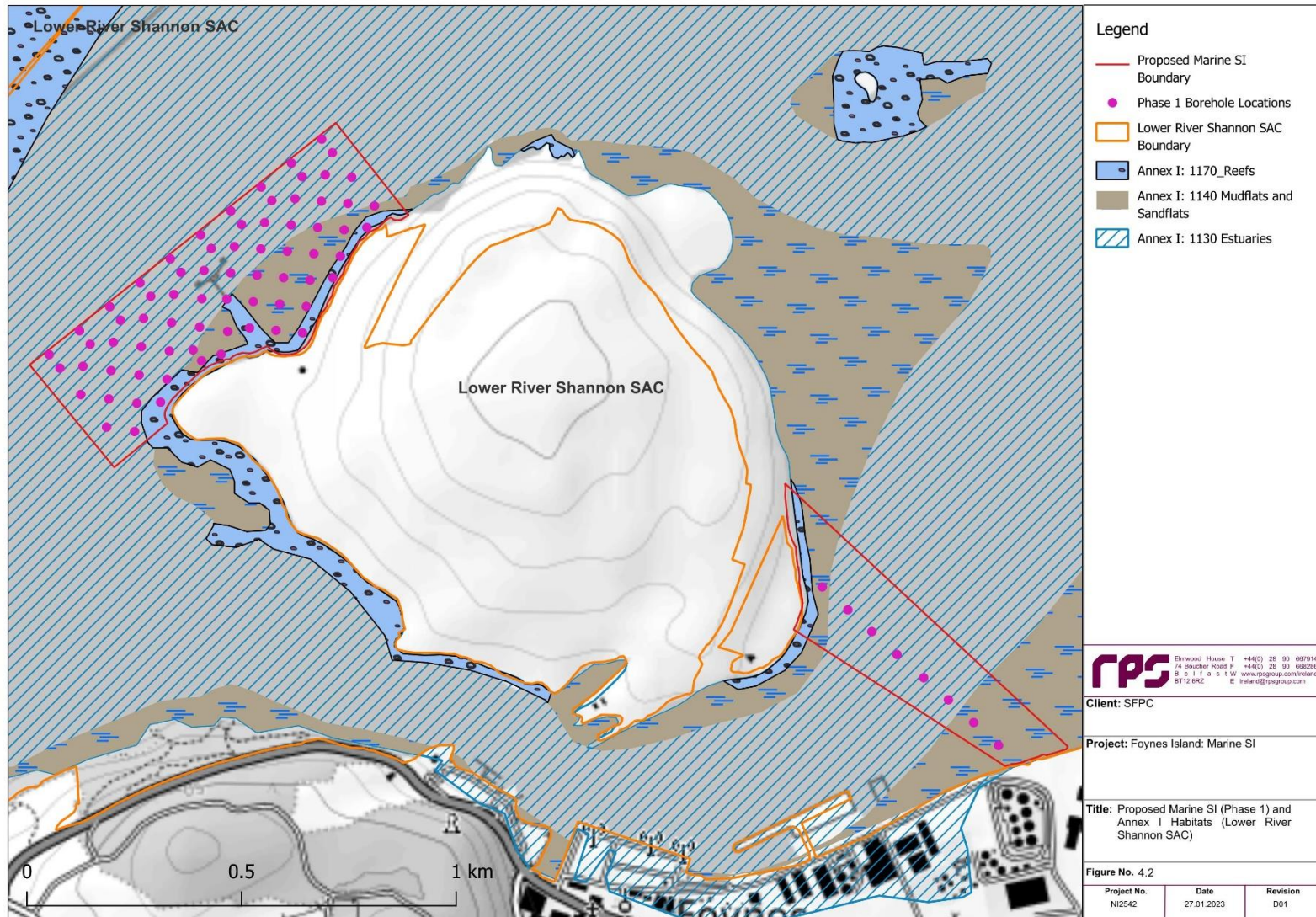
The proposed borehole creation, within the relevant areas of Annex I habitats, will involve the direct disturbance of a 200mm wide circle of habitat, per borehole, for estuary and mudflat habitats. Direct disturbance of the habitat associated with borehole creation will be extremely temporary in nature, as it is anticipated that borehole locations will be subject to rapid and natural filling by surrounding sediments following completion of the works, through normal tidal action and other natural processes. These effects will occur within an energetically active marine environment which supports significant quantities of mobile sediment as part of the natural processes of sediment transport which occur throughout the estuary including the areas proposed for SI works. The proposed borehole creation will also involve a direct impact of seabed habitat loss of a 200mm wide circle of habitat, per borehole, for reef where it occurs. For all habitat types affected by the works, the areas over which such effects would occur are extremely small in the context of the areas of the relevant Annex I habitats across the SAC, being an extremely small fraction of one percent ( $<1 \times 10^{-7}$ ), as set out at Table 4-2.

Such small-scale temporary effects are not considered representative of an adverse impact upon the integrity of the qualifying features, furthermore it is not predicted that such effects would give rise to any wider impacts to the favourable structure and functioning of the wider areas of Annex I or wetland qualifying habitats which they are predicted to affect.

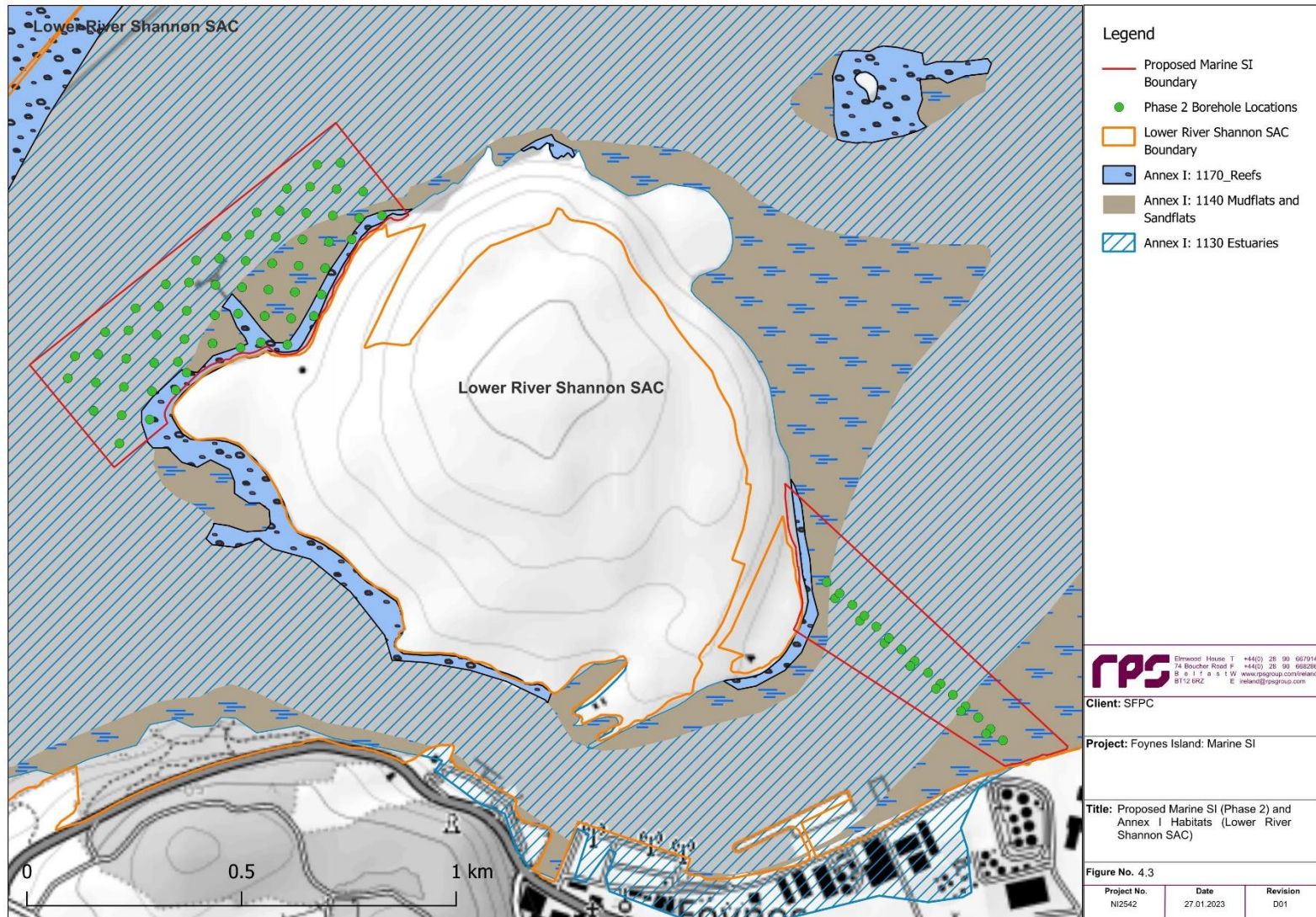
On this basis it is considered that temporary impacts associated with borehole creation within areas of Annex I intertidal and estuarine habitats within the Lower River Shannon SAC and intertidal wetlands of the River Shannon and River Fergus Estuaries SPA would not give rise to significant habitat loss effects upon either of these European sites.

Proposed grab sampling will involve the removal of a maximum of 0.1m<sup>2</sup> of material at each sample location. It is considered that such small sample volumes will have no potential to give rise to significant effects upon any Annex I habitat within the SAC through habitat loss.

