NATURA IMPACT STATEMENT

GREATER DUBLIN DRAINAGE PROJECT

10028814-RPS-MO-XX-RP-E-RP0084
GDD NIS
S3 P03
29.08.2025

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EXECUTIVE SUMMARY

The Greater Dublin Drainage (GDD) project is the development of a new regional wastewater treatment facility and associated infrastructure to serve the population of Dublin and parts of Kildare and Meath.

These SI works are required to inform the construction stage, the detailed engineering design of the marine elements of the GDD project and to provide baseline data for any preconstruction and monitoring assessments. Information collected by the SI works will support the overall GDD project in its aim to upgrade and provide additional wastewater infrastructure for the Greater Dublin Area. Therefore, this MUL represents a critical step towards meeting the current and future wastewater treatment demand within the Greater Dublin. Area.

This report has been prepared by RPS, on behalf of Uisce Éireann, in support of a Maritime Usage Licence Application (MULA) to the Maritime Area Regulatory Authority (MARA). The MULA is for site investigation works (SI works) to inform the construction stage and the detailed engineering design of the marine elements of the GDD project within Baldoyle Bay and the Irish Sea. The results of environmental surveys will provide baseline data for preconstruction and monitoring assessments.

The SI works comprise geophysical, bathymetric and geotechnical investigations below the High Water Mark (HWM) in Baldoyle Bay (MUL Area A) and bathymetric ,geotechnical and environmental surveys in the Irish Sea (MUL Area B) as summarised below:

- Land-based geophysical surveys including access routes via bog mats (Baldoyle Bay);
- Geotechnical surveys (4no. boreholes) including access routes via bog mats (Baldoyle Bay);
- Marine (boat-based) geophysical and bathymetric surveys within Baldoyle Bay and bathymetric surveys within the Irish Sea;
- Marine geotechnical surveys (10no. boreholes) (Irish Sea); and
- Marine environmental surveys (benthic grab samples) (Irish Sea).

This Natura Impact Statement (NIS) provides MARA with the information required for their Appropriate Assessment (AA) of the SI works required to inform the GDD project.

A Supporting Information for Screening for Appropriate Assessment (SISAA) report was prepared for the SI works and identified the presence of twenty European sites, including four sites in the UK, within the potential Zone of Influence (ZoI) of the SI works. The SISAA concluded it cannot be excluded on the basis of objective scientific information that the SI works, individually or in combination with other plans or projects, will have a significant effect on of these European sites.

The SISAA concluded that the SI works, in the absence of mitigation, have the potential to contribute to habitat loss, alteration, and/or fragmentation of Qualifying Interest (QI) habitats in:

- Baldoyle Bay Special Area of Conservation (SAC)
- Rockabill to Dalkey Island SAC

The SISAA concluded that in the absence of mitigation, the SI works will introduce subsea noise that has the potential to have likely significant effects on harbour porpoise (*Phocoena phocoena*), bottlenose dolphin (*Tursiops truncatus*), harbour seal (*Phoca vitulina)* and grey seal (*Halichoerus grypus)* at the following SACs:

- Rockabill to Dalkey Island SAC (harbour porpoise)

- Lambay Island SAC (grey seal, harbour seal, harbour porpoise)
- Codling Fault Zone Sac (harbour porpoise)
- North Anglesey SAC (harbour porpoise)
- Murlough SAC (harbour seal)
- North Channel SAC (harbour porpoise)
- Blackwater Bank SAC (harbour porpoise)
- Llyn a'r Sarnau / Lleyn Peninsula and the Sarnau SAC (bottlenose dolphin)
- Hook Head SAC (bottlenose dolphin)

The SISAA concluded that in the absence of mitigation measures, there is the potential for likely significant disturbance effects on the following Special Protection Areas (SPAs):

- Baldoyle Bay SPA (wintering waterbirds/geese)
- North-West Irish Sea SPA (breeding seabirds)
- Ireland's Eye SPA (breeding seabirds)
- Lambay Island SPA (wintering geese)
- North Bull Island SPA (wintering geese)
- Dalkey Islands SPA (seabirds)
- Skerries Islands SPA (wintering geese)
- Rogerstown Estuary SPA (wintering geese)
- South Dublin Bay and River Tolka Estuary SPA (wintering geese)
- Malahide Estuary SPA (wintering geese)

The SISAA concluded that in the absence of mitigation measures, there is the potential for the SI works to result in likely significant in-combination effects, and these effects were screened in for further assessment.

Within this NIS, mitigation measures have been specified to avoid adverse effects to European sites, from the SI works alone, and the SI works in combination with other plans and projects. Following implementation of mitigation measures there will be no adverse effects on the integrity of European sites. The NIS provides complete, precise and definitive findings to MARA, with no lacunae or gaps, to enable MARA to complete their AA of the SI works.

1 INTRODUCTION

1.1 Overview

The Greater Dublin Drainage (GDD) project is the development of a new regional wastewater treatment facility and associated infrastructure to serve the population of Dublin and parts of Kildare and Meath.

The proposed scheme involves a new 14.6km orbital sewer running from Blanchardstown to a proposed new wastewater treatment plant (WwTP) in Clonshagh located to the east of Dublin Airport. From the WwTP, a further 5.4km length of outfall pipeline connects to a 6km length of marine outfall to transport the treated wastewater offshore.

Core elements of the GDD project, indicated in **Figure 1-1** below, comprise the following:

- **1km Orbital Sewer** – Gravity Main 1 from Blanchardstown to Abbotstown Pumping Station (PS);
- **Abbotstown PS** – to be located in the grounds of the Sport Ireland Campus;
- **5.3km Orbital Sewer** – Rising Main from the PS to Dubber Odour Control Facility;
- **9.3km Orbital Sewer** – Gravity Main 2 from Dubber to WWTP;
- **500,000 PE Wastewater Treatment Plant (WwTP)** and **Sludge Hub Centre (SHC)** to be located at Clonshagh;
- **5km Land-Based Outfall Pipeline** linking the proposed Regional WwTP to the marine outfall,
- **6km Marine Outfall** pipeline to a discharge point located approximately 1km north-east of Ireland's Eye; and,
- **North Fringe Sewer (NFS) Diversion** – diversion of an existing trunk sewer to the WwTP site.

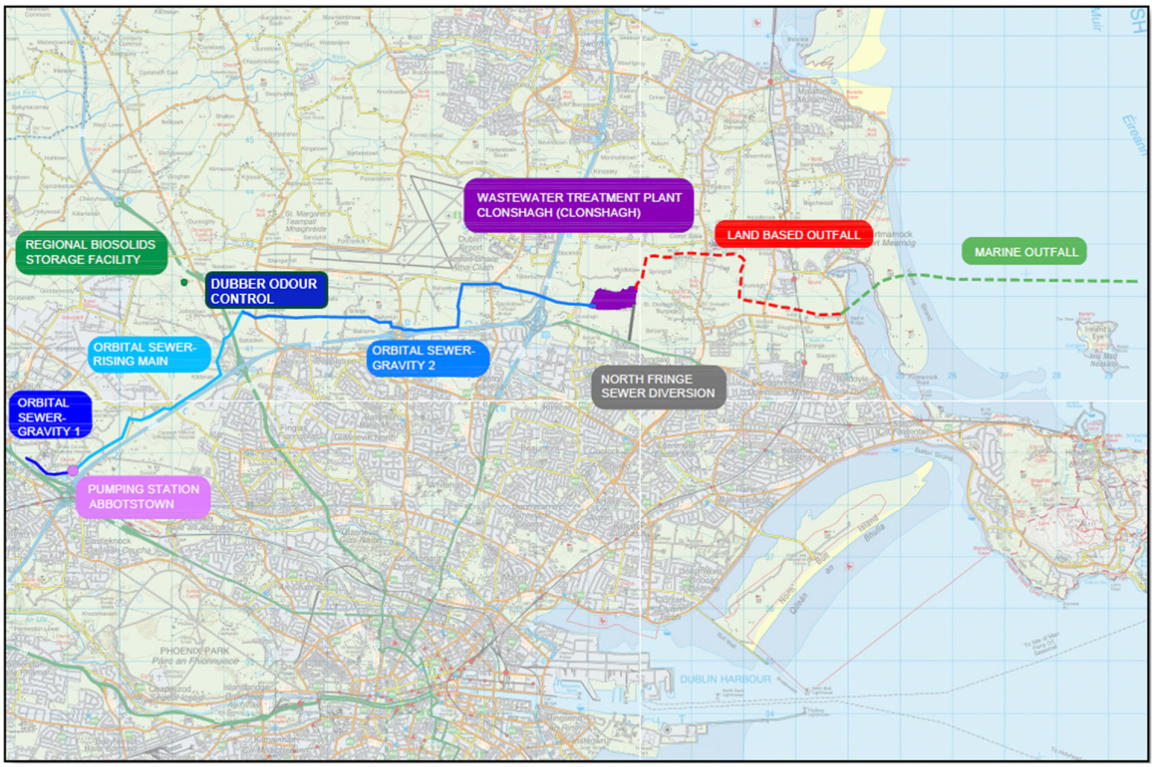
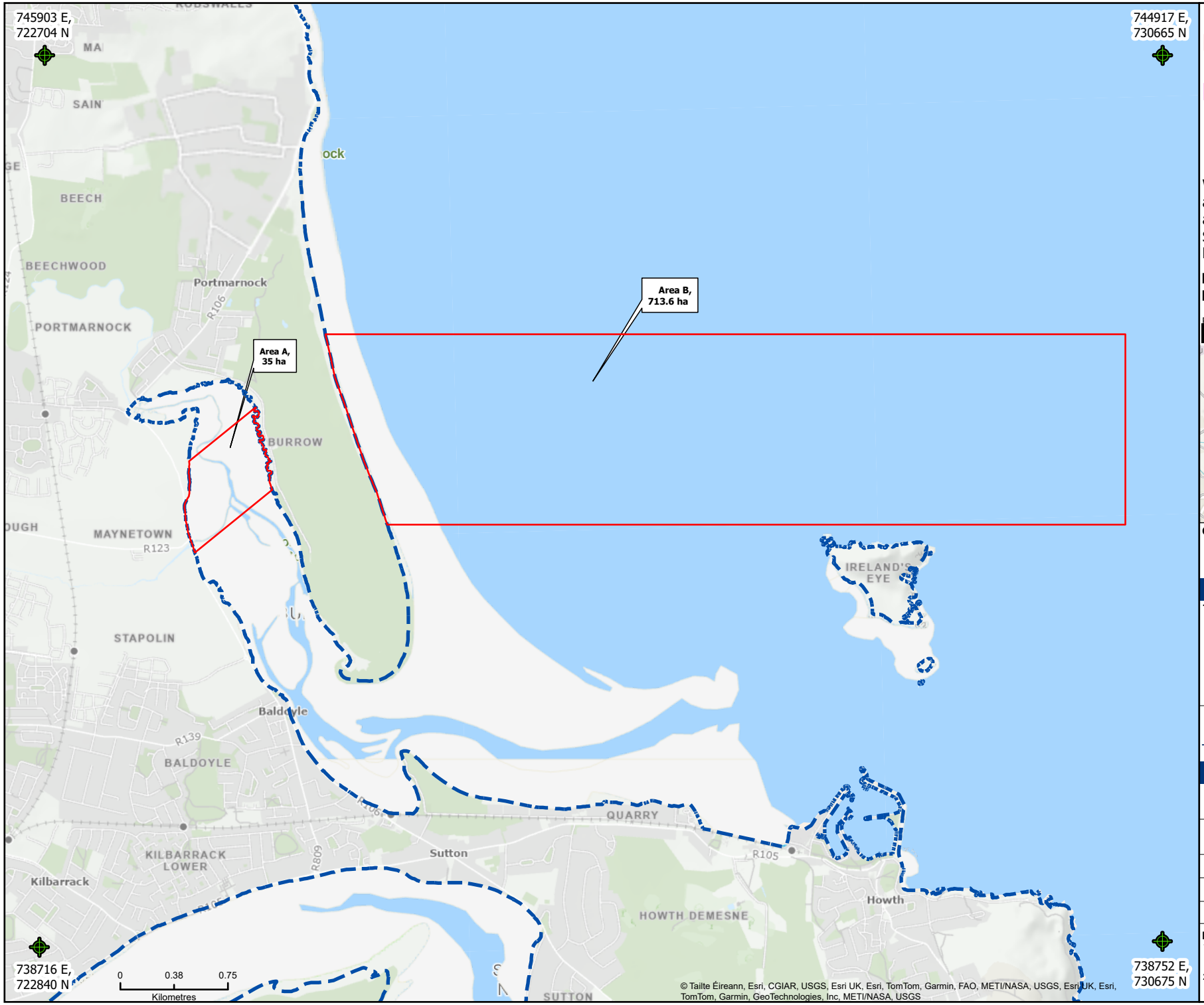


Figure 1-1 Core elements of GDD project.

Construction methods for the GDD project pipeline consist of a combination of both tunnelled and open cut for terrestrial sections of pipeline and tunnelled and dredged methods for marine based sections of pipeline.

This Maritime Usage Licence Application (MULA) is required to undertake site investigations (hereafter SI works), within Baldoyle Bay and the Irish Sea. These SI works, which are discussed in more detail in Section 2 below, are required to inform the construction stage, the detailed engineering design of the marine elements of the GDD project and to provide baseline data for any preconstruction and monitoring assessments. Information collected by the SI works will support the overall GDD project in its aim to upgrade and provide additional wastewater infrastructure for the Greater Dublin Area.



Legend

- Maritime Usage Licence Area
- High Water Mark (HWM)
- Townlands Boundaries

Where the licence area adjoins or abuts the land the High Water Mark as defined by the Chief Boundary Surveyor is the boundary of the licence area

MARA File Reference No: PA/MUL/022

N

Prepared by:

[redacted]

Client

Uisce Éireann Irish Water

Greater Dublin Drainage

Title

Figure 1-2

Proposed MUL Map

TETRA TECH
rps
West Pier Business Campus,
Dun Laoghaire,
Co Dublin,
Ireland.
+353 (0) 1 4882900
rpsgroup.com

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NOTE:

1. This drawing is the property of RPS Group Ltd. It is a confidential document and must not be copied, used, or its contents divulged without prior written consent.
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1.2 Accompanying Reports

The MULA consists of the following documents and reports:

- Maritime Usage Licence Application;
- Project Description including drawings;
- Assessment of Impact on the Maritime Usage (AIMU);
- Supporting Information for Screening for Appropriate Assessment (SISAA);
- Annex IV Species Risk Assessment;
- Subsea Noise Technical Report; and
- Natura Impact Statement (NIS).

In order to avoid repetition, this report makes reference to these other reports and drawings throughout.

1.3 Purpose of the Report

This report has been prepared by RPS, on behalf of Uisce Éireann, to provide information on the SI Works proposed to be undertaken for the GDD project in support of the MULA to MARA. This Natura Impact Statement (NIS) provides all necessary information to MARA for them to complete an Appropriate Assessment of the potential for adverse effect(s) on the integrity of (a) European site(s), arising from the SI works either individually or in-combination with other plans or projects.

This report provides a brief description of the SI works, consisting of land-based (below the high-water mark; HWM) and marine geophysical, bathymetric, geotechnical and environmental surveys and investigations that are proposed to be undertaken. A more detailed description is provided in the separate 'Project Description' document (Report ref: 10028814-RPS-MO-XX-RP-N-RP0080). The Project Description includes details of the methods, equipment and quantities for proposed activities. The results of the SI works will be used to inform the construction stage, the detailed engineering design for the proposed marine outfall and will also provide baseline data for preconstruction and monitoring assessments.

1.4 Statement of authority

The technical competence of the authors is outlined below:

[redacted] is a Principal Scientist in the Environmental Services Business Unit in RPS. She has over 13 years' experience in the marine science field and is a Chartered Environmentalist and a Full Member of the Institute of Environmental Sciences. [redacted] holds an honours degree in Environmental Science from Trinity College Dublin and a Master's in Marine Environmental Protection from Bangor University, Wales. [redacted] has delivered the environmental assessments for a wide range of marine and coastal projects, including environmental impact assessment, appropriate assessment and Annex IV species reports.

[redacted] is a Project Scientist in the Environmental Services Business Unit in RPS. She holds a Bachelor's Degree in Marine Science from the University of Galway and Master's Degree in Climate Change and Managing the Marine Environment from Heriot-Watt University Edinburgh. She has three years' experience working in consultancy, assisting on a wide range of projects from offshore renewable

energy projects to flood relief schemes, including marine and terrestrial surveys. She is a qualifying CIEEM member.

[redacted] is a Graduate Scientist in the Environmental Services Business Unit in RPS. She holds an honours degree in Zoology (B.Sc.) and Master's degree in Marine Biology, both from University College Cork. She has a years' experience as a Project Manager at Cork Nature Network, responsible for marine and river surveys, and is currently involved in marine licensing and flood relief projects within RPS.

1.5 Legislation

1.5.1 European Legislation

Council Directive 92/43/EEC of 21 May 1992 on the Conservation of Natural Habitats and of Wild Fauna and Flora (as amended) (the Habitats Directive) provides protection for habitats and species of European importance; Council Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the Conservation of Wild Birds (codified version) (the Birds Directive) aims to protect all of the 500 wild bird species naturally occurring in the European Union (EU). Areas designated for protection under the Habitats Directive are described as Special Areas of Conservation (SAC) and those designated under the Birds Directive, as Special Protection Areas (SPA) and the sites are known collectively as European sites within the Natura 2000 network (see section 1.5.2.4). As each member of the EU is required to designate areas in their jurisdictions, the establishment of this Natura 2000 network of sites under Articles 3 to 9 of the Habitats Directive is the key measure to protect nature and biodiversity in the EU.

