

# REPORT TO INFORM SCREENING FOR APPROPRIATE ASSESSMENT

3FM Project - Marine Site Investigations



Dublin Port 3FM Project  
Marine Site Investigations  
RISAA  
D01  
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## REPORT TO INFORM AA SCREENING

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# 1 INTRODUCTION

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

In Ireland, the Natura 2000 network of sites comprises Special Areas of Conservation (SACs, including candidate SACs) designated under domestic legislation transposing Directive [92/43/EEC](#), and Special Protection Areas (SPAs, including proposed SPAs) classified under the Birds Directive (Council Directive [2009/147/EC](#) on the conservation of wild birds) and designated under the same domestic legislation.

SACs are designated for the conservation of Annex I habitats (including priority types which are in danger of disappearance) and Annex II species (other than birds). SPAs are designated for the conservation of Annex I birds and other regularly occurring migratory birds and their habitats. The annexed habitats and species for which each site is designated correspond to the qualifying interests of the sites; from these the conservation objectives of the site are derived.

SACs and SPAs make up the pan-European network of Natura 2000 sites. 'European sites' are defined in Regulation 2(1) of the European Communities (Birds and Natural Habitats) Regulations 2011, as amended ('the 2011 Regulations').

## 1.1 Appropriate Assessment

### 1.1.1 The Habitats Directive

A key protection mechanism in the Habitats Directive is the requirement to subject plans and projects to Appropriate Assessment (AA) in line with the requirements of Article 6(3) of the Habitats Directive, which requires that–

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

Thus, Article 6(3) defines a step-wise procedure for considering plans and projects:

- The first part of this procedure consists of a preliminary 'screening' stage to determine whether, firstly, the plan or project is directly connected with or necessary to the management of the site, and secondly, whether it is likely to have a significant effect on the site; it is governed by the first sentence of Article 6(3).
- The second part of the procedure, governed by the second sentence of Article 6(3), relates to the appropriate assessment and the decision of the competent national authorities.

## 1.1.2 Domestic Transposition

### 1.1.2.1 Screening

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

### 1.1.2.2 Appropriate Assessment

Regulation 42 of the 2011 Regulations requires *inter alia* that a public authority shall determine that an appropriate assessment of a project is required where the project is not directly connected with or necessary to the management of the site as a European Site and if it cannot be excluded, on the basis of objective scientific information following screening that the project, individually or in combination with other plans or projects, will have a significant effect on a European site.

## 1.1.3 The Appropriate Assessment Process

According to European Commission guidance document 'Assessment of plans and projects significantly affecting Natura 2000 sites' ([EC, 2001](#)), the assessment requirements of Article 6 establish a step-by-step approach as follows:

**Stage 1 - Screening for Appropriate Assessment:** An initial or preliminary assessment of the project or plan's effect on a European site(s). If it cannot be concluded that there will be no significant effect upon a European site, an appropriate assessment of the implications of a plan or project must be conducted.

**Stage 2 - Appropriate Assessment:** The consideration of the impact of the project or plan on the integrity of a European site, either alone or in combination with other projects or plans, and with respect to the site's structure and function and its conservation objectives. Additionally, where there are adverse impacts, an assessment of the potential mitigation of those impacts. A Natura Impact Statement or a Natura Impact Report is prepared at this stage.

**Stage 3 – Assessment of alternative solutions:** If assessment does not end after the preceding step, a further set of steps are envisaged. Stage 3 is a process which examines alternative ways of achieving the objectives of the project or plan that avoid adverse impacts on the integrity of a European site.

**Stage 4 – Assessment where no alternative solutions exist and where adverse impacts remain:** An assessment of compensatory measures where, in the light of an assessment of imperative reasons of overriding public interest (IROPI), it is deemed that the project or plan should proceed.

Each step determines whether a further step in the process is required. If, for example, the conclusion at the end of Stage 1 is that significant effects on European sites can be excluded, there is no requirement to proceed further.

## 1.2 Objective of the Document

The purpose of this document which contains a Stage 1 screening appraisal in a report to inform screening for appropriate assessment to assist Dublin Port Company (DPC) carry out a screening for appropriate



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assessment under Regulation 42 of S.I. No. 477/2011, as amended (the 2011 Regulations) of the implications of the Dublin Port Company 3FM project marine site investigation works on European sites in view of their conservation objectives.

This report seeks to assist DPC acting as a public authority under the 2011 Regulations in circumstances where the proposed marine site investigations are being undertaken on foreshore privately owned by DPC and as a consequence, fall outside of the jurisdiction of the foreshore licencing regime administered by the Department of Housing, Local Government and Heritage.

### **1.3 Document Structure**

#### **1.3.1 Methodology and Guidance**

Section 2 of the document, sets out the methodology followed and guidance documents used in conducting a screening appraisal of the implications of the proposed marine site investigations on European sites.

#### **1.3.2 Proposed Development**

Section 3 of the report describes and illustrates the proposed marine site investigations and activities to be undertaken.

#### **1.3.3 Stage 1 Screening Appraisal**

Section 4 of the report contains a preliminary examination and analysis to understand whether or not the proposed marine site investigations are likely to have a significant effect on any European site. This is a screening appraisal for appropriate assessment. It has been undertaken in view of best scientific knowledge, in light of the Conservation Objectives of the sites concerned and considers the proposed marine site investigations individually or in combination with other plans and projects.

In accordance with EC guidance and settled case law of the CJEU, measures intended to avoid or reduce the harmful effects of the proposed development on European sites, (i.e. “mitigation measures”) or best practice measures have not been taken into account in the screening stage appraisal.

## 2 METHODOLOGY

### 2.1 Published guidance on Appropriate Assessment

Appropriate Assessment Guidelines for Planning Authorities have been published by the Department of the Environment Heritage and Local Government ([DEHLG, 2010a](#)). In addition to the advice available from the Department, the European Commission has published a number of documents which provide a significant body of guidance on the requirements of Appropriate Assessment, most notably including, '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' ([EC, 2001](#)), which sets out the principles of how to approach decision making during the process. These principal national and European guidelines have been followed in the preparation this report. The following list identifies these and other pertinent guidance documents:

- Communication from the Commission on the Precautionary Principle., Office for Official Publications of the European Communities, Luxembourg ([EC, 2000](#));
- Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Articles 6(3) and (4) of the Habitats Directive 92/43/EEC. Office for Official Publications of the European Communities, Brussels ([EC, 2001](#));
- Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC – Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the commission; ([EC, 2007](#));
- Estuaries and Coastal Zones within the Context of the Birds and Habitats Directives - Technical Supporting Document on their Dual Roles as Natura 2000 Sites and as Waterways and Locations for Ports. European Commission ([EC, 2009](#));
- Appropriate Assessment of Plans and Projects in Ireland. Guidance for Planning Authorities. Department of the Environment, Heritage and Local Government, Dublin (DEHLG, 2010a);
- Department of Environment Heritage and Local Government Circular NPW 1/10 and PSSP 2/10 on Appropriate Assessment under Article 6 of the Habitats Directive – Guidance for Planning Authorities ([DEHLG, 2010b](#));
- Guidance document on the implementation of the birds and habitats directive in estuaries and coastal zones with particular attention to port development and dredging. European Commission ([EC, 2011a](#));
- European Commission Staff Working Document 'Integrating biodiversity and nature protection into port development' ([EC, 2011b](#));
- Marine Natura Impact Statements in Irish Special Areas of Conservation: A working document, National Parks and Wildlife Service, Dublin ([NPWS, 2012](#));
- Interpretation Manual of European Union Habitats. Version EUR 28. European Commission ([EC, 2013](#));
- European Commission Notice "Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC", Office for Official Publications of the European Communities, Luxembourg ([EC, 2019](#));



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- Institute of Air Quality Management 'A guide to the assessment of air quality impacts on designated nature conservation sites' (version 1.1). Institute of Air Quality Management, London ([IAQM, 2020](#));
- Office of the Planning Regulator Practice Note (PN01) 'Appropriate Assessment Screening for Development Management' ([OPR, 2021](#)); and
- European Commission Notice C(2021) 6913 'Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC', Office for Official Publications of the European Communities, Luxembourg ([EC,2021](#)).

## 2.2 Likely Significant Effect

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

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

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

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

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

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

EC (2021) defines a LSE as being "*any effect that may reasonably be predicted as a consequence of a plan or project that would negatively and significantly affect the conservation objectives established for the*

*habitats and species significantly present on the Natura 2000 site. This can result from either on-site or off-site activities, or through combinations with other plans or projects”.*

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

## 2.3 Mitigation Measures

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

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

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

The judgment in *People Over Wind* is further reinforced in EC (2019) which refers to CJEU Case C-323/17.

## 2.4 Consideration of ex-situ effects

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

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

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

## 2.5 Conservation Objectives

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

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

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

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

### 2.5.1 Site-Specific Conservation Objectives

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

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

The most up-to-date Conservation Objectives for the European sites being considered, and details in relation to the Qualifying Interests and Special Conservation Interests of these European sites is based on publicly available data on these European Sites, sourced from the [NPWS website](#) in June 2022. Boundary data used in the appraisal is based on NPWS master SAC and SPA datasets (SAC\_ITM\_2022\_02.shp and SPA\_ITM\_2021\_10.shp).

### 2.5.2 In-combination Effects

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

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

EC (2021) additionally advises that:

- an in-combination assessment is often less detailed at the screening stage than in the appropriate assessment;
- there is still a need to identify all other plans or projects that could give rise to cumulative impacts with the plan or project in question and
- if this analysis cannot reach definitive conclusions, it should at least identify any other relevant plans and projects that should be scrutinised in more detail during the appropriate assessment.

## 3 THE PROPOSED DEVELOPMENT

### 3.1 3FM Project

The 3FM Project (<http://www.dublinport3fm.ie>) is Dublin Port Company's (DPC's) third and final Masterplan Project. It focuses on development in the south port area, known as the Poolbeg Peninsula, which contains nearly one-fifth of the Dublin Port estate. The 3FM Project contains six main elements as shown in **Figure 3.1**:

- **Southern Port Access Route (SPAR)** – a new an internal Dublin Port private road and lifting bridge across the Liffey
- **New Ro-Ro Terminal** - the redevelopment and change of use of the existing MTL container terminal to create a new Ro-Ro terminal on South Bank Quay
- **New Container Terminal** - the construction of a new container terminal with 650 metres of new berths
- **Turning Circle** – a ship turning circle in the River Liffey
- **Community Gain** - development of over 6.1 hectares of new public realm
- **Provision for Utilities** - provision of a site to accommodate utilities for the operation of the district heating system to be powered by the Covanta waste to energy plant

**The 3FM Project will be the subject of a planning application to An Bord Pleanala under the Planning and Development (Strategic Infrastructure) Act 2006 in mid 2023 and will be accompanied by an Environmental Impact Assessment Report and a Natura Impact Statement.**



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Figure 3.1: 3FM Project

### 3.2 3FM Marine Site Investigations

Preliminary design has commenced on 3FM Project, but a ground investigation campaign is required to provide preliminary ground investigation information to inform and assess the geotechnical and geo-environmental characteristics of the soils, sediments and rock. This information will inform engineering design work and applications to regulatory authorities for relevant consents.a.

The ground investigation works will consist of boreholes, Vibrocore surface sediment sampling and laboratory testing of samples collected from site. The works will comprise the following:

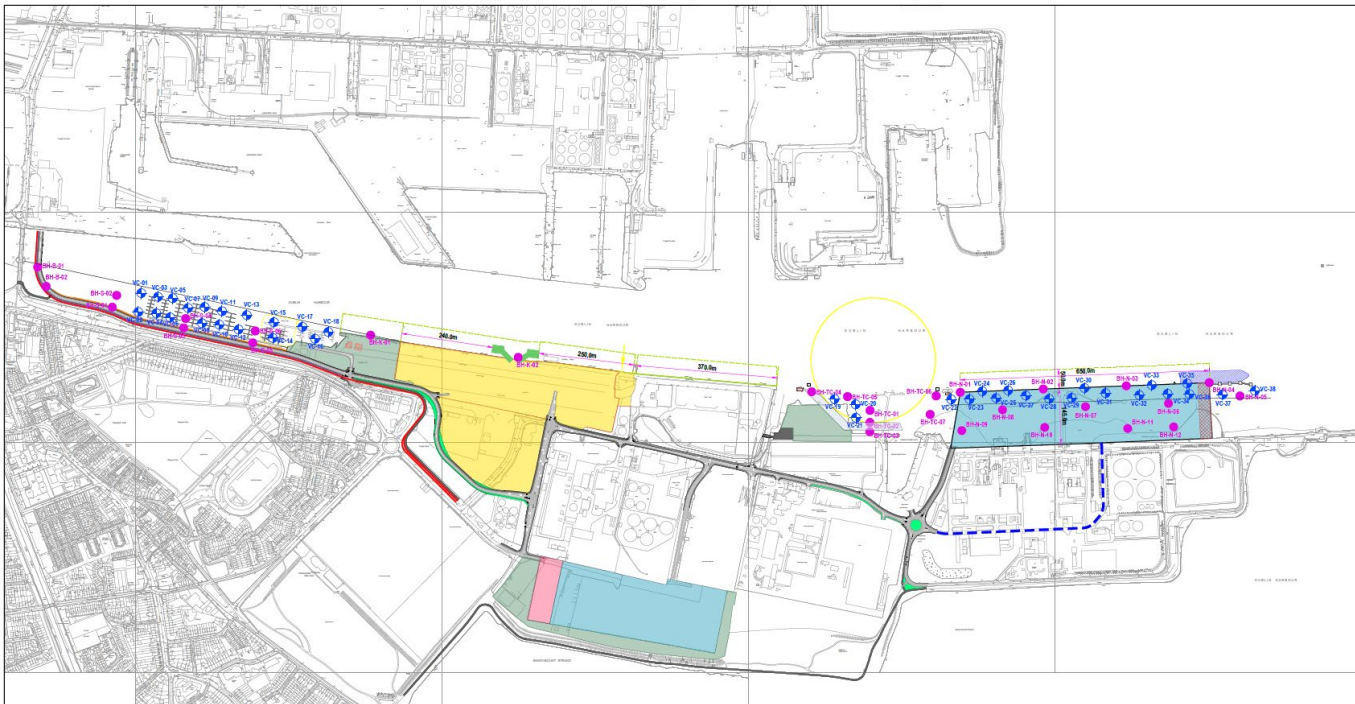
- 29 nr boreholes
- 38 nr Vibrocores
- Samples of bed sediments at surface level and depth
- Geotechnical Laboratory Testing of samples
- Geo-environmental testing of sediment samples
- Establish surface level and location of each Vibrocore

All ground investigation is to be carried out over water. A jack up rig and multicat or alternative suitable vessel will be required to carry out the works.



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Details of the investigation including their locations are provided on full (A1 sized) drawings at Appendix 1, reduced in size and presented as **Figure 3.2** and **Table 3.1** below.