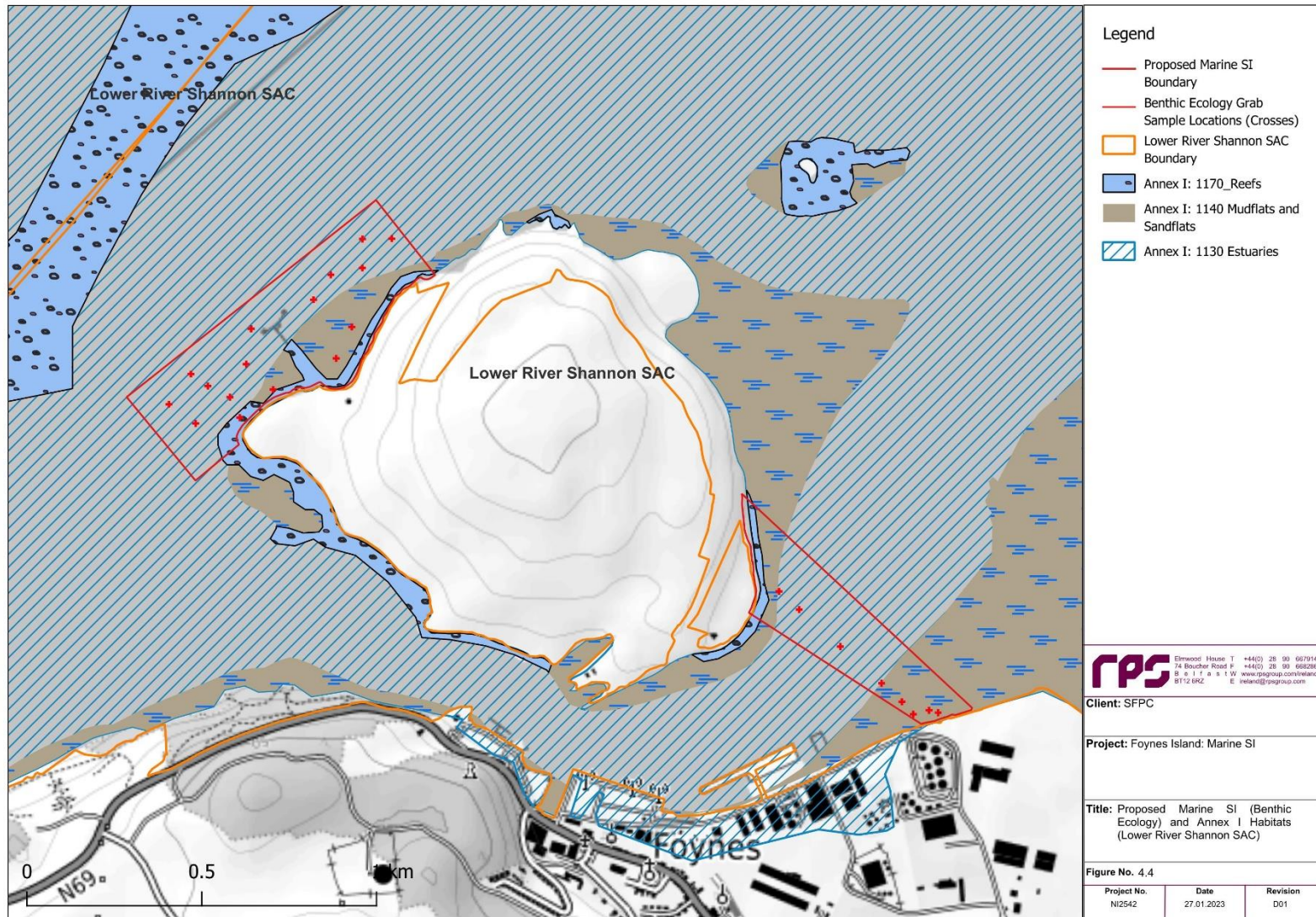
On the basis of the above it is considered that the proposed marine SI project would not have potential to give rise to any adverse impacts upon the integrity of either the Lower River Shannon SAC or the River Shannon and River Fergus Estuaries SPA through habitat loss. This conclusion is drawn in the absence of the application of mitigation measures.



**Figure 4.2: Proposed Borehole Locations (Phase 1) and Annex I Habitats (Lower River Shannon SAC)**



**Figure 4.3: Proposed Borehole Locations (Phase 2) and Annex I Habitats (Lower River Shannon SAC)**



**Figure 4.4: Proposed Benthic Ecology Grab Sample Locations and Annex I Habitats (Lower River Shannon SAC)**

## 4.3.2 Water Quality and Habitat Deterioration

### 4.3.2.1 Suspended Solids

The proposed works will result in disturbance to the estuary bed, both through the placement of jack-up rig footings and through the creation of the borehole itself. The methodology proposed for borehole drilling will involve cable percussive drilling through soft overburden. This methodology, which is less energetic than rotary drilling, will give rise to fairly minimal dispersal of sediments, with the coring taking place within the 200mm steel casing. While rotary drilling will subsequently be utilised to penetrate underlying bedrock, as required, this will occur at depth and as such surrounding overburden is likely to limit the dispersal of sediments. Again, rotary drilling will take place within the 200mm steel casing which will also limit, to a certain extent, arising suspended sediments. The works will not involve the use of additional substances which could enter the water column as suspended solids, with any arising suspended sediments being limited to natural materials already present within the estuarine environment.

The proposed borehole drilling will take place on the bed of estuarine waters which are subject to significant sediment transport associated with the tidal action on soft overburdens including sand and mud and significant suspended sediments which are washed down into the estuary from the River Shannon and River Fergus catchments, with the Shannon Estuary in total drawing from an inland catchment of approximately 17,963 km<sup>2</sup>.

Habitats within proximity to the proposed SI works are estuarine and intertidal habitats including reefs and mudflats and sandflats. These habitats are not particularly sensitive to adverse effects associated with the movements of small quantities of suspended and subsequently deposited sediments, as such habitats will interact with such sediments continuously as natural sediment transport occurs throughout the estuary system.

Annex II species for which the Lower River Shannon SAC is designated include a range of species which are sensitive to sedimentation including freshwater pearl mussel, sea lamprey, brook lamprey, river lamprey and salmon. The sensitivity of these species to adverse effects associated with sedimentation is largely limited to the headwaters of freshwater watercourses in which the species breed. The proposed works lie downstream of all freshwater habitats within the SAC and as such have no potential to give rise to likely significant effects upon freshwater pearl mussel or breeding habitats of importance for QI fish species. It is considered that the proposed works, given the small quantities of sediment likely to arise, would have no potential to give rise to any likely significant adverse effects upon QI fish species of the Lower River Shannon SAC during the adult portion of their life cycle.

Given that potential sedimentation effects arising as a result of the proposed works will be extremely minimal in nature and will occur over a short period of time, and in the context of information set out above, it is considered that there will be no potential for adverse effects upon non-QI fish species within the area proposed for works. As such it is considered that the proposals would have no potential to give rise to likely significant sedimentation effects upon foraging otter within proximity to the proposed marine SI works.

As discussed above, given the nature of the estuary environment which supports relatively large quantities of suspended sediments and supports significant sediment transport through natural processes, in addition to the lack of predicted impacts upon fish populations generally, it is considered that there is no potential for likely significant sedimentation effects on either the QI species common bottlenose dolphin or upon wintering or breeding SCI bird species associated with the River Shannon and River Fergus Estuaries SPA.

No sedimentation effects to any further, more distantly situated European sites, are predicted to arise as a result of the proposed works.

On the basis of the above information it is considered that sedimentation effects associated with the proposed SI works would not have potential to give rise to adverse impacts upon the integrity of any European Site. This conclusion was drawn in the absence of the application of mitigation measures.

### 4.3.2.2 Pollution Incidents

There is a risk involved with any activity involving the use of machinery within the marine environment that a pollution incident might arise resulting from spills or leaks of polluting substances into the water. There is potential for the works required, inclusive of the movement of a jack-up barge and associated tug and workboat, to give rise to pollution events from discharges of hydrocarbon fuels, oil-based lubricants and other chemicals. It is noted however that risks are extremely minimal, typical of the movement of any motor-operated vessel, as occurs continually within the Shannon Foynes Port environment.

It is considered that given the nature of the proposals, which are small in scale, will not involve the use of large volumes of hydrocarbon fuels or other chemicals, that any potential pollution incidents potentially arising as a result of the proposed development will be very minor.

Significant mixing of seawater occurs within the Shannon Estuary with freshwater flowing in from the surrounding river catchments. The mixing of any polluting materials that escape to the marine environment as a result of the proposed works is further aided by the tidal currents, wind and wave climate which transport and continue to mix the seawater and freshwater (and any polluting substances) both into and out of the Shannon Estuary, and help it disperse widely and dilute to much lower concentrations to the point where it cannot be detected above background levels. On this basis any potential minor inputs arising as a result of the proposed works are highly likely to be undetectable beyond the immediate vicinity of the proposed works. It is considered likely therefore that any potential spills will be slowly dispersed into the wider estuary or biodegrade or settle within proximity to the works location.

The site of the proposed SI works will take place within areas which support Annex I habitats within the Lower River Shannon SAC, as detailed above, and intertidal wetlands which are a qualifying feature of the River Shannon and River Fergus Estuaries SPA.