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

Article 6(3) establishes the requirement for Appropriate Assessment (AA):

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

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

In the context of the SI works to which this MULA relates, the Habitats and Birds Directives have been transposed into Irish Legislation under, amongst other things, the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011), as amended.

Each European site has assigned Conservation Objectives (COs) and a list of Qualifying Interests (QI) in the case of SACs or Special Conservation Interests (SCI) in the case of SPAs. The CO concept appears in the eighth recital of the Habitats Directive which reads: "*whereas it is appropriate, in each area designated, to implement the necessary measures having regard to the conservation objectives pursued*".

Article 1 then explains that "*conservation means a series of measures required to maintain or restore the natural habitats and the populations of species of wild fauna and flora at a favourable status*".

The National Parks and Wildlife Service (NPWS) has established COs for each European site in Ireland. These are published on their website. NPWS advise in the general introductory notes of their site-specific conservation objectives (SSCO) series publications, that an appropriate assessment based on their "*published conservation objectives will remain valid even if the CO targets are subsequently updated, providing they were the most recent objectives available when the assessment was carried out*". NPWS advise that to assist in that regard, it is essential that the date and version are included when objectives are cited.

1.5.2 National Legislation

1.5.2.1 Maritime Area Planning Act

The Maritime Area Planning Act, 2021 (as amended) (the MAP Act) established MARA. One of the functions of MARA is to consider applications for the granting of licences to undertake any of the activities included in Schedule 7 of the MAP Act.

The following definitions in relation to Appropriate Assessment (AA) are included in Section 2(1) of the MAP Act:

> *"screening for appropriate assessment" shall be construed in accordance with, as appropriate—*
>
> > *(a) section 177U of the Act of 2000, or*
> >
> > *(b) Part 5 of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011)*
>
> *"appropriate assessment" shall be construed in accordance with, as appropriate—*
>
> > *(a) section 177V of the Act of 2000, or*
> >
> > *(b) Part 5 of the European Communities (Birds and Natural Habitats) Regulations (S.I. No. 477 of 2011);*

where the Act of 2000 refers to the Planning and Development Act 2000 (as amended).

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

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

Where MARA determines that an AA is required it shall carry out the AA in accordance with Section 117(7)(a) of the MAP Act, 2021.

1.5.2.2 Screening in for Appropriate Assessment

Under Regulation 42(6) of the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended) the competent authority shall determine that an AA of a plan or project *is required* where the plan or project is not directly connected with or necessary to the management of the site as a European

site and if it cannot be excluded, on the basis of objective scientific information following screening under this Regulation, that the plan or project, individually or in combination with other plans or projects, will have a significant effect on a European site. Under Section 117(4) of the MAP Act the MARA shall, as soon as is practicable after it receives a MUL application and if it considers it necessary to do so in its capacity as the competent authority, carry out screening for Appropriate Assessment in respect of the proposed maritime usage the subject of the application.

Where the competent authority determines that an AA is required, they shall make a determination under Article 6(3) of the Habitats Directive as to whether or not the proposed development would adversely affect the integrity of a European site and an Appropriate Assessment shall be carried out by the competent authority before consent is given for the proposed development - see Regulation 42(11) European Communities (Birds and Natural Habitats) Regulations 2011 (as amended).

1.5.2.3 Appropriate Assessment

In accordance with Section 117(6)(a) of the MAP Act, MARA requires that the applicant prepare and submit a Natura Impact Statement (NIS) as defined in Regulation 2 of the European Communities (Birds and Natural Habitats) Regulations, 2011 (as amended):

> *"Natura Impact Statement" means a report comprising the scientific examination of a plan or project and the relevant European Site or European Sites, to identify and characterise any possible implications of the plan or project individually or in-combination with other plans or projects in view of the conservation objectives of the site or sites, and any further information including, but not limited to, any plans, maps or drawings, scientific information or data required to enable the carrying out of an Appropriate Assessment.*

Following receipt of the NIS, MARA will, under Section 117(6)(b), satisfy itself as to the adequacy of the NIS and then write to the applicant to require them to give notice to the public that the application and supporting information has been provided to MARA. Following a consultation period of not less than 30 days, MARA will then carry out an AA in accordance with Section 117(7)(a).

1.5.2.4 European Sites and Natura 2000 Sites

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

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

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

> *"Natura 2000" means the European network of special areas of conservation under the Habitats Directive and special protection areas under the Birds Directive, provided for by Article 3(1) of the Habitats Directive and, for the purposes of these Regulations, includes European Sites.*

As such, and as adopted in this report, the term European site refers to one of the sites comprising the Natura 2000 network.

2 PROJECT DESCRIPTION

A detailed Project Description report including drawings, has been included as a separate report to the MULA to reduce repetition in reports. Please refer to this document for the detail on each of the elements summarised in the text below.

The MUL Area comprises two areas, one within Baldoyle Bay (Area A) and the other (Area B) extending east from Portmarnock Beach into the Irish Sea. The total combined MUL Area encompasses an area of 748.6 ha. Area A is within Baldoyle Bay between the high water mark (HWM) running adjacent to the R106 on the west of Baldoyle Bay and the HWM on the east of Baldoyle Bay adjacent to the Portmarnock Golf Club. This encompasses an area of 35 ha. Area B extends east into the Irish Sea from the HWM at Portmarnock Beach. This encompasses an area of 713.6ha. Drawings illustrating the MUL Area and the proposed locations of the SI works are included in Section 2 of the MULA Project Description.

The activities proposed to be carried out within the MUL Area are summarised in **Table 2-1** below.

Table 2-1 Proposed SI works Activities

Survey Type	Survey Elements (indicative equipment)	MUL Area Applicable to Survey Type	
		Baldoyle Bay	Irish Sea
Land-based Geophysical Surveys	Seismic Refraction, GPR or Electrical Resistivity Tomography (ERT)	Yes	N/A
(below HWM, undertaken at Baldoyle Bay at low tide)	Topographical land surveying techniques.	Yes	N/A
Marine Bathymetric Surveys	Multi Beam Echosounder (MBES)	Yes	Yes
(undertaken from survey vessel)	Side Scan Sonar (SSS)	Yes	Yes
	Vessel Positioning System: Ultra short baseline (UBSL)	Yes	Yes
Marine Geophysical Surveys	Ultra-High Resolution Seismic (UHRS), boomer or sparker	Yes	N/A
	Sub-bottom profiler (SBP)	Yes	N/A
(undertaken from survey vessel)	Vessel Positioning System: USBL	Yes	Yes
Marine Geomagnetic Surveys (undertaken from survey vessel, no acoustic signal)	Magnetometer	Yes	Yes
Marine Geotechnical Surveys	Rotary core boreholes	N/A	Yes
(undertaken from survey vessel(s) or jack-up barge; JUB)	Cone penetration testing (CPT) at borehole locations.	N/A	Yes
Land-based Geotechnical Surveys	Rotary core boreholes	Yes	N/A
(below HWM, accessed from land and undertaken using a rig)	Cone penetration testing (CPT) at intertidal borehole locations.	Yes	N/A

Survey Type	Survey Elements (indicative equipment)	MUL Area Applicable to Survey Type	
		Baldoyle Bay	Irish Sea
Marine Environmental Surveys (undertaken from survey vessel(s))	Drop-down video (DDV) and/or Remotely Operated Vehicles (ROV) survey.	N/A	Yes
	Grab sampling	N/A	Yes
	Water Quality Samples, including Conductivity, Temperature and Depth (CTD) Measurements.	N/A	Yes

The drawings prepared in support of the MULA are included in Appendix A of the Project Description document. As described in more detail in the Project Description document, the proposed locations shown in the figures and drawings are subject to refinement based on the results of the geophysical, bathymetric and environmental surveys. Similarly, the location may be moved due to the presence of obstructions/ refusals at individual locations, i.e. where a physical object, e.g. a subsurface boulder, prevents the borehole, CPT, etc., from going to its target depth. In such circumstances, the borehole location is moved to another nearby location away from the obstruction and drilled again to the target depth.

3 APPROPRIATE ASSESSMENT METHODOLOGY

3.1 Guidance

The following guidance has been used in the preparation of this NIS:

- EC (2000). Communication from the Commission on the Precautionary Principle. Office for Official Publications of the European Communities, Luxembourg;
- EC (2002). Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission;
- EC (2007). Guidance document on the strict protection of animal species of Community interest under the Habitats Directive 92/43/EEC. European Commission;
- DoEHLG (2009, rev. 2010). Appropriate Assessment of Plans and Projects in Ireland Guidance for Planning Authorities. Department of the Environment, Heritage and Local Government;
- EC (2013). Interpretation Manual of European Union Habitats. Version EUR 28. European Commission, Luxembourg;
- EC (2018). European Commission Notice C (2018) 7621 'Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC', Office for Official Publications of the European Communities, Luxembourg;
- OPR (2021). Practice Note PN01: Appropriate Assessment Screening for Development Management. Office of the Planning Regulator, Dublin Ireland.
- EC (2021). European Commission Notice C (2021) 6913 'Assessment of plans and projects in relation to Natura 2000 sites – Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC', Office for Official Publications of the European Communities, Luxembourg.

3.2 Stages

Appropriate Assessment (AA) is a four-stage process with tests at each stage. The four stages are summarised diagrammatically in **Figure 3-1** below. An important aspect of the process is that the outcome at each successive stage determines whether a further stage in the process is required.

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

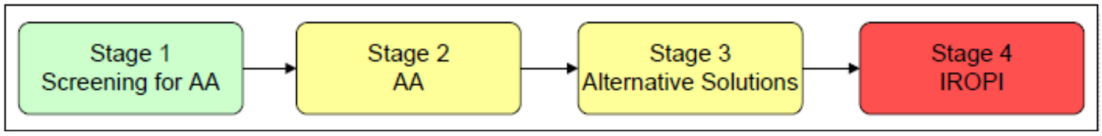

Figure 3-1 Four Stages of Appropriate Assessment

The screening for AA carried out by the competent authority (Stage 1), will determine whether an AA (Stage 2) of the proposed project is required. The purpose of the screening stage is to determine, on the basis of a preliminary assessment and objective criteria, whether a plan or project, alone and in-combination with other plans or projects, could have significant effects on a European site in view of the site's conservation objectives.

There is no necessity to establish such an effect; it is merely necessary for the competent authority to determine that there may be such an effect. The need to apply the precautionary principle in making any key decisions in relation to the tests of Appropriate Assessment (AA) has been confirmed by the case law

of the Court of Justice of the European Union (CJEU). Plans or projects that have no appreciable effect on a European site may be excluded. The threshold at this first stage is a very low one and operates as a trigger in order to determine whether a Stage Two AA must be undertaken by the competent authority on the implications of the proposed development for the conservation objectives of a European site. Therefore, where significant effects are likely, uncertain or unknown at screening stage, a second stage AA will be required.

Stage 2 is required if it cannot be excluded, on the basis of the objective information provided at Stage 1, that the proposed project, individually or in combination with other projects or plans, will have a significant effect on a European site, in view of the site's conservation objectives. In this case, a Natura Impact Statement (NIS) must be prepared to assist the competent authority to conduct the Stage 2 AA. Stage 2 AA is a focused and detailed examination, analysis and evaluation carried out by the competent authority of the implications of the plan or project, alone and in-combination with other plans and projects, on the integrity of a European site in view of that site's conservation objectives. Case law has established that such an Appropriate Assessment, to be lawfully conducted, in summary:

> (i) must identify, in the light of the best scientific knowledge in the field, all aspects of the proposed development which can, by itself or in-combination with other plans or projects, affect the conservation objectives of the European site;
>
> (ii) must contain complete, precise and definitive findings and conclusions and may not have lacunae or gaps; and
>
> (iii) may only include a determination that the proposed development will not adversely affect the integrity of any relevant European site where the competent authority decides (on the basis of complete, precise and definitive findings and conclusions) that no reasonable scientific doubt remains as to the absence of the identified potential effects. If adverse impacts can be satisfactorily avoided or successfully mitigated at this stage, so that no reasonable doubt remains as to the absence of the identified potential effects, then the process is complete. If the assessment is negative, i.e. adverse effects on the integrity of a site cannot be excluded, then the process must proceed to stage three and, if necessary, stage four.

If it is not possible during Stage 2 to avoid adverse effects on the integrity of one or more European sites through avoidance and/or mitigation, Stage 3 of the process must be undertaken which is to objectively assess whether alternative solutions exist by which the objectives of the plan or project can be achieved. If it can be demonstrated that there are no reasonable alternative solutions, the AA progresses to Stage 4. This final stage is undertaken when it has been determined that negative impacts on the integrity of a European site will result from a plan or project and there are no alternative solutions. At Stage 4 of the AA process, the competent authority must determine if, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, the project must nevertheless be carried out for imperative reasons of overriding public interest, or 'IROPI', including those of a social or economic nature. In such circumstances, the Member State is required to take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected.

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

As per DoEHLG (2009):

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

3.3 Identification of Relevant European Sites

3.3.1 Source-Pathway-Receptor Model

Relevant European sites were identified in the Supporting Information for Screening for Appropriate Assessment (SISAA) report (IE10028814-RPS-MO-XX-RP-E-RP0082) based on the identification of a 'zone of influence' (ZoI) of the SI works using a Source-Pathway-Receptor (S-P-R) model (OPR, 2021) where:

- A 'source' is defined as the individual element of the proposed works that has the potential to impact on a European site, its qualifying features, and its COs;
- A 'pathway' is defined as the means or route by which a source can affect the ecological receptor; and
- A 'receptor' is defined as the Qualifying Interest (QI) or Species of Conservation Interest (SCI) of the European site being assessed for which COs have been set.

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

3.3.2 Zone of Influence

Determination of the SI works' ZoI was achieved by assessing the SI works against the ecological receptors within the MUL Area, in addition to the ecological receptors that could be connected to and subsequently impacted by the project through abiotic and biotic vectors outside the boundary of the MUL Area.

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

> "*For projects, the distance could be much less than 15 km, and in some cases less than 100m, but this must be evaluated on a case-by-case basis with reference to the nature, size and location of the project, and the sensitivities of the ecological receptors, and the potential for in combination effects" (DoEHLG, 2009; p.32, para 1).*

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

To this end, the ZoI for this project extends outside of the immediate SI works MUL Area to include ecological receptors connected to the project through proximity and connectivity through features such as watercourses and waterbodies in addition to potential connectivity through land and air. See Section 4.1 for the identification of relevant European sites.

3.3.3 Adverse Effects on the Integrity of European Sites

The European Commission's 2018 Notice (EC, 2019) advises that the purpose of the AA is to assess the implications of the plan or project in respect of the site's COs, either individually or in-combination with other plans or projects. The conclusions should enable the competent authorities to ascertain whether the plan or project will adversely affect the integrity of the site concerned. The focus of the AA is therefore specifically on the species and/or the habitats for which the European sites is designated.

EC (2019) also emphasises the importance of using the best scientific knowledge when carrying out the AA in order to enable the competent authority to conclude with certainty that there will be no adverse effects on the integrity of the site. This guidance notes that it is at the time of adoption of the decision authorising implementation of the project that there must be no reasonable scientific doubt remaining as to the absence of adverse effects on the integrity of the site in question.

As regards the meaning of 'integrity,' this relates to ecological integrity. This can be considered as a quality or condition of being whole or complete. In a dynamic ecological context, it can also be considered as having the sense of resilience and ability to evolve in ways that are favourable to conservation.

The 'integrity of the site' can be usefully defined as (EC, 2019):

"The coherent sum of the site's ecological structure, function and ecological processes, across its whole area, which enables it to sustain the habitats, complex of habitats and/or populations of species for which the site is designated."

EC (2019) notes that if the competent authority considers the mitigation measures are sufficient to avoid the adverse effects on site integrity identified in the AA, they will become an integral part of the specification of the final plan or project or may be listed as a condition for project approval.

EC (2019) advises that it is for the competent authority, in the light of the conclusions made in the appropriate assessment on the implications of a plan or project for the European sites concerned, to approve the plan or project. This decision can only be taken after they have made certain that the plan or project will not adversely affect the integrity of the site. That is the case where no reasonable scientific doubt remains as to the absence of such effects.

EC (2019) also reaffirms that the authorisation criterion laid down in the second sentence of Article 6(3) of the Habitats Directive integrates the precautionary principle and makes it possible effectively to prevent the protected sites from suffering adverse effects on their integrity as the result of the plans or projects. A less stringent authorisation criterion could not as effectively ensure the fulfilment of the objective of site protection intended under that provision. The onus is therefore on demonstrating the absence of adverse effects rather than their presence, reflecting the precautionary principle. It follows that the appropriate assessment must be sufficiently detailed and reasoned to demonstrate the absence of adverse effects, in light of the best scientific knowledge in the field.

3.3.4 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 Holohan v. An Bord Pleanála, that determined *inter alia* that Article 6(3) of the Habitats Directive 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 COs of the site.

In that regard, consideration has been given in this NIS to inform AA to implications for habitats and species located both inside and outside of the European sites considered in the SISAA with reference to those sites' COs where effects upon those habitats and/or species are liable to affect the COs of the sites concerned.

3.3.5 Conservation Objectives

The COs for each European site are to maintain or restore the favourable conservation condition of the qualifying interest (QI) habitat(s) and/or the QI (or special conservation interest (SCI) for SPAs) 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.

The COs of European sites published by the National Parks and Wildlife Service (NPWS) note that an AA based on the most up to date COs (which are defined by a list of attributes and targets) will remain valid even if the targets are subsequently updated, providing they were the most recent objectives available when the assessment was carried out.

The most up-to-date COs for the European sites being considered have been used in this NIS.