**Figure 3.2: 3FM Site Investigation Borehole and Vibrocore Locations**

DPC shall appoint a single Contractor who shall be responsible for carrying out the whole of the site investigation works, including geological investigation, boring, drilling, sampling, soil testing and interpretation of all aspects and reporting thereon. The purpose of the investigation contract is to:

- Identify the ground profile including strata boundaries across the identified areas
- Identify depth of soft sediments, collecting samples throughout this depth
- Identify depth of underlying Port CLAY/Glacial TILL material between soft sediments & bedrock, collecting core samples throughout this depth
- Identify depth to bedrock, collecting core samples penetrating c. 5m into competent bedrock
- Identify the in-situ geotechnical properties of the soils, sediments
- Take samples for laboratory geotechnical and geo-environmental testing
- Take sediment samples for laboratory geoenvironmental testing

Exploratory holes will be made in the locations illustrated in **Figure 3.2** and as detailed in **Table 3.1**.

**Table 3.1: Marine Investigation Areas**

Exploratory Hole	Prefix	Numbers
SPAR Bridge Crossing	B	B-01 – B-02
SPAR & Marina	S	S-01 – S-06

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Area K	K	K-01 – K-02
Turning Circle	TC	TC-01 – TC-07
Area N	N	N-01 – N-12

Proposed exploratory hole location coordinates and scheduled depths is detailed in **Table 3.2** below.

**Table 3.2: Exploratory Hole Coordinates and Scheduled Depths**

Exploratory Hole		Prefix		Numbers	
BH Ref	Type	ITM Reference		Approx. Existing Ground Level (mCD)	Scheduled Depth (m)
		Easting (m)	Northing (m)		
B01	CP & RC	718070.4203	734283.5599	-1m CD	28.5m
B02	CP & RC	718092.2144	734232.8983	+1m CD	28.5m
S01	CP & RC	718264.9599	734178.7240	+4m CD	28.5m
S02	CP & RC	718276.2850	734209.4520	+1m CD	28.5m
S03	CP & RC	718451.3074	734124.5740	+4m CD	28.5m
S04	CP & RC	718456.6487	734149.2820	+1m CD	28.5m
S05	CP & RC	718631.4653	734085.6280	+4m CD	28.5m
S06	CP & RC	718638.2026	718638.2026	+1m CD	28.5m
K01	CP & RC	718939.0280	734105.7570	-7m CD	35.0m
K02	CP & RC	719324.3081	734047.7995	-11m CD	35.0m
TC-01	CP & RC	720242.2676	733909.6802	+2m CD	35.0m
TC-02	CP & RC	720241.6633	733878.3177	+3m CD	35.0m
TC-03	CP & RC	720241.6633	733854.1747	+4m CD	35.0m
TC-04	CP & RC	720090.2290	733958.0455	0m CD	35.0m
TC-05	CP & RC	720183.7396	733945.7047	0m CD	35.0m
TC-06	CP & RC	720414.8644	733947.4405	0m CD	35.0m
TC-07	CP & RC	720399.1965	733899.0828	+1m CD	35.0m
N-01	CP & RC	720477.8406	733956.8890	-8m CD	43.5m
N-02	CP & RC	720694.3504	733965.2189	-8m CD	43.5m
N-03	CP & RC	720910.8602	733973.5489	-8m CD	43.5m
N-04	CP & RC	721127.3600	733981.8785	-8m CD	43.5m
N-05	CP & RC	721207.6039	733947.2744	-8m CD	43.5m
N-06	CP & RC	721021.0374	733927.7509	-1m CD	43.5m
N-07	CP & RC	720804.5276	733919.4209	-1m CD	43.5m
N-08	CP & RC	720588.0178	733911.0909	-1m CD	43.5m
N-09	CP & RC	720481.6851	733856.9629	+3m CD	43.5m
N-10	CP & RC	720698.1949	733865.2929	+3m CD	43.5m
N-11	CP & RC	733973.5489	720914.7048	+3m CD	43.5m
N-12	CP & RC	721034.5490	733866.6686	+3m CD	43.5m

\*Approximate Existing Ground Level Pending – TBD based on most recent Bathymetric Survey.

### 3.2.1 Timing of Works

Works are estimated to take 8-10 weeks to complete, and they shall commence in August 2022. Except where otherwise instructed by Dublin Port Company, the exploratory holes shall be made starting from the

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east and working westwards. Once an exploratory hole has commenced, it shall be completed continuously and without undue delay.

Ground investigations shall be undertaken 24 hours per day, 7 days per week with the correct Navigational Lights and Aids displayed and in accordance with the Merchant Shipping (Collision Regulations) (Ships and Water Craft on the Water) Order 2012.

### 3.2.2 Hard Materials and Obstructions

In the event that hard material, hard stratum or other obstructions are encountered, the operative shall continue to chisel for a minimum of 1.5hrs in hard stratum before requesting permission to pull off the position and attempt the procedure again in close proximity to the original location. Jack Up Barge Pontoons shall be capable of locating the exploratory holes in multiple positions to ensure that the vessel does not have to be moved, should any hard materials or obstructions be encountered.

### 3.2.3 Percussion Boring

It is envisaged that cable percussion boring will be used through the overburden material. Any other proposed methods should be submitted to the Investigation Supervisor for approval. The minimum nominal casing diameter shall be 150mm. At ground level before boring commences, the initial casing diameter shall be checked to ensure it is sufficiently large to ensure that the borehole can be completed to its scheduled depth.

### 3.2.4 Rotary Drilling

Follow-on rotary core drilling techniques shall be carried out using either a triple barrel system or conventional double barrel system fitted with a semi-rigid inner plastic liner, to act as a triple barrel system. The core barrel shall be either a T6 116 or a T6 131 water flush barrel, designed to recover cores of either 98mm or 108mm diameter respectively for a corresponding nominal hole diameter of 116mm and 131mm. The length of the coring run in the specified boreholes will be a minimum of 5m length, although this may be altered at the discretion of the Investigation Supervisor, subject to the ground conditions and target depths.

### 3.2.5 Vibrocoreing

Vibro-coring shall be used for collection of 100mm diameter partially disturbed samples from surface to a maximum depth of 4m. Core recovery of at least 90% is required. If the measured core recovery is less than 90%, the subsequent core run shall be halved (subject to a minimum core run length of 0.5m).

Should obstructions result in protracted chiselling time (minimum 1 hour) permission to continue chiselling, abandon the vibrocore or undertake a rebore shall be sought from the Investigation Supervisor. Reborings shall be undertaken in close proximity to the original vibrocore.

### 3.2.6 Geotechnical Samples

#### 3.2.6.1 Disturbed Samples

Small Disturbed Samples shall be collected at 0.5m depth, at 1.0m intervals to 5.0m depth and 1.5m intervals thereafter and shall be collected from SPT samplers at each test depth.

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Bulk Disturbed Samples shall be collected between consecutive SPTs or Undisturbed Samples in cable percussion boreholes.

### 3.2.6.2 Undisturbed Samples

Undisturbed UT100 Samples shall be collected in suitable cohesive deposits or at as directed by the Investigation Supervisor.

Undisturbed Piston Samples shall be taken in suitable very soft cohesive deposits in cable percussion boreholes.

### 3.2.7 Sampling methods

All environmental soil samples must be subject to headspace testing. The results must be recorded within the borehole logs.

Samples shall be stored in suitable containers and maintained at a temperature of 4°C.

The Contractor is to liaise with the laboratory to ensure sufficient sample is obtained for the analysis, and stored in the appropriate container. Each sample container shall be filled to the brim to minimise volatile headspace (unless analysis requires a different method of containment). Gravels larger than 10mm in size shall be discarded. The use of sample fixatives may be required for some laboratory analyses.

Samples shall be obtained using the procedures identified in BS 10175:2011+A2 2017 – Investigation of potentially contaminated sites – Code of Practice. Sampling tools shall be stainless steel or PTFE coated, and washed in clean water following the taking of each sample. To prevent cross-contamination, protective gloves shall be removed and replaced between the taking of samples.

All samples should be clearly labelled to show the individual sample identification i.e. site reference, site location, vibrocore number, sample depth, date of sampling, sampler's initials etc. together with any precautionary notes for the analytical laboratory (e.g. potential asbestos). The shipping of the samples shall comply with the Classification, Packaging and Labelling Regulations, 1984.

Chain of custody documentation shall be completed by the Contractor immediately following the taking of samples, whether on site or in the laboratory, listing all the samples that are contained within each batch to be despatched. One copy of this documentation shall be retained and two copies issued with the consigned batch. Any foreign materials or potential contamination shall be recorded e.g. plastics, oily substances, etc. Chain of custody documentation shall indicate the name of the project engineer. A contact number shall also be listed.

The Contractor shall ensure the integrity of the samples during transit from the investigation site to the chemical testing laboratory. Samples shall be securely packaged with clear labelling to minimise the risk of damage or loss during transit through improper handling. A large plastic bag shall be used to line the container and appropriate packing material shall be used to prevent the movement of samples and contact between fragile containers. Documentation accompanying the samples shall be placed inside the plastic liner of the shipping container. If the samples are chilled, or if ice packs are included with the samples, then care shall be taken to ensure that condensation or melt water does not contact the samples, and does not affect the legibility of the sample labels/documentation. The maximum transit time is dictated by the period over which the samples can be kept cool, but shall be less than 24 hours.

Samples due for testing shall not be stored on site for more than 8 hours. Samples shall be despatched to the laboratory at the end of each working shift, so as to minimise the time between collection and analysis

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or storage at the laboratory. Sediment samples containing biodegradable contaminants shall be stored at a temperature below 4°C. Such samples may be temporarily stored in insulated cooler boxes with ice packs during the course of the working shift. For extended periods of on-site storage greater than 8 hours, they shall be kept in a refrigerator at below 4°C. Care shall be taken to avoid rupturing of sample containers when refrigerating, (glass containers are generally unsuitable for freezing). The onsite storage facility shall protect all samples from extreme fluctuations in temperature and direct sunlight. The storage facility shall be secure with access to the samples restricted to authorised personnel only.

The responsibility for disposal of surplus samples not delivered to a laboratory lies with the Contractor. The requirements for sample disposal will depend upon the nature of the sample (including the degree of contamination) and the type and amount of any preservative(s) added to the sample.

A record shall be made within the chain of custody documentation giving the following information for each individual sample:

- Site reference;
- Site location;
- Vibrocore;
- Sample location and depth;
- Date of sampling;
- Colour;
- Any odours that may be noted (however, appropriate H & S measures should be in place to prevent the inhalation of dangerous substances should they be uncovered during the works);
- Consistency / nature of materials (soil / water);
- Results of in-situ testing; and,
- Potential contamination

### 3.2.8 Cone Penetration Testing

Dynamic probing equipment shall be DPSH-B or similar approved by the Investigation Supervisor and shall comply with BS EN ISO 22476-2.

Tests shall be carried out in accordance with BS EN ISO 22476-2.

Cone penetration tests shall be carried out at the locations shown on the drawings at Appendix 1.

Tests should be carried out to refusal. Rig to have minimum 20 Tonne Hydraulic capacity and an inclinometer device which shall be accurate to 1%.

Cone penetration testing equipment does not consume oil or produce any oil spills under normal production. All fluid systems on rigs are closed circuits with integrated sensors showing all oil levels, temperatures, etc. Furthermore, alarms are given via rig software in case of oil loss. The alarm also stops the hydraulics on the seabed rigs, minimising possible oil leaks underwater.

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### 3.2.9 *In-situ* Testing

SPTs shall be undertaken in marine boreholes in accordance with BS 1377-9 at intervals specified in Clause 7.6.4 of the site investigation contract.

In cohesive materials, SPT test are to be alternated with UT100 or Piston samples depending on the suitability of the soil for each sampling method.

When an SPT test is carried out, the Contractor shall record and include in their Report the blow count for each 75mm increment of penetration (or part-thereof).

### 3.2.10 Open Hole Drilling

Open Hole Drilling is not being undertaken.

Resonance (sonic) drilling is not being undertaken.

### 3.2.11 Geophysical Testing

Geophysical surveys are not being undertaken,

### 3.2.12 Geo-environmental Laboratory Testing

Environmental testing will be required from the vibrocores.

An INAB or UKAS accredited laboratory experienced in testing of marine sediment and participating in relevant marine sediment inter laboratory proficiency testing schemes such as QUASIMEME shall be used. The laboratory must have the capability to meet the limits of detection and other quality requirements of the Marine Institute. The contractor is required to provide details of the selected laboratory to the Investigation Supervisor for approval prior to award of contract on site.

Chemical analytical testing of specific determinands is required to the Maximum Limits of Detection specified in **Table 3.3** for total soil and soil leachability analysis.

**Table 3.3: Geo-environmental Sediment Testing Requirements**

Determinands	Maximum Laboratory Detection Limit (mg/kg)	
	Arsenic	3.0
	Cadmium	0.2
	Chromium (Total and VI)	4.5
	Copper	6.0
	Nickel	0.9
	Lead	2.0
	Zinc	2.5
Metals	Mercury	0.4
	Vanadium	1.5
	Boron	1.0
	Selenium	3.0
	Beryllium	1.0
	Manganese	1.0
	Barium	1.0
	Iron	1.0
	Aluminium	1.0



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Determinands		Maximum Laboratory Detection Limit (mg/kg)
Polycyclic Aromatic Hydrocarbons (PAH) (16)	Naphthalene	0.01
	Chrysene	0.01
	Benzo(b)fluoranthene	0.01
	Benzo(k)fluoranthene	0.01
	Benzo(a)pyrene	0.01
	Indeno(123cd)pyrene	0.01
	Dibenzo(ah)anthracene	0.01
	Benzo(ghi)perylene	0.01
	Acenaphthylene	0.01
	Acenaphthene	0.01
	Fluorene	0.01
	Phenanthrene	0.01
	Anthracene	0.01
	Fluoranthrene	0.01
	Pyrene	0.01
	Benzo(a)anthracene	0.01
Total PAH	0.01	
Total Petroleum Hydrocarbons (aromatic/aliphatic split) including Chromatographs and Interpretation	TPH - CWG (C5-35) Aliphatic/Aromatic Split (with CWG banding)	0.01
	Aliphatic - C5-6, >6-8, >8-10, >10-12, >12-16, >16-21, >21-35 Aromatic - >C6-7, >7-8, >8-10, >C10-12, >12- 16, >16-21, >21-35	
BTEX Compounds (speciated)	GC-MS	0.001
Asbestos screen	Asbestos Screen (fibre screen only)	-
Phenols (speciated)	By HPLC	0.01
Cyanide	Cyanide (Total)	1.0
Cyanide	Cyanide (Free)	1.0
Thiocyanate		1.0
Total Sulphur		0.01%
Sulphur (Elemental)		10.0
Sulphate (Water Soluble)		1.0
pH	pH Value	1.00 pH Units
Soil Organic Matter		0.1 (no unit)
Total Organic Carbon		0.1 (no unit)
Volatile Organic Compounds	VOCs target list only	0.001
Semi-Volatile Organic Compounds <b>excluding PAHs</b>	SVOCs target list	0.1
PCBs	WHO 12 Congeners	0.001
TBT		0.001
DBT		0.001
Asbestos Quantification	Only required if asbestos detected	0.1%
Waste Acceptance Criteria	As per BS 12457/2	

### 3.2.13 Waste Acceptance Criteria Testing

Waste Acceptance Criteria testing comprising the test suites detailed in **Table 3.4** shall be carried out in accordance with BS 12457-2.