An accidental pollution spill associated with the proposed marine SI works would not likely sufficiently dissipate prior to interacting with Annex I habitats within the Lower River Shannon SAC, namely reefs, mudflats and sandflats and estuaries to be able to exclude likely significant effects. Furthermore wetland habitats forming qualifying features of the River Shannon and River Fergus Estuaries SPA may be similarly affected. LSEs were therefore not excluded at the screening stage.

Oil spills, including that of crude oil and other hydrocarbons, can give rise to potentially significant effects upon seabird populations. These effects result from impregnation of seabird plumage by hydrocarbon pollutants, floating on the sea surface, which reduces the ability of the feathers to provide waterproofing and insulation. Mortality subsequently occurs most commonly through hypothermia and starvation (Bourne 1968; Jenssen 1994), but can also arise through suffocation, poisoning and dehydration.

These impacts can occur when birds physically come into contact with spilled hydrocarbons which float on the surface of marine waters in a film. In the case of crude oil and diesel spills, these surface films are heavier and less liable to quickly disperse, due to the presence of longer-chain hydrocarbons (Paulauskiene et al., 2014). Other petroleum products produce lighter spills which disperse and break down more quickly. All these hydrocarbons are subject to dispersal and biodegradation within the marine environment and as such the potential oiling effects of such surface films on seabirds reduces with distance from the site of a spill (Al Majed et al., 2012) and reduces with increased wind and wave action which increases the extent of mixing, which accelerates breakdown.

Compared to the potential for spills which could arise from oil product tankers traversing the shipping lanes in proximity to Foynes Island, on the way to and from Shannon Foynes Port, the proposed site survey activities have a very limited potential to give rise to significant spillage of hydrocarbons onto the surface of the marine waters in the licence area. However, there remains a small risk of accidental hydrocarbon spill pollution events from the vessels and associated equipment used for the proposed surveys.

To consider the risk of oiling effects on seabirds representing SCI species of the River Shannon and River Fergus Estuaries SPA, their vulnerability to oiling effects was investigated. Williams et al. (1995)

provided an Oiling Vulnerability Index ("OVI"). The OVI score for each species reflects a variety of factors including the species ecology (notably the time spent on the surface of the water and/or the need to dive into marine waters), their reliance on the marine environment, population recovery time and population size. Considering all these aspects, the OVI provides a ranked list of vulnerability (from high to low) for the species considered. Species with lower OVI scores are less vulnerable to the effects of oiling, while species with higher scores are more vulnerable to such effects. The OVI scores provided by Williams *et al.* (1995) are set out in Table 4-3.

The quantitative oil vulnerability index (OVI) developed and presented in Williams *et al.*, (1995) is based on four factors, to assess the vulnerability of seabird species to surface pollution. OVI ratings have been based on the following factors:

- Proportion of each species that was oiled of those found dead (or moribund) on the shoreline and proportion of time spent on the surface of the sea by that species;
- Biogeographical population of the species;
- Potential rate of recovery of the species following a reduction in numbers; and
- Reliance of the species on the marine environment.

**Table 4-3: Seabird SCI species of River Shannon and River Fergus Estuaries SPA considered vulnerable to oiling risk as a result of proposed site survey activities.**

Species	OVI score
Cormorant <i>Phalacrocorax carbo</i>	<b>20</b>
Scaup <i>Aythya marila</i>	<b>20</b>
Black-headed gull <i>Chroicocephalus ridibundus</i>	<b>11</b>

No further SCI species of the River Shannon and River Fergus Estuaries SPA were included within the Williams *et al.* (1995) analysis as they are either waterfowl or waders which are not noted to be vulnerable to the effects of surface water oiling.

Taking a precautionary approach to potential oiling risk vulnerability reported by Williams *et al.* (1995); provides an objective basis to determine whether or not accidental spillages of hydrocarbon fuels and oil products as a result of the proposed site survey activities could potentially result in mortality of individuals of certain SCI populations of the River Shannon and River Fergus Estuaries SPA.

No LSEs to any further European sites considered within this assessment through impacts arising through pollution incidents will occur.

It is considered therefore that identified likely significant pollution effects upon the Lower River Shannon SAC and the River Shannon and River Fergus SPA not excluded at the screening stage would, in the absence of mitigation measures give rise to adverse impacts upon the integrity of intertidal and estuarine habitats of the Lower River Shannon SAC and intertidal wetlands of the River Shannon and River Fergus Estuaries SPA, in addition to SCI bird species themselves through limited environmental toxicity and surface water oiling.

Mitigations measures are therefore required and set out below at Section 4.4, below.

### 4.3.3 Underwater Noise and Disturbance

As described in Section 3, some aspects of the proposed SI works will require activities in the marine environment including activities producing underwater noise, including:



- Movement of a single work boat, tug and jack-up barge within the estuary to facilitate proposed works.
- Undertaking of 97 no. boreholes in Phase 1 and 84 in Phase 2 incorporating a cable percussive drilling method through soft overburden and a rotary drilling method through underlying bedrock where required.
- A geophysical survey to map the seabed and underlying layers, using a sub-bottom profiler, a side scan sonar and a multibeam echosounder system.

These activities carry a risk of noise induced effects upon some marine species as a result of underwater acoustic energy being released into the marine environment.

LSEs through underwater noise upon QI species of the following European sites, designated on account of bottlenose dolphin, harbour porpoise or grey seal, were not excluded at the screening stage:

- Lower River Shannon SAC (bottlenose dolphin);
- Blasket Islands SAC (harbour porpoise, grey seal);
- Slyne Head Islands SAC (bottlenose dolphin, grey seal);
- Slyne Head Peninsula SAC (bottlenose dolphin);
- West Connacht Coast SAC (bottlenose dolphin);
- Inishbofin and Inishshark SAC (grey seal);
- Duvillaun Islands SAC (bottlenose dolphin, grey seal);
- Inishkea Islands SAC (grey seal);
- Roaringwater Bay and Islands SAC (harbour porpoise);
- Rockabill to Dalkey Island SAC (harbour porpoise);
- North Anglesey Marine / Gogledd Môn Forol SAC (harbour porpoise);
- Bristol Channel Approaches / Dynesfeydd Môr Hafren SAC (harbour porpoise);
- North Channel SAC (harbour porpoise);
- West Wales Marine / Gorllewin Cymru Forol SAC (harbour porpoise);
- Récifs et lands de la Hague SAC (harbour porpoise);
- Anse de Vauville SAC (harbour porpoise);
- Banc et récifs de Surtainville SAC (harbour porpoise);
- Chausey SAC (harbour porpoise);
- Baie du Mont Saint-Michel SAC (harbour porpoise);
- Estuaire de la Rance SAC (harbour porpoise);
- Baie de Lancieux, Baie de l'Arguenon, Archipel de Saint Malo et Dinard SAC (harbour porpoise);
- Cap d'Erquy-Cap Fréhel SAC (harbour porpoise);
- Baie de Saint-Brieuc – Est SAC (harbour porpoise);
- Tregor Goëlo Est SAC (harbour porpoise);
- Côte de Granit rose-Sept-Iles SAC (harbour porpoise);
- Nord Bretagne DH SAC (harbour porpoise);
- Baie de Morlaix SAC (harbour porpoise);
- Abers - Côte des legends SAC (harbour porpoise);

- Ouessant-Molène SAC (harbour porpoise);
- Côtes de Crozon SAC (harbour porpoise); and
- River Shannon and River Fergus Estuaries SPA (Annex I waterbird populations).

Underwater noise is not a persistent effect, and once the noise source ceases to operate noise levels drop near-instantly to pre-existing levels. The natural underwater soundscape of the Shannon Estuary is noisy - biological sounds from fish and marine mammals are mixed with sounds from waves and surface noise; current flow and turbulence; rain and wind/storm noise; and noise from shipping and leisure craft activities dominates busy areas such as ports. The ambient noise levels in coastal and inshore water, bays and harbours are subject to huge variation.

Lower River Shannon SAC is designated for the supported population of common bottlenose dolphin. No other European site within 20km of Foynes Island or its surrounds is designated for a species of marine mammal.

Proposed marine SI works will take place in close proximity to the Shannon Foynes Port, which supports regular marine traffic generating significant underwater noise.

In order to characterise the potential effects of construction noise, the magnitude of the effect and the sensitivity of the receptors determines the overall impact. Table 4-4 summarises the sensitivities of marine mammal species with regard to noise thresholds. A permanent threshold shift (PTS) occurs when a permanent auditory injury results in loss of hearing. PTS can result in very significant to profound negative impacts on marine species. A temporary threshold shift (TTS) describes a temporary but recoverable loss of hearing due to exposure to high energy sounds for a short duration or lower energy sounds for a longer duration. The impact of TTS is significant but recoverable. Determining the likelihood of noise sensitive species being exposed to such noise levels will help to categorise the significance of effects on each species. The international guidance on underwater noise threshold levels for marine mammals is published in Southall *et al* (2019) and provides (inter alia) the following thresholds (Table 4-4).

**Table 4-4 TTS- and PTS-onset thresholds for marine mammals exposed to non-impulsive noise**

Marine mammal hearing group	TTS onset: SEL (weighted)	PTS onset: SEL (weighted)
	dB re 1 µPa2s	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

Grey seals have been recorded as largely tolerant to underwater noise (J. Parsons in G.D. Green et al. 1985) with pinnipeds generally being resilient to the effects of regular high intensity underwater noise with localised avoidance recorded in association with underwater noise of up to and greater than 190dB (Harris et al. 2001). Both grey and harbour seals are known to frequent areas which are subject to relatively high levels of anthropogenic disturbance including busy ports (Brooks et al. 2016), marinas (Bankhead et al. 2023) and offshore wind farms (Russell et al. 2016).