3.3.6 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 EC (2018), 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.

EC (2021) notes that cumulative environmental effects can be defined as effects on the environment caused by the combined action of past, current, and future activities. Although the effects of one development may not be significant, the combined effects of several developments together can be significant.

EC (p.14, 2021) also notes that the “in-combination provision concerns other plans or projects that have been already completed, approved but uncompleted, or proposed (i.e., for which an application for approval or consent has been submitted).” And furthermore (p.31, ibid): “In addition to the effects of the plans or projects that are the main subject of the assessment, it may be appropriate to consider the effects of already completed plans and projects, including those preceding the date of transposition of the directive or the date of designation of the site. The effects of such completed plans and projects would typically form part of the site's baseline conditions which are considered at this stage.”

Plans and projects that have been approved in the past but have not yet been implemented or completed should be included in the in-combination provision. As regards other proposed plans or projects, on grounds of legal certainty it would seem appropriate to restrict the ‘in-combination’ provision to plans that have been proposed, (i.e., for which an application for approval or consent has been submitted) (EC, 2021).

This mirrors the advice contained in EC (2018) which advises that other plans or projects which are completed, approved but uncompleted, or proposed should be considered. EC (2018) specifically advises that “as regards other proposed plans or projects (i.e., other projects not proposed by the Applicant), 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”.

The ability for impacts arising from the proposed project to overlap with those from other projects, plans and activities to result in adverse effects are considered. This means that, in most examples, an overlap of the physical extents of the impacts arising from the two (or more) projects, plans or activities must be established for an in-combination effect to arise. For example, for a cumulative sedimentation effect to be established between the proposed project and another project, it must be established that the extent of sediment release from both projects has the potential to overlap and may affect a receptor at the same location.

Exceptions to this exist for certain mobile receptors that may move between, and be subject to, two or more separate physical extents of impact from two or more projects. For example, species such as otter may be affected by water quality impacts from the project, as well as those from other projects where the extent of another area affecting water quality does not directly overlap with that of the project. Where relevant, mitigation will be imposed as necessary to prevent adverse in-combination effects.

3.4 Ecological Desk Study

The SISAA (RPS report ref: 10028814-RPS-MO-XX-RP-E-RP0082) details the results of the ecological desk study undertaken to describe the receiving environment of the SI works. Those details are not reiterated here to avoid repetition. A description of each European site is provided in Section 5.

4 STAGE 1 SCREENING FOR APPROPRIATE ASSESSMENT

4.1 SISAA Report

Through an assessment of the S-P-R model, which considered the ZoI of effects from the SI works, the following findings were reported by RPS in the SISAA report (RPS report ref: 10028814-RPS-MO-XX-RP-E-RP0082):

The SI works are not connected with or necessary to the management of the nature conservation interest of any European site.

The SI works, in the absence of mitigation, have the potential to contribute to habitat loss, alteration, and/or fragmentation of Annex I habitats in:

- Baldoyle Bay SAC
- Rockabill to Dalkey Island SAC

In the absence of mitigation, the geophysical, bathymetric and geotechnical surveys within the Irish Sea will introduce subsea noise that has the potential to impact on harbour porpoise (*Phocoena phocoena*), bottlenose dolphin (*Tursiops truncatus*), harbour seal (*Phoca vitulina*) and grey seal (*Halichoerus grypus*) at the following European sites:

- Rockabill to Dalkey Island SAC (harbour porpoise)
- Lambay Island SAC (grey seal, harbour seal, harbour porpoise)
- Codling Fault Zone SAC (harbour porpoise)
- North Anglesey Marine SAC (harbour porpoise)
- Murlough SAC (harbour seal)
- North Channel SAC (harbour porpoise)
- Blackwater Bank SAC (harbour porpoise)
- Llyn a'r Sarnau / Lleyn Peninsula and the Sarnau SAC (bottlenose dolphin)
- Hook Head SAC (bottlenose dolphin)

In the absence of mitigation, the SI works will introduce above water noise, vibration and lighting that have the potential to impact on seabirds and wintering birds at the following European sites:

- Baldoyle Bay SPA (wintering waterbirds and geese)
- North-West Irish Sea SPA (seabirds foraging at sea within MUL Area)
- Ireland’s Eye SPA (breeding birds at the nest)
- North Bull Island SPA (wintering geese)
- Skerries Islands SPA (wintering geese and gull)
- Malahide Estuary SPA (wintering geese)
- South Dublin Bay and River Tolka Estuary SPA (wintering waterbirds, geese and gull)

- Lambay Island SPA (seabirds foraging within MUL Area)
- Rogerstown Estuary SPA (wintering swan/geese)
- Dalkey Island SPA (seabirds foraging within MUL Area)

In addition, the SI works have the potential to contribute to habitat loss of SPA wetland habitat at the following European sites:

- Baldoyle Bay SPA (wintering waterbirds and geese)

In the absence of mitigation measures, there is the potential for there to be in-combination effects with other projects and therefore in-combination effects are screened in for further assessment.

The SISAA report concluded that it cannot be excluded, on the basis of objective information, that the SI works, individually or in combination with other plans or projects, will have a significant effect(s) on European sites. It is recommended that an NIS be prepared to assist MARA in conducting an Appropriate Assessment should they agree with the findings of the SISAA.

5 ASSESSMENT OF ADVERSE EFFECTS

5.1 Introduction

The connectivity between the proposed SI works and the relevant European sites has been assessed in the SISAA Report (RPS report ref: (RPS report ref: 10028814-RPS-MO-XX-RP-E-RP0082). Ten SACs and ten SPAs have been identified as relevant European sites for this NIS (see Section 4). This NIS only assesses QIs and SCIs in relation to which it could not be excluded based on objective information following screening that the proposed SI works, either alone or in combination with other projects, would have a likely significant effect. This analysis is set out in the SISAA Report and the relevant QIs and SCIs and associated European sites are summarised in Section 4 of this NIS report.

As the SISAA considered likely significant effects in line with the precautionary principle, interactions between the proposed SI works and the European sites identified in the SISAA will be investigated in more detail to establish whether there is a credible risk of interaction with the proposed SI works. Where no such interaction with a European site (or relevant QIs) occurs, no further assessment will be undertaken. Where there is a credible interaction between the SI works and a European site, an assessment against the site's Conservation Objectives (COs) will be undertaken. Where appropriate, mitigation measures will also be considered.

5.2 Habitats

5.2.1 Overview of impacts to habitats (Habitat loss, alteration or fragmentation, including increased SSC/smothering)

In line with the precautionary principle, intertidal and subtidal QI habitats at the following SACs were screened in for AA, as likely significant effects due to habitat loss, alteration or fragmentation, including increased SSC/ smothering (including water quality impacts) caused by extractive/ intrusive survey techniques (e.g. benthic grab sampling and boreholes) could not be excluded at the screening stage:

- Baldoyle Bay SAC
- Rockabill to Dalkey Island SAC

The interaction between the proposed SI works and the above SACs will be investigated in more detail to establish whether there is a credible risk of interaction with the QI habitats from the proposed SI works. Where no such risk of interaction with a European site occurs, no further assessment will be undertaken. Where there is a risk of interaction between the SI works to QI habitats, an assessment against the conservation objectives will be undertaken.

Intrusive or extractive SI works (e.g. grab samples, boreholes, etc.) can potentially damage habitats if undertaken directly on or through that habitat. Where a jack-up barge (JUB) is used as a platform to undertake geotechnical surveys, as is proposed within the Irish Sea, the legs will result in disturbance to sediments during the placement operations (i.e. "spudding"). **Table 5-1** and **Table 5-2** outline the maximum quantities of each sampling activity type, area per sample and maximum area to be removed or disturbed.

The sensitivity of a habitat will depend on the likelihood of damage (or tolerance/ resistance) and the rate of recovery (or resilience) once the pressure has abated (Tyler-Walters et al., 2023). In general,

sedimentary habitats are considered to be less sensitive to damage from sampling as they have higher resistance and resilience to pressures such as removal and damage than more complex, hard substrate habitats like reefs. Intrusive/ extractive sampling associated with the SI works will be limited in scale and consists of very small (4no. boreholes within Baldoyle Bay, 10no. boreholes and a maximum of 48 grab samples within the Irish Sea), discrete sampling areas within a much wider estuarine and marine environment. Given the dynamic estuarine and marine environment within the MUL Area, the limited scale and temporary nature of sampling to be undertaken, it is anticipated that there will be rapid recovery of sedimentary habitats over a number of tidal cycles and therefore, any impact to sedimentary habitats is fully reversible.

Within Baldoyle Bay, bog mats will be used to access/egress target areas for the land-based geophysical surveys and borehole locations to the west and east of the Bay, with the potential to temporarily cover areas of Atlantic and Mediterranean Salt Meadows (1330/1410). However, it is anticipated that these salt meadow habitats will quickly recover and will return to their natural state once bog mats and equipment are removed. No boreholes will be undertaken within the Atlantic and Mediterranean Salt Meadow habitat.

Table 5-1 Summary of SI works with potential to disturb / remove sediment in Baldoyle Bay (MUL Area A)

Activity	Maximum Quantity*	Unit Area m^2	Disturbed Area m^2	% of MUL Area A (0.35 km^2)	Unit Volume Disturbed m^3	Maximum Volume Removed m^3
Geotech Boreholes Baldoyle Bay (102mm dia x 20m deep)	4	0.008	0.033	0.000009%	0.16	0.65
Bog Mat (assume 1m long x 5m wide x 0.1m deep) x 500m track	1	2500	2500	0.71%	N/A	N/A
Total	**N/A**	**N/A**	**3800**	**1.09%**	**N/A**	**0.65**

Table 5-2 Summary of SI works with potential to disturb / remove sediment in the Irish Sea (MUL Area B)

Activity	Maximum Quantity*	Unit Area m^2	Disturbed Area m^2	% of MUL Area B (7.136 k m^2)	Unit Volume Disturbed m^3	Maximum Volume Removed m^3
Marine environ surveys (12 stations with up to 4 grabs @ each station x 0.1m^2)	48	0.1	4.8	0.000067%	0.015	0.7
Geotech Boreholes Baldoyle Bay (102mm dia x 20m deep @10 locations)	10	0.008	0.08	0.000001%	0.16	1.6
JUB legs (4 legs x max 3m^2 each @ 10 locations)	10	12	120	0.0017%	N/A	N/A

Activity	Maximum Quantity*	Unit Area m^2	Disturbed Area m^2	% of MUL Area B (7.136 k m^2)	Unit Volume Disturbed m^3	Maximum Volume Removed m^3
Total	**N/A**	**N/A**	**124.88**	**0.00175 0%**	**N/A**	**2.35**

SI works that extract or disturb sediment also have the potential to result in sediment becoming suspended in the water column, which has the potential to smother nearby sensitive community types or habitats. However, given the relatively limited scale and temporary nature of sampling within the Irish Sea MUL Area (10no. boreholes and 48 grab samples), it is anticipated that any suspended sediments will settle out of suspension rapidly, and that habitats in the region are adapted to natural levels of turbidity, given the exposed, dynamic marine environment off the east coast of Ireland.

Although it is unlikely that intrusive sampling of hard substrates such as reef would be successful due to operational constraints of the equipment, attempts to sample over hard substrates likely to be reef could damage such habitats.

5.2.2 Baldoyle Bay SAC

Baldoyle Bay SAC is located to the south of Portmarnock village and spans to the west pier at Howth in Co. Dublin (NPWS, 2013a). The MUL Area intersects the tidal estuarine bay that is fed by the rivers Mayne and Sluice and is protected from the open sea by a large sand dune system. This SAC was selected to maintain the favourable conservation conditions of the following habitats listed in Annex I of the EU Habitats Directive: Mudflats and sandflats not covered by seawater at low tide (1140), *Salicornia* and other annuals colonising mud and sand (1310), Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) (1330), and Mediterranean salt meadows (*Juncetalia maritimi*) (1410).

MUL Area A is wholly within Baldoyle Bay SAC, while MUL Area B (Irish Sea) overlaps with the SAC close to shore at Portmarnock Beach. Land-based geophysical surveys, geotechnical surveys (4no. boreholes) and boat-based geophysical and bathymetric surveys will be undertaken within MUL Area A within Baldoyle Bay. With the exception of the boat based geophysical and bathymetric surveys within the Bay, all other SI works have the potential to remove and/or disturb sedimentary and estuarine habitats within Baldoyle Bay.

The area designated as mudflats and sandflats not covered by seawater at low tide (shortened to ‘mudflats and sandflats’ in the following text for brevity) is widespread across the Bay and is estimated to cover 409 ha (NPWS, 2012a). This habitat type overlaps the MUL Area within Baldoyle Bay and at the intertidal zone at Portmarnock Beach. Due to this overlap, there is expected to be some interaction between a small section of QI mudflats and sandflats and the proposed SI works, and further assessment of this QI habitat is considered necessary. Intrusive/ extractive survey methodologies could, in theory, lead to habitat loss and/or disturbance on a limited scale.

The area designated as *Salicornia* and other annuals colonising mud and sand (shortened to ‘*Salicornia* mud’ in the following text for brevity) is estimated at 0.38 ha (NPWS, 2012a). There are several patches

of *Salicornia* mud on both sides of Baldoyle estuary towards the lower end of the estuary[1]. None of the proposed SI works overlap this habitat type within Baldoyle Bay therefore, there will be no interaction between the *Salicornia* mud and the proposed SI works (including access), and no further assessment of this habitat is considered necessary.

The area mapped as Atlantic salt meadows and Mediterranean salt meadows (hereafter referred as 'ASM' and 'MSM' for brevity) is estimated at 11.98 h and 2.64 ha within the SAC, respectively. The land-based geophysical surveys will involve a small team of surveyors utilising non-intrusive equipment therefore no direct habitat loss is expected. The intrusive SI works will not take place directly within these habitat types; therefore, no direct habitat loss is expected. However, access/egress to the land-based geophysical and geotechnical SI work locations will involve equipment and personnel crossing these habitat types, which has the potential to cause habitat alteration and/or fragmentation. Therefore, there is potential for interaction between the land-based geotechnical and geophysical surveys in relation to access/egress locations for ASM and MSM habitat. In line with standard practise, bog mats will be utilised in areas of soft ground to provide stability and safe access for personnel, machinery and equipment. The use of bog mats in the ASM and MSM habitat will also minimise habitat alteration and/or fragmentation.

The impacts associated with the SI works will be considered against the detailed conservation objectives and attributes for mudflats and sandflats not covered by seawater at low tide and Atlantic salt meadows and Mediterranean salt meadows at Baldoyle Bay SAC below.

Table 5-3 Site-specific conservation objectives for relevant qualifying interest habitats

Relevant Qualifying Interests	Site Specific Conservation Objective	Site Specific Attributes Potentially Affected by the Project
Baldoyle Bay SAC (IE000199) (NPWS, 2012a; Version 1, 19/11/2012)		
Mudflats and sandflats not covered by seawater at low tide [1140]	To maintain the favourable conservation condition	Habitat area Community distribution
Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)	To maintain the favourable conservation condition	Habitat area Habitat distribution Physical structure: sediment supply Physical structure: creeks and pans Physical structure: flooding regime Vegetation structure: zonation Vegetation structure: vegetation height Vegetation structure: vegetation cover Vegetation composition: typical species and sub-communities Vegetation structure: negative indicator species- *Spartina anglica*
Mediterranean salt meadows (*Juncetalia maritimi*)	To maintain the favourable conservation condition	Habitat area Habitat distribution

[1] Baldoyle Bay SAC Conservation objectives supporting document- coastal habitats accessed July 2025

Relevant Qualifying Interests	Site Specific Conservation Objective	Site Specific Attributes Potentially Affected by the Project
		Physical structure: sediment supply Physical structure: creeks and pans Physical structure: flooding regime Vegetation structure: zonation Vegetation structure: vegetation height Vegetation structure: vegetation cover Vegetation composition: typical species and sub-communities Vegetation structure: negative indicator species- *Spartina anglica*

5.2.2.1 Assessment against conservation objectives

Qualifying Interest: Mudflats and sandflats not covered by seawater at low tide

Habitat area – The habitat area is estimated as 409 ha (4,060,000 m^2) across the SAC (NPWS, 2012a). The target for this attribute is that the permanent habitat area is stable and increasing, subject to natural processes, and refers to activities or operations that propose to permanently remove habitat and does not refer to long- or short-term disturbance of the biology of the site (NPWS, 2012a).

The SI works within Baldoyle Bay that are capable of removing and/or disturbing intertidal sediment are boreholes (0.008 m^2 per sample), bog mats (2500 m^2 per 500 m track), and land-based geophysical SI works including geophysical resistivity. Given the total area of disturbance is 1.09% of the MUL Area within Baldoyle Bay, including the limited nature and scale of the proposed SI works (4no. boreholes), a very small proportion of the mudflat and sandflat habitat will be removed or disturbed leading to increased SSC, with mudflats and sandflats known to have natural resilience and good recoverability from physical disturbances (OSPAR, 2023). Therefore, no permanent removal of habitat or continuous disturbance will occur.

Community distribution: Maintain fine sand the extent of the *Angulus tenuis* community complex and the estuarine sandy mud complex of *Pygospio elegans and Tubificoides benedii* communities - The proposed SI works within Baldoyle Bay do not overlap with the fine sand dominated *Angulus tenuis* community complex which is noted at the mouth of the estuary extending into the Irish Sea (NPWS, 2012b). Therefore, this community type will be conserved in its natural condition. The extent of estuarine sand mud with *Pygospio elegans and Tubificoides benedii* communities was estimated at 152 ha[2] and overlaps the MUL Area within Baldoyle Bay. The intrusive SI works within MUL Area A have the potential to cause direct habitat loss, alteration and/or fragmentation to mudflat and sandflat habitat and in turn the estuarine sandy mud complex of *Pygospio elegans and Tubificoides benedii* within this area. However as stated above the total disturbed area equates to 3800.016m^2 or 1.09% of MUL Area A . Given the tidal nature of the estuary, and that the proposed SI works will be temporary in nature and of a small scale (4no.