**REPORT TO INFORM AA SCREENING**
**Table 3.4: Waste Acceptance Criteria Testing Requirements**

Determinands	Required Laboratory Detection Limit	Required Accreditation
Total organic carbon	3%	BS EN ISO/IEC 17025:2005 / MCERTS
Loss on ignition	10%	BS EN ISO/IEC 17025:2005 / MCERTS
BTEX	6 mg/kg	BS EN ISO/IEC 17025:2005 / MCERTS
PCBs (7 congeners)	1 mg/kg	BS EN ISO/IEC 17025:2005 / MCERTS
Mineral Oil, C10 – C40	500 mg/kg	BS EN ISO/IEC 17025:2005 / MCERTS
PAHs (Total of 17)	100 mg/kg	BS EN ISO/IEC 17025:2005 / MCERTS
pH	N/A	BS EN ISO/IEC 17025:2005 / MCERTS
Arsenic, As	0.5 mg/kg	BS EN ISO/IEC 17025:2005 / MCERTS
Barium, Ba	20 mg/kg	BS EN ISO/IEC 17025:2005 / MCERTS
Cadmium, Cd	0.04 mg/kg	BS EN ISO/IEC 17025:2005 / MCERTS
Chromium, Cr	0.5 mg/kg	BS EN ISO/IEC 17025:2005 / MCERTS
Copper, Cu	2 mg/kg	BS EN ISO/IEC 17025:2005 / MCERTS
Mercury, Hg	0.01 mg/kg	BS EN ISO/IEC 17025:2005 / MCERTS
Molybdenum, Mo	0.5 mg/kg	BS EN ISO/IEC 17025:2005 / MCERTS
Nickel, Ni	0.4 mg/kg	BS EN ISO/IEC 17025:2005 / MCERTS
Lead, Pb	0.5 mg/kg	BS EN ISO/IEC 17025:2005 / MCERTS
Antimony, Sb	0.06 mg/kg	BS EN ISO/IEC 17025:2005 / MCERTS
Selenium, Se	0.1 mg/kg	BS EN ISO/IEC 17025:2005 / MCERTS
Zinc, Zn	4 mg/kg	BS EN ISO/IEC 17025:2005 / MCERTS
Chloride, Cl	800 mg/kg	BS EN ISO/IEC 17025:2005 / MCERTS
Fluoride, F	10 mg/kg	BS EN ISO/IEC 17025:2005 / MCERTS
Sulphate, SO <sub>4</sub>	1000 mg/kg	BS EN ISO/IEC 17025:2005 / MCERTS
Total dissolved Solids (TDS)	4000 mg/kg	BS EN ISO/IEC 17025:2005 / MCERTS
Phenol index	1 mg/kg	BS EN ISO/IEC 17025:2005 / MCERTS
Dissolved organic carbon	500 mg/kg	BS EN ISO/IEC 17025:2005 / MCERTS

### 3.2.14 Survey Vessels

For sampling, a jack-up barge will be required. The vessel should have the appropriate draft and manoeuvrability to be able to access the anticipated water depths. However, a jack-up barge with a draft of no more than 1.5m with associated safety boat and tug boat for transiting between locations would be typical for these operations. **Figure 3.3** shows a typical jack-up barge that could be deployed for these works.

The jack-up barge will at a minimum meet the following requirements:

- be provided with a class certificate verifying the provision of adequate safety equipment for the type of vessel and the number of on-board personnel
- the platform should be certified in compliance with the MODU Code



**Figure 3.3: Example of a Fugro nearshore jack-up barge with jack-up deployed drilling assembly**

The Jack Up Vessel (JUV) will use hydraulic oil in the jacking system which is sealed with an anti-pollution ring / scupper inside the jackhouse. The legs of the JUV do not have any oil or grease on them and have no oil or grease system.

## 4 STAGE 1 SCREENING APPRAISAL FOR APPROPRIATE ASSESSMENT

A screening exercise will be undertaken by DPC to determine whether, firstly, the plan or project is directly connected with or necessary to the management of the site, and secondly, whether it is likely to have a significant effect on the site; it is governed by the first sentence of Article 6(3).

The provisions of Regulation 42 of the 2011 Regulations make clear that screening for appropriate assessment of a project which a public authority wishes to undertake or adopt shall be carried out to assess, in view of best scientific knowledge, if that proposed development, individually or in combination with another plan or project is likely to have a significant effect on the European site.

### 4.1 Directly Connected with or Necessary to the Management of the Site

The proposed 3FM Project marine site investigations are required to provide preliminary ground investigation information to inform and assess the geotechnical and geo-environmental characteristics of the soils, sediments and rock to inform engineering design work and environmental assessment for applications for development consent to various competent authorities including An Bord Pleanála and the EPA.

On this basis, the proposed marine site investigations are not directly connected with or necessary to the management of any site as a European Site.

### 4.2 European Sites in proximity to Dublin Port

There is a significant aggregation of designated sites in and around Dublin Bay, including European sites (SACs and SPAs), NHAs and pNHAs, Ramsar sites, IBAs and Nature Reserves. It is a coastal wetland complex of considerable nature conservation value in a European and international context and the UNESCO designated Dublin Bay Biosphere extends to over 300km<sup>2</sup>, containing or overlapping with 14 European sites.

This screening appraisal considers European sites designated under European Council Directives 92/43/EEC and 2009/147/EC. The proposed marine site investigations will be screened against those European sites in order to appraise whether they are likely to have a significant effect on the site(s).

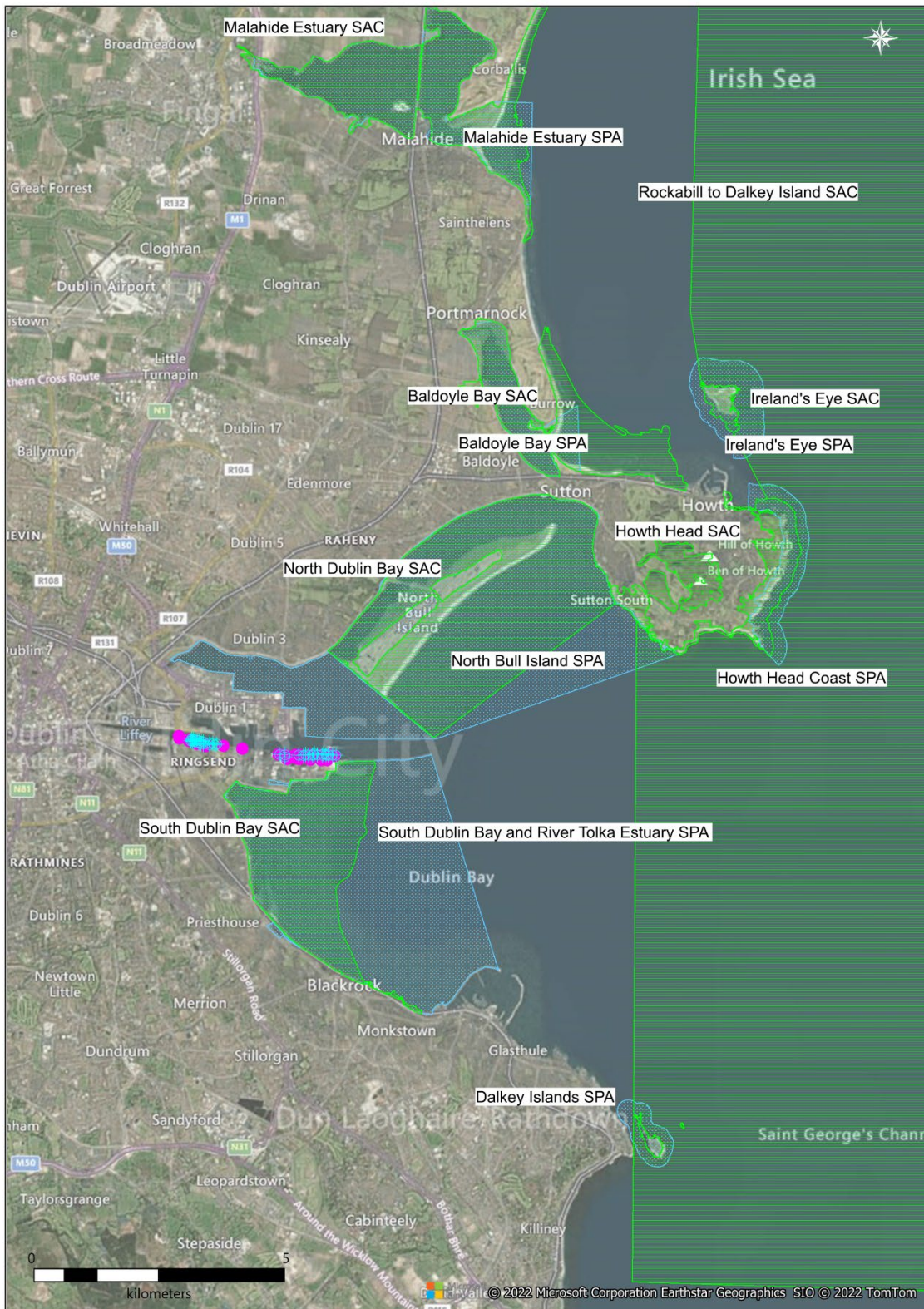
The most up-to-date Conservation Objectives for the European sites under consideration, and details in relation to the Qualifying Interests and Special Conservation Interests of these European sites are provided in **Table 4.1**.

The information contained in these tables is based on publicly available data on these European Sites and their Conservation Objectives, sourced from NPWS in June 2022.

European sites described in **Table 4.1** are illustrated in **Figure 4.1** at 1:88,000 scale. The location of the Dublin Port tern colonies are shown in **Figure 4.2** at a scale of 1:12,000.



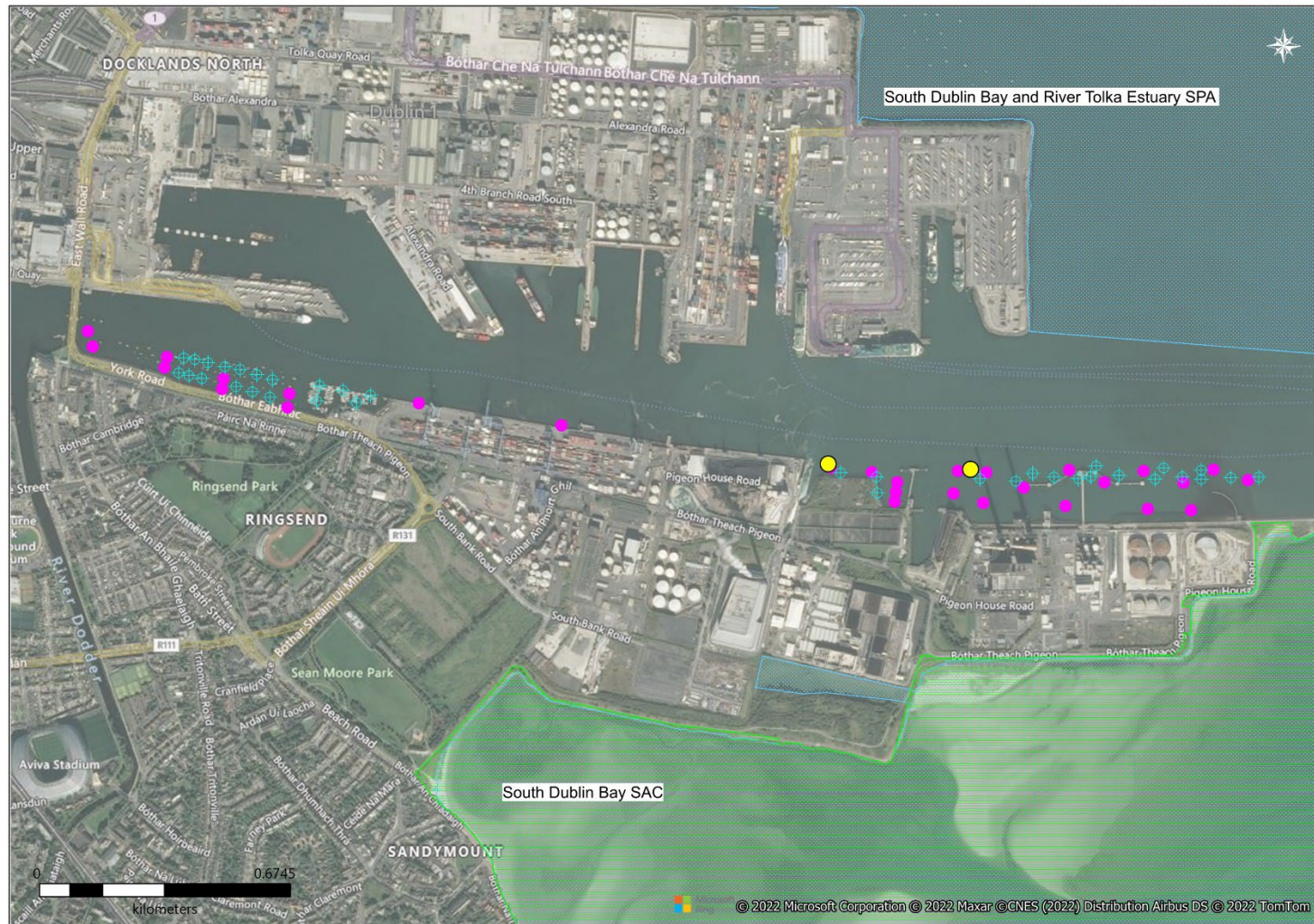
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**Figure 4.1: European sites considered in the Habitats Directive Screening Appraisal**



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**Figure 4.2: Tern colonies considered in the Habitats Directive Screening Appraisal**