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 130-147dB SPL1 (re 1  $\mu$ Pa) (Erbe & McPherson, 2017; MR, M, M, & I, 2010). Recent measurements of geotechnical drilling in shallow waters (Huang Long-Fei et al. 2023) recorded an SPL of 155.9 dB re 1 $\mu$ Pa 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 160dB SPL2 limit for behavioural effect for marine mammals.

It is considered that the proposed borehole drilling works will have limited potential to give rise to underwater noise effects in addition to background noise levels and those associated with the operation of Shannon Foynes Port. The area around Foynes Island is not identified in Map 16 of the Lower River Shannon SAC Conservation Objectives document as a 'critical area' for common bottlenose dolphin, but nonetheless, elevated levels of man-made noise will occur throughout the works.

Comparing the weighted source level of the drilling/boring, 147dB SPL, with the limit for hearing impact (178dB SEL<sup>3</sup>, TTS limit; 153dB SEL, TTS limit, 181dB SEL, TTS limit) for the common bottlenose dolphin, harbour porpoise and grey seal respectively, shows that any hearing impact from the activity is extremely unlikely.

The geophysical survey (sub-bottom profiling, multibeam echosounder survey and side scan sonar survey) will utilise acoustic signals to ensonify the seabed and the underlying layers.

MacGillivray et al. (2014) showed that low-frequency sources such as sub-bottom profilers were the most audible sources to large baleen whales. Mid-frequency sources (fisheries, communication, and hydrographic systems) were the most audible sources to odontocetes at ranges below 3km, but low-frequency sources began to dominate between 3 and 10 km. Low and mid-frequency systems have similar estimated audibility for seals due to their broad hearing range. MacGillivray et al. (2014) used modelling to explore the acoustic effects of marine survey sound sources on marine mammals. They reviewed the acoustic signatures of widely used equipment. Sub-bottom profilers produced frequencies of 1-6 kHz at a source level of 200 dB re 1 $\mu$ Pa @1m, while multibeam and side-scan sonar much higher frequencies of 200-230kHz at 218-229 dB re 1 $\mu$ Pa @1m.

For all species, modelled sensation levels are lowest for the high-frequency sources (side-scan and multibeam), which operate at the upper limits of the audible spectrum. The estimated zone of audibility for all species is largest for the low-frequency sources (sub-bottom profiler), which propagate over longer distances relative to the rapidly attenuating high frequencies. Thus bottlenose dolphins, harbour porpoise or grey seal if very close to the vessel during site investigations may lead to disturbance and at worse auditory injury through temporary threshold shift (TTS).

Equipment used during a geophysical survey can potentially cause hearing impact (exceed the TTS limit) to a significant distance. Given that the specific type of equipment used is unknown, impacts from this source are considered to have potential to give rise to auditory injury to common bottlenose dolphin.

It is understood that QI fish species of the Lower River Shannon SAC, including sea lamprey, brook lamprey and river lamprey are, at several stages in their life cycle, vulnerable to the effects of high levels of underwater noise and vibration. While adult salmon are not particularly sensitive to relatively low intensity underwater noise (Harding et al. 2016) their larval stages are more vulnerable and particularly sensitive to underwater vibration. Given that QI fish species in general lack the ability to detect high

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<sup>1</sup> As per ISO 18405:2017, section 3.2.1.1

<sup>2</sup> NOAA Type B harassment for non-impulsive noise

<sup>3</sup> As per ISO 18405:2017, section 3.2.1.5

frequency sounds (lack of swim bladder or connection from swim bladder to inner ear) they are at little to no risk from the geophysical survey that primarily uses higher frequencies (> 10 kHz).

The low source levels from the geotechnical works (boring/drilling) means that, even at close ranges, there is little to no auditory risk to fish or their larvae from this activity.

Additionally, the proposed works will take place at a significant distance downstream of any spawning habitat for QI fish species within the SAC and any potential underwater noise or vibrational effects predicted will only have potential to interact with juvenile or adult fish which are not recorded to be particularly sensitive to such effects. It is considered therefore that underwater noise and vibration would not have potential to give rise to likely significant adverse effects upon QI fish species of the Lower River Shannon SAC.

Given the nature of the works, which will take place during daylight hours and within the marine environment, it is not considered that there would be any potential for likely significant adverse effects to otter populations within the SAC given their largely nocturnal habit and in the context of existing levels of disturbance at Shannon Foynes Port, along with their relatively poor hearing sensitivity at higher frequencies under water.

Bird populations within the River Shannon and River Fergus Estuaries SPA are considered to be sensitive to underwater noise and vibrational disturbance effects arising as a result of the proposed SI works. There is an absence of scientific understanding of the use of underwater sound by diving birds and the extreme lack of scientific data on the underwater hearing capabilities of such birds, with evidence of underwater hearing in birds being only recently discovered (Hansen et. al 2017). While diving marine bird species have been shown to react to underwater noise (Anderson Hansen et al. 2020) there is no evidence that such reactions would give rise to any adverse effects upon the population where such effects occur over the short term. As is well known, and unlike in mammals, birds regenerate their auditory hair cells after all forms of auditory injury (Stone and Cotanche 2007). As such, unlike marine mammals where there is potential for long-term effects associated with auditory injury, whether temporary or permanent threshold shift, such effects cannot arise in respect of birds.

On this basis adverse effects upon the integrity of the River Shannon and River Fergus Estuaries SPA will not arise as a result of underwater noise effects upon SCI bird populations.

Adverse effects upon QI common bottlenose dolphin, harbour porpoise or grey seal populations associated with the above listed SACs as a result of underwater noise and vibrational effects cannot be excluded in the absence of mitigation measures in respect of the proposed geophysical surveys only.

## **4.3.4 Aerial Noise and Visual Disturbance**

### **4.3.4.1 Annex II Species**

Mobile species that live above the water line can also be vulnerable to aerial noise and visual triggers of disturbance.

Given the aquatic nature of the vast majority of Annex II QI species for which the Lower River Shannon SAC is designated it is considered that only otter is vulnerable to the effects of aerial noise and visual disturbance.

It is noted that temporary disturbance to foraging adult otters would be unlikely to give rise to a significant adverse effect as individuals are likely to simply move on to adjacent undisturbed foraging habitat if they were present when a noise producing activity commenced. As the species is largely nocturnal, daytime disturbance to foraging otter is unlikely to occur as a result of the proposed works. Disturbance to this species is more critical is where it arises in close proximity to otters with young, particularly disturbance to natal holts or dens, where young are being raised. While resting places utilised by adult otters may be within areas requiring tolerance to disturbance, a key factor in the location of otter breeding sites and natal holts or dens is a lack of regular human disturbance (Liles 2003).

Surveys for otter were undertaken of Foynes Island by RPS in 2023. These surveys included the vast majority of the coastline of the island, which was surveyed for evidence indicating the presence of otter in addition to any sources of fresh surface water, principally watercourses which give an indication of the suitability of areas of the island for breeding otter.

An extremely important factor which influences the location of holts is a nearby constant source of freshwater. Otters that hunt in the sea need to be able to wash the salt of their fur before they can return to their dens/holts, otherwise the furs water proofing properties are seriously impaired (Chanin P, 2013). This was observed in vitro, after otters were soaked in seawater and dried, their fur insulation ability decreased (Kruuk and Balharry, 1990). If no freshwater was present nearby the seawater, the otters were reluctant to feed in the seawater and if not able to groom in freshwater after seawater exposure the otters' showed signs of hypothermia. It was found that Eurasian otters spent more time grooming using freshwater after being in seawater compared to sea otters (Nolet and Kruuk, 1989). It is thought that the purpose of grooming after saltwater exposure is to re-establish air in their fur and to avoid encrustation of salt on their fur.

Surveys of the island recorded no surface watercourses which are likely to support continuous freshwater flow. Much of the island appears to drain to the estuary via a small number of minor drainage channels which were recorded, across the surveys, to support ephemeral flows. Much of the island's drainage appears to occur through groundwater flows which seep out of the shore rock and are likely to be inundated or have limited accessibility for otter at high tide.

The survey recorded fairly limited signs indicative of the presence of otter inclusive of a number of spraint locations along the northern and western shore of the island. Furthermore extensive bird surveys undertaken of the islands coastline in 2022 and 2023 have not recorded any casual sightings of otter.

It is therefore considered relatively unlikely that the island supports a natal holt or den and it is instead hypothesised that the islands shore serves as a part of a wider coastal territory for a single or small number of otter(s).

It is noted that the proposed borehole locations are universally situated in marine habitat in proximity to areas which are subject to relatively high levels of human disturbance associated with the ongoing operation of Shannon Foynes Port or recreational boating. These areas are therefore well away from any potential otter natal holts or dens, which are typically situated within terrestrial habitats well inland of the shore. As such it is considered highly unlikely that natal holts or dens would be present within proximity to proposed GI works locations.

No further SACs within the project's zone of influence would be potentially affected by aerial noise or visual disturbance arising as a result of the proposed works.

On the basis of the above it is considered that the proposed marine SI works would not have potential to give rise to any adverse impacts upon the integrity of any SACs, including Annex II qualifying species populations, through aerial noise or visual disturbance.