[2] Baldoyle Bay SAC Conservation objectives supporting document - Marine Habitats Accessed July 2025

boreholes) it is expected that the sediment will return to its natural state over a number of tidal cycles. Therefore, estuarine sandy mud complexes of *Pygospio elegans and Tubificoides benedii* will be conserved.

Qualifying Interest: Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)

Habitat area – The habitat area for ASM at Baldoyle Bay SAC is estimated at 12 ha with a patchy distribution within the estuary (NPWS, 2012b). This QI overlaps with likely access routes required for MUL Area A and as such, there is potential for interactions between SI works due to the need for access via bog mats for the land-based geophysical and geotechnical SI works. However, utilising bog mats for access/egress within Baldoyle Bay will not permanently remove any of the QI habitat and will in fact protect the ASM habitat from damage from heavy machinery. It is expected that once bog mats and machinery are removed, the vegetation will return to its natural state therefore supporting its stable natural processes. No boreholes will be undertaken in areas of ASM.

Habitat distribution –There are multiple patches of ASM distributed throughout the estuary, predominantly located to the northern-western end of the estuary and the sheltered area at the mouth of the estuary (NPWS, 2012b). This QI overlaps the MUL Area A due to the need for access via bog mats for the geophysical and geotechnical SI works. No boreholes will be undertaken in areas of ASM. There will be no direct habitat decline or change to habitat distribution as none of this habitat type will be removed during the SI works within Baldoyle Bay. Therefore, there will be no permanent habitat decline or change to its distribution due to the proposed SI works.

Physical structure: sediment supply – There are no indications that ASM is in decline at Baldoyle Bay SAC, however there is some sign of erosion in the southeastern corner of the estuary (NPWS, 2012b). Maintenance of the natural circulation of sediment and organic matter without physical disturbances or obstruction is of importance. As stated above, given the minimal SI works proposed within the MUL Area A in Baldoyle Bay (4no. boreholes, use of bog mats, and land-based geophysical SI works). Once these activities are complete, machinery and bog mats will be removed, and over a number of tidal cycles the sediment supply will return to its natural range within the Bay. The physical obstruction represented by equipment and machinery will be limited in scale and temporary in nature and will only be at the footprint of the SI works. Therefore, there will be minimal impact from the proposed SI works and sediment supply within the MUL Area.

Physical structure: creeks and pans – The proposed SI works within Baldoyle Bay will not interact with the creek and pan structure of the ASM at Baldoyle Bay. Therefore, it will be maintained subject to natural processes.

Physical structure: flooding regime - Species in the lowest part of the saltmarsh require regular inundation, while those higher up on the marsh can only tolerate occasional inundation. ASM occurs on the banks of the estuary and as such, experience somewhat regular submersion in seawater (NPWS, 2012b). The proposed SI works will not interact with the flood regime within Baldoyle Bay. Therefore, the natural tidal regime will be maintained.

Vegetation structure: zonation – At Baldoyle Bay SAC, the maintenance of transitions to sand dune habitats and transitional mosaics within saltmarsh habitats is a conservation objective (McCorry, 2007). The proposed SI works will not involve any permanent removal of this QI therefore its natural range within the transitional zones within Baldoyle Bay will be maintained. The use of bog mats for access/egress onto the intertidal areas will have no permanent impact to the zonation of habitats within the Bay. Therefore, there will be no impact to the range of coastal habitats including transitional zones.

Vegetation structure: vegetation height – Typical recommendations for vegetation height within salt marshes is a ratio of 70% short plants, 30 % tall plants across the complete marsh area (NPWS, 2012b). The proposed SI works will not involve the removal of ASM, however the use of bog mats may cause compaction of vegetation for the duration of the surveys. However, it is expected that once bog mats and machinery are removed the vegetation will return to its natural state and its structural variation will be intact.

Vegetation structure: vegetation cover –The proposed SI works will not involve any removal of vegetation within creek areas, the use of bog mats will reduce vegetation loss that may be caused by machinery or equipment. Therefore, it is expected that more than 90% of the areas outside of the creeks will remain vegetated.

Vegetation composition: typical species & sub-communities – The proposed SI works will not involve any removal of vegetation or species within Baldoyle Bay. Therefore there will be no negative interaction between the proposed SI works and the typical species listed in the Saltmarsh Monitoring report.

Vegetation structure: negative indicator species *Spartina anglica* – The proposed SI works will utilise industry standard practices to reduce the spread of invasive species, these include washing machinery before and after arrival to the site in a designated area, desk-based research of invasive species within the area and avoidance where possible. Common cordgrass *(Spartina anglica)* is the only invasive species recorded on the saltmarsh of Baldoyle Bay SAC. The proposed SI works will follow industry standard practices to reduce the risk of spreading of invasive species to reduce the expansion of common cordgrass.

Qualifying Interest: Mediterranean salt meadows (*Juncetalia maritimi*)

Habitat area – The habitat area for MSM at Baldoyle Bay SAC is estimated at 2.64 ha and is found primarily along the northern banks of the estuary (NPWS, 2012a). This QI overlaps with MUL Area A and as such, there is potential for interactions between SI works due to the need for access via bog mats for the land-based geophysical and geotechnical SI works. However, utilising bog mats for access/egress within Baldoyle Bay will not permanently remove any of the QI habitat. It is expected that once bog mats and machinery are removed, the vegetation will return to its natural state therefore supporting its stable natural processes. No boreholes will be undertaken in areas of MSM.

Habitat distribution – There are multiple patches of MSM distributed throughout the estuary, predominantly located to the northern western end of the estuary and along a band on the eastern side. No boreholes will be undertaken in areas of MSM. There will be no direct habitat decline or change to habitat distribution as none of this habitat type will be removed during the SI works within Baldoyle Bay. Therefore, there will be no permanent habitat decline or change to its distribution.

Physical structure: sediment supply – There are no indications that MSM is in decline at Baldoyle Bay SAC, however there is some sign of decrease in the brackish marsh at Mayne which includes the MSM community (NPWS, 2012b). Maintenance of the natural circulation of sediment and organic matter without physical disturbances or obstruction is of importance. As MUL Area A overlaps with areas designated for this QI habitat and it is proposed that bog mats will be utilised for access/egress to the geophysical and geotechnical SI locations, there is potential for interaction or obstruction of sediment supply by proposed SI works. As stated above, given the minimal SI works proposed within the MUL Area A in Baldoyle Bay (4no. boreholes, use of bog mats, and land-based geophysical SI works). Once these activities are complete, machinery and bog mats removed over a number of tidal cycles the sediment supply will return to its natural range within the Bay. Therefore, the physical obstruction will be limited in

scale and temporary in nature and will only be at the footprint of the SI works. Therefore, there will be minimal impact from the proposed SI works and sediment supply within the MUL Area.

Physical structure: creeks and pans – The proposed SI works within Baldoyle Bay will not interact with the creek and pan structure of the MSM at Baldoyle Bay. Therefore it will be maintained subject to natural processes.

Physical structure: flooding regime - Species in the lowest part of the saltmarsh require regular inundation, while those higher up on the marsh can only tolerate occasional inundation. MSM occur on the mid to upper banks of the estuary and as such experience somewhat less frequent submersion in seawater (NPWS, 2012b). The proposed SI works will not interact with the flood regime within Baldoyle Bay. Therefore, the natural tidal regime will be maintained.

Vegetation structure: zonation – At Baldoyle Bay SAC, the maintenance of transitions to sand dune habitats and transitional mosaics is a conservation objective (McCorry, 2007). The proposed SI works will not involve any permanent removal of this QI therefore its natural range within the transitional zones within Baldoyle Bay will be maintained. The use of bog mats for access/egress onto the intertidal areas will have no permanent impact to the zonation of habitats within the Bay. Therefore, there will be no impact to the range of coastal habitats including transitional zones.

Vegetation structure: vegetation height – Typical recommendations for vegetation height within salt marshes is a ratio of 70% short plants, 30 % tall plants across the complete marsh area. The proposed SI works will not involve the removal of MSM, however the use of bog mats may cause compaction of vegetation for the duration of the surveys. However, it is expected that once bog mats and machinery are removed the vegetation will return to its natural state and its structural variation will be intact.

Vegetation structure: vegetation cover – The proposed SI works will not involve any removal of vegetation within creek areas, the use of bog mats will reduce vegetation loss that may be caused by machinery or equipment. Therefore, it is expected that more than 90% of the areas outside of the creeks will remain vegetated, in keeping with this conservation objective.

Vegetation composition: typical species & sub-communities – The proposed SI works will not involve any removal of vegetation or species within Baldoyle Bay. Therefore there will be no interaction between the proposed SI works and the typical species listed in the Saltmarsh Monitoring report.

Vegetation structure: negative indicator species *Spartina anglica* – Common cordgrass *(Spartina anglica)* is the only invasive species recorded on the saltmarsh of Baldoyle Bay SAC. Within the Mediterranean salt meadows there is no evidence of cordgrass, and there is no suggestion that cordgrass is currently spreading within Baldoyle Bay SAC (NPWS, 2012b). The proposed SI works will utilise industry standard practices to reduce the spread of invasive species, these include washing machinery before and after arrival to the site in a designated area, desk-based research of invasive species within the area and avoidance where possible. The proposed SI works will follow industry standard practices to reduce the risk of spreading of invasive species to reduce the expansion of common cordgrass.

Therefore, it can be concluded that the favourable conservation condition of mudflats and sandflats, *Salicornia* mud, ASM and MSM will be maintained at Baldoyle Bay SAC, and as such, there will be no adverse effect on site integrity as a result of the SI works.

5.2.3 Rockabill to Dalkey Island SAC

Rockabill to Dalkey Island SAC is located off the coast of Dublin and extends 40 km north to south and is designated for Reef (1170) in addition to harbour porpoise (NPWS, 2014a). The eastern end of MUL Area B overlaps this SAC, including a small section of its reef habitat to the northwest of Irelands Eye. There is a risk that intrusive/extractive survey methodologies (e.g. boreholes, grab sampling) could lead to habitat loss and/or disturbance. The impacts associated with the SI works have been considered below against the detailed conservation objectives and attributes for reef habitat at Rockabill to Dalkey Island SAC.

Table 5.3 Site-specific conservation objectives for relevant qualifying interest habitats

Relevant Qualifying Interests	Site Specific Conservation Objective	Site Specific Attributes Potentially Affected by the Project
Rockabill to Dalkey Island SAC (IE003000) (NPWS, 2013b; Version 1, 07/05/2013)		
Reefs [1170]	To maintain the favourable conservation condition	Habitat area Habitat distribution Community structure

5.2.3.1 Assessment against conservation objectives

Qualifying Interest: Reefs

Habitat Area – The habitat area of reefs within the Rockabill to Dalkey Island SAC is estimated as 182 ha, as mapped within the site-specific conservation objectives (NPWS, 2013b). MUL Area B within the Irish Sea overlaps a small portion of this mapped reef habitat to the northwest of Irelands Eye. While none of the proposed SI locations within the Irish Sea overlap with this area, as these proposed locations may be subject to change, additional measures will be put in place to ensure that intrusive sampling types (i.e. grab sampling and boreholes) do not take place within Annex I reefs. Prior to selection of intrusive SI locations, available bathymetric data will be reviewed alongside the results of previous benthic surveys carried out in support of the GDD Planning Application. Any areas identified as Annex I reef will be avoided with the implementation of a precautionary 100 m exclusion zone. As an additional precautionary measure, prior to deployment of grabs or borehole equipment, on-board sonar and echosounders will be used to provide backscatter data which will allow marine surveyors to identify seabed conditions (i.e. sediment/reef) to ensure suitability for proposed activities. Therefore, the permanent habitat area of reef at Irelands Eye will remain in a stable condition subject to natural processes.

Habitat distribution – As stated above, the proposed SI works will not directly overlap any area designated for reef, as mapped reef habitat will be avoided with the implementation of a precautionary 100 m exclusion zone. Therefore, the proposed SI works will not impact on the distribution of Annex I reefs.

Community structure – In deeper water reefs, communities are dominated by anemone, echinoderm and bryozoan species (NPWS, 2013c). As stated above, the proposed SI works will not directly overlap any area designated for reef, as mapped reef habitat will be avoided with the implementation of a precautionary 100 m exclusion zone. Therefore no permanent disturbances or impacts on the reef community structure will occur.

Therefore, it can be concluded that the favourable conservation condition of reef habitat will be maintained at Rockabill to Dalkey Island SAC, and as such, there will be no adverse effect on site integrity as a result of the SI works.

5.3 Marine Mammals

5.3.1 Overview of impacts to Marine Mammals (underwater noise)

In line with the precautionary principle, marine mammals at the following SACs were screened in for AA, due to the likelihood for significant effects as a result of underwater noise:

- Rockabill to Dalkey Island SAC (harbour porpoise)
- Lambay Island SAC (harbour porpoise, grey and harbour seal)
- Codling Fault Zone SAC (harbour porpoise)
- North Anglesey Marine SAC (harbour porpoise)
- Murlough SAC (UK) (harbour seal)
- North Channel SAC (harbour porpoise)
- Blackwater Bank SAC (harbour porpoise)
- Llyn a'r Sarnau / Lleyn Peninsula and the Sarnau SAC (bottlenose dolphin)
- Hook Head SAC (bottlenose dolphin)

The interaction between the proposed SI works and the above SACs will be investigated in more detail to establish whether there is a credible risk to marine mammals from the proposed SI works. Where no such risk exists, no further assessment will be undertaken. Where there is a risk of impact from the SI works to marine mammals, an assessment against the conservation objectives will be undertaken. Site-specific conservation objectives for relevant marine mammal species at the above SACs are provided in **Table 5-4**.

As is standard practise, the DAHG (2014) “Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters” will be followed during the geophysical, bathymetric and geotechnical surveys. The guidance refers to “ramp-up procedures” or “soft starts”, “*whereby sound energy input to the marine environment is gradually or incrementally increased from levels unlikely to cause significant behavioural impact on marine mammals to the full output necessary for completion of the activity”.* This will ensure that initial noise emissions are at a level below that where permanent injury can occur, allowing time for marine mammals to move outside the area of ensonification before noise levels reach a level where they may cause injury. Full details on the implementation of soft starts, as laid out in DAHG (2014) is provided in Section 6.1.4 in Chapter 6 Schedule of Mitigation Measures.

A subsea noise assessment was undertaken to inform this NIS. To assess the impacts of the geophysical and bathymetric surveys within Baldoyle Bay each scenario assumed that the vessel, SSS, MBES and USBL sources were active, with only the SBP and Ultra-High Resolution Seismic (UHRS) (sparker or boomer) active or not active between the scenarios modelled. To assess the impacts of the bathymetric surveys within the Irish Sea, the scenario assumed that the vessel, SSS, MBES and USBL sources were active with no SBP or UHRS in use, as these survey types are not required in this location. It is anticipated that within Baldoyle Bay, boreholes will be taken from a land-based drilling rig during low tide, however, as a precautionary measure, underwater noise from borehole drilling within the Bay has also been assessed. To assess the impacts of the geotechnical surveys within Baldoyle Bay, the scenario assumed a rotary and/or sonic drilling rig and use of a small vessel up to 25m in length. To assess the

impacts of the geotechnical surveys within the Irish Sea, the scenario assumed a difference in vessel size i.e., small or large vessel (<25 m and < 85 m respectively).

The results have been summarised below to present the 'worst-case scenario' with respect to injury and/or disturbance to each relevant species (harbour seal, grey seal, harbour porpoise and bottlenose dolphin).

Baldoyle Bay (MUL Area A)

Harbour and grey seal

- In the absence of mitigation, parametric SBP and UHRS (sparker or boomer) (geophysical sound sources) have the potential to cause auditory injury to both species of seals (classed as the Phocid carnivores in water (PCW); Southall et al., 2019) within <10 m of the sound source, and temporary threshold shift (TTS) could occur within 400 m.

Harbour porpoise

- In the absence of mitigation, parametric SBP and UHRS (sparker or boomer) (geophysical and bathymetric sound sources) have the potential to cause auditory injury harbour porpoise (classed as very high frequency cetaceans (VHF); Southall et al., 2019) within 270 m of the sound source, and TTS could occur within 1.1 km.

Bottlenose dolphin

- In the absence of mitigation, parametric SBP and UHRS (sparker or boomer) (geophysical and bathymetric sound sources) have the potential to cause auditory injury to bottlenose dolphin (classed as high frequency cetaceans (HF); Southall et al., 2019) within <10 m of the sound source, and temporary threshold shift (TTS) could occur within 190 m.

For all species, the geophysical survey including use of SBP and UHRS (sparker or boomer) represents the 'worst case scenario' with regard to underwater noise within Baldoyle Bay. Auditory injury for seals and bottlenose dolphin will only occur close to the sound sources (<10 m), while injury could occur out to 270 m for harbour porpoise. While modelled risk ranges for TTS extend out to 1.1 km, this is mainly as a result of activities being assumed to continue for 6-24 hours (meaning long duration of sound exposure accumulation, whereas in reality activities will not be undertaken for this long within Baldoyle Bay), and the assumption that the activities from this study are the main contributors to the sound exposure of an animal – at ranges of a few kilometres from the source, any other larger vessel nearer an animal will be the primary contributor to its sound exposure, not these surveys.