**Table 4.1: Qualifying Interests and Conservation objectives of European sites considered**

Site Code	Site Name	Qualifying Interests & Conservation Objectives	Distance from proposed Site Investigations																																	
IE000204	Lambay Island SAC	<p><b>Conservation Objectives Specific Version 1.0 (22/07/13)</b> To maintain the favourable conservation condition of the 2 no. Annex I habitat types in the SAC, as defined by a range of attributes and targets; and of 2 no. Annex II species in the SAC, as defined by 5 no. attributes and targets.</p> <p><b>Annex I Habitats</b></p> <ul style="list-style-type: none"> <li>Reefs [1170]</li> </ul> <table border="1"> <thead> <tr> <th>Attribute</th> <th>Measure</th> <th>Target</th> </tr> </thead> <tbody> <tr> <td>Habitat area</td> <td>Hectares</td> <td>The permanent area is stable or increasing, subject to natural processes</td> </tr> <tr> <td>Distribution</td> <td>Occurrence</td> <td>The distribution of reefs is stable or increasing, subject to natural processes</td> </tr> <tr> <td>Community structure</td> <td>Biological composition</td> <td>Conserve the following community types in a natural condition: Intertidal reef community complex; Laminaria-dominated community complex</td> </tr> <tr> <td></td> <td></td> <td> <ul style="list-style-type: none"> <li>Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]</li> </ul> </td> </tr> <tr> <th>Attribute</th> <th>Measure</th> <th>Target</th> </tr> <tr> <td>Habitat length</td> <td>Kilometres</td> <td>Area stable, subject to natural processes, including erosion. Total length of cliff section mapped: 7.27km</td> </tr> <tr> <td>Habitat distribution</td> <td>Occurrence</td> <td>No decline, subject to natural processes</td> </tr> <tr> <td>Physical structure: functionality and hydrological regime</td> <td>Occurrence of artificial barriers</td> <td>No alteration to natural functioning of geomorphological and hydrological processes due to artificial structures</td> </tr> <tr> <td>Vegetation structure: zonation</td> <td>Occurrence</td> <td>Maintain range of sea cliff habitat zonations including transitional zones, subject to natural processes including erosion and succession</td> </tr> <tr> <td>Vegetation structure: vegetation height</td> <td>Centimetres</td> <td>Maintain structural variation within sward</td> </tr> </tbody> </table>	Attribute	Measure	Target	Habitat area	Hectares	The permanent area is stable or increasing, subject to natural processes	Distribution	Occurrence	The distribution of reefs is stable or increasing, subject to natural processes	Community structure	Biological composition	Conserve the following community types in a natural condition: Intertidal reef community complex; Laminaria-dominated community complex			<ul style="list-style-type: none"> <li>Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]</li> </ul>	Attribute	Measure	Target	Habitat length	Kilometres	Area stable, subject to natural processes, including erosion. Total length of cliff section mapped: 7.27km	Habitat distribution	Occurrence	No decline, subject to natural processes	Physical structure: functionality and hydrological regime	Occurrence of artificial barriers	No alteration to natural functioning of geomorphological and hydrological processes due to artificial structures	Vegetation structure: zonation	Occurrence	Maintain range of sea cliff habitat zonations including transitional zones, subject to natural processes including erosion and succession	Vegetation structure: vegetation height	Centimetres	Maintain structural variation within sward	22.0km by sea
Attribute	Measure	Target																																		
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Site Code	Site Name	Qualifying Interests & Conservation Objectives			Distance from proposed Site Investigations
		<b>Vegetation composition: typical species and subcommunities</b>	Percentage cover at a representative sample of monitoring stops	Maintain range of subcommunities with typical species listed in the Irish Sea Cliff Survey	
		<b>Vegetation composition: negative indicator species</b>	Percentage	Negative indicator species (including non-natives) to represent less than 5% cover	
		<b>Vegetation composition: bracken and woody species</b>	Percentage	Cover of bracken ( <i>Pteridium aquilinum</i> ) on grassland and/or heath less than 10%. Cover of woody species on grassland and/or heath less than 20%	
		<b>Annex II Species</b>			
		<ul style="list-style-type: none"> <li>Grey Seal (<i>Halichoerus grypus</i>) [1364]</li> </ul>			
		<b>Attribute</b>	<b>Measure</b>	<b>Target</b>	
		<b>Access to suitable habitat</b>	Number of artificial barriers	Species range within the site should not be restricted by artificial barriers to site use.	
		<b>Breeding behaviour</b>	Breeding sites	The breeding sites should be maintained in a natural condition.	
		<b>Moulting behaviour</b>	Moult haul-out sites	The moult haul-out sites should be maintained in a natural condition.	
		<b>Resting behaviour</b>	Resting haul-out sites	The resting haul-out sites should be maintained in a natural condition.	
		<b>Disturbance</b>	Level of impact	Human activities should occur at levels that do not adversely affect the grey seal population at the site	
		<ul style="list-style-type: none"> <li>Harbour seal (<i>Phoca vitulina</i>) [1365]</li> </ul>			
		<b>Attribute</b>	<b>Measure</b>	<b>Target</b>	
		<b>Access to suitable habitat</b>	Number of artificial barriers	Species range within the site should not be restricted by artificial barriers to site use.	
		<b>Breeding behaviour</b>	Breeding sites	The breeding sites should be maintained in a natural condition.	
		<b>Moulting behaviour</b>	Moult haul-out sites	The moult haul-out sites should be maintained in a natural condition.	
		<b>Resting behaviour</b>	Resting haul-out sites	The resting haul-out sites should be maintained in a natural condition.	
		<b>Disturbance</b>	Level of impact	Human activities should occur at levels that do not adversely affect the harbour seal population at the site	

## REPORT TO INFORM AA SCREENING

Site Code	Site Name	Qualifying Interests & Conservation Objectives	Distance from proposed Site Investigations																											
IE000205	Malahide Estuary SAC	<p><b>Conservation Objectives Specific Version 1.0 (27/05/13)</b> To maintain the favourable conservation condition of 7 no. Annex 1 habitat type in the SAC, as defined by a range of attributes and targets.</p> <p><b>Annex I Habitats</b></p> <ul style="list-style-type: none"> <li>Mudflats and sandflats not covered by seawater at low tide [1140]</li> </ul> <table border="1"> <thead> <tr> <th>Attribute</th> <th>Measure</th> <th>Target</th> </tr> </thead> <tbody> <tr> <td>Habitat area</td> <td>Hectares</td> <td>The permanent habitat area is stable or increasing, subject to natural processes.</td> </tr> <tr> <td>Community extent</td> <td>Hectares</td> <td>Maintain the extent of the Zostera-dominated community and the Mytilus edulis-dominated community complex, subject to natural processes.</td> </tr> <tr> <td>Community structure: Zostera density</td> <td>Shoots/m<sup>2</sup></td> <td>Conserve the high quality of the Zostera-dominated community, subject to natural processes</td> </tr> <tr> <td>Community structure: Mytilus edulis density</td> <td>Individuals/m<sup>2</sup></td> <td>Conserve the high quality of the Mytilus edulisdominated community, subject to natural processes</td> </tr> <tr> <td>Community distribution</td> <td>Hectares</td> <td>Conserve the following community types in a natural condition: Fine sand with oligochaetes, amphipods, bivalves and olychaetes community complex; Estuarine sandy mud with Chironomidae and Hediste diversicolor community complex; and Sand to muddy sand with Peringia ulvae, Tubificoides benedii and Cerastoderma edule community complex.</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li><i>Salicornia</i> and other annuals colonizing mud and sand [1310]</li> </ul> <table border="1"> <thead> <tr> <th>Attribute</th> <th>Measure</th> <th>Target</th> </tr> </thead> <tbody> <tr> <td>Habitat area</td> <td>Hectares</td> <td>Area stable or increasing, subject to natural processes, including erosion and succession. For sub-site mapped: Malahide Estuary- 1.93ha.</td> </tr> <tr> <td>Habitat distribution</td> <td>Occurrence</td> <td>No decline, or change in habitat distribution, subject to natural processes.</td> </tr> </tbody> </table>	Attribute	Measure	Target	Habitat area	Hectares	The permanent habitat area is stable or increasing, subject to natural processes.	Community extent	Hectares	Maintain the extent of the Zostera-dominated community and the Mytilus edulis-dominated community complex, subject to natural processes.	Community structure: Zostera density	Shoots/m <sup>2</sup>	Conserve the high quality of the Zostera-dominated community, subject to natural processes	Community structure: Mytilus edulis density	Individuals/m <sup>2</sup>	Conserve the high quality of the Mytilus edulisdominated community, subject to natural processes	Community distribution	Hectares	Conserve the following community types in a natural condition: Fine sand with oligochaetes, amphipods, bivalves and olychaetes community complex; Estuarine sandy mud with Chironomidae and Hediste diversicolor community complex; and Sand to muddy sand with Peringia ulvae, Tubificoides benedii and Cerastoderma edule community complex.	Attribute	Measure	Target	Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession. For sub-site mapped: Malahide Estuary- 1.93ha.	Habitat distribution	Occurrence	No decline, or change in habitat distribution, subject to natural processes.	19.7km by sea
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Site Code	Site Name	Qualifying Interests & Conservation Objectives			Distance from proposed Site Investigations
		<b>Physical structure: sediment supply</b>	Presence/ absence of physical barriers	Maintain, or where necessary restore, natural circulation of sediments and organic matter, without any physical obstructions	
		<b>Physical structure: creeks and pans</b>	Occurrence	Maintain creek and pan structure, subject to natural processes, including erosion and succession	
		<b>Physical structure: flooding regime</b>	Hectares flooded; frequency	Maintain natural tidal regime	
		<b>Vegetation structure: zonation</b>	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	
		<b>Vegetation structure: vegetation height</b>	Centimetres	Maintain structural variation within sward	
		<b>Vegetation structure: vegetation cover</b>	Percentage cover at a representative sample of monitoring stops	Maintain more than 90% of area outside creeks vegetated	
		<b>Vegetation composition: typical species and subcommunities</b>	Percentage cover	Maintain the presence of species-poor communities listed in SMP (McCorry and Ryle, 2009)	
		<b>Vegetation structure: negative indicator species – Spartina anglica</b>	Hectares	No significant expansion of common cordgrass ( <i>Spartina anglica</i> ). No new sites for this species and an annual spread of less than 1% where it is already known to occur	
		<ul style="list-style-type: none"> <li><i>Spartina</i> swards (<i>Spartinion maritimae</i>)</li> </ul> <p>The Conservation Objectives document published by NPWS states that " <i>Spartina</i> swards (<i>Spartinion maritimae</i>) was originally listed as a qualifying Annex I habitat for Malahide Estuary SAC due to historical records of two rare forms of cordgrass—small cordgrass (<i>Spartina maritima</i>) and Townsend's cordgrass (<i>S. x townsendii</i>). However, Preston et al. (2002) considers both forms to be alien. In addition, all stands of cordgrass in Ireland are now regarded as common cordgrass (<i>S. anglica</i>) (McCorry et al., 2003; McCorry and Ryle, 2009). As a consequence, a conservation objective has <b>not</b> been prepared for this habitat. It will therefore <b>not be necessary to assess</b> the likely effects of plans or projects against this Annex I habitat at this site." (authors emphasis).</p> <ul style="list-style-type: none"> <li>Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) [1330]</li> </ul>			
		<b>Attribute</b>	<b>Measure</b>	<b>Target</b>	
		<b>Habitat area</b>	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession. For sub-site mapped: Malahide Estuary - 25.33ha.	
		<b>Habitat distribution</b>	Occurrence	No decline or change in habitat distribution, subject to natural processes.	
		<b>Physical structure: sediment supply</b>	Presence/ absence of physical barriers	Maintain natural circulation of sediments and organic matter, without any physical obstructions	

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Site Code	Site Name	Qualifying Interests & Conservation Objectives			Distance from proposed Site Investigations
		<b>Physical structure: creeks and pans</b>	Occurrence	Allow creek and pan structure to develop, subject to natural processes, including erosion and succession	
		<b>Physical structure: flooding regime</b>	Hectares flooded; frequency	Maintain natural tidal regime	
		<b>Vegetation structure: zonation</b>	Occurrence	Maintain range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	
		<b>Vegetation structure: vegetation height</b>	Centimetres	Maintain structural variation within sward	
		<b>Vegetation structure: vegetation cover</b>	Percentage cover at a representative sample of monitoring stops	Maintain more than 90% area outside creeks vegetated	
		<b>Vegetation composition: typical species and subcommunities</b>	Percentage cover at a representative sample of monitoring stops	Maintain range of subcommunities with typical species listed in SMP (McCorry and Ryle, 2009)	
		<b>Vegetation structure: negative indicator species – <i>Spartina anglica</i></b>	Hectares	No significant expansion of common cordgrass ( <i>Spartina anglica</i> ), with an annual spread of less than 1% where it is known to occur	
		<ul style="list-style-type: none"> <li>Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410]</li> </ul>			
		<b>Attribute</b>	<b>Measure</b>	<b>Target</b>	
		<b>Habitat area</b>	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession. For sub-site mapped: Malahide Estuary - 0.64ha.	
		<b>Habitat distribution</b>	Occurrence	No decline, subject to natural processes.	
		<b>Physical structure: sediment supply</b>	Presence/ absence of physical barriers	Maintain/restore natural circulation of sediments and organic matter, without any physical obstructions	
		<b>Physical structure: creeks and pans</b>	Occurrence	Maintain creek and pan structure, subject to natural processes, including erosion and succession	
		<b>Physical structure: flooding regime</b>	Hectares flooded; frequency	Maintain natural tidal regime	
		<b>Vegetation structure: zonation</b>	Occurrence	Maintain range of saltmarsh habitats including transitional zones, subject to natural processes including erosion and succession	
		<b>Vegetation structure: vegetation height</b>	Centimetres	Maintain structural variation in the sward	
		<b>Vegetation structure: vegetation cover</b>	Percentage cover at a representative sample of monitoring stops	Maintain more than 90% of area outside creeks vegetated	