#### **4.3.4.2 Special Conservation Interest Bird Species**

Likely significant effects as a result of aerial noise and visual disturbance associated with the proposed marine SI works, upon qualifying features of the River Shannon and River Fergus Estuaries SPA, were not excluded at the screening stage.

The River Shannon and River Fergus Estuaries SPA is designated for the supported populations of waders or waterbirds. These species are known to be susceptible to aerial noise or visual disturbance impacts including through abandonment of foraging habitats which, if disturbance is regular or prolonged, can give rise to a functional loss of habitat in the context of the SPA.

A suite of bird surveys of a large proportion of the island's coastline are currently underway incorporating a wetland bird survey methodology in addition to vantage point surveys of areas of the Shannon Estuary between the Island and Shannon Foynes Port. These surveys have been ongoing from October 2022 to present.

The methodology employed was based on the BTO's wetland bird survey (WeBS) Core Counts which use the so-called 'look-see' method (Bibby *et al.*, 2000), whereby the observer, familiar with the species involved, surveys the whole of a predefined area.

Counts were made across all wetland habitats within the surveys area including intertidal habitats and coastal habitat. Numbers of all waterbird species, as defined by Wetlands International (Rose and Scott, 1997), in addition to any other bird species as relevant, were recorded. Target species for the purposes of this survey include the SCI species associated with the River Shannon and River Fergus Estuaries SPA including geese, ducks, waders and waterbirds.

All species encountered during the surveys were mapped and coded using standard BTO species codes.

Bird surveys undertaken of the islands coastline to date have recorded use by fairly low numbers of waders and waterfowl at both high and low tide. This is inclusive of a range of species which are SCI species of the River Shannon and River Fergus Estuaries SPA in low numbers.

The proposed works will involve activities emitting aerial noise and associated with the movement of a single work boat, tug and jack-up rig, in proximity to Foynes Island and the Shannon Foynes Port. As set out above, areas of intertidal mud in proximity to the proposed works are known to support occasional low numbers of SCI species and function as foraging habitat for these species.

Given the findings of bird surveys undertaken of the island's coastline and adjacent areas of intertidal and marine habitat, with a particular focus on areas within the footprint of proposed marine SI works, it is considered that the proposed marine SI works would have potential to give rise to aerial disturbance and displacement of only small numbers of SCI birds, should works take place within the winter period.

Given the relative availability of similar intertidal habitat around the island's shore and the wider estuary it is considered that any such disturbance and associate temporary displacement of such small numbers of SCI birds would have only minor adverse effects which would not constitute an adverse effect upon the integrity of the site.

Furthermore it is considered that the areas in proximity to proposed marine SI works area are already subject to significant aerial noise and visual disturbance associated with shipping and other vessel movements.

No further SPAs, which are all significantly separated from the proposed works, would be potentially affected by aerial noise or visual disturbance arising as a result of the proposed project.

On the basis of the above it is considered that the proposed marine SI works would not have potential to give rise to any adverse impacts upon the integrity of any SPAs, including SCI bird populations, through aerial noise or visual disturbance arising as a result of the marine SI works.

## 4.4 In-Combination Effects

Article 6(3) of the Habitats Directive and Irish national law requires that in-combination effects with other plans or projects are considered. The significance of any identified combined effects of the proposed development and other past, present or reasonably foreseeable future plans or projects must also be evaluated. On this basis, a range of other port projects were considered in terms of their potential to have in-combination effects with the proposed works.

### 4.4.1 Foynes Island Terrestrial SI

In addition to the proposed marine SI, terrestrial SI works in association with the same project design are proposed on Foynes Island and within Shannon Foynes Port, Foynes, Co. Limerick and have been subject to a separate planning and felling license applications.

The scale of the SI works is commensurate with the level of detail required to facilitate the preliminary and detailed design and environmental assessment of the development for the planning application of the wider proposed project which comprises the development of a new deepwater port at Foynes Island.

All aspects of the terrestrial SI works to be undertaken as part of this project will take place within the terrestrial environment with some marine operations required to facilitate access to the island by the relevant plant. These works, have potential to give rise to likely significant effects upon the Lower River Shannon SAC and the River Shannon and River Fergus Estuaries SPA through effects associated with habitat loss and water quality and habitat deterioration.

It is anticipated that these terrestrial SI works will incorporate a range of mitigation measures, to be agreed with Limerick City and County Council and the DHLGH.

In the absence of mitigation in respect of the proposed marine SI works which also have potential to give rise to water quality and habitat deterioration effects upon the Lower River Shannon SAC and the River Shannon and River Fergus Estuaries SPA has potential to give rise to in-combination effects when considered alongside the proposed Marine SI works project. This is the case in the absence of mitigation measures.

### 4.4.2 Capacity Extension at Foynes Port

A project for capacity extension at Foynes Port (file number: 18301561) to facilitate capacity extension at Shannon Foynes Port. This capacity extension has been granted permission and is under construction. Capacity is to be provided in two interrelated ways – increased capacity of the quay wall, and, increased capacity of supporting landside storage facilities and logistics. The project includes two specific elements of development and operational activities as follows:

- Jetty Extension (the joining of the existing 'West Quay' and the 'East Jetty'), and;
- Durnish land development (to provide for increased port related storage and port-centric logistics)

The proposed development seeks to provide for Port Capacity Extension that will consist of the following:

1. **Modifications to the existing jetties and quays to include:** connection of the existing West Quay to the existing East Jetty for the purpose of extending the length of the existing quay to facilitate the mooring of vessels and Port related operations. Development works consist of; (i) Construction of an open piled jetty structure with suspended 116.5 metre concrete deck connecting the West Quay to the East Jetty; (ii) quayside furniture including quay fenders, mooring bollards, safety ladders, toe rail, and lighting columns, (iii) construction and remedial works to the both existing West Quay and East Jetty ends to facilitate structural 'tie-in' of the proposed new jetty structure, (iv) removal of the existing small craft landing pontoon and walkway from its current position affixed to the shore between the West Quay and the East Jetty, and provision of a new small craft landing pontoon and

walkway affixed to the western side of the West Quay wall, and, (v) all associated site development works; and

2. **Phased Expansion of the Port Estate** on 33.95 hectares of land immediately adjacent to the east of the existing port estate to provide serviced industrial land, and, to accommodate marine related industry, port centric logistics and associated infrastructure that will be provided in accordance with a development framework programme prepared for the overall 'expansion' area and which is lodged with the planning application. The development includes:

- i. site development and infrastructure works to the entire expansion lands on a phased basis including (a) raising of ground levels with fill material to a typical height of +4.44m OD Malin; (b) provision of all associated services including storm water infrastructure and modification to the existing OPW drainage attenuation system; (c) provision of 2.4m high perimeter fencing, (d) landscaping berms and treatments, and (e) all associated site development works; all to be delivered on a phased basis; and
- ii. Implementation and use of 'Phase 1' of port expansion works including: (a) modification and realignment to part of the existing port estate access road including provision of new roundabout and junction arrangements on that road, and associated lighting, and storm water drainage; (b) provision of new internal Port access road (with associated footpath and combined cycle path) including the provision of bridge structures to facilitate access across existing drainage channels; (c) construction of three covered industrial type warehouse units (with typical maximum ridge height of 15.1m above raised ground level) with associated external storage, parking and circulation areas; (d) the provision of separate dedicated uncovered 'open' storage area/ container storage area and associated circulation and service area (with maximum container stacking height of 8m if/when container storage required); (e) provision of Klargester BE model (or similar) package foul water treatment system with polishing filter and discharge to ground to serve the Phase 1a expansion area; (f) modifications to existing 'Foynes Engineering' industrial building which involves the removal of the 'lean-to' structure affixed to the main building and remedial building and site development works; (g) provision of an ESB electrical substation; (h) provision of lighting columns within the 'Phase 1' expansion area; (i) provision of a new security kiosk and access control barrier on the existing Port access road; (j) provision of noise attenuation measures along parts of the southern and western boundary of 'Phase 1' expansion area; (k) provision of a 'bus-stop' on the existing Port access road; (l) landscaping; and (m) all associated site development works.

This project was subject to Appropriate Assessment as part of the consenting process in 2018. This assessment concluded that subject to the implementation of a range of mitigation measures, including those intended to reduce the risk of pollution incidents both at construction and operational stages and underwater noise and vibration effects at construction phase.

This project is currently under construction and the jetty extension aspects have already been completed and as such would have no potential to act in-combination with the proposed marine SI works. Furthermore a proportion of the phased port expansion has also been completed further limiting the potential for in-combination effects.

If accidental pollution events in the marine environment or were to occur concurrently for the Capacity Expansion project and the proposed site investigation works, there is a possibility that cumulative water



quality effects could occur on the Annex I marine QI habitats that occur in the Estuary. Likely significant in-combination effects cannot be excluded.

### 4.4.3 Shannon Foynes Port Developments

An application (File number: 2360011) was submitted in January 2023 and has yet to be determined. Proposals include the construction of three covered industrial type warehouse units with associated external storage, parking and circulation areas, upgrade of existing site services and all ancillary works associated with the site development.

This application was subject to appropriate assessment as part of the submissions. This assessment concluded that subject to the implementation of mitigation measures at construction stage, principally to avoid the potential for pollution and associated water quality and habitat deterioration effects, there would be no adverse impacts upon any European sites as a result of the development. On this basis it is considered that the proposed development would not have potential to act in-combination with the proposed development.