Additionally, no marine mammal species have been recorded utilising Baldoyle Bay. Given more suitable habitat and prey opportunities within the Irish Sea, it is unlikely the proposed SI works within Baldoyle Bay would overlap with important habitats or foraging areas for marine mammal species. Therefore, it is considered extremely unlikely that cetacean species would be impacted by the temporary underwater noise within Baldoyle Bay.

Irish Sea

Harbour and grey seal

- In the absence of mitigation, bathymetric surveys have the potential to cause auditory injury to the PCW group within <10 m of the sound source, and TTS could occur within 1.3 km.

- In the absence of mitigation, geotechnical survey (using a small or big vessel (<25 m or <85 m respectively) has the potential to cause auditory injury to the PCW group within <10 m of the sound source for both vessel types, and TTS could occur within 6 and 10 km respectively.

Harbour porpoise

- In the absence of mitigation, bathymetric surveys have the potential to cause auditory injury to the VHF group within 150 m of the sound source, and TTS could occur within 11 km.
- In the absence of mitigation, geotechnical survey (using a small or big vessel (<25 m or <85 m respectively) has the potential to cause auditory injury to the VHF group within <10 m of the sound source for both vessel types, and TTS could occur within 11 and 13 km respectively.

Bottlenose dolphin

- In the absence of mitigation, bathymetric surveys have the potential to cause auditory injury to the HF group within <10m of the sound source, and TTS could occur within 180 m.
- In the absence of mitigation, geotechnical survey (using a small or big vessel (<25 m or <85 m respectively) has the potential to cause auditory injury to the HF group within <10 m of the sound source for both vessel types, and TTS could occur within 120 m and 270 m, respectively.

For seals and bottlenose dolphin, both bathymetric and geotechnical surveys represent minimal risk for auditory injury (auditory injury within <10 m of the sound source), while injury could occur out to 270 m for harbour porpoise during the bathymetric surveys. While modelled risk ranges for TTS extend out to 13 km for the geotechnical survey, this is mainly as a result of activities being assumed to continue for 6-24 hours (meaning long duration of sound exposure accumulation, whereas in reality borehole drilling activities will not be undertaken for this long consecutively), and the assumption is that the activities from this study are the main contributors to the sound exposure of an animal, however, at ranges of a few kilometres from the source, any other larger vessel nearer an animal will be the primary contributor to its sound exposure, not these surveys.

Behavioural Disturbance

For all marine mammals, risk ranges for behavioural disturbance were modelled applying the criterion strictly (unweighted for marine mammal hearing frequency). This means that, while risk ranges appear large in some instances (up to a maximum 20 km for the geotechnical and bathymetric surveys within the Irish Sea, whereas these are reduced within Baldoyle Bay to within in-water line of sight), the main energy will often be outside of the hearing range of the receiving marine mammal. The reason for these behavioural disturbance ranges within the Irish Sea is partly due to the 24-hour potential active survey durations, however this 24-hour window is unlikely and depending on other vessel activity in the area it is expected that marine mammals within the MUL Area will exhibit habituation to vessel presence.

In their guidance document for assessing noise disturbance against the conservation objectives of harbour porpoise SACs, JNCC (2020) advises that fixed distances should be applied to assess behavioural disturbance, based on empirical evidence. For geophysical and bathymetric surveys, the JNCC's 'effective deterrence range' is 5 km. While the JNCC document focuses on harbour porpoise, this is precautionary for all other marine mammal hearing groups, as harbour porpoise is considered to be the most sensitive. Behavioural disturbance includes avoidance and changes in behaviour, and will be temporary and short term in duration, with rapid recovery once the survey vessel has left the area. No adverse effects due to behavioural disturbance are predicted.

Proposed Mitigation

As part of the standard application of DAHG (2014) guidance, a qualified and experienced MMO will be appointed during geophysical, bathymetric and geotechnical surveys within the Irish Sea. The MMO will search for marine mammals within the monitored zone, which is a 500 m radial distance of the sound source intended for use. Sound-producing activity shall not commence until at least 30 minutes have elapsed with no marine mammals detected within the monitored zone (500 m) by the MMO. In commencing sound producing activities using the equipment listed above, a “Ramp Up” (i.e. soft-start) procedure (i.e. 20 or 40 minute soft-start depending on the activity) must be used. Once the Ramp-Up (i.e. soft-start) procedure commences, there is no requirement to halt or discontinue the procedure at night-time, nor if weather or visibility conditions deteriorate nor if marine mammals occur within a 500 m radial distance, of the sound source. If there is a break in sound output for a period greater than 30 minutes (e.g., due to equipment failure, shut-down, survey line or station change) then all Pre-Start Monitoring and a subsequent Ramp-up (i.e. soft-start) Procedure (where appropriate following Pre-Start Monitoring) must be undertaken (DAHG Guidance, 2014). Full details on the implementation of soft starts, as laid out in DAHG (2014) is provided in Chapter 6 Mitigation Measures.

Underwater noise impacts were assessed against the MUL Area B only as no marine mammal species have been recorded utilising Baldoyle Bay for foraging or commuting. Therefore the only potential for underwater noise impacts is within the MUL Area B (Irish Sea) which is assessed against each QI site specific conservation objectives below.

Table 5-4 Site-specific conservation objectives for relevant qualifying interests of SACs

Relevant Qualifying Interests	Site Specific Conservation Objective	Site Specific Attributes Potentially Affected by the Project
Rockabill to Dalkey Island SAC (IE003000) (NPWS, 2013b, Version 1 07/05/2013)		
Harbour porpoise [1351]	To maintain the favourable conservation condition	Access to suitable habitat Disturbance
Lambay Island SAC (IE000204) (NPWS, 2024a, Version 2, 17/12/2024)		
Grey seal [1364]	To maintain the favourable conservation condition	Access to suitable habitat Breeding behaviour Moulting behaviour Resting behaviour Population composition Disturbance
Harbour Seal [1365]	To maintain the favourable conservation condition	Access to suitable habitat Breeding behaviour Moulting behaviour Resting behaviour Disturbance
Harbour porpoise [1351]	To maintain the favourable conservation condition	Access to suitable habitat Disturbance
Codling Fault Zone SAC (IE003015) (NPWS, 2025a, Version 2, 14/01/2025)		
Harbour porpoise [1351]	To maintain the favourable conservation condition	Access to suitable habitat Disturbance
North Anglesey Marine SAC (UK0030398) (NRW, 2019a)		
Harbour porpoise [1351]	To ensure that the integrity of the site is maintained and that it makes the best	Harbour porpoise is a viable component of the site

Relevant Qualifying Interests	Site Specific Conservation Objective	Site Specific Attributes Potentially Affected by the Project
	possible contribution to maintaining Favourable Conservation Status (FCS)	There is no significant disturbance of the species The condition of supporting habitats and processes, and the availability of prey is maintained
Murlough SAC (UK0016612) (DAERA, 2018)		
Harbour seal [1365]	To maintain (or restore where appropriate) to favourable condition	Maintain (and if feasible enhance) population numbers and distribution of Harbour (Common) Seal Maintain and enhance, as appropriate, physical features used by Harbour (Common) Seals within the site
North Channel SAC (UK0030399) (NRW, 2019b)		
Harbour porpoise [1351]	To ensure that the integrity of the site is maintained and that it makes the best possible contribution to maintaining Favourable Conservation Status (FCS)	Harbour porpoise is a viable component of the site There is no significant disturbance of the species The condition of supporting habitats and processes, and the availability of prey is maintained
Blackwater Bank SAC (IE002953) (NPWS, 2024b, Version 3 17/12/2024)		
Harbour porpoise [1351]	To maintain the Favourable conservation condition	Access to suitable habitat Disturbance
Llyn a'r Sarnau / Lleyn Peninsula and the Sarnau SAC (UK0013117) (JNCC, 2015)		
Bottlenose dolphin [1349]	To achieve favourable conservation status all the following, subject to natural processes, need to be fulfilled and maintained in the long-term.	The bottlenose dolphin population that use the SAC is maintained in favourable condition and stable or increasing over the medium and long term. The bottlenose dolphin population that use the SAC continue to have access to, and be able to utilise habitats necessary to maintain the population in favourable condition. The bottlenose dolphin population that use the SAC have high quality habitat and sufficient food supply to support and maintain the population in favourable condition.
Hook Head SAC (IE000764) (NPWS, 2025b, Version 2 17/01/2025)		
Bottlenose dolphin [1349]	To maintain the favourable conservation condition	Access to suitable habitat Disturbance

5.3.2 Rockabill to Dalkey Island SAC

Rockabill to Dalkey Island SAC is designated for harbour porpoise. The SAC extends southwards, in a strip approximately 7 km wide and 40 km in length, from Rockabill, running adjacent to Howth Head, and crosses Dublin Bay to Frazer Bank in south Co. Dublin. The site encompasses Dalkey, Muglins and Rockabill islands (NPWS, 2014a). The MUL Area within the Irish Sea overlaps Rockabill to Dalkey Island SAC. The underwater noise produced from the geophysical, bathymetric and geotechnical SI works have the potential to interact with harbour propose for which the SAC is designated. Therefore, this species will be assessed in more detail against the conservation objectives below.

5.3.2.1 Assessment against conservation objectives

Qualifying Interest: Harbour porpoise

Access to suitable habitat: The proposed SI works will not introduce any artificial barriers within the MUL Area which would restrict harbour porpoises' access to suitable habitat.

Disturbance: The proposed SI works have the potential to introduce underwater noise from the bathymetric and geotechnical surveys within the Irish Sea. There may be some low-level disturbance to harbour porpoise while the surveys within the Irish Sea are ongoing resulting in potential avoidance behaviour. In the absence of mitigation auditory injury is predicted to be limited to within 150 m of the sound source and TTS to within 11 km for harbour porpoise. The risk of auditory injury will be mitigated through the application of MMOs and soft starting equipment, as outlined in DAHG (2014) guidance. The MMO will conduct a pre-activity search for 30 minutes within a 500 m monitored zone, which will ensure that no marine mammals are within the range for auditory injury prior to equipment start-up. Large TTS ranges are partially due to the precautionary modelling of a large geotechnical vessel operating for 24-hours periods, and assumes that no other vessels are present in the area, which is extremely unlikely.

Given the limited scale and duration of the surveys and that the seas off the east coast have a baseline level of activity due to commercial, recreational and fishing vessels, the proposed SI works will not adversely disturb the harbour porpoise community at the site.

Therefore, it can be concluded that the favourable conservation condition of harbour porpoise will be maintained at Rockabill to Dalkey Island SAC, and as such, there will be no adverse effect on site integrity as a result of the SI works.

5.3.3 Lambay Island SAC

Lambay Island SAC is designated for grey seal, harbour seal and harbour porpoise. The SAC is located off the coast of north Dublin and has notable steep cliffs around its coastline. A gently sloping shore on the western side of the island is used by grey seal and harbour seal as haul out sites, along with coves and caves (NPWS, 2024a). While not within the MUL Area, the underwater noise produced from the marine geophysical, bathymetric and geotechnical SI works have the potential to interact with harbour porpoise, grey seal and harbour seal for which the SAC is designated. Therefore, these species will be assessed in more detail against the conservation objectives below.

5.3.3.1 Assessment against conservation objectives

Qualifying Interest: Grey seal

Access to suitable habitat: The proposed SI works will not introduce any artificial barriers within the MUL Area B which would restrict grey seals' access to suitable habitat.

Breeding behaviour: The proposed SI works will not alter breeding sites of grey seal at Lambay Island SAC. As stated above, the islands themselves are over 7 km from the MUL Area B, without any mitigation applied auditory injury for grey seal is <10 m of the sound source and TTS could occur out to 10 km. However this large TTS range is due to the presumption that the large geotechnical vessel (< 85 m) will be operating for 24-hour periods, which is unlikely. Therefore, breeding behaviour and breeding sites will be maintained in a natural condition.

Moulting behaviour: The proposed SI works do not overlap the Lambay Island SAC or associated moulting haul-out sites for grey seal therefore no interaction will occur, and haul-out sites will be maintained in a natural condition.

Resting behaviour: As stated above, the MUL Area does not spatially overlap the Lambay Island SAC and is 7 km from the MUL Area B boundary. Therefore, the proposed SI works will not interact with the resting haul-out sites, and these will be maintained in a natural condition.

Population composition: The proposed SI works will not affect the population composition of the Lambay Island SAC. While the proposed SI works have the potential to cause low levels of disturbance to grey seal resulting in potential avoidance behaviour, the proposed SI works will be temporary and given that there is no direct overlap with the SAC there will be no implications for the populations of grey seals. The surveys will not result in the permanent exclusion of individuals from part of their range within the SAC nor will they permanently prevent access for the species to suitable habitat therein.

Disturbance: The proposed SI works have the potential to introduce underwater noise from the bathymetric and geotechnical surveys within the Irish Sea. There may be some low-level disturbance to grey seal while the surveys are ongoing resulting in potential avoidance behaviour. However, the surveys will be of limited scale and duration and the seas off the east coast have an existing baseline level of activity due to commercial, recreational and fishing vessels, therefore the proposed SI works will not adversely affect the grey seal community at the site.

Qualifying Interest: Harbour seal

Access to suitable habitat: The proposed SI works will not introduce any artificial barriers within the MUL Area B which would restrict harbour seal access to suitable habitat.

Breeding behaviour: The proposed SI works will not alter breeding sites of harbour seal at Lambay Island SAC. As stated above, the MUL Area B does not overlap spatially with the SAC which is located 7 km away. Therefore, breeding behaviour and breeding sites will be maintained in a natural condition.

Moulting behaviour: The proposed SI works do not overlap the Lambay Island SAC or associated moulting haul-out sites for harbour seal therefore no interaction will occur, and haul-out sites will be maintained in a natural condition.

Resting behaviour: As stated above, the MUL Area B does not spatially overlap Lambay Island SAC. Therefore, the proposed SI works will not interact with the resting haul-out sites, and these will be maintained in a natural condition.

Disturbance: The proposed SI works have the potential to introduce underwater noise due to the marine bathymetric and geotechnical surveys. There may be some low-level disturbance to harbour seals while the surveys are ongoing resulting in potential avoidance behaviour. However, the surveys will be of limited scale and duration and the seas off the east coast have an existing baseline level of activity due to

commercial, recreational and fishing vessels, therefore the proposed SI works will not adversely affect the harbour seal community at the site.

Qualifying Interest: Harbour porpoise

Access to suitable habitat: The proposed SI works will not introduce any artificial barriers within the MUL Area B which would restrict harbour porpoise access to suitable habitat.

Disturbance: The proposed SI works have the potential to introduce underwater noise from the bathymetric and geotechnical surveys within the Irish Sea. There may be some low-level disturbance to harbour porpoise while the surveys within the Irish Sea are ongoing resulting in potential avoidance behaviour. In the absence of mitigation auditory injury is predicted to be limited to within 150 m of the sound source and TTS to within 11 km for harbour porpoise, The risk of auditory injury will be mitigated through the application of MMOs and soft starting equipment, as outlined in DAHG (2014) guidance. The MMO will conduct a pre-activity search for 30 minutes within a 500 m monitored zone, which will ensure that no marine mammals are within the range for auditory injury prior to equipment start-up. Large TTS ranges are partially due to the precautionary modelling of a large geotechnical vessel operating for 24-hours periods, and assumes that no other vessels are present in the area, which is extremely unlikely.

Given the limited scale and duration of the surveys and that the seas off the east coast have a baseline level of activity due to commercial, recreational and fishing vessels, the proposed SI works will not adversely disturb the harbour porpoise community at the site.

Therefore, it can be concluded that the favourable conservation condition of grey, harbour seal and arbour porpoise will be maintained at Lambay Islands SAC, and as such, there will be no adverse effect on site integrity as a result of the SI works.

5.3.4 Codling Fault Zone SAC

Codling Fault Zone SAC is designated for harbour porpoise, located 25 km from the MUL Area B within the Irish Sea. The length of the site is approximately 7 km and 5 km wide at its greatest extent. The water depth at the site ranges from approximately 80 to 100 m (NPWS, 2024b). The underwater noise produced from the bathymetric and geotechnical SI works have the potential to interact with harbour porpoise for which the SAC is designated. Therefore, this species will be assessed in more detail against the conservation objectives below.

5.3.4.1 Assessment against conservation objectives

Qualifying Interest: Harbour porpoise

Access to suitable habitat: The proposed SI works will not introduce any artificial barriers within the MUL Area B which would restrict harbour porpoises' access to suitable habitat.

Disturbance: The proposed SI works have the potential to introduce underwater noise from the bathymetric and geotechnical surveys within the Irish Sea. There may be some low-level disturbance to harbour porpoise while the surveys within the Irish Sea are ongoing resulting in potential avoidance behaviour. In the absence of mitigation auditory injury is predicted to be limited to within 150 m of the sound source and TTS to within 11 km for harbour porpoise, The risk of auditory injury will be mitigated through the application of MMOs and soft starting equipment, as outlined in DAHG (2014) guidance. The MMO will conduct a pre-activity search for 30 minutes within a 500 m monitored zone, which will ensure that no marine mammals are within the range for auditory injury prior to equipment start-up. Large TTS

ranges are partially due to the precautionary modelling of a large geotechnical vessel operating for 24-hours periods, and assumes that no other vessels are present in the area, which is extremely unlikely.

Given the limited scale and duration of the surveys and that the seas off the east coast have a baseline level of activity due to commercial, recreational and fishing vessels, the proposed SI works will not adversely disturb the harbour porpoise community at the site.

Therefore, it can be concluded that the favourable conservation condition of harbour porpoise will be maintained at Codling Fault Zone SAC, and as such, there will be no adverse effect on site integrity as a result of the SI works.