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		<p><b>Vegetation composition: typical species and subcommunities</b> Percentage cover at a representative sample of monitoring stops Maintain range of subcommunities with characteristic species listed in SMP (McCorry and Ryle, 2009)</p> <p><b>Vegetation structure: negative indicator species – Spartina anglica</b> Hectares No significant expansion of common cordgrass (<i>Spartina anglica</i>), with an annual spread of less than 1% where it is already known to occur</p> <ul style="list-style-type: none"> <li>Shifting dunes along the shoreline with <i>Ammophila arenaria</i> ("white dunes") [2120]</li> </ul> <table border="1"> <thead> <tr> <th>Attribute</th> <th>Measure</th> <th>Target</th> </tr> </thead> <tbody> <tr> <td>Habitat area</td> <td>Hectares</td> <td>Area stable or increasing, subject to natural processes including erosion and succession. 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IE000199	Baldoye Bay SAC	<p><b>Conservation Objectives Specific Version 1.0 (19/11/12)</b> To maintain the favourable conservation condition of 4 no. Annex 1 habitat type in the SAC, as defined by a range of attributes and targets.</p> <p><b>Annex I Habitats</b></p> <ul style="list-style-type: none"> <li>Mudflats and sandflats not covered by seawater at low tide [1140]</li> </ul> <table border="1"> <thead> <tr> <th>Attribute</th> <th>Measure</th> <th>Target</th> </tr> </thead> <tbody> <tr> <td><b>Habitat area</b></td> <td>Hectares</td> <td>The permanent habitat area is stable or increasing, subject to natural processes.</td> </tr> <tr> <td><b>Community distribution</b></td> <td>Hectares</td> <td>Conserve the following community types in a natural condition: Fine sand dominated by <i>Angulus tenuis</i> community complex; and Estuarine sandy mud with <i>Pygospio elegans</i> and <i>Tubificoides benedii</i> community complex.</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li><i>Salicornia</i> and other annuals colonizing mud and sand [1310]</li> </ul> <table border="1"> <thead> <tr> <th>Attribute</th> <th>Measure</th> <th>Target</th> </tr> </thead> <tbody> <tr> <td><b>Habitat area</b></td> <td>Hectares</td> <td>Area stable or increasing, subject to natural processes, including erosion and succession. For sub-site mapped: Baldoye - 0.383ha.</td> </tr> <tr> <td><b>Habitat distribution</b></td> <td>Occurrence</td> <td>No decline, or change in habitat distribution, subject to natural processes.</td> </tr> <tr> <td><b>Physical structure: sediment supply</b></td> <td>Presence/ absence of physical barriers</td> <td>Maintain natural circulation of sediments and organic matter, without any physical obstructions</td> </tr> <tr> <td><b>Physical structure: creeks and pans</b></td> <td>Occurrence</td> <td>Maintain creek and pan structure, subject to natural processes, including erosion and succession</td> </tr> <tr> <td><b>Physical structure: flooding regime</b></td> <td>Hectares flooded; frequency</td> <td>Maintain natural tidal regime</td> </tr> </tbody> </table>	Attribute	Measure	Target	<b>Habitat area</b>	Hectares	The permanent habitat area is stable or increasing, subject to natural processes.	<b>Community distribution</b>	Hectares	Conserve the following community types in a natural condition: Fine sand dominated by <i>Angulus tenuis</i> community complex; and Estuarine sandy mud with <i>Pygospio elegans</i> and <i>Tubificoides benedii</i> community complex.	Attribute	Measure	Target	<b>Habitat area</b>	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession. For sub-site mapped: Baldoye - 0.383ha.	<b>Habitat distribution</b>	Occurrence	No decline, or change in habitat distribution, subject to natural processes.	<b>Physical structure: sediment supply</b>	Presence/ absence of physical barriers	Maintain natural circulation of sediments and organic matter, without any physical obstructions	<b>Physical structure: creeks and pans</b>	Occurrence	Maintain creek and pan structure, subject to natural processes, including erosion and succession	<b>Physical structure: flooding regime</b>	Hectares flooded; frequency	Maintain natural tidal regime	14.3km by sea
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IE002193	Ireland's Eye SAC	<p><b>Conservation Objectives Specific Version 1.0 (27/01/17)</b>          To maintain the favourable conservation condition of 2 no. Annex 1 habitat type in the SAC, as defined by a range of attributes and targets.</p> <p><b>Annex I Habitats</b></p> <ul style="list-style-type: none"> <li>Perennial vegetation of stony banks [1220]</li> </ul> <table border="1"> <thead> <tr> <th>Attribute</th> <th>Measure</th> <th>Target</th> </tr> </thead> <tbody> <tr> <td>Habitat area</td> <td>Hectares</td> <td>Area stable or increasing, subject to natural processes, including erosion and succession</td> </tr> <tr> <td>Habitat distribution</td> <td>Occurrence</td> <td>No decline or change in habitat distribution, subject to natural processes including erosion and succession.</td> </tr> </tbody> </table>	Attribute	Measure	Target	Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession	Habitat distribution	Occurrence	No decline or change in habitat distribution, subject to natural processes including erosion and succession.	13.5km by sea																								
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IE000202	Howth Head SAC	<b>Conservation Objectives Specific Version 1.0 (06/12/16)</b> To maintain the favourable conservation condition of 2 no. Annex 1 habitat type in the SAC, as defined by a range of attributes and targets.  <b>Annex I Habitats</b>	6.1km by sea																																										



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Habitat distribution	Occurrence	No decline or change in habitat distribution, subject to natural processes.																																														
Physical structure: functionality and hydrological regime	Occurrence of artificial barriers	No alteration to natural functioning of geomorphological and hydrological processes, including groundwater quality, due to artificial structures																																														
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession																																														
Vegetation structure: vegetation height	Centimetres	Maintain structural variation within sward																																														
Vegetation composition: typical species and subcommunities	Percentage cover at a representative number of monitoring stops	Maintain range of subcommunities with typical species listed in the Irish Sea Cliff Survey (Barron et al., 2011)																																														
Vegetation composition: negative indicator species	Percentage	Negative indicator species (including non-native species) to represent less than 5% cover																																														
Vegetation composition: bracken and woody species	Percentage	Cover of bracken (Pteridium aquilinum) on grassland and/or heath less than 10%. Cover of woody species on grassland and/or heath less than 20%																																														
Attribute	Measure	Target																																														
Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession																																														
Habitat distribution	Occurrence	No decline or change in habitat distribution, subject to natural processes																																														
Ecosystem function: soil nutrients	Soil pH and appropriate nutrient levels at a representative number of monitoring stops	Maintain soil nutrient status within natural range																																														
Community diversity	Abundance of variety of vegetation communities	Maintain variety of vegetation communities, subject to natural processes																																														
Vegetation composition: lichens and bryophytes	Number of species at a representative number of 2m x 2m monitoring stops	Number of bryophyte or non-crustose lichen species present at each monitoring stop is at least three, excluding Campylopus and Polytrichum mosses																																														

## REPORT TO INFORM AA SCREENING

Site Code	Site Name	Qualifying Interests & Conservation Objectives		Distance from proposed Site Investigations
		<b>Vegetation composition: number of positive indicator species</b>	Number of species at a representative number of 2m x 2m monitoring stops	Number of positive indicator species present at each monitoring stop is at least two
		<b>Vegetation composition: cover of positive indicator species</b>	Percentage cover at a representative number of 2m x 2m monitoring stops	Cover of positive indicator species at least 50% for siliceous dry heath and 50- 75% for calcareous dry heath
		<b>Vegetation composition: dwarf shrub composition</b>	Percentage cover at a representative number of 2m x 2m monitoring stops	Proportion of dwarf shrub cover composed collectively of bog-myrtle ( <i>Myrica gale</i> ), creeping willow ( <i>Salix repens</i> ) and western gorse ( <i>Ulex gallii</i> ) is less than 50%
		<b>Vegetation composition: negative indicator species</b>	Percentage cover at a representative number of 2m x 2m monitoring stops	Total cover of negative indicator species less than 1%
		<b>Vegetation composition: non-native species</b>	Percentage cover at a representative number of 2m x 2m monitoring stops	Cover of non-native species less than 1%
		<b>Vegetation composition: native trees and shrubs</b>	Percentage cover in local vicinity of a representative number of monitoring stops	Cover of scattered native trees and shrubs less than 20%
		<b>Vegetation composition: bracken</b>	Percentage cover in local vicinity of a representative number of monitoring stops	Cover of bracken ( <i>Pteridium aquilinum</i> ) less than 10%
		<b>Vegetation composition: soft rush</b>	Percentage cover in local vicinity of a representative number of monitoring stops	Cover of soft rush ( <i>Juncus effusus</i> ) less than 10%
		<b>Vegetation structure: senescent ling</b>	Percentage cover at a representative number of 2m x 2m monitoring stops	Senescent proportion of ling ( <i>Calluna vulgaris</i> ) cover less than 50%

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Site Code	Site Name	Qualifying Interests & Conservation Objectives			Distance from proposed Site Investigations
		<b>Vegetation structure: signs of browsing</b>	Percentage of shoots browsed at a representative number of 2m x 2m monitoring stops	Less than 33% collectively of the last complete growing season's shoots of ericoids showing signs of browsing	
		<b>Vegetation structure: burning</b>	Occurrence in local vicinity of a representative number of monitoring stops	No signs of burning in sensitive areas	
		<b>Vegetation structure: growth phases of ling</b>	Percentage cover in local vicinity of a representative number of monitoring stops	Outside sensitive areas, all growth phases of ling ( <i>Calluna vulgaris</i> ) should occur throughout, with at least 10% of cover in the mature phase	
		<b>Physical structure: disturbed bare ground</b>	Percentage cover at, and in local vicinity of, a representative number of 2m x 2m monitoring stops	Cover of disturbed bare ground less than 10%	
		<b>Indicators of local distinctiveness</b>	Occurrence and population size	No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat	
IE000206	North Dublin Bay SAC	<b>Conservation Objectives Specific Version 1.0 (06/11/13)</b> To maintain or restore the favourable conservation condition of 9 no. Annex 1 habitat type in the SAC, as defined by a range of attributes and targets; and of 1 no. Annex II species in the SAC, as defined by 5 no. attributes and targets.  <b>Annex I Habitats</b>  <ul style="list-style-type: none"> <li>Mudflats and sandflats not covered by seawater at low tide [1140]</li> </ul>			1.5km by sea
		<b>Attribute</b>	<b>Measure</b>	<b>Target</b>	
		<b>Habitat area</b>	Hectares	The permanent habitat area is stable or increasing, subject to natural processes.	
		<b>Community extent</b>	Hectares	Maintain the extent of the <i>Mytilus edulis</i> -dominated community, subject to natural processes.	
		<b>Community structure: <i>Mytilus edulis</i> density</b>	Individuals/m <sup>2</sup>	Conserve the high quality of the <i>Mytilus edulis</i> dominated community, subject to natural processes	
		<b>Community distribution</b>	Hectares	Conserve the following community types in a natural condition: Fine sand to sandy mud with <i>Pygospio elegans</i> and <i>Crangon crangon</i> community complex; Fine sand with <i>Spio martinensis</i> community complex.	

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		<ul style="list-style-type: none"> <li>Annual vegetation of drift lines [1210]</li> </ul> <table border="1"> <thead> <tr> <th>Attribute</th> <th>Measure</th> <th>Target</th> </tr> </thead> <tbody> <tr> <td>Habitat area</td> <td>Hectares</td> <td>Area increasing, subject to natural processes, including erosion and succession. 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		<p><b>Distribution of populations</b> Number and geographical spread of populations No decline</p> <p><b>Population size</b> Number of individuals No decline. Population at Bull Island estimated at a maximum of 5,824 thalli. Actual population is more likely to be 5% of this, or c. 300 thalli</p> <p><b>Area of suitable habitat</b> Hectares No decline. Area of suitable habitat at Bull Island is estimated at c. 0.04ha.</p> <p><b>Hydrological conditions: soil moisture</b> Occurrence Maintain hydrological conditions so that substrate is kept moist and damp throughout the year, but not subject to prolonged inundation by flooding in winter</p> <p><b>Vegetation structure: height and cover</b> Centimetres and percentage  <ul style="list-style-type: none"> <li>Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410]</li> </ul>           Maintain open, low vegetation with a high percentage of bryophytes (small acrocarps and liverwort turf) and bare ground</p> <table border="1"> <thead> <tr> <th>Attribute</th> <th>Measure</th> <th>Target</th> </tr> </thead> <tbody> <tr> <td><b>Habitat area</b></td> <td>Hectares</td> <td>Area stable or increasing, subject to natural processes, including erosion and succession. For sub-site mapped: North Bull Island - 7.98ha.</td> </tr> <tr> <td><b>Habitat distribution</b></td> <td>Occurrence</td> <td>No decline or change in habitat distribution, subject to natural processes.</td> </tr> <tr> <td><b>Physical structure: sediment supply</b></td> <td>Presence/ absence of physical barriers</td> <td>Maintain, or where necessary restore, natural circulation of sediments and organic matter, without any physical obstructions</td> </tr> <tr> <td><b>Physical structure: creeks and pans</b></td> <td>Occurrence</td> <td>Maintain creek and pan structure, subject to natural processes, including erosion and succession</td> </tr> <tr> <td><b>Physical structure: flooding regime</b></td> <td>Hectares flooded; frequency</td> <td>Maintain natural tidal regime</td> </tr> <tr> <td><b>Vegetation structure: zonation</b></td> <td>Occurrence</td> <td>Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession</td> </tr> <tr> <td><b>Vegetation structure: vegetation height</b></td> <td>Centimetres</td> <td>Maintain structural variation within sward</td> </tr> <tr> <td><b>Vegetation structure: vegetation cover</b></td> <td>Percentage cover at a representative number of monitoring stops</td> <td>Maintain more than 90% of area outside creeks vegetated</td> </tr> <tr> <td><b>Vegetation composition: typical species and subcommunities</b></td> <td>Percentage cover at a representative number of monitoring stops</td> <td>Maintain the presence of species-poor communities listed in SMP (McCorry and Ryle, 2009)</td> </tr> <tr> <td><b>Vegetation structure: negative indicator species – <i>Spartina anglica</i></b>  <ul style="list-style-type: none"> <li>Embryonic shifting dunes [2110]</li> </ul> </td> <td>Hectares</td> <td>No significant expansion of common cordgrass (<i>Spartina anglica</i>), with an annual spread of less than 1%</td> </tr> </tbody> </table>	Attribute	Measure	Target	<b>Habitat area</b>	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession. For sub-site mapped: North Bull Island - 7.98ha.	<b>Habitat distribution</b>	Occurrence	No decline or change in habitat distribution, subject to natural processes.	<b>Physical structure: sediment supply</b>	Presence/ absence of physical barriers	Maintain, or where necessary restore, natural circulation of sediments and organic matter, without any physical obstructions	<b>Physical structure: creeks and pans</b>	Occurrence	Maintain creek and pan structure, subject to natural processes, including erosion and succession	<b>Physical structure: flooding regime</b>	Hectares flooded; frequency	Maintain natural tidal regime	<b>Vegetation structure: zonation</b>	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	<b>Vegetation structure: vegetation height</b>	Centimetres	Maintain structural variation within sward	<b>Vegetation structure: vegetation cover</b>	Percentage cover at a representative number of monitoring stops	Maintain more than 90% of area outside creeks vegetated	<b>Vegetation composition: typical species and subcommunities</b>	Percentage cover at a representative number of monitoring stops	Maintain the presence of species-poor communities listed in SMP (McCorry and Ryle, 2009)	<b>Vegetation structure: negative indicator species – <i>Spartina anglica</i></b> <ul style="list-style-type: none"> <li>Embryonic shifting dunes [2110]</li> </ul>	Hectares	No significant expansion of common cordgrass ( <i>Spartina anglica</i> ), with an annual spread of less than 1%	
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<b>Physical structure: creeks and pans</b>	Occurrence	Maintain creek and pan structure, subject to natural processes, including erosion and succession																																		
<b>Physical structure: flooding regime</b>	Hectares flooded; frequency	Maintain natural tidal regime																																		
<b>Vegetation structure: zonation</b>	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession																																		
<b>Vegetation structure: vegetation height</b>	Centimetres	Maintain structural variation within sward																																		
<b>Vegetation structure: vegetation cover</b>	Percentage cover at a representative number of monitoring stops	Maintain more than 90% of area outside creeks vegetated																																		
<b>Vegetation composition: typical species and subcommunities</b>	Percentage cover at a representative number of monitoring stops	Maintain the presence of species-poor communities listed in SMP (McCorry and Ryle, 2009)																																		
<b>Vegetation structure: negative indicator species – <i>Spartina anglica</i></b> <ul style="list-style-type: none"> <li>Embryonic shifting dunes [2110]</li> </ul>	Hectares	No significant expansion of common cordgrass ( <i>Spartina anglica</i> ), with an annual spread of less than 1%																																		