An application (File number: 22742) was submitted in July 2022 for construction of seven covered industrial type warehouse units (with typical maximum ridge height of 14m above raised ground level) with associated external storage, parking and circulation areas; upgrade of existing site services and all ancillary works associated with the site development. This application is for a 10-year permission. The application has yet to be determined.

While the application has not been supported by a Screening for Appropriate Assessment document or Natura Impact Statement, it is noted that the proposed development lies well away from the Shannon Estuary and the associated designated sites and is separated from them by existing port development. As such it is considered unlikely that this proposed development would have potential to act in-combination with the proposed SI works.

While various further applications have been submitted for development within Shannon Foynes Port, these are generally older and the construction to which they relate has already occurred. As such they do not have potential to act in combination with the proposed project.

### 4.4.4 Clarus Offshore Wind Farm

Clarus Offshore Wind Farm Limited is investigating the feasibility of developing an offshore wind farm off the west coast of Ireland. Clarus Offshore Wind Farm Limited intend to carry out the proposed site investigations investigate potential export cable corridors and landfall areas, and to assess the associated seabed.

The developer has sought a foreshore licence application for these site investigation works. The area in which the proposed Clarus SI works are located includes a large proportion of the mouth of the Shannon including areas of the estuary terminating at Tarbert Island, all lying approximately 17km from the proposed SI works.

The foreshore licence application has been supported by a Supporting Information for Screening for Appropriate Assessment and Natura Impact Statement. This report sets out that the SI works proposed for the Clarus project were anticipated to give rise to likely significant effects upon Annex I habitat: reef, and Annex II species: bottlenose dolphin, of the Lower River Shannon SAC in addition to further qualifying interests of additional European sites not relevant to the proposed SI works.

Subject to the implementation of mitigation in connection with these proposed site investigations including the use of marine mammal observers (MMO) and the avoidance of areas of reef habitat within the Lower River Shannon SAC it has been concluded that these works will not give rise to an adverse impact upon the integrity of the SAC. As such it is not anticipated that this proposal will have potential to act in-combination with the proposed Foynes marine-based SI works.

#### 4.4.5 Illen Offshore Array

Illen Array Ltd. is proposing to develop an offshore wind farm at a site off the Kerry and Clare coasts. The proposed site will be developed using fixed and floating foundation wind turbine technologies.

Illen Array Ltd. is seeking to undertake a variety of marine surveys at the proposed site in order to inform the specific location, design and layout of the proposed offshore wind farm and export cable route to shore. The surveys will include geophysical, geotechnical, environmental and metocean campaigns.

SI works associated with the foreshore licence works will take place within areas at least 19km from the proposed Foynes SI area. No information on appropriate assessment is currently publicly available in respect of the foreshore licence application.

It is anticipated that these works will be similar to the above Clarus Offshore Wind Farm in respect of its potential to give rise to likely significant effects upon Annex I marine habitats and Annex II species bottlenose dolphin associated with the Lower River Shannon SAC. However as no information is currently available on the incorporation of mitigation measures in respect of the proposed SI works it is assumed that these works will have potential to give rise to likely significant effects upon the Lower River Shannon SAC and as such in the absence of mitigation measures would have potential to act in-combination with the proposed Foynes Island marine SI works.

#### 4.4.6 Mainstream Renewable Power Ltd.

Mainstream has identified potential search or investigation areas which are based on available data and minimise potential impacts to a number of key stakeholders.

The cable corridor and the array investigation areas are search areas in which surveys will be carried out to determine where infrastructure could be located. The Foreshore Licence Application Area is located off the west coast of County Kerry and County Clare approximately 17km at its closest point from the proposed Foynes SI area.

As per the Illen Offshore Array, no supporting information in relation to appropriate assessment has been submitted in support of the foreshore licence for the proposed site investigation works connected with this project.

It is anticipated that these works will be similar to the above Clarus Offshore Wind Farm in respect of its potential to give rise to likely significant effects upon Annex I marine habitats and Annex II species bottlenose dolphin associated with the Lower River Shannon SAC. However as no information is currently available on the incorporation of mitigation measures in respect of the proposed SI works it is assumed that these works will have potential to give rise to likely significant effects upon the Lower River Shannon SAC and as such in the absence of mitigation measures would have potential to act in-combination with the proposed Foynes Island marine SI works.

#### 4.4.7 Moneypoint Offshore Wind

Plans to develop offshore wind farms around the coast of Ireland in support of national and European targets for renewable electricity generation and de-carbonisation of our society.

Comprised of two projects, namely Moneypoint Offshore One Wind and Moneypoint Offshore Two which are both proposed as floating offshore wind projects. Moneypoint Offshore One is located to the west of County Clare and County Kerry and at least 22km from the proposed Foynes Island SI works. This Foreshore licence application relates to proposed Site Investigation (SI) works only.

As per the Illen Offshore Array, no supporting information in relation to appropriate assessment has been submitted in support of the foreshore license for the proposed site investigation works connected with this project.

It is anticipated that these works will be similar to the above Clarus Offshore Wind Farm in respect of its potential to give rise to likely significant effects upon Annex I marine habitats and Annex II species bottlenose dolphin associated with the Lower River Shannon SAC. However as no information is

currently available on the incorporation of mitigation measures in respect of the proposed SI works it is assumed that these works will have potential to give rise to likely significant effects upon the Lower River Shannon SAC and as such in the absence of mitigation measures would have potential to act in-combination with the proposed Foynes Island marine SI works.

#### **4.4.8 Rian Offshore Array Ltd.**

The overall Rian Offshore Array Project relates to an offshore floating wind farm located which will be located off the west coast of Ireland, predominantly off the coast of north Kerry and county Clare with the closest aspect to the proposals taking place at least 17km from the proposed Foynes Island SI works.

Rian Offshore Array will take a phased approach to development which incorporates two development phases:

- Phase 1 – Assessment of the Foreshore Investigatory Area, for the survey works investigating cable routing options
- Phase 2 – A further development site is proposed but details were not included in the foreshore licence application

As per the Illen Offshore Array, no supporting information in relation to appropriate assessment has been submitted in support of the foreshore license for the proposed site investigation works connected with this project.

It is anticipated that these works will be similar to the above Clarus Offshore Wind Farm in respect of its potential to give rise to likely significant effects upon Annex I marine habitats and Annex II species bottlenose dolphin associated with the Lower River Shannon SAC. However as no information is currently available on the incorporation of mitigation measures in respect of the proposed SI works it is assumed that these works will have potential to give rise to likely significant effects upon the Lower River Shannon SAC and as such in the absence of mitigation measures would have potential to act in-combination with the proposed Foynes Island marine SI works.

#### **4.4.9 Moneypoint Hub Project**

Marine SI is proposed as part of the overall Site Investigations in both the terrestrial and marine environment at the ESB facility at Moneypoint in order to inform the future development of the site as an offshore floating wind construction and deployment facility.

This proposal has been supported by documents relevant to appropriate assessment which identified that the proposed SI works would not have potential to give rise to likely significant effects upon the Lower River Shannon SAC, or any other relevant European sites.

On this basis it is considered that the proposed Foynes Island marine SI works would have no potential to act in-combination with this project.

#### **4.4.10 Shannon Technology and Energy Park**

This development is for a site investigations associated with a proposed power plant and LNG terminal located at least 22km from the proposed Foynes Island SI works area.

This proposal has been accompanied by a Natura Impact Statement which identified the potential for likely significant effects upon the Lower River Shannon SAC and the River Shannon and River Fergus Estuaries SPA.

Subject to the implementation of a range of mitigation measures it is concluded that this proposal will not give rise to any adverse effects upon the integrity of any European sites and as such will not have potential to give rise to any in-combination effects alongside the proposed Foynes Island marine SI works.

Furthermore at the current time this project has been refused by An Bord Pleanála.

#### 4.4.11 Eirgrid Cross Shannon 400kV Electricity Cable

This development involves the laying of 400 kV submarine cables across the Lower Shannon Estuary between the Moneypoint 400 kV Electricity Substation in the townland of Carrowdotia South County Clare and Kilpaddoge 220/110 kV Electricity Substation in the townland of Kilpaddoge County Kerry. The proposal is located 19km from the closest aspect of the proposed Foynes Island marine SI works area.

This project has been subject to appropriate assessment which identified the potential for likely significant effects upon the qualifying features of the Lower River Shannon SAC through pollution and underwater noise disturbance. Subject to the implementation of mitigation measures in respect of this project in relation to these potential effects, including the use of MMOs, no adverse impacts to the integrity of this or any other European sites.

On this basis it is considered highly likely that this project will have no potential to act in combination with the proposed Foynes Island marine SI works.

#### 4.4.12 Forestry Licences

Private and Coillte thinning and felling licence applications for lands bordering the Shannon Estuary, located within approximately 2km to the proposed land SI works:

- Approved Coillte thinning for 0.93ha of land at Ballynacragga North (LK01-FL0170).
- Approved private clearfell and thinning for 22.26ha of land at Ballynash (bishop), Glenagragara, Limerick. 6.55h land parcel in proximity to the proposed SI works (TFL00630121).
- Pending Coillte thinning application for 1.75ha of land at Cahiracon (CE07-FL0150).
- Approved private clearfell and thinning for 6.2ha of land at Shannakea more (TFL00306119)

Project TFL00630121 has been subject to appropriate assessment which concluded that, with the implementation of mitigation measures in respect of this project, there would be no adverse impacts to the integrity of any European sites.