5.3.5 North Anglesey Marine SAC

North Anglesey Marine SAC is located off the northwest coast of Wales, 47 km from the MUL Area B boundary, and is designated for harbour porpoise (NRW, 2019a). The underwater noise produced from the bathymetric and geotechnical SI works within the Irish Sea have the potential to interact with harbour porpoise for which the SAC is designated. Therefore, this species will be assessed in more detail against the conservation objectives below.

5.3.5.1 Assessment against conservation objectives

Qualifying Interest: Harbour porpoise

Harbour porpoise is a viable component of the site: MUL Area B does not spatially overlap the North Anglesey Marine SAC. The proposed SI works will not interact with the harbour porpoise directly at the site or cause injury, killing or other factors that would restrict the survivability and reproductive potential of harbour porpoise using the SAC. No unacceptable levels of impacts on harbour porpoise within their natural range will occur. As stated above, the maximum range for auditory injury within the Irish Sea (in the absence of mitigation) is 150 m from the sound source and 1.1 km for TTS. The risk of auditory injury will be mitigated through the application of MMOs and soft starting equipment, as outlined in DAHG (2014) guidance. The MMO will conduct a pre-activity search for 30 minutes within a 500 m monitored zone, which will ensure that no marine mammals are within the range for auditory injury prior to equipment start-up. Large TTS ranges are partially due to the precautionary modelling of a large geotechnical vessel operating for 24-hours periods, and assumes that no other vessels are present in the area, which is extremely unlikely. As the proposed SI works are 47 km east of the SAC, there is no likelihood of the proposed SI works contributing to unacceptable levels of impacts to harbour porpoise which use the SAC.

There is no significant disturbance of the species: The proposed SI works have the potential to introduce underwater noise from the bathymetric and geotechnical surveys within the Irish Sea. There may be some low-level disturbance to harbour porpoise while the surveys are ongoing, resulting in potential avoidance behaviour. However, as stated above, in the absence of mitigation, auditory injury is within 150 m of the sound source and TTS within 11 km for harbour porpoise. As harbour porpoise are transient there is a possibility that they could be utilising the MUL Area B. The risk of auditory injury will be mitigated through the application of MMOs and soft starting equipment, as outlined in DAHG (2014) guidance. The MMO will conduct a pre-activity search for 30 minutes within a 500 m monitored zone, which will ensure that no marine mammals are within the range for auditory injury prior to equipment start-up. Large TTS ranges are partially due to the precautionary modelling of a large geotechnical vessel operating for 24-hours periods, and assumes that no other vessels are present in the area, which is extremely unlikely. Given the nature of the surveys and limited scale and duration, and that the seas off

the east coast have a baseline level of activity due to commercial, recreational and fishing vessels, the proposed SI works will not adversely disturb the harbour porpoise community at the site.

The condition of supporting habitats and processes, and the availability of prey is maintained: As stated above the MUL Area does not spatially overlap with the North Anglesey Marine SAC. The underwater noise produced by the proposed SI works will not affect the characteristics of the seabed or water column of the SAC. The availability of prey species will be maintained.

Therefore, it can be concluded that the favourable conservation condition of harbour porpoise will be maintained at North Anglesey Marine SAC, and as such, there will be no adverse effect on site integrity as a result of the SI works.

5.3.6 Murlough SAC

Murlough SAC is located off the southeast coast of Northern Ireland, 79 km north of the MUL Area, designated for harbour seal. The site is a known haul out site for harbour seal. The site includes the shallow bay as well as offshore shallow sub littoral sandbanks (DAERA, 2018). The underwater noise produced from the bathymetric and geotechnical SI works have the potential to interact with harbour seal for which the SAC is designated. Therefore, this species will be assessed in more detail against the conservation objectives below.

5.3.6.1 Assessment against conservation objectives

Qualifying Interest: Harbour seal

Maintain (and if feasible enhance) population numbers and distribution of harbour seal (maintain a population of at least 106 harbour seals): The proposed SI works will not affect the population numbers of Murlough SAC. As stated above, MUL Area B does not spatially overlap with the Murlough SAC, which is located 79 km to the north. There is a potential for limited and temporary disturbance of harbour seals foraging within the MUL Area, as the SI works will introduce underwater noise from the bathymetric and geotechnical surveys. In the absence of mitigation, auditory injury to seals for all survey scenarios is limited to within <10 m of the noise sources. While TTS is modelled out to 10 km, large TTS ranges are partially due to the precautionary modelling of a large geotechnical vessel operating for 24-hours periods, and assumes that no other vessels are present in the area, which is extremely unlikely. While the surveys are ongoing, harbour seals in the area may engage in temporary avoidance behaviour, however, there will be no deterioration of the Murlough SAC population of harbour seals.

Maintain and enhance, as appropriate, physical features used by harbour seals within the site: As stated above, MUL Area B does not spatially overlap with the Murlough SAC which is located 79 km to the north. There will be no overlap with haul-out sites of this SAC, therefore, the integrity of traditional haul-out sites is maintained at the SAC.

Therefore, it can be concluded that the favourable conservation condition of harbour seal will be maintained at Murlough SAC, and as such, there will be no adverse effect on site integrity as a result of the SI works.

5.3.7 North Channel SAC

The North Channel SAC is located 93 km from the MUL Area B boundary off the eastern coast of Northern Ireland. It is designated as a SAC for harbour porpoise (NRW, 2019b). The underwater noise produced from the bathymetric and geotechnical SI works have the potential to interact with harbour

propose for which the SAC is designated. Therefore, this species will be assessed in more detail against the conservation objectives below.

5.3.7.1 Assessment against conservation objectives

Qualifying Interest: Harbour porpoise

Harbour porpoise is a viable component of the site: MUL Area B does not spatially overlap the North Channel SAC. The proposed SI works will not interact with the harbour porpoise directly at the site or cause injury, killing or other factors that would restrict the survivability and reproductive potential of harbour porpoise using the SAC. No unacceptable levels of impacts on harbour porpoise within their natural range will occur as stated above the maximum range for auditory injury in the absence of mitigation is 150 m from the sound source and within 1.1 km for TTS. As the proposed SI works are 93 km from the SAC, there is no likelihood of the proposed SI works contributing to unacceptable levels of impacts to harbour porpoise which use the SAC.

There is no significant disturbance of the species: The proposed SI works have the potential to introduce underwater noise from the bathymetric and geotechnical surveys within the Irish Sea. There may be some low-level disturbance to harbour porpoise while the surveys are ongoing resulting in potential avoidance behaviour. However, as stated above, in the absence of project specific mitigation auditory injury is within 150 m of the sound source and TTS is within 11 km for harbour porpoise. As harbour porpoise are transient there is a possibility that they could be utilising the MUL Area B. The risk of auditory injury will be mitigated through the application of MMOs and soft starting equipment, as outlined in DAHG (2014) guidance. The MMO will conduct a pre-activity search for 30 minutes within a 500 m monitored zone, which will ensure that no marine mammals are within the range for auditory injury prior to equipment start-up. Large TTS ranges are partially due to the precautionary modelling of a large geotechnical vessel operating for 24-hours periods, and assumes that no other vessels are present in the area, which is extremely unlikely. Given the nature of the surveys and limited scale and duration, and that the seas off the east coast have a baseline level of activity due to commercial, recreational and fishing vessels, the proposed SI works will not adversely disturb the harbour porpoise community at the site.

The condition of supporting habitats and processes, and the availability of prey is maintained: As stated above the MUL Area B does not spatially overlap with the North Channel SAC. The underwater noise produced by the proposed SI works will not affect the characteristics of the seabed or water column of the SAC. The availability of prey species will be maintained.

Therefore, it can be concluded that the favourable conservation condition of harbour porpoise will be maintained at North Channel SAC, and as such, there will be no adverse effect on site integrity as a result of the SI works.

5.3.8 Blackwater Bank SAC

Blackwater Banks SAC is located 98 km south of the MUL Area B boundary, off the coast of Co. Wexford. It is designated for its' Annex I QI harbour porpoise (NPWS, 2024c). The underwater noise produced from the bathymetric and geotechnical SI works have the potential to interact with harbour porpoise for which the SAC is designated. Therefore, this species will be assessed in more detail against the conservation objectives below.

5.3.8.1 Assessment against conservation objectives

Qualifying Interest: Harbour porpoise

Access to suitable habitat: The proposed SI works will not introduce any artificial barriers within the MUL Area B which would restrict harbour porpoise access to suitable habitat.

Disturbance: The proposed SI works have the potential to introduce underwater noise from the bathymetric and geotechnical surveys within the Irish Sea. There may be some low-level disturbance to harbour porpoise while the surveys within the Irish Sea are ongoing resulting in potential avoidance behaviour. In the absence of mitigation auditory injury is predicted to be limited to within 150 m of the sound source and TTS to within 11 km for harbour porpoise, The risk of auditory injury will be mitigated through the application of MMOs and soft starting equipment, as outlined in DAHG (2014) guidance. The MMO will conduct a pre-activity search for 30 minutes within a 500 m monitored zone, which will ensure that no marine mammals are within the range for auditory injury prior to equipment start-up. Large TTS ranges are partially due to the precautionary modelling of a large geotechnical vessel operating for 24-hours periods, and assumes that no other vessels are present in the area, which is extremely unlikely.

Given the limited scale and duration of the surveys and that the seas off the east coast have a baseline level of activity due to commercial, recreational and fishing vessels, the proposed SI works will not adversely disturb the harbour porpoise community at the site.

Therefore, it can be concluded that the favourable conservation condition of harbour porpoise will be maintained at Blackwater Bank SAC, and as such, there will be no adverse effect on site integrity as a result of the SI works.

5.3.9 Llyn a'r Sarnau / Lleyn Peninsula and the Sarnau SAC

The Llyn a'r Sarnau / Lleyn Peninsula and the Sarnau SAC is located 102 km from the MUL Area B boundary off the northwestern coast of Wales. It is designated as a SAC for bottlenose dolphin (JNCC, 2015). The underwater noise produced from the bathymetric and geotechnical SI works have the potential to interact with bottlenose dolphin for which the SAC is designated. Therefore, this species will be assessed in more detail against the conservation objectives below.

5.3.9.1 Assessment against conservation objectives

Qualifying Interest: Bottlenose dolphin

The bottlenose dolphin population that uses the SAC is maintained in favourable condition and stable or increasing over the medium and long term: The MUL Area B does not overlap with the site and proposed SI works will not interact with bottlenose populations within the SAC. However, this population are semi-resident and known to travel widely within the Irish Sea, likely following temporal and spatial variations in prey abundance. Given the low reproduction rate and long rearing time in the species, maintaining reproductive success and survival rates is a requirement in sustaining the favourable condition of the population within Lleyn Peninsula and the Sarnau SAC (NRW, 2025). In the absence of mitigation, within the Irish Sea auditory injury to <10 m of the source and TTS within 270 m of the sound source for bottlenose dolphin. As the species is transient there is a possibility that they could be utilising the MUL Area B. The risk of auditory injury will be mitigated through the application of MMOs and soft starting equipment, as outlined in DAHG (2014) guidance. The MMO will conduct a pre-activity search for 30 minutes within a 500 m monitored zone, which will ensure that no marine mammals are within the range for auditory injury prior to equipment start-up. Large TTS ranges are partially due to the precautionary

modelling of a large geotechnical vessel operating for 24-hours periods, and assumes that no other vessels are present in the area, which is extremely unlikely. Given the nature of the surveys and limited scale and duration, and that the seas off the east coast have a baseline level of activity due to commercial, recreational and fishing vessels, the proposed SI works will not adversely disturb bottle nose dolphin.

The bottlenose dolphin population that use the SAC continue to have access to and be able to utilise habitats necessary to maintain the population in favourable condition: In order to maintain a stable population, bottlenose dolphin must have access to resource areas both within and outside the borders of the SAC. This can be sustained through removal of constraints to movement and managing of anthropogenic disturbance within or outside of the site (NRW, 2025). In the absence of mitigation, the risk of auditory injury to bottlenose dolphin is limited to within <10 m of the source and TTS within 270 m for bottlenose dolphin. As outlined above, this risk is minimal given the wider area available to foraging bottlenose dolphins within the Irish Sea, and risks will be mitigated through the application of standard soft-starts and MMO application. Given the nature of the surveys and limited scale and duration, and that the seas off the east coast have a baseline level of activity due to commercial, recreational and fishing vessels, the proposed SI works will not adversely disturb bottlenose dolphin utilising habitats nearby.

The bottlenose dolphin population that uses the SAC have high quality habitat and sufficient food supply to support and maintain the population in favourable condition: The quality and function of the habitat used by bottlenose dolphins must be maintained through monitoring of prey species abundance and water contamination levels. Bottlenose dolphins rely on a number of prey species, so a reduction in one species will not alter the function of habitat and food supply for bottlenose dolphins that are QIs of Llyn a'r Sarnau / Lleyn Peninsula and the Sarnau SAC (NRW, 2025). The underwater noise produced by the proposed SI works will not affect the characteristics of the seabed or water column of the SAC. The underwater noise produced by the proposed SI works have the potential to disturb fish species, however this disturbance is less than 10 m of the sound source bathymetric and geotechnical survey scenarios excluding mitigation measures. Therefore, there will be no impact to prey species for bottlenose dolphin at the SAC.

Therefore, it can be concluded that the favourable conservation condition of bottlenose dolphin will be maintained at Llyn a'r Sarnau / Lleyn Peninsula and the Sarnau SAC, and as such, there will be no adverse effect on site integrity as a result of the SI works.

5.3.10 Hook Head SAC

Hook Head SAC is located 141 km from the MUL Area B boundary, off the southern coast of Waterford. The underwater noise produced from the bathymetric and geotechnical SI works have the potential to interact with bottlenose dolphin for which the SAC is designated. Therefore, this species will be assessed in more detail against the conservation objectives below.

5.3.10.1 Assessment against conservation objectives

Qualifying Interest: Bottlenose dolphin

Access to suitable habitat: The proposed SI works will not introduce any artificial barriers within the MUL Area B which would restrict bottlenose dolphin access to suitable habitat.

Disturbance: The proposed SI works have the potential to introduce underwater noise due to the bathymetric and geotechnical surveys. There may be some low-level disturbance to bottlenose dolphin

while the surveys are ongoing resulting in potential avoidance behaviour. In the absence of mitigation, within the Irish Sea auditory injury to <10 m of the source and TTS within 270 m of the sound source for bottlenose dolphin. As the species is transient there is a possibility that they could be utilising the MUL Area B. The risk of auditory injury will be mitigated through the application of MMOs and soft starting equipment, as outlined in DAHG (2014) guidance. The MMO will conduct a pre-activity search for 30 minutes within a 500 m monitored zone, which will ensure that no marine mammals are within the range for auditory injury prior to equipment start-up. Large TTS ranges are partially due to the precautionary modelling of a large geotechnical vessel operating for 24-hours periods, and assumes that no other vessels are present in the area, which is extremely unlikely. Given the nature of the surveys and limited scale and duration, and that the seas off the east coast have a baseline level of activity due to commercial, recreational and fishing vessels, the proposed SI works will not adversely disturb bottle nose dolphin.

Therefore, it can be concluded that the favourable conservation condition of bottlenose dolphin will be maintained at Hook Head SAC, and as such, there will be no adverse effect on site integrity as a result of the SI works.

5.4 Birds

5.4.1 Overview of Impacts to Birds

In line with the precautionary principle, the following SPAs were screened in for AA, as likely significant effects due to disturbance could not be excluded at screening stage:

- Baldoyle Bay SPA (wintering waterbirds and geese)
- North-West Irish Sea SPA (seabirds foraging within MUL Area)
- Ireland's Eye SPA (breeding birds at the nest)
- North Bull Island SPA (wintering geese)
- Malahide Estuary SPA (wintering geese)
- South Dublin Bay and River Tolka Estuary SPA (wintering waterbirds, geese and gull)
- Lambay Island SPA (wintering geese and seabirds foraging within MUL Area)
- Rogerstown Estuary SPA (wintering swan/geese)
- Dalkey Islands SPA (seabirds foraging within MUL Area)
- Skerries Islands SPA (wintering geese and gull)

Likely significant effects at Baldoyle Bay SPA could not be ruled out at the screening stage, due to the potential for habitat loss, alteration or fragmentation. Likely significant effects due to habitat loss, alteration or fragmentation was ruled out for all other SPAs.

The interaction between the proposed SI works and the above SPAs will be investigated in more detail to establish whether there is a credible risk from the proposed SI works. Where no such risk to a European site exists, no further assessment will be undertaken. Where there is a risk of impact from the SI works to QI birds, an assessment against the conservation objectives will be undertaken.

5.4.2 Baldoyle Bay SPA

Baldoyle Bay SPA is a small tidal estuarine system protected from the Irish Sea by a large dune system, with large mud flats exposed at low tides. It supports internationally important populations of light-bellied Brent goose (*Branta bernicla*) as well as nationally important populations of a further five species (NPWS, 2014b). The site is of special conservation interest for the following wintering SCIs (Special Conservation Interests): light-bellied Brent goose, shelduck (*Tadorna tadorna)*, ringed plover (*Charadrius hiaticula)*, golden plover *(Pluvialis apricaria*), grey plover *(Pluvialis squatarola)*, bar-tailed godwit (*Limosa lapponica)* and Wetland and Waterbirds (NPWS, 2013d). The vegetated sandflats and mudflats provide quality feeding grounds, and the site supports large populations of wintering waterfowl roosts (NPWS, 2014b). The screened in conservation objectives for Baldoyle Bay SPA are provided in **Table 5-5**.

Impacts associated with the proposed SI works at Baldoyle Bay SPA include:

- Above-water disturbance; and
- Habitat loss, alteration and/or fragmentation of wetland habitat including water deterioration impacts.