REPORT TO INFORM AA SCREENING

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IE000210	South Dublin Bay SAC	<p><b>Conservation Objectives Specific Version 1.0 (22/08/13)</b> To maintain the favourable conservation condition of 1 no. Annex 1 habitat type [1140] in the SAC, as defined by 4 no. attributes and targets.</p> <p><i>Note:</i> Habitat types [1210], [1310] and [2110] were added as qualifying interests in 2015 and the site's conservation objectives have not yet been revised to take account of these features. Their objectives from North Dublin Bay SAC have been adopted for this assessment.</p> <p><b>Annex I Habitats</b></p> <ul style="list-style-type: none"> <li>Mudflats and sandflats not covered by seawater at low tide [1140]</li> </ul> <table border="1"> <thead> <tr> <th>Attribute</th> <th>Measure</th> <th>Target</th> </tr> </thead> <tbody> <tr> <td><b>Habitat area</b></td> <td>Hectares</td> <td>The permanent habitat area is stable or increasing, subject to natural processes.</td> </tr> <tr> <td><b>Community extent</b></td> <td>Hectares</td> <td>Maintain the extent of the <i>Mytilus edulis</i>-dominated community, subject to natural processes.</td> </tr> <tr> <td><b>Community structure: <i>Mytilus edulis</i> density</b></td> <td>Individuals/m<sup>2</sup></td> <td>Conserve the high quality of the <i>Mytilus edulis</i>-dominated community, subject to natural processes</td> </tr> <tr> <td><b>Community distribution</b></td> <td>Hectares</td> <td>Conserve the following community types in a natural condition: Fine sand to sandy mud with <i>Pygospio elegans</i> and <i>Crangon crangon</i> community complex; Fine sand with <i>Spio martinensis</i> community complex.</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>Annual vegetation of drift lines [1210]</li> </ul>	Attribute	Measure	Target	<b>Habitat area</b>	Hectares	The permanent habitat area is stable or increasing, subject to natural processes.	<b>Community extent</b>	Hectares	Maintain the extent of the <i>Mytilus edulis</i> -dominated community, subject to natural processes.	<b>Community structure: <i>Mytilus edulis</i> density</b>	Individuals/m <sup>2</sup>	Conserve the high quality of the <i>Mytilus edulis</i> -dominated community, subject to natural processes	<b>Community distribution</b>	Hectares	Conserve the following community types in a natural condition: Fine sand to sandy mud with <i>Pygospio elegans</i> and <i>Crangon crangon</i> community complex; Fine sand with <i>Spio martinensis</i> community complex.	3.1km by sea
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IE003000	Rockabill to Dalkey Island SAC	<p><b>Conservation Objectives Specific Version 1.0 (07/05/13)</b>            To maintain the favourable conservation condition of 1 no. Annex 1 habitat type in the SAC, as defined by 3 no. attributes and targets; and of 1 no. Annex II species in the SAC, as defined by 2 no. attributes and targets.</p> <p><b>Annex I Habitats</b></p> <ul style="list-style-type: none"> <li>Reefs [1170]</li> </ul> <table border="1"> <thead> <tr> <th>Attribute</th> <th>Measure</th> <th>Target</th> </tr> </thead> <tbody> <tr> <td>Habitat area</td> <td>Hectares</td> <td>The permanent area is stable or increasing, subject to natural processes.</td> </tr> <tr> <td>Distribution</td> <td>Occurrence</td> <td>The distribution of reefs is stable or increasing, subject to natural processes.</td> </tr> <tr> <td>Community structure</td> <td>Biological composition</td> <td>Conserve the following community types in a natural condition: Intertidal reef community complex; and Subtidal reef community complex.</td> </tr> </tbody> </table> <p><b>Annex II Species</b></p>	Attribute	Measure	Target	Habitat area	Hectares	The permanent area is stable or increasing, subject to natural processes.	Distribution	Occurrence	The distribution of reefs is stable or increasing, subject to natural processes.	Community structure	Biological composition	Conserve the following community types in a natural condition: Intertidal reef community complex; and Subtidal reef community complex.	6.0km - by sea												
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IE004024	South Dublin Bay & River Tolka Estuary SPA	<p><b>Conservation Objectives Specific Version 1.0 (09/03/15)</b> To maintain the favourable conservation condition of –</p> <ul style="list-style-type: none"> <li>9 no. overwintering species in the SPA, as defined by 2 no. attributes and targets;</li> <li>3 no. breeding and passage species of terns, as defined by a wider range of attributes and targets; and</li> <li>wetland habitats in the SPA as a resource for the regularly-occurring migratory waterbirds that utilise it, as defined by 1 no. attribute and target.</li> </ul> <p><b>Special Conservation Interests</b></p> <ul style="list-style-type: none"> <li>Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046]</li> </ul> <table border="1"> <thead> <tr> <th>Attribute</th> <th>Measure</th> <th>Target</th> </tr> </thead> <tbody> <tr> <td>Population trend</td> <td>Percentage change</td> <td>Long term population trend stable or increasing</td> </tr> <tr> <td>Distribution</td> <td>Range, timing and intensity of use of areas</td> <td>No significant decrease in the range, timing or intensity of use of areas by light-bellied brent goose, other than that occurring from natural patterns of variation</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>Oystercatcher (<i>Haematopus ostralegus</i>) [A130]</li> </ul> <table border="1"> <thead> <tr> <th>Attribute</th> <th>Measure</th> <th>Target</th> </tr> </thead> <tbody> <tr> <td>Population trend</td> <td>Percentage change</td> <td>Long term population trend stable or increasing</td> </tr> <tr> <td>Distribution</td> <td>Range, timing and intensity of use of areas</td> <td>No significant decrease in the range, timing or intensity of use of areas by oystercatcher, other than that occurring from natural patterns of variation</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>Ringed Plover (<i>Charadrius hiaticula</i>) [A137]</li> </ul> <table border="1"> <thead> <tr> <th>Attribute</th> <th>Measure</th> <th>Target</th> </tr> </thead> <tbody> <tr> <td>Population trend</td> <td>Percentage change</td> <td>Long term population trend stable or increasing</td> </tr> <tr> <td>Distribution</td> <td>Range, timing and intensity of use of areas</td> <td>No significant decrease in the range, timing or intensity of use of areas by ringed plover, other than that occurring from natural patterns of variation</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>Knot (<i>Calidris canutus</i>) [A143]</li> </ul> <table border="1"> <thead> <tr> <th>Attribute</th> <th>Measure</th> <th>Target</th> </tr> </thead> </table>	Attribute	Measure	Target	Population trend	Percentage change	Long term population trend stable or increasing	Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by light-bellied brent goose, other than that occurring from natural patterns of variation	Attribute	Measure	Target	Population trend	Percentage change	Long term population trend stable or increasing	Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by oystercatcher, other than that occurring from natural patterns of variation	Attribute	Measure	Target	Population trend	Percentage change	Long term population trend stable or increasing	Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by ringed plover, other than that occurring from natural patterns of variation	Attribute	Measure	Target	345m by sea
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IE004006	North Bull Island SPA	<p><b>Conservation Objectives Specific Version 1.0 (09/03/15)</b> To maintain the favourable conservation condition of 17 no. Annex 1 species in the SPA, as defined by 2 no. attributes and targets; and of wetland habitats in the SPA as a resource for the regularly-occurring migratory waterbirds that utilise it, as measured by 1 no. attribute and target</p> <p><b>Special Conservation Interests</b></p> <ul style="list-style-type: none"> <li>Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046]</li> </ul> <table border="1"> <thead> <tr> <th>Attribute</th> <th>Measure</th> <th>Target</th> </tr> </thead> <tbody> <tr> <td><b>Population trend</b></td> <td>Percentage change</td> <td>Long term population trend stable or increasing</td> </tr> <tr> <td><b>Distribution</b></td> <td>Range, timing and intensity of use of areas</td> <td>No significant decrease in the range, timing or intensity of use of areas by light-bellied brent goose, other than that occurring from natural patterns of variation</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>Shelduck (<i>Tadorna tadorna</i>) [A048]</li> </ul> <table border="1"> <thead> <tr> <th>Attribute</th> <th>Measure</th> <th>Target</th> </tr> </thead> <tbody> <tr> <td><b>Population trend</b></td> <td>Percentage change</td> <td>Long term population trend stable or increasing</td> </tr> <tr> <td><b>Distribution</b></td> <td>Range, timing and intensity of use of areas</td> <td>No significant decrease in the range, timing or intensity of use of areas by shelduck, other than that occurring from natural patterns of variation</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>Teal (<i>Anas crecca</i>) [A052]</li> </ul> <table border="1"> <thead> <tr> <th>Attribute</th> <th>Measure</th> <th>Target</th> </tr> </thead> <tbody> <tr> <td><b>Population trend</b></td> <td>Percentage change</td> <td>Long term population trend stable or increasing</td> </tr> <tr> <td><b>Distribution</b></td> <td>Range, timing and intensity of use of areas</td> <td>No significant decrease in the range, timing or intensity of use of areas by teal, other than that occurring from natural patterns of variation</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>Pintail (<i>Anas acuta</i>) [A054]</li> </ul> <table border="1"> <thead> <tr> <th>Attribute</th> <th>Measure</th> <th>Target</th> </tr> </thead> <tbody> <tr> <td><b>Population trend</b></td> <td>Percentage change</td> <td>Long term population trend stable or increasing</td> </tr> </tbody> </table>	Attribute	Measure	Target	<b>Population trend</b>	Percentage change	Long term population trend stable or increasing	<b>Distribution</b>	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by light-bellied brent goose, other than that occurring from natural patterns of variation	Attribute	Measure	Target	<b>Population trend</b>	Percentage change	Long term population trend stable or increasing	<b>Distribution</b>	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by shelduck, other than that occurring from natural patterns of variation	Attribute	Measure	Target	<b>Population trend</b>	Percentage change	Long term population trend stable or increasing	<b>Distribution</b>	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by teal, other than that occurring from natural patterns of variation	Attribute	Measure	Target	<b>Population trend</b>	Percentage change	Long term population trend stable or increasing	2.0km by sea
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		<ul style="list-style-type: none"> <li>Shoveler (<i>Anas clypeata</i>) [A056]</li> </ul>			
		<b>Attribute</b>	<b>Measure</b>	<b>Target</b>	
		<b>Population trend</b>	Percentage change	Long term population trend stable or increasing	
		<b>Distribution</b>	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by shoveler, other than that occurring from natural patterns of variation	
		<ul style="list-style-type: none"> <li>Oystercatcher (<i>Haematopus ostralegus</i>) [A130]</li> </ul>			
		<b>Attribute</b>	<b>Measure</b>	<b>Target</b>	
		<b>Population trend</b>	Percentage change	Long term population trend stable or increasing	
		<b>Distribution</b>	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by oystercatcher, other than that occurring from natural patterns of variation	
		<ul style="list-style-type: none"> <li>Ringed Plover (<i>Charadrius hiaticula</i>) [A137]</li> </ul>			
		<b>Attribute</b>	<b>Measure</b>	<b>Target</b>	
		<b>Population trend</b>	Percentage change	Long term population trend stable or increasing	
		<b>Distribution</b>	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by ringed plover, other than that occurring from natural patterns of variation	
		<ul style="list-style-type: none"> <li>Golden Plover (<i>Pluvialis apricaria</i>) [A140]</li> </ul>			
		<b>Attribute</b>	<b>Measure</b>	<b>Target</b>	
		<b>Population trend</b>	Percentage change	Long term population trend stable or increasing	
		<b>Distribution</b>	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by golden plover, other than that occurring from natural patterns of variation	
		<ul style="list-style-type: none"> <li>Grey Plover (<i>Pluvialis squatarola</i>) [A141]</li> </ul>			
		<b>Attribute</b>	<b>Measure</b>	<b>Target</b>	
		<b>Population trend</b>	Percentage change	Long term population trend stable or increasing	
		<b>Distribution</b>	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by grey plover, other than that occurring from natural patterns of variation	
		<ul style="list-style-type: none"> <li>Knot (<i>Calidris canutus</i>) [A143]</li> </ul>			
		<b>Attribute</b>	<b>Measure</b>	<b>Target</b>	
		<b>Population trend</b>	Percentage change	Long term population trend stable or increasing	
		<b>Distribution</b>	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by knot, other than that occurring from natural patterns of variation	