No information is currently available on the incorporation of mitigation measures in respect of the other proposed and accepted thinning and felling projects, it is assumed that these works will have potential to give rise to likely significant effects upon the nearby European sites and as such in the absence of mitigation measures would have potential to act in-combination with the proposed Foynes Island marine SI works, namely those associated with water quality.

#### 4.4.13 Shannon Foynes Port Company Land Reclamation

The development involves land reclamation works and associated surfacing, services and drainage at the East jetty at Foynes harbour, to take place approximately 0.65km from the proposed Foynes land SI works. The proposal has been supported by a Natura Impact Statement accompanied by an application for a Dump at Sea Permit which covers capital dredging operations where the dredged spoil is to be dumped on an approved site in the Shannon Estuary.

The Natura Impact Statement identified the potential for significant negative effects on the integrity of the Lower River Shannon SAC and River Shannon and Fergus SPA. However, mitigation measures have been detailed that will avoid significant negative impacts on the key sensitive receptors (Lamprey, Salmonids and Cetaceans) and other qualifying features of the European sites. On this basis, permission was granted for both applications in 2014.

It is considered that the proposed Foynes Island marine SI works would have no potential to act in-combination with this project.

#### 4.4.14 Aughinish Alumina Jetty

The proposal is for maintenance dredging of clean sediment from four sites around the Aughinish Alumina Jetty and subsequent dumping of dredged material in the Shannon Estuary. The nearest dump site to the proposed Foynes Island SI works is located approximately 1km northwest. The proposal, applied for in November 2023, has yet to be determined. The application has been accompanied by a Natura Impact Statement which outlines mitigation measures such as monitoring by marine mammal observer to minimise the risk of disturbance to the population of bottlenose dolphins associated with the Lower River Shannon SAC. Provided all the recommended mitigation measures are implemented, it was concluded that there would be no adverse effects on the Lower River Shannon SAC or the River Shannon and River Fergus Estuaries SPA.

On this basis it is considered that this proposal would have no potential to give rise to any in-combination effects alongside the proposed Foynes Island marine SI works.

#### 4.4.15 Tarbert Offshore Wind Farm

This project involves site investigation works to consider the substrate stability, suitability for cable routing and positioning of turbines and other electrical infrastructure for the proposed development of the Offshore Wind Farm off the coast of counties Clare, Limerick and Kerry. A Natura Impact Assessment has been produced and accompanies the Foreshore Licence Application. The Foreshore Licence area is located approximately 15km west of the proposed Foynes Island SI works. Potential likely significant effects on common bottlenose dolphin from underwater noise disturbances, on reefs from pressure disturbance and on overwintering birds were identified. The NIS concludes that with the implementation of mitigation measures, including timing of works outside the wintering period, any impacts on the conservation objectives of the Lower River Shannon SAC, and the River Shannon and River Fergus Estuaries SPA will be avoided.

On this basis it is considered highly likely that this project will have no potential to act in combination with the proposed Foynes Island marine SI works.

#### 4.4.16 SFPC Maintenance Dredging

Shannon Port Company has applied for a Foreshore Licence for maintenance dredging at Limerick Docks, the approach channel to Limerick Docks and at Foynes Port. Two sites in the inner estuary and a single site in the main channel of the estuary, west of Foynes, are the proposed dump sites. These works are located within approximately 1km of the proposed Foynes island SI works.

The proposal has been subject to appropriate assessment where mitigation measures were outlined to avoid the potential likely significant effects on Annex II marine mammals as a result of underwater noise disturbance of 18 European sites and the risk of entrainment for migratory fish of the Lower River Shannon SAC during dredging. The appropriate assessment concluded that with adherence to mitigation measures, the project will not have a significant effect on European sites. Permission has been granted as of June 2023.

On this basis it is considered that this proposal would have no potential to give rise to any in-combination effects alongside the proposed Foynes Island marine SI works.

#### 4.4.17 Foynes to Limerick Road

An application (file ABP-306146-19) has been made to An Bord Pleanála by Limerick City and County Council, as the Roads Authority, for the proposed development 'Foynes to Limerick Road (including the Adare Bypass)' including all ancillary and consequential works. A second application (file ABP-306199-19) was submitted seeking approval of three road schemes. The project was approved with conditions in August 2022.

The proposed project comprises 399ha of lands and generally follows a linear route located predominantly in rural County Limerick located close to the communities of Foynes, Askeaton,

Rathkeale, Croagh, Adare and Patrickswell. The new road starts from the N69 at Shannon-Foynes port, located approximately 1.5km from the proposed Foynes Island SI works area.

Screening for appropriate assessment determined the development to likely result in significant effects on the Lower River Shannon SAC and the River Shannon and River Fergus Estuaries SPA with uncertainty regarding possible impacts on Curraghchase Woods SAC and Askeaton Fen Complex SAC. Appropriate Assessment informed by a NIS concluded that this development would not adversely affect any European sites following the implementation of mitigation to prevent any deterioration in water quality and to maintain habitat connectivity.

On this basis it is considered that this proposal would have no potential to give rise to any in-combination effects alongside the proposed Foynes Island marine SI works.

## 4.5 Mitigation Measures

The Proposed Development will incorporate a range of measures to safeguard the aquatic environment within the marine and estuarine waters of the Lower River Shannon SAC and the River Shannon and River Fergus Estuaries SPA and to address the following identified potential adverse effects upon the integrity of the following European sites:

- Adverse water quality and habitat deterioration and oiling effects arising through pollution events upon the following European Sites:
  - Lower River Shannon SAC;
  - River Shannon and River Fergus Estuaries SPA.
- Adverse underwater noise and vibration effects upon marine mammals, including common bottlenose dolphin, harbour porpoise and grey seal upon the following European Sites:
  - Lower River Shannon SAC (bottlenose dolphin);
  - Blasket Islands SAC (harbour porpoise, grey seal);
  - Slyne Head Islands SAC (bottlenose dolphin, grey seal);
  - Slyne Head Peninsula SAC (bottlenose dolphin);
  - West Connacht Coast SAC (bottlenose dolphin);
  - Inishbofin and Inishshark SAC (grey seal);
  - Duvillaun Islands SAC (bottlenose dolphin, grey seal);
  - Inishkea Islands SAC (grey seal);
  - Roaringwater Bay and Islands SAC (harbour porpoise);
  - Rockabill to Dalkey Island SAC (harbour porpoise);
  - North Anglesey Marine / Gogledd Môn Forol SAC (harbour porpoise);
  - Bristol Channel Approaches / Dynesfeydd Môr Hafren SAC (harbour porpoise);
  - North Channel SAC (harbour porpoise);
  - West Wales Marine / Gorllewin Cymru Forol SAC (harbour porpoise);
  - Récifs et lands de la Hague SAC (harbour porpoise);
  - Anse de Vauville SAC (harbour porpoise);
  - Banc et récifs de Surtainville SAC (harbour porpoise);
  - Chausey SAC (harbour porpoise);
  - Baie du Mont Saint-Michel SAC (harbour porpoise);

- Estuaire de la Rance SAC (harbour porpoise);
- Baie de Lancieux, Baie de l'Arguenon, Archipel de Saint Malo et Dinard SAC (harbour porpoise);
- Cap d'Erquy-Cap Fréhel SAC (harbour porpoise);
- Baie de Saint-Brieuc – Est SAC (harbour porpoise);
- Tregor Goëlo Est SAC (harbour porpoise);
- Côte de Granit rose-Sept-Iles SAC (harbour porpoise);
- Nord Bretagne DH SAC (harbour porpoise);
- Baie de Morlaix SAC (harbour porpoise);
- Abers - Côte des legends SAC (harbour porpoise);
- Ouessant-Molène SAC (harbour porpoise) and
- Côtes de Crozon SAC (harbour porpoise).

The proposed factored in measures and mitigation measures are set out below in Table 4-5.

**Table 4-5: Factored-in measures and mitigation commitments.**

Effect Theme	Potential Effect	Control and Mitigation Measures
<b>Water Quality/ Pollution/ Oiling risk</b>	<ul style="list-style-type: none"> <li>Oil spills from plant, machinery and equipment used in the surveys</li> <li>Acute toxicity effects on marine fauna from fuel and oil spills</li> <li>Deterioration to Annex I marine and estuarine habitats from fuel and oil spills</li> </ul>	<ul style="list-style-type: none"> <li>All hazardous substances to be stored in a dedicated storage room</li> <li>Substances categorized as “Danger” will be stored in a locker and may only be used with a Permit To Work</li> <li>Updated MSDS will be readily accessible in storage rooms</li> <li>The amount of hazardous material is kept to a minimum</li> <li>Hazardous substances stored, handled and disposed of in accordance with the regulations in force</li> <li>All storage facilities and handling equipment will be in good working order and designed in such a way as to prevent and contain any spillage as far as practicable</li> <li>Use appropriate and certified hoses only</li> <li>Procedures in case of bunkering, spillage, SOPEP, discussed in a toolbox before each bunker operation</li> <li>Identified personnel trained in the use of equipment</li> <li>Regular drills</li> <li>Spill kits located near hydrocarbon storage areas and replenished if required.</li> </ul>
<b>Underwater Noise and Vibration</b>	<p>Auditory injury and/or disturbance to marine mammals from underwater noise during geophysical surveys.</p>	<p><i>Geophysical Survey Marine Mammal Mitigation Plan: In line with previous geophysical surveys for the project the following mitigation measures will be employed for any geophysical surveys in line with best practice guidance (NPWS, 2014):</i></p> <ul style="list-style-type: none"> <li>A qualified Marine Mammal Observer (MMO) will be on board the geophysical survey vessel to monitor marine mammal activity and log all events;</li> <li>Pre-start monitoring: Geophysical survey operations shall not commence if marine mammals are detected within a 350 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);</li> <li>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;</li> <li>Ramp Up: Following the pre-start monitoring, a ramp-up procedure will involve, for a period of 4 minutes all geophysical equipment, with the exception of the air-guns, will be powered on. Once the 4 minute period soft-start has lapsed, the air gun will be activated;</li> <li>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 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;</li> <li>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</li> </ul>



Effect Theme	Potential Effect	Control and Mitigation Measures
		<p>power. Where a marine mammal is observed within the 350 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; and</p> <ul style="list-style-type: none"> <li>• 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.</li> </ul>

## 5 CONCLUSION OF THE HABITATS DIRECTIVE APPRAISALS

### 5.1 Screening for Appropriate Assessment

Having regard to the relevant legislation and the methodology followed, supporting information for Screening for Appropriate Assessment (the SISAA report) was presented to evaluate whether or not the Proposed Project is likely to have an adverse effect on the integrity of four SACs and two SPAs as described within SISAA report.