Table 5-5 Site-specific conservation objectives for Baldoyle Bay SPA

Relevant Qualifying Interests	Site Specific Conservation Objective	Site Specific Attributes Potentially Affected by the Project
Baldoyle Bay SPA (IE004033) (NPWS, 2013d; Version 1, 27/02/2013)		
Branta bernicla hrota (light-bellied Brent goose) [A046] *Tadorna tadorna* (shelduck) [A048] *Charadrius hiaticula* (ringed plover) [A137] *Pluvialis apricaria* (golden plover) [A140] *Pluvialis squatarola* (grey plover) [A141] *Limosa lapponica* (bar-tailed godwit) [A157]	To maintain the favourable conservation condition	Population trend Distribution
Wetland and Waterbirds [A999]	To maintain the favourable conservation condition	Wetland habitat area

Above-water disturbance

The MUL Area boundary overlaps the Baldoyle Bay SPA therefore there is potential for above-water noise disturbance due to the proposed SI works.

NPWS (2012c) provides an assessment of the ecological characteristics, requirements and specialities of the SCI species. Light-bellied Brent goose, ringed plover, grey plover and shelduck display high site fidelity on non-breeding grounds, while bar-tailed godwit and golden plover exhibit moderate site fidelity. Those species with high site fidelity are generally considered to be more reliant on the habitats of the SPA and less likely to utilise alternative habitats. The principal supporting habitat within Baldoyle Bay SPA for all species is intertidal mud and sand flats. Therefore, as the proposed SI works will be located within this habitat type in Baldoyle Bay, there is potential for above-water noise disturbance to wintering bird species which may utilise Baldoyle Bay SPA in the absence of mitigation.

Existing activities causing disturbance in and around Baldoyle Bay SPA have been identified as walking (including with/without dogs), horse riding, and hand-gathering of molluscs (NPWS, 2012c). SI works within Baldoyle Bay SPA include land and boat based geophysical and bathymetric surveys and

geotechnical surveys to be undertaken in MUL Area A. The SI activities that will be conducted within the Irish Sea in MUL Area B, including borehole drilling and grab samples, will be located in the subtidal zone and therefore there will be no interaction with wading waterbirds.

The conservation objectives seek to maintain the favourable conservation status of the waterbird SCIs listed for Baldoyle Bay SPA, by ensuring that the long-term population trend is stable or increasing, and that there should be no significant decrease in the range, timing or intensity of use of areas by the waterbird species.

Disturbance due to above water noise and vibration has the potential to displace waterbird species from feeding, roosting and other maintenance behaviours within the habitats of the SPA. While any disturbance will be temporary in nature due to the short duration of the proposed works, and relatively limited in scale compared with the overall area available in the SPA, it is acknowledged that disturbance may lead to displacement of wintering waterbirds, which reduce a birds energy intake along with an increase in energy expenditure as a result of flying to an alternative foraging area. When disturbance effects reduce species fitness (reduced survival or reproductive success) consequences at population level may result (NPWS, 2012c).

Therefore, out of an abundance of caution, the following mitigation will be applied:

- SI works will not be carried out within Baldoyle Bay SPA (MUL Area A) during the overwintering period (October to March, inclusive) in order to avoid disturbance to wintering waterbirds.

Therefore, the favourable conservation condition of the population and distribution of SCI species at Baldoyle Bay SPA will be maintained.

Habitat loss, alteration and/or fragmentation of wetland habitat including water deterioration impacts

The land-based geophysical surveys within Baldoyle Bay SPA will involve a small team of surveyors walking along the estuarine/intertidal zone using non-intrusive hand-held equipment or minimally intrusive equipment such as seismic refraction, GPR and Electrical Resistivity Tomography (ERT) equipment. The boat-based geophysical and bathymetric surveys will involve a small nearshore vessel within the Bay utilising non-intrusive techniques. These survey techniques will not remove wetland habitat. Geotechnical boreholes are intrusive and have the potential to remove and/or disturb wetland habitat (including roosting and/or foraging habitats) within Baldoyle Bay. 4no. boreholes will be drilled within the MUL Area in Baldoyle Bay To access the borehole locations, and land-based geophysical surveys, bog mats will be utilised in areas of soft ground to provide stability and safe access for personnel, machinery and equipment. The use of bog mats will also minimise habitat alteration and/or fragmentation of wetland habitats.

However, the intrusive and extractive geotechnical surveys within Baldoyle Bay have the potential to directly remove, alter or fragment the wetland habitats of Baldoyle Bay SPA. The sensitivity of a habitat will depend on the likelihood of damage (or tolerance/ resistance) and the rate of recovery (or resilience) once the pressure has abated (Tyler-Walters et al., 2023). In general, sedimentary habitats are considered to be less sensitive to damage from sampling than more complex, hard substrate habitats like reefs, as they have higher resistance and resilience to pressures such as removal and damage. The wetland habitat within Baldoyle Bay equates to 263 Ha (NPWS, 2012c), while the area to be removed/disturbed (boreholes and bog mats) within MUL Area A is 0.38 ha (3800m^2; see **Table 5-1**) which represents just 0.14% of the wetland habitat within Baldoyle Bay. Therefore, given that the intrusive/ extractive sampling associated with the SI works will be limited in scale, and consists of very

small, discrete sampling areas within a much wider estuarine environment, it is considered that there will be minimal impact to the wetland habitat of Baldoyle Bay SPA due to the intrusive SI works. Given that Baldoyle Bay is a dynamic estuarine system exposed to both riverine and tidal influxes, it is expected that wetland habitats will return to baseline conditions over a number of tidal cycles. Additionally, with the implementation of the following seasonal mitigation, these limited effects to the wetland habitats will not occur during the crucial wintering period:

- SI works will not be carried out within Baldoyle Bay SPA (MUL Area A) during the overwintering period (October to March, inclusive) in order to avoid disturbance to wintering waterbirds.

In summary, the impact to wetland habitat of Baldoyle Bay SPA will be negligible as less than 0.14% of the available wetland habitat will be removed and/or disturbed, and SI works will not take place during the overwintering period. **Therefore, favourable conservation condition will be maintained and there will be no adverse effect on the integrity of Baldoyle Bay SPA.**

5.4.3 Ex-situ Effects – Wintering Waterbirds

In terms of sites designated for wintering birds, the SI works will overlap only with Baldoyle Bay SPA, as described above. There will be no spatial overlap with any other SPAs designated for waterbirds, the closest of which are Malahide Estuary SPA and North Bull Island SPA, both 2 km away across a heavily populated urban environment. There is, however, potential for wintering birds from nearby SPAs to utilise Baldoyle Bay SPA. Although some waterbird species will be faithful to specific habitats within their wintering SPAs, many will at times also use habitats situated within the immediate hinterland of the site or in areas ecologically connected to the SPA (NPWS, 2014d). There is therefore a potential pathway for ex-situ effects as several bird species may at times use habitats outside of but ecologically connected to the SPA. Significant habitat change or increased levels of disturbance within these areas could result in the displacement of one or more of the listed waterbird species and/or a reduction on their numbers (NPWS, 2014d). In particular, wintering swan and goose species can have foraging ranges of up to 20 km from their night roosts (SNH, 2016). Therefore, the following SPAs designated for swan and goose species (namely light bellied Brent goose) and within 20 km were screened in for ex situ effects:

- North Bull Island SPA
- Malahide Estuary SPA
- South Dublin Bay and River Tolka Estuary SPA
- Lambay Island SPA
- Rogerstown Estuary SPA
- Skerries Islands SPA

As described in Section 5.4.2 above, the implementation of the following seasonal mitigation will avoid adverse effects to wintering waterbirds, including ex situ effects to foraging species from nearby SPAs within 20 km:

- SI works will not be carried out within Baldoyle Bay SPA (MUL Area A) during the overwintering period (October to March, inclusive) in order to avoid disturbance to wintering waterbirds.

Therefore, the favourable conservation condition of the populations and distributions of SCI waterbird species at North Bull Island SPA, Malahide Estuary SPA, South Dublin Bay and River Tolka Estuary SPA, Rogerstown Estuary SPA and Skerries Islands SPA will be maintained.

Please note that South Dublin Bay and River Tolka Estuary SPA, Lambay Island SPA and Skerries Islands SPA are also designated for the presence of seabird species and effects to the relevant seabird SCIs of these sites will be assessed in the proceeding section.

5.4.4 Seabirds

5.4.4.1 Overview of seabird SPAs

As outlined in the SISAA, the North-West Irish Sea SPA provides additional supporting habitats for foraging and maintenance behaviours for those seabirds that breed at colonies on the north-west Irish Sea's islands and coastal headlands (NPWS, 2023a). The North-West Irish Sea provides foraging at sea habitat for breeding seabirds from Lambay Island SPA, Skerries Islands SPA, Ireland's Eye SPA, Howth Head SPA, Rockabill Island SPA, Boyne Estuary SPA and South Dublin Bay and River Tolka Estuary SPA (NPWS, 2023a). With the exception of Ireland's Eye, the above-listed SPAs that support nesting sites for breeding birds are at least 7 km from the boundary of the MUL Area, therefore significant above-water disturbance to birds at their nesting sites at these SPAs was excluded at the screening stage. As there is potential for these species to forage within MUL Area B, the North-West Irish Sea SPA has been brought forward to NIS for the assessment of above-water disturbance effects to the following seabird species: red-throated diver (*Gavia stellata),* great Northern diver (*Gavia immer*), fulmar (*Fulmaris glacialis*), Manx shearwater (*Puffinus puffinus),* cormorant*,* shag, common scooter (*Melanitta nigra*), black-headed gull, common gull (*Larus canus*), lesser black-backed gull (*Larus fuscus*), herring gull, kittiwake *(Rissa tridactyla),* roseate tern, common tern, arctic tern, little tern (*Sterna albifrons*), guillemot (*Uria aalge*), razorbill (*Alca torda*), puffin (*Fratercula arctica*), and little gull *(Hydrocoloeus minutus)* (NPWS, 2023b). This covers foraging seabird species from the above-listed SPA colonies, and therefore, it would be duplication to consider each individual seabird colony SPA.

As the boundary of Ireland's Eye SPA overlaps with MUL Area B, this SPA will also be assessed for disturbance effects at the nest. Dalkey Islands SPA is designated for the protection of Roseate tern, common tern and Arctic tern and is located 14 km south of MUL Area B. The North-West Irish Sea SPA site synopsis (NPWS, 2023a) does not include this SPA in the list of ecologically connected SPAs, however, as these tern species have maximum foraging ranges of 23.9 km, 30 km and 46 km (Woodward et al., 2019), respectively, as a precautionary measure it considered likely that individuals could forage within the MUL Area.

5.4.4.2 North-West Irish Sea SPA

MUL Area B overlaps with the North-West Irish Sea SPA, which has been designated to provide supporting habitat for foraging and maintenance behaviours for seabirds breeding at colonies in the north-west Irish Sea (NPWS, 2023a). This SPA spans from intertidal coastal zones out to the offshore Irish Sea and is ecologically connected to multiple other SPAs in the area. The shallow intertidal habitats provide shelter and food for overwintering birds while the pelagic zone offers resources to seabirds both in and out of seasonal breeding periods. The special conservation interests (SCI) of the site along with their conservation objectives for North-West Irish Sea SPA are provided in **Table 5-6**.

Table 5-6 Site-specific conservation objectives for North-west Irish Sea SPA

Relevant Qualifying Interests	Site Specific Conservation Objective	Site Specific Attributes Potentially Affected by the Project
North-West Irish Sea SPA (IE004236) (NPWS, 2023b; Version 1, 19/09/2023)		
Gavia stellata (red-throated diver) [A001] *Gavia immer* (great Northern diver) [A003]	To maintain the favourable conservation condition	Non-breeding population size Spatial distribution

Relevant Qualifying Interests	Site Specific Conservation Objective	Site Specific Attributes Potentially Affected by the Project
Melanitta nigra (common scooter) [A065] *Chroicocephalus ridibundus* (black-headed gull) [A179] *Larus canus* (common gull) [A182] *Larus marinus* (great black-backed gull) [A187] *Hydrocoloeus minutus* (little gull) [A862]		Forage spatial distribution, extent and abundance Disturbance across the site Barriers to connectivity and site use
Fulmaris glacialis (fulmar) [A009] *Larus argentatus* (herring gull) [A184] *Rissa tridactyla* (kittiwake) [A188] *Uria aalge* (guillemot) [A199] *Alca torda* (razorbill) [A200]	To maintain the favourable conservation condition	Population size Spatial distribution Forage spatial distribution, extent, abundance and availability Disturbance across the site Barriers to connectivity
Puffinus puffinus (Manx shearwater) [A013] *Phalacrocorax carbo* (cormorant) [A017] *Phalacrocorax aristotelis* (Shag) [A018] *Larus fuscus* (lesser black-backed gull) [A183] *Sterna dougallii* (roseate tern) [A192] *Sterna Hirundo* (common tern) A193] *Sterna Paradisaea* (arctic tern) [A194] *Sterna albifrons* (little tern) [A885] *Fratercula arctica* (puffin) [A204]	To maintain the favourable conservation condition	Breeding population size Spatial distribution Forage spatial distribution, extent, abundance and availability Disturbance across the site Barriers to connectivity

The physical presence of survey vessels in the marine environment, and the noise associated with the operation of survey equipment, could result in a limited degree of disturbance to seabirds in the vicinity of survey vessel and/or JUB. Birds present on the surface waters near the survey vessel could be temporarily displaced from their chosen feeding/ resting locations. For all surveys, vessel activity in any one location will be of short duration with the vessels moving steadily forward along the transect lines (e.g. during bathymetric surveys) or remaining stationary at sample locations for short durations (e.g. during geotechnical and benthic sampling) before transitioning to the next location. This activity will not differ considerably to existing vessel activity in the region, which includes ferries, tour boats, fishing and recreational vessels and it is not anticipated that above-water noise emitted by the survey vessels and equipment will differ significantly from that emitted by vessels already using the area. Birds using the area are likely to be habituated to the baseline levels of activity and are unlikely to be significantly disturbed by the presence of vessels.

It is expected that any temporary displacement will be comparable to that experienced in response to routine shipping traffic (Hartley Anderson Limited, 2020) and when the survey vessel has left the area, birds can resume foraging activities. Therefore, impacts on bird fitness will not lead to population-level effects at the SPA.

There will be no change in the long-term population trend or distribution of any species and no reduction in foraging or breeding habitat area due to the proposed temporary SI works, therefore favourable conservation condition will be maintained and there will be no adverse effect on the integrity of North-West Irish Sea SPA.

5.4.4.3 Ireland's Eye SPA

Ireland's Eye Sea SPA is of special conservation interest for the following seabird species: cormorant, herring gull, kittiwake, guillemot and razorbill (NPWS, 2024d). Populations of these species are of national importance. The island encompasses near vertical rocky cliffs which reach 69 m along the northern and eastern sides of the island, as well as the presence of a large sea stack that is disconnected from the main island at high tide (NPWS, 2011a). Conservation objectives for Ireland's Eye SPA are provided in **Table 5-7**.

Table 5-7 Site-specific conservation objectives for Ireland's Eye SPA

Relevant Qualifying Interests	Site Specific Conservation Objective	Site Specific Attributes Potentially Affected by the Project
Ireland's Eye SPA (IE004117) (NPWS, 2024d; Version 1, 12/11/2024)		
Phalacrocorax carbo (cormorant) [A107] *Larus argentatus* (herring gull) [A184] *Rissa tridactyla* (kittiwake) [A188] *Uria aalge* (guillemot) [A199] *Alca torda* (razorbill) [A200]	To maintain the favourable conservation condition	Breeding population size Productivity rate Distribution: extent of available nesting options within the SPA Forage spatial distribution, extent, abundance and availability Disturbance at the breeding site Disturbance at areas ecologically connected to the colony Barriers to connectivity

Disturbance to foraging seabirds at sea has been assessed in Section 5.4.4.2 above. The SI works will be of limited scale, short duration and temporary nature, and any temporary displacement of foraging seabirds will be comparable to that experienced in response to routine shipping traffic. Birds using the area are likely to be habituated to the baseline levels of activity and are unlikely to be significantly disturbed by the presence of vessels. Once the survey vessel has left the area, birds can resume foraging activities. Impacts on bird fitness will not lead to population-level effects at the SPA.

The operation of vessels and equipment close to Ireland's Eye SPA has the potential to disturb nesting birds. Disturbance events at the nest site can result in a reduction of overall productively and can even lead to the abandonment of the breeding colony. The conservation objectives recommend that factors such as intensity, frequency, timing and duration of a disturbance source must be taken into account to determine the potential impact upon the targets (NPWS, 2024d). Visual and noise disturbance related to the marine SI works will be limited to standard vessel operation and operation of survey equipment is not expected to increase baseline levels of disturbance. It is known that there is an existing baseline level of

vessel activity in the area, with recreational vessels running landing trips to Ireland's Eye during the breeding season.[3]

While MUL Area B does not overlap with Ireland's Eye island itself, it overlaps with the marine boundary of Irelands Eye SPA (a buffer of approximately 500 m surrounding the northern cliffs). Therefore, as a precautionary measure, the following mitigation will be applied

- In order to avoid visual and above-water disturbance effects to nesting birds at Ireland's Eye SPA, SI works will not be undertaken within the marine boundary of Ireland's Eye SPA during the breeding season (March to July, inclusive).

With the application of the above mitigation, the favourable conservation condition of the population of breeding SCI species at Ireland's Eye SPA will be maintained.