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IE004016	Baldoyle Bay SPA	<p><b>Conservation Objectives Specific Version 1.0 (27/02/13)</b> To maintain the favourable conservation condition of 6 no. Annex 1 species in the SPA, as defined by a series of attributes and targets; and of wetland habitats in the SPA as a resource for the regularly-occurring migratory waterbirds that utilise it, as measured by 1 no. attribute and target</p> <p><b>Special Conservation Interests</b></p> <ul style="list-style-type: none"> <li>Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046]</li> </ul> <table border="1"> <tr> <td><b>Attribute</b></td> <td><b>Measure</b></td> <td><b>Target</b></td> </tr> <tr> <td><b>Population trend</b></td> <td>Percentage change</td> <td>Long term population trend stable or increasing</td> </tr> <tr> <td><b>Distribution</b></td> <td>Range, timing and intensity of use of areas</td> <td>No significant decrease in the range, timing or intensity of use of areas by light-bellied brent goose, other than that occurring from natural patterns of variation</td> </tr> <tr> <td colspan="3"> <ul style="list-style-type: none"> <li>Shelduck (<i>Tadorna tadorna</i>) [A048]</li> </ul> </td> </tr> </table>	<b>Attribute</b>	<b>Measure</b>	<b>Target</b>	<b>Population trend</b>	Percentage change	Long term population trend stable or increasing	<b>Distribution</b>	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by light-bellied brent goose, other than that occurring from natural patterns of variation	<ul style="list-style-type: none"> <li>Shelduck (<i>Tadorna tadorna</i>) [A048]</li> </ul>			16.2km by sea																								
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IE004113	Howth Head Coast SPA	<p><b>Conservation Objectives Generic Version 8.0 (23/03/21)</b> To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA</p> <p><b>Special Conservation Interests</b></p> <ul style="list-style-type: none"> <li>Kittiwake (<i>Rissa tridactyla</i>) [A188]</li> </ul> <p>Conservation attributes and targets have not been published.</p>	8.9km by sea						
IE004117	Ireland's Eye SPA	<p><b>Conservation Objectives Generic Version 8.0 (23/03/21)</b> To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA</p> <p><b>Special Conservation Interests</b></p> <ul style="list-style-type: none"> <li>Cormorant (<i>Phalacrocorax carbo</i>) [A017]</li> <li>Herring Gull (<i>Larus argentatus</i>) [A184]</li> <li>Kittiwake (<i>Rissa tridactyla</i>) [A188]</li> <li>Guillemot (<i>Uria aalge</i>) [A199]</li> <li>Razorbill (<i>Alca torda</i>) [A200]</li> </ul> <p>Conservation attributes and targets have not been published.</p>	13.0km by sea						
IE004172	Dalkey Islands SPA	<p><b>Conservation Objectives Generic Version 8.0 (23/03/21)</b> To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA</p> <p><b>Special Conservation Interests</b></p> <ul style="list-style-type: none"> <li>Roseate Tern (<i>Sterna dougallii</i>) [A192]</li> <li>Common Tern (<i>Sterna hirundo</i>) [A193]</li> <li>Arctic Tern (<i>Sterna paradisaea</i>) [A194]</li> </ul> <p>Conservation attributes and targets have not been published.</p>	9.7km by sea						
IE004025	Malahide Estuary SPA	<p><b>Conservation Objectives Specific Version 1.0 (16/08/13)</b> To maintain the favourable conservation condition of 14 no. Annex 1 species in the SPA, as defined by a series of attributes and targets; and of wetland habitats in the SPA as a resource for the regularly-occurring migratory waterbirds that utilise it, as measured by 1 no. attribute and target</p> <p><b>Special Conservation Interests</b></p> <ul style="list-style-type: none"> <li>Great Crested Grebe (<i>Podiceps cristatus</i>) [A005]</li> </ul> <table border="1"> <thead> <tr> <th>Attribute</th> <th>Measure</th> <th>Target</th> </tr> </thead> <tbody> <tr> <td>Population trend</td> <td>Percentage change</td> <td>Long term population trend stable or increasing</td> </tr> </tbody> </table>	Attribute	Measure	Target	Population trend	Percentage change	Long term population trend stable or increasing	19.5km by sea
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		<b>Distribution</b>	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by great crested grebe, other than that occurring from natural patterns of variation	
		<ul style="list-style-type: none"> <li>Brent Goose (<i>Branta bernicla hrota</i>) [A046]</li> </ul>			
		<b>Attribute</b>	<b>Measure</b>	<b>Target</b>	
		<b>Population trend</b>	Percentage change	Long term population trend stable or increasing	
		<b>Distribution</b>	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by light-bellied brent goose, other than that occurring from natural patterns of variation	
		<ul style="list-style-type: none"> <li>Shelduck (<i>Tadorna tadorna</i>) [A048]</li> </ul>			
		<b>Attribute</b>	<b>Measure</b>	<b>Target</b>	
		<b>Population trend</b>	Percentage change	Long term population trend stable or increasing	
		<b>Distribution</b>	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by shelduck, other than that occurring from natural patterns of variation	
		<ul style="list-style-type: none"> <li>Pintail (<i>Anas acuta</i>) [A054]</li> </ul>			
		<b>Attribute</b>	<b>Measure</b>	<b>Target</b>	
		<b>Population trend</b>	Percentage change	Long term population trend stable or increasing	
		<b>Distribution</b>	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by pintail, other than that occurring from natural patterns of variation	
		<ul style="list-style-type: none"> <li>Goldeneye (<i>Bucephala clangula</i>) [A067]</li> </ul>			
		<b>Attribute</b>	<b>Measure</b>	<b>Target</b>	
		<b>Population trend</b>	Percentage change	Long term population trend stable or increasing	
		<b>Distribution</b>	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by goldeneye, other than that occurring from natural patterns of variation	
		<ul style="list-style-type: none"> <li>Red-breasted Merganser (<i>Mergus serrator</i>) [A069]</li> </ul>			
		<b>Attribute</b>	<b>Measure</b>	<b>Target</b>	
		<b>Population trend</b>	Percentage change	Long term population trend stable or increasing	
		<b>Distribution</b>	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by red-breasted merganser, other than that occurring from natural patterns of variation	
		<ul style="list-style-type: none"> <li>Oystercatcher (<i>Haematopus ostralegus</i>) [A130]</li> </ul>			
		<b>Attribute</b>	<b>Measure</b>	<b>Target</b>	

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Site Code	Site Name	Qualifying Interests & Conservation Objectives			Distance from proposed Site Investigations
		<b>Population trend Distribution</b>	Percentage change Range, timing and intensity of use of areas	Long term population trend stable or increasing No significant decrease in the range, timing or intensity of use of areas by bar-tailed godwit, other than that occurring from natural patterns of variation	
		<ul style="list-style-type: none"> <li>Redshank (<i>Tringa totanus</i>) [A162]</li> </ul>			
		<b>Attribute</b>	<b>Measure</b>	<b>Target</b>	
		<b>Population trend</b>	Percentage change	Long term population trend stable or increasing	
		<b>Distribution</b>	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by redshank, other than that occurring from natural patterns of variation	
		<ul style="list-style-type: none"> <li>Wetlands [A999]</li> </ul>			
		<b>Attribute</b>	<b>Measure</b>	<b>Target</b>	
		<b>Habitat area</b>	Hectares	The permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 263 hectares, other than that occurring from natural patterns of variation.	

### 4.3 Establishing an Impact Pathway

The possibility of significant effects is considered in this report using the source-pathway-receptor model. ‘Source’ is defined as the individual elements of the proposed works that have the potential to affect the identified ecological feature (or receptor). ‘Pathway’ is defined as the means or route by which a source can affect the ecological receptor. ‘Ecological receptor’ is defined as the Special Conservations Interests (for SPAs) or Qualifying Interests (of SACs/cSACs) for which conservation objectives have been set for the European sites under consideration (refer **Table 4.1**). Each element can exist independently however an effect is created when there is a linkage between the source, pathway and receptor. Possible effects are discussed under four themes:

- Habitat loss;
- Diminution of Water Quality and Habitat deterioration;
- Underwater noise and disturbance; and
- Aerial noise and visual disturbance.

It is noted that the above effects relate to those which may arise during the proposed site investigation works, as the proposed works will not in themselves lead to any change in the operational use of Dublin Port. The proposed works do not comprise an operational phase in the usual sense and there is therefore no potential for a likely significant effect to arise following completion of the proposed investigations.

Potential effects upon European sites arising as a result of the construction and operation of 3FM Project are to be assessed as part of the applications for development consent for that Strategic Infrastructure Development itself.

### 4.4 Potential Effects

#### 4.4.1 Habitat Loss

The proposed site investigations do not lie within the boundary of any European site.

The nearest European site is South Dublin Bay and River Tolka Estuary SPA, approximately 345m north of the proposed boreholes and Vibrocores at the Irish Water and ESB outfall weir at the end of Pigeon House Road.

Boreholes BH-TC-04 and BH-TC-06 are located 25m from the CDL dolphin and ESB dolphin respectively. These structures are breeding sites of common and arctic terns which are special conversation interests of South Dublin Bay and River Tolka Estuary SPA.

No habitat loss will occur from within a European site as a result of the proposed site investigations.

#### 4.4.2 Diminution of Water Quality and Habitat Deterioration

##### 4.4.2.1 Suspended Solids

##### 4.4.2.1.1 South Dublin Bay and River Tolka Estuary SPA

As set out above, in Section 3, the proposed marine site investigations will principally involve the taking of 29 nr boreholes, 38 nr Vibrocores and samples of bed sediments at surface level and depth as

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illustrated in **Figure 3.2** and Appendix 1. The investigations will result in temporary suspension and release of small quantities (<1m<sup>3</sup>) of sediments locally around the borehole and Vibrocore locations.

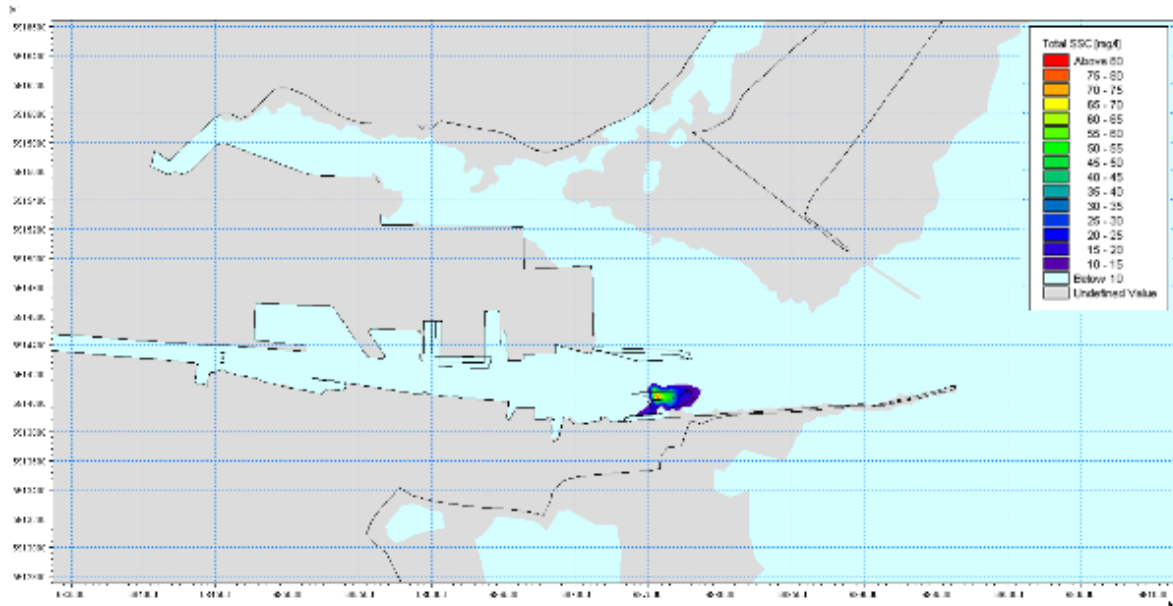
The conservation objective for Wetland habitat is to maintain the favourable conservation condition of the wetland habitat in South Dublin Bay and River Tolka Estuary SPA, as a resource for the regularly occurring migratory waterbirds that utilise it, defined by one conservation attribute and target:

*Habitat area:* The permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 2,192 hectares, other than that occurring from natural patterns of variation

The target for the SSCO attribute '*habitat area*' is measured in 'hectares'.

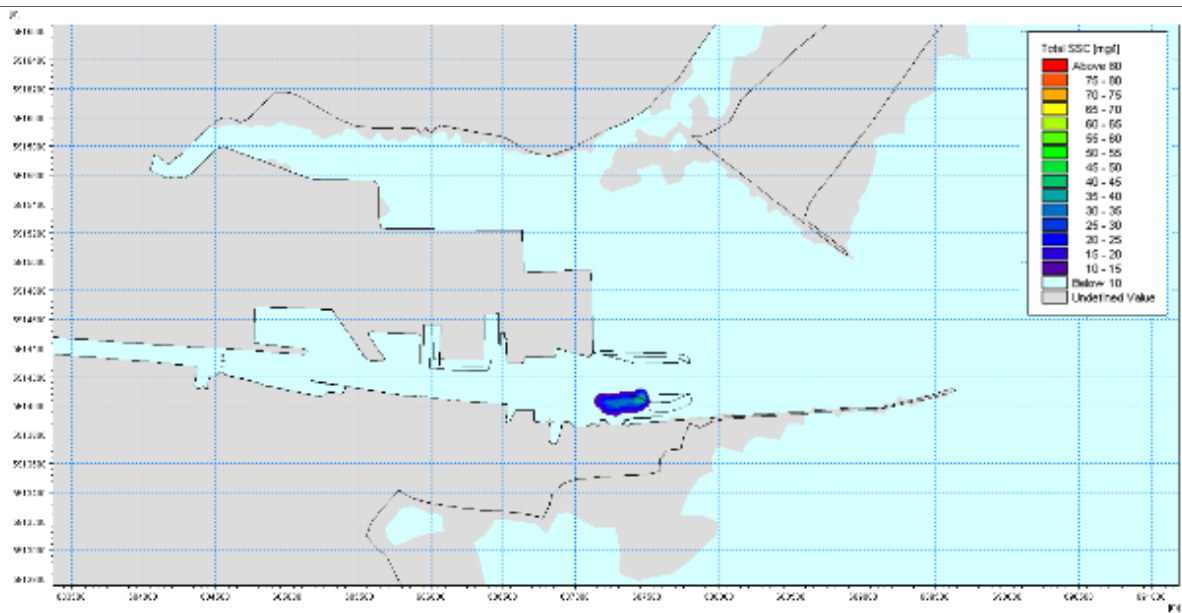
The MP2 Project NIS contains (at section 5.3.1.1.3.1.2) outputs of a sediment plume modelling study for dredging works in the Liffey Channel, simulating a trailer suction hopper dredging vessel dredging approximately 4,000m<sup>3</sup> of seabed material over a 90 minute event. Those plume diagrams are reproduced here. The dredging simulations are located in the main shipping channel, between the NORA Oil Jetty and No. 12 Buoy, and are located approximately 200m from the closest point of South Dublin Bay and River Tolka Estuary SPA. By contract, the closest proposed site investigations are boreholes BH-N-03 and BH-N-04 and Vibrocores VC-33 and VC-35, approximately 345m across the channel from the SPA.

The impact of the silt dispersion as a result of dredging c.4,000m<sup>3</sup> of material on the suspended sediment concentration is shown by a series of plume diagrams. **Figure 4.3** to **Figure 4.6** represent the dispersion of silt material at times of low water, mid flood, high water and mid ebb at a time during the dredging operation when the suspended sediment concentrations may be expected to be at their highest values (i.e. when the dredger is active at the site).

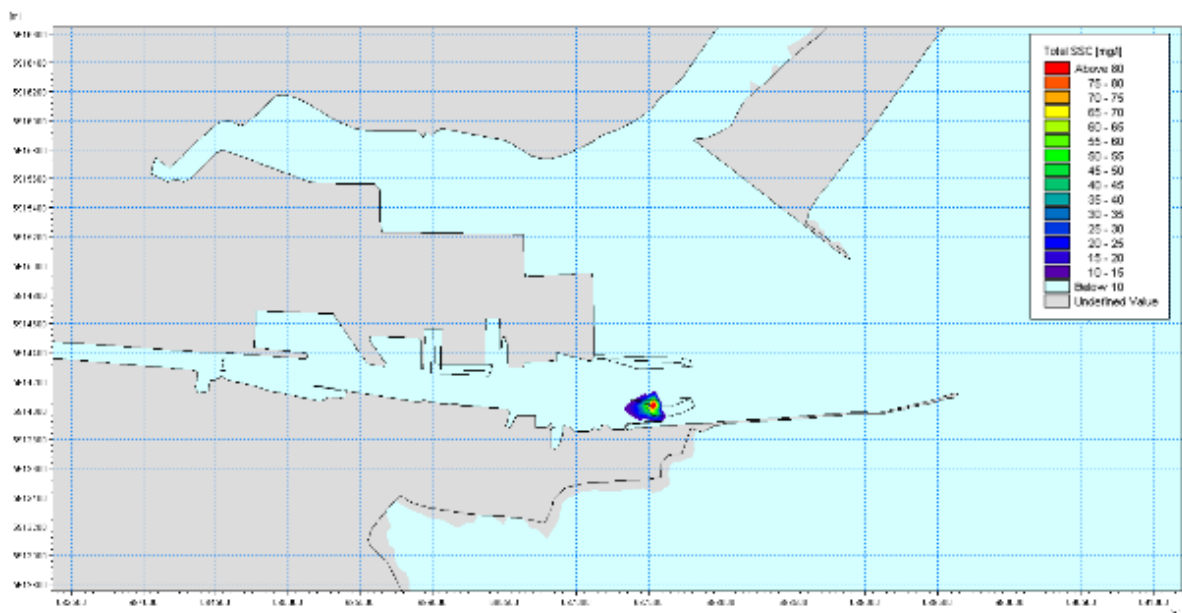


**Figure 4.3: Suspended sediment concentration plume in the bottom layer during a typical low water phase of a spring tidal cycle during MP2 Project Channel Dredging Works**

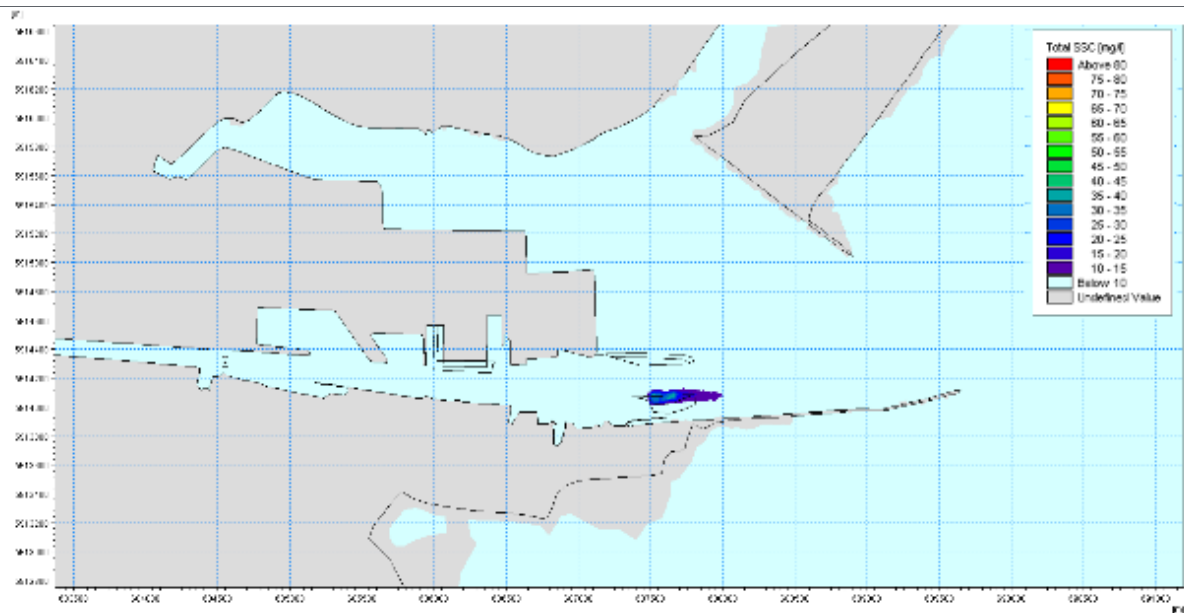
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**Figure 4.4: Suspended sediment concentration plume in the bottom layer during a typical mid flood phase of a spring tidal cycle during MP2 Project Channel Dredging Works**



**Figure 4.5: Suspended sediment concentration plume in the bottom layer during a typical high water phase of a spring tidal cycle during MP2 Project Channel Dredging Works**



**Figure 4.6: Suspended sediment concentration plume in the bottom layer during a typical mid ebb phase of a spring tidal cycle during MP2 Project Channel Dredging Works**

It will be seen from these figures the suspended sediment concentration plumes are confined to the southern half of the navigation channel. The sediment concentration of the plumes is generally less than 25 mg/l beyond the immediate dredge area.

Monitoring of the Liffey and Tolka Estuaries between East Link Bridge and the entrance to the Port at Poolbeg Lighthouse has been undertaken for the ABR Project. Measurements of turbidity at the North Bank Light (adjacent to the Tolka Estuary) over the period 2017 – 2018 have ranged from 0 to 39.5 NTU with a mean of 2.6 NTU (n=17,533). The estimated natural sediment load from the upstream Liffey catchment is estimated at about 200,000 tonnes per annum (DPC Maintenance Dredge AER 2017, Dumping at Sea Permit S0004-01). If dispersed over the Port area between East Link and Poolbeg Light and the Tolka Estuary, the MP2 Project coastal processes assessment at Appendix 4 of the MP2 Project NIS estimates this quantum to be equivalent to a natural sediment load of 30 kg/m<sup>2</sup> in any year.

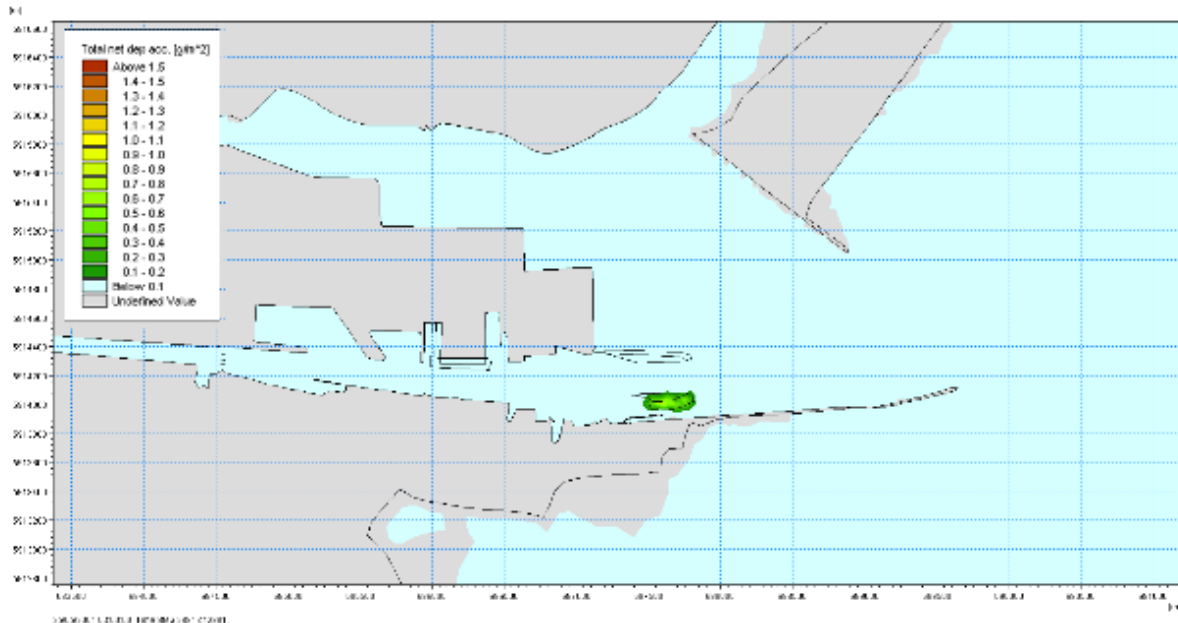
Over 100,000m<sup>3</sup> of seabed material is proposed to be removed for channel widening works for the MP2 Project. Infinitesimally smaller amounts of seabed materials will be temporarily disturbed by the placement of site investigation equipment on the seabed.

The predicted deposition of the silt fractions lost to the water column during the channel dredging works at the end of a simulated one month dredging campaign is presented in **Figure 4.7**. This figure shows that the volume of material deposited outside of the dredge area is generally less than 0.30g/m<sup>2</sup> and that the deposition of sediment is generally confined to within the immediate area of the dredging operation. It can be concluded that when considered in terms of background conditions, the small quantity of sediment temporarily released during site investigation works will not result in any significant impact to water quality in the Tolka Estuary. By comparison with natural background sediment loads such a small level of deposition will pose no risk whatsoever to the wetland habitats of South Dublin Bay and River Tolka Estuary SPA.

If dredging over 100,000m<sup>3</sup> of materials 200m from South Dublin Bay and River Tolka Estuary SPA has been shown by computational modelling to result in no risk whatsoever to the wetland habitat of that SPA, then marine site investigations 345m from the SPA will result in no risk whatsoever to the wetland habitats of South Dublin Bay and River Tolka Estuary SPA either. The permanent area occupied by

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wetland habitat in South Dublin Bay and River Tolka Estuary SPA shall not be put at risk or reduced whatsoever by the proposed marine site investigations.



**Figure 4.7: Deposition of sediment following MP2 Project Channel Dredging Works**

**4.4.2.1.2 Other Wetland SPA sites**

Given that there is no possibility of likely significant effects on the wetland habitat of South Dublin Bay and River Tolka Estuary SPA, then for all estuarine wetland SPA sites at a greater distance (such as North Bull Island SPA, Baldoyle Bay SPA or Malahide Estuary SPA), there is equally no possibility that sediment plumes arising as a result of the proposed works could likely significantly affect their wetland special conservation interests when tested against their conservation objectives. Plumes do not extent as far as North Bull Island SPA under any modelled wave and tidal scenario.

**4.4.2.1.3 North Dublin Bay cSAC**

This site is designated for one marine habitat type, eight coastal habitat types and an Annex II liverwort species. Of the eight coastal habitats, three are saltmarsh communities and five are sand dune communities but all eight of these habitats are found in close association with each other at Bull Island.

**4.4.2.1.3.1 Saltmarsh Communities**

The saltmarsh communities are flooded periodically by the sea and are restricted to the area between mid neap tide level and high water spring tide level ([NPWS, 2013](#)). The overall objective for *Salicornia* and other annuals colonising mud and sand in North Dublin Bay cSAC is to restore the habitat to a favourable conservation condition. The overall objective for Atlantic salt meadows and Mediterranean salt meadows is to maintain the favourable conservation condition of the Atlantic and Mediterranean salt meadows habitats; and restore the favourable conservation condition of the *Salicornia* habitat.

These objectives are based on an assessment of the recorded condition of each habitat under a range of attributes and targets divided into three main headings (Area, Range and Structure and Function).



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The conservation target for habitat area of the saltmarsh communities is that the area is stable or increasing, subject to natural processes, including erosion and succession.

The conservation target for habitat distribution of the saltmarsh communities is that there is no decline, or change in habitat distribution, subject to natural processes.

There is no possibility whatsoever that the proposed marine site investigations will present any threat to maintaining the area or range of saltmarsh communities in North Dublin Bay cSAC.

Turning then to structure and function, there are nine attributes to be considered:

- Physical structure
  - (i) sediment supply
  - (ii) creeks and pans
  - (iii) flooding regime
  
- Vegetation structure
  - (iv) zonation
  - (v) vegetation height
  - (vi) vegetation cover
  
- Vegetation composition
  - (vii) typical species & sub-communities
  - (viii) negative indicator species

The target for sediment supply is to maintain, or where necessary restore, natural circulation of sediments and organic matter, without any physical obstructions. The proposed marine site investigations will not present any threat to the natural circulation of sediments and organic matter in the saltmarsh communities as there will be no physical obstructions introduced as part of the proposed works anywhere near North Dublin Bay cSAC.

The target for creeks and pans is to maintain creek and pan structure, subject to natural processes, including erosion and succession. The proposed marine site investigations will not present any threat to the maintenance of the creek and pan structure of saltmarsh communities as there will be no physical works introduced as part of the proposed works anywhere near North Dublin Bay cSAC.

The target for flooding regime is to maintain the natural tidal regime. The proposed marine site investigations will not present any threat to the maintenance of the natural tidal regime of the saltmarsh communities of North Dublin Bay cSAC.

The target for zonation is to maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession. The proposed marine site investigations will not present any threat to the maintenance of the range of coastal saltmarsh habitats including transitional zones in North Dublin Bay cSAC.

The target for vegetation height is to maintain structural variation within the sward. The proposed marine site investigations will not present any threat to the maintenance of the structural variation within the saltmarsh community swards of North Dublin Bay cSAC.

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The target for vegetation cover is to maintain more than 90% of area outside creeks vegetated. The proposed marine site investigations will not present any threat to the maintenance of more than 90% of areas of saltmarsh communities outside of creeks being vegetated within North Dublin Bay cSAC.

The target for typical species and sub-communities is to maintain the presence of species-poor communities listed in the 2009 Saltmarsh Monitoring Project (the SMP) in the case of *Salicornia* and other annuals colonising mud and sand; and to maintain the range of sub-communities with typical species listed in SMP in the case of Atlantic and Mediterranean salt meadows. The proposed marine site investigations will not present any threat to maintaining the presence of species-poor communities within the *Salicornia* habitats; or maintaining the range of sub-communities with typical species listed in SMP in the case of Atlantic and Mediterranean salt meadow habitats of North Dublin Bay cSAC.

The target for negative indicator species is for no significant expansion of common cordgrass with an annual spread of less than 1%. The proposed marine site investigations will not present any opportunity for significant expansion of common cordgrass within the saltmarsh habitats of North Dublin Bay cSAC.

It follows from the foregoing that the possibility of LSEs as a result of diminution of water quality and habitat deterioration effects on the saltmarsh habitats in North Dublin Bay cSAC does not arise and may be excluded at the screening stage in the absence of mitigation measures.

### 4.4.2.1.3.2 Sand Dune Communities

Five dune habitats were recorded by Ryle et al. (2009) are listed as Qualifying Interests for North Dublin Bay cSAC. These habitats include mobile areas at the front, as well as more stabilised parts of dune systems and also humid dune slacks ([NPWS, 2013](#)). The overall objective for the following habitats in North Dublin Bay cSAC is to restore to favourable conservation condition:

- Annual vegetation of drift lines
- Embryonic shifting dunes
- Shifting dunes along the shoreline with *Ammophila arenaria*
- Fixed coastal dunes with herbaceous vegetation
- Humid dune slacks

Sand dunes are hills of wind blown sand that have become progressively more stabilised by a cover of