LSEs could not be excluded at screening stage for two European sites, without further analysis or the application of measures intended to avoid or reduce the harmful effects of the proposed site survey activities on the sites concerned.

The possibility of habitat loss on the following could not be excluded:

- Annex I Estuaries, Mudflats and sandflats not covered by seawater at low tide and Reefs of the Lower River Shannon SAC; and
- Qualifying wetland habitats of the River Shannon and River Fergus Estuaries SPA.

The possibility of likely significant water quality and subsequent habitat deterioration effects on the following could not be excluded:

- Marine and intertidal habitats including Annex I estuaries and mudflats and sandflats of the Lower River Shannon SAC;
- Wetland habitats of the River Shannon and River Fergus Estuaries SPA;

The possibility of likely underwater noise and vibrational disturbance effects on the following could not be excluded:

- Annex II common bottlenose dolphin populations of the Lower River Shannon SAC.

The possibility of likely significant aerial noise and visual disturbance effects on the following could not be excluded:

- SCI bird populations of the River Shannon and River Fergus Estuaries SPA;
- Annex I species populations (otter) of the Lower River Shannon SAC.

The Screening for Appropriate Assessment undertaken by MARA identified and screened in a further range of SACs, designated on account of the supported populations of marine mammals including bottlenose dolphin, harbour porpoise and grey seal. This included all sites within the management units for these QI species populations or within known maximum foraging ranges. For these sites the possibility of likely underwater noise and vibrational disturbance effects on the following could not be excluded:

- Blasket Islands SAC (harbour porpoise, grey seal);
- Slyne Head Islands SAC (bottlenose dolphin, grey seal);
- Slyne Head Peninsula SAC (bottlenose dolphin);
- West Connacht Coast SAC (bottlenose dolphin);
- Inishbofin and Inishshark SAC (grey seal);
- Duvillaun Islands SAC (bottlenose dolphin, grey seal);
- Inishkea Islands SAC (grey seal);

- Roaringwater Bay and Islands SAC (harbour porpoise);
- Rockabill to Dalkey Island SAC (harbour porpoise);
- North Anglesey Marine / Gogledd Môn Forol SAC (harbour porpoise);
- Bristol Channel Approaches / Dynesfeydd Môr Hafren SAC (harbour porpoise);
- North Channel SAC (harbour porpoise);
- West Wales Marine / Gorllewin Cymru Forol SAC (harbour porpoise);
- Récifs et lands de la Hague SAC (harbour porpoise);
- Anse de Vauville SAC (harbour porpoise);
- Banc et récifs de Surtainville SAC (harbour porpoise);
- Chausey SAC (harbour porpoise);
- Baie du Mont Saint-Michel SAC (harbour porpoise);
- Estuaire de la Rance SAC (harbour porpoise);
- Baie de Lancieux, Baie de l'Arguenon, Archipel de Saint Malo et Dinard SAC (harbour porpoise);
- Cap d'Erquy-Cap Fréhel SAC (harbour porpoise);
- Baie de Saint-Brieuc – Est SAC (harbour porpoise);
- Tregor Goëlo Est SAC (harbour porpoise);
- Côte de Granit rose-Sept-Iles SAC (harbour porpoise);
- Nord Bretagne DH SAC (harbour porpoise);
- Baie de Morlaix SAC (harbour porpoise);
- Abers - Côte des legends SAC (harbour porpoise);
- Ouessant-Molène SAC (harbour porpoise) and
- Côtes de Crozon SAC (harbour porpoise).

These sites were therefore considered within the stage two appraisal within this NIS.

## 5.2 Natura Impact Statement

A NIS of the implications of the Proposed Project on European sites was prepared and which included for further assessment of the potential effects and receptors in addition to the introduction of measures intended to avoid or reduce the harmful effects of the proposed site survey activities on European sites, and these measures are set out at Section 4.4.

Further assessment, as set out in Section 4.2, provided sufficient certainty (beyond reasonable scientific doubt) that the Proposed Development would not give rise to adverse effects upon the integrity of the relevant European sites via the respective pathway for effect:

- Habitat loss effects upon the Lower River Shannon SAC;
- Habitat loss effects upon the River Shannon and River Fergus Estuaries SPA;
- Aerial noise and visual disturbance effects upon the Lower River Shannon SAC; and
- Aerial noise and visual disturbance effects upon the River Shannon and River Fergus Estuaries SPA.

The NIS has identified that the Proposed Development would have potential to give rise to adverse impacts upon the integrity of a number of European sites in the absence of mitigation measures as follows:

- Water quality and habitat deterioration effects upon the Lower River Shannon SAC;
- Water quality and habitat deterioration effects upon the River Shannon and River Fergus Estuaries SPA;
- Underwater noise and vibration effects upon the Lower River Shannon SAC;
- Underwater noise and vibration effects upon the Blasket Islands SAC;
- Underwater noise and vibration effects upon the Slyne Head Islands SAC;
- Underwater noise and vibration effects upon the Slyne Head Peninsula SAC;
- Underwater noise and vibration effects upon the West Connacht Coast SAC;
- Underwater noise and vibration effects upon the Inishbofin and Inishshark SAC;
- Underwater noise and vibration effects upon the Duvillaun Islands SAC;
- Underwater noise and vibration effects upon the Inishkea Islands SAC;
- Underwater noise and vibration effects upon the Roaringwater Bay and Islands SAC;
- Underwater noise and vibration effects upon the Rockabill to Dalkey Island SAC;
- Underwater noise and vibration effects upon the North Anglesey Marine / Gogledd Môn Forol SAC;
- Underwater noise and vibration effects upon the Bristol Channel Approaches / Dynesfeydd Môr Hafren SAC;
- Underwater noise and vibration effects upon the North Channel SAC;
- Underwater noise and vibration effects upon the West Wales Marine / Gorllewin Cymru Forol SAC;
- Underwater noise and vibration effects upon the Récifs et lands de la Hague SAC;
- Underwater noise and vibration effects upon the Anse de Vauville SAC;
- Underwater noise and vibration effects upon the Banc et récifs de Surtainville SAC;
- Underwater noise and vibration effects upon the Chausey SAC;
- Underwater noise and vibration effects upon the Baie du Mont Saint-Michel SAC;
- Underwater noise and vibration effects upon the Estuaire de la Rance SAC;
- Underwater noise and vibration effects upon the Baie de Lancieux, Baie de l'Arguenon, Archipel de Saint Malo et Dinard SAC;
- Underwater noise and vibration effects upon the Cap d'Erquy-Cap Fréhel SAC;
- Underwater noise and vibration effects upon the Baie de Saint-Brieuc – Est SAC;
- Underwater noise and vibration effects upon the Tregor Goëlo Est SAC;
- Underwater noise and vibration effects upon the Côte de Granit rose-Sept-Iles SAC;
- Underwater noise and vibration effects upon the Nord Bretagne DH SAC;
- Underwater noise and vibration effects upon the Baie de Morlaix SAC;
- Underwater noise and vibration effects upon the Abers - Côte des legends SAC;
- Underwater noise and vibration effects upon the Ouessant-Molène SAC; and
- Underwater noise and vibration effects upon the Côtes de Crozon SAC.

Mitigation measures will be put in place to ensure that effects arising through water quality and habitat deterioration effects and potential for underwater noise and vibration effects will effectively mitigate these potential adverse impacts and ensure that they will not adversely affect the integrity of any European site.

Accordingly, for the reasons set out in detail, in the light of the best scientific knowledge in the field, all aspects of the proposed site survey activities which, by themselves, or in combination with other plans or projects, may affect the relevant European Sites have been considered. The SISAA report and NIS contain information which the Department and the Minister may consider in making their own complete, precise and definitive findings and conclusions and upon which the public authority is capable of determining that all reasonable scientific doubt has been removed as to the effects of the proposed development on the integrity of the relevant European sites.

In the light of the conclusions of the assessment which it shall conduct on the implications for the European sites concerned, the relevant public authority is enabled to ascertain that the proposed site survey activities will not adversely affect the integrity of any European site.

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