5.4.4.4 Dalkey Island SPA

Dalkey Islands SPA is designated for the protection of Roseate tern, common tern and Arctic tern and is located 14 km south of MUL Area B. The North-West Irish Sea SPA site synopsis (NPWS, 2023a) does not include this SPA in the list of ecologically connected SPAs, however, as these tern species have maximum foraging range of 23.9 km, 30 km and 46 km (Woodward et al., 2019), respectively, as a precautionary measure it considered likely that individuals could, in theory, forage within the MUL Area. Tern species from roosts of Dalkey Islands SPA are thought to feed during the day in the wider Dublin Bay area and environs. Studies suggest that they typically feed in the shallow waters of Kish/Bray and Burford Banks (NPWS, 2024h). Conservation objectives for Dalkey Island SPA are provided in **Table 5-8**.

Table 5-8 Site-specific conservation objectives for Dalkey SPA

Relevant Qualifying Interests	Site Specific Conservation Objective	Site Specific Attributes Potentially Affected by the Project
Dalkey SPA (IE004172) (NPWS, 2024g; Version 1, 29/10/2024)		
Sterna dougallii (roseate tern) [A192] *Sterna Hirundo* (common tern) [A193] *Sterna Paradisaea* (arctic tern) [A194]	To maintain the favourable conservation condition	Post-breeding passage population size Distribution: extent of available roosting options within the SPA Forage spatial distribution, extent, abundance and availability Disturbance at roosting site Disturbance at areas ecologically connected to the roosting sites Barriers to connectivity

Disturbance to foraging seabirds at sea has been assessed in Section 5.4.4.2 above. The SI works will be of limited scale, short duration and temporary nature, and any temporary displacement of foraging seabirds will be comparable to that experienced in response to routine shipping traffic. Birds using the area are likely to be habituated to the baseline levels of activity and are unlikely to be significantly

[3] https://howthcliffcruises.ie/cruises/ferry-to-irelands-eye/

disturbed by the presence of vessels. Once the survey vessel has left the area, birds can resume foraging activities. Impacts on bird fitness will not lead to population-level effects at the SPA.

There will be no change in the long-term population trend or distribution of any species and no reduction in foraging or breeding habitat area due to the proposed temporary SI works, therefore favourable conservation condition will be maintained and there will be no adverse effect on the integrity of Dalkey Islands SPA.

5.5 In-combination effects

5.5.1 Plans

Even if projects are unlikely to have adverse effects on their own, the effects in-combination with those of other plans or projects could be adverse. An in-combination assessment must be carried out to identify projects/plans that could act in-combination to affect site conservation objectives (OPR, 2021).

In the SISAA Report, an assessment of in-combination effects was carried out following MARA's stepwise approach outlined in their Technical Guidance document. A search was undertaken for other plans and projects that could act in-combination with the SI works taking into account a Cumulative Effects Spatial Scope (CESS) of 5 km and a Cumulative Effects Temporal Scope (CETS) of plans or project likely to occur within the next six years. Impact pathways and predictions were considered and then relevant plans or project were identified. Full details of this assessment are provided in Section 6.3 of the SISAA Report (RPS report ref: 10028814-RPS-MO-XX -RP-E-RP0082). It was concluded that there are no anticipated in-combination effects arising from the identified high-level strategic plans that do not determine the precise location of any development project or designate or allocate specific land uses. Therefore, no plans were screened in for further assessment.

5.5.2 Projects

RPS undertook a desk study using internet searches, planning databases and other available sources, as outlined below, to identify other projects and activities likely to overlap with the CESS and CETS of the proposed SI works, which have the potential to give rise to in-combination effects. Full details of this assessment are provided in Section 6.3 of the SISAA Report (RPS report ref: 10028814-RPS-MO-XX -RP-E-RP0082). Based on the review of other projects occurring within the CESS and CETS of the proposed SI works, there is potential that the following projects could act in combination with the proposed SI works:

- Mares Connect (FS007635);
- RWE Renewables Ireland (DS007188);
- Microsoft Ireland Ltd. (LIC230018);
- Microsoft Ireland Ltd. (LIC230016);
- University College Dublin (MUL230032);
- East/North-East Strategic Modelling Study (not yet submitted for MUL).

Mares Connect (FS007635)

Mares Connect was granted a foreshore licence (FS007635) for marine SI works for the MaresConnect Ltd (MCL) Interconnector which landfalls at Portmarnock Co. Dublin. This licence was for a period of five

years from the commencement date (04/07/2024). Geophysical and bathymetric works commenced on the 28th of March 2025 and lasted for 13 days[4]. Geotechnical works were completed between the 21st to the 26th of May 2025[5]. Although surveys have been undertaken, as the licence is still valid, spatial and temporal overlap with future surveys with the proposed SI works is possible, though unlikely.

RWE Renewables Ireland (DS007188)

RWE renewables was granted a foreshore licence (FS007188) to undertake geotechnical, bathymetric and geophysical site investigations and ecological, wind, wave and current monitoring to provide further data to refine wind farm design, cable routing, landfall design and associated installation methodologies for the proposed Dublin Array offshore wind farm. This licence was for a period of five years from the commencement date (13/01/2023) and survey works took place in summer 2024[6], however, as the licence is still valid, temporal overlap with the proposed SI works is possible, though unlikely.

Microsoft Ireland Ltd. (LIC230018)

Microsoft Ireland Ltd. was granted a MUL (LIC230018) to undertake geophysical, bathymetric and SI investigations for a subsea fibre optic cable which has a landfall in Portmarnock transversing the Irish Sea. This licence has a period of two years from the commencement date (03/07/2024), with surveys anticipated to take less than 6 weeks in total and will be completed over a 6-month period. It is not known whether SI works have been completed to date, therefore there is potential for spatial and temporal overlap with the proposed SI works.

Microsoft Ireland Ltd. (LIC230016)

Microsoft Ireland Ltd. was granted a MUL (LIC230016) to undertake geophysical, bathymetric and SI investigations for a subsea fibre optic cable which has a landfall at Dublin Port crossing Dublin Bay across the Irish Sea. This licence has a period of two years from the commencement date (28/06/2024), with surveys anticipated to take less than 3 weeks in total and will be completed over a 2-month period. It is not known whether SI works have been completed to date, therefore there is potential for spatial and temporal overlap with the proposed SI works.

University College Dublin (MUL230032)

Application MUL230032 has not yet been determined but overlaps with the CESS, for the introduction of native oysters into nearshore sites along with eco-engineered habitat units and appropriate substrate at Sutton, Rogerstown, Irelands Eye, Tolka Estuary and Malahide Marina and Estuary (MUL230032). Due to the nature of this project, it is considered unlikely that the introduction of native oysters has the potential to act in combination with the proposed SI works, and therefore, in-combination effects can be ruled out.

East/North-East Strategic Modelling Study

Uisce Éireann are in the processes of submitting a MUL application for the East/North-East Strategic Modelling Study, which involved a strategic modelling study of water currents along the Irish coast from Carlingford Lough to Kilcoole. The proposed works which overlaps the MUL Area include deployment of ADCPs, vessel mounted ADCPs, tide gauges, bathymetric surveys and water quality sampling from the shoreline and a vessel. As the proposed surveys are yet to be granted a licence, commencement of

[4] Mars Connect Cable Route Geophysical Surveys Accessed July 2025

[5] MN_31_of_2025_Mares_Connect_Cable_Route_Geotechnical_Survey.pdf Accessed July 2025

[6] Dublin Array 2024 Offshore Survey Works Campaign accessed July 2025

works is unknown at this time. However, a licence period of five years is being sought therefore there is potential for temporal overlap.

5.5.3 In-combination Assessment

In the absence of mitigation measures, the proposed SI works could act in-combination with other site investigation projects (namely Mares Connect, RWE Renewables Ireland, Microsoft Ireland Ltd x 2), where there is a temporal overlap, to result in likely significant effects on the conservation objectives of the European sites considered in this NIS. Therefore, as a precautionary measure, the following mitigation measures have been imposed to avoid in-combination effects with other SI projects:

Where the SI works are to take place within 5 km of and at the same time as other licenced activities, Uisce Éireann will coordinate with other licence holders to ensure that:

- There will be no spatial overlap between the SI geophysical and bathymetric activities and geophysical and bathymetric activities by other licence holders;
- The Applicant will consult with other licence holders and to seek to limit any temporal overlap between the SI geophysical and bathymetric activities and the geophysical and bathymetric activities by other licence holders as far as reasonably practicable.

Following implementation of these measures, there will be no adverse in-combination effects on European sites.

6 MITIGATION MEASURES

6.1 Mitigation of Adverse Effects

6.1.1 Avoidance of impacts due to habitat loss, alteration and/or fragmentation loss

In order to avoid any direct and indirect adverse effects on the QI habitats within Baldoyle Bay SAC, the following mitigation measures will be implemented:

- Suitable access tracks will be installed to reduce loading on estuarine sediments, i.e. bog mats. While the use of these bog mats is standard practise in soft sediment environments to allow for safe and secure access/egress to sampling locations, their use will also avoid direct interaction with sensitive QI habitats such as salt meadows.
- Prior to intrusive SI works , recent estuarine survey data will be reviewed and a suitably experienced and qualified ecologist will identify and delineate areas of Annex I habitat that should be protected from direct impacts using bog mats.

In order to avoid any direct and indirect adverse effects on the QI reefs within Rockabill to Dalkey Island SAC, the following mitigation will be implemented:

- Published NPWS mapping of Annex I habitats and the results of previous benthic surveys undertaken in support of the GDD project will be reviewed in order to identify the location of known Annex I reef within MUL Area B.
- A precautionary 100 m exclusion zone will be implemented around all Annex I reef habitat locations. Intrusive sampling (grab samples and boreholes) will not be undertaken within these exclusion zones.
- As an additional precautionary measure, prior to deployment of grabs or borehole equipment, on-board sonar and echosounders will be used to provide backscatter data which will allow marine surveyors to identify seabed conditions (i.e. sediment/reef) to ensure suitability for proposed activities.

6.1.2 Avoidance of impacts due to water quality impacts

In order to avoid any accidental pollution effects to habitats and species including marine mammals, and birds, the following standard measures will be implemented:

- All vessels will comply with international standards according to the MARPOL (maritime pollution) Convention and the Sea Pollution Acts with respect to wastewater and food waste discharges. Hazardous materials, radiation sources or chemicals will be stored, handled, used and documented in accordance with those legal provisions and also the Safety Health and Welfare at Work Act 2005, as amended, and associated regulations, which apply to vessels as places of work, and the Chemicals Act 2008, as amended, and associated regulations, accepted guidelines, and technical standards and requirements.
- An oil pollution emergency plan will be implemented onboard all survey vessels. This plan will specify:
    - Information on the location and detail of spill response resources on-board

- Information on crew training in relation to oil pollution response
- How crew will interface with other vessel operators, where applicable.

- Spill kits will be stored on board all vessels and will also be available where machinery is operating in the intertidal zone. Any fluid leaks or spills will be cleaned up immediately. All machinery or vehicles on the intertidal area will be fuelled on the hard-standing surface of a car park or road and at least 10 m from a drain or gully.

6.1.3 Avoidance of impacts due to visual and above water noise disturbance

In order to avoid visual and above-water disturbance effects to wintering waterbirds of Baldoyle Bay SPA and ex situ waterbirds from nearby SPAs using Baldoyle Bay (North Bull Island SPA, Malahide Estuary SPA, South Dublin Bay and River Tolka Estuary SPA, Lambay Islands SPA, Rogerstown Estuary SPA and Skerries Islands SPA), the following mitigation measure will be implemented:

- SI works will not be carried out within Baldoyle Bay SPA (MUL Area A) during the overwintering period (October to March, inclusive) in order to avoid disturbance to wintering waterbirds.
- In order to avoid visual and above-water disturbance effects to nesting bird species at Irelands Eye SPA, the following mitigation measure will be implemented:
- SI works will not be undertaken within the marine boundary of Ireland's Eye SPA during the breeding season (March to July, inclusive).

6.1.4 Avoidance of underwater noise impacts

Standard risk avoidance and/or risk reduction measures will be in place on geophysical, bathymetric and geotechnical survey vessels, as required under Section 4.3.4 of the *Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters* (DAHG, 2014). These measures will comprise visual observation during daylight hours (see Pre-Start Monitoring below) and the use of soft start procedures (see Ramp-Up / Soft Start Procedures below). The incorporation of these measures will avoid auditory injury and reduce disturbance to marine mammals. The implementation of soft-start/ramp up procedures as a mitigation measure for marine mammals as described below will also benefit migratory fish and otters, as the ramp-up in noise will deter these species from approaching the vessel.

The relevant text from DAHG (2014) has been included below:

1. A qualified and experienced marine mammal observer (MMO) shall be appointed to monitor for marine mammals and to log all relevant events using standardised data forms.
2. Unless information specific to the location and/or plan/project is otherwise available to inform the mitigation process (e.g., specific sound propagation and/or attenuation data) and a distance modification has been agreed with the Regulatory Authority, acoustic surveying using the above equipment shall not commence if marine mammals are detected within a 500m radial distance of the sound source intended for use, i.e., within the Monitored Zone.

Pre-Start Monitoring

3. Sound producing activities shall only commence in daylight hours where effective visual monitoring, as performed and determined by the MMO, has been achieved. Where effective visual monitoring, as determined by the MMO, is not possible the sound-producing activities shall be postponed until effective visual monitoring is possible.

4. An agreed and clear on-site communication signal must be used between the MMO and the Works Superintendent as to whether the relevant activity may or may not proceed, or resume following a break (see below). It shall only proceed on positive confirmation with the MMO.
5. In waters up to 200m deep, the MMO shall conduct pre-start-up constant effort monitoring at least 30 minutes before the sound-producing activity is due to commence. Sound-producing activity shall not commence until at least 30 minutes have elapsed with no marine mammals detected within the Monitored Zone by the MMO.
6. This prescribed Pre-Start Monitoring shall subsequently be followed by a Ramp-Up Procedure which should include continued monitoring by the MMO.

Ramp-Up / Soft Start Procedure

7. In commencing sound producing activities using the equipment listed in **Table 2-1** the following Ramp-up Procedure (i.e., “soft-start”) must be used, including during any testing of acoustic sources, where the output peak sound pressure level from any source exceeds 170 dB re: 1µPa @1m:
    a. Where it is possible according to the operational parameters of the equipment concerned, the device’s acoustic energy output shall commence from a lower energy start-up (i.e., a peak sound pressure level not exceeding 170 dB re: 1µPa @1m) and thereafter be allowed to gradually build up to the necessary maximum output over a period of 20 minutes.
    b. This controlled build-up of acoustic energy output shall occur in consistent stages to provide a steady and gradual increase over the ramp-up period.
    c. Where the acoustic output measures outlined in steps (a) and (b) are not possible according to the operational parameters of any such equipment, the device shall be switched “on” and “off” in a consistent sequential manner over a period of 20 minutes prior to commencement of the full necessary output. In the case of sparkers/boomers, starting with the lowest electric discharge possible, and thereafter being allowed to gradually build up to the necessary maximum output over a period of 40 minutes.
8. In all cases where a Ramp-Up Procedure is employed the delay between the end of ramp-up and the necessary full output must be minimised to prevent unnecessary high-level sound introduction into the environment.
9. Once the Ramp-Up Procedure commences, there is no requirement to halt or discontinue the procedure at night-time, nor if weather or visibility conditions deteriorate nor if marine mammals occur within a 500m radial distance, of the sound source, i.e., within the Monitored Zone.

Breaks in sound output

10. If there is a break in sound output for a period greater than 30 minutes (e.g., due to equipment failure, shut-down, survey line or station change) then all Pre-Start Monitoring and a subsequent Ramp-up Procedure (where appropriate following Pre-Start Monitoring) must be undertaken.

Reporting

11. Full reporting on MMO operations and mitigation undertaken must be provided to the Regulatory Authority.

6.1.5 In-combination effects

Where the SI works are to take place within 5 km of and at the same time as other licenced activities, Uisce Éireann will coordinate with other licence holders to ensure that:

- There will be no spatial overlap between the SI geophysical and bathymetric activities and geophysical and bathymetric activities by other licence holders;
- The Applicant will consult with other licence holders and to seek to limit any temporal overlap between the SI geophysical and bathymetric activities and the geophysical and bathymetric activities by other licence holders as far as reasonably practicable.

7 CONCLUSION

This NIS has examined the potential implications of the proposed project, alone and in combination with other plans and projects, on the integrity of the SACs and SPAs identified below, considering each European site's structure, function, and conservation objectives.

- Baldoyle Bay SAC
- Rockabill to Dalkey Island SAC
- Lambay Island SAC
- Codling Fault Zone SAC
- North Anglesey Marine SAC
- Murlough SAC
- North Channel SAC
- Blackwater Bank SAC
- Llyn a'r Sarnau / Lleyn Peninsula and the Sarnau SAC
- Hook Head SAC
- Baldoyle Bay SPA
- North Bull Island SPA
- Skerries Islands SPA
- Rogerstown Estuary SPA
- South Dublin Bay and River Tolka Estuary SPA
- Malahide Estuary SPA
- North-West Irish Sea SPA
- Ireland's Eye SPA
- Lambay Island SPA
- Dalkey Island SPA

MARA may use the information contained in this NIS for establishing its own complete, precise, and definitive findings and conclusions to ensure all reasonable scientific doubt has been removed regarding the effects of the proposed site investigations on relevant European sites.

Following a comprehensive evaluation of the potential direct, indirect, and in-combination effects on the conservation objectives of relevant SACs and SPAs, mitigation measures were prescribed where necessary. Consequently, it has been concluded in this NIS that the proposed SI works, either alone or in-combination with any other plan or project, will not adversely effect the integrity of any European Site.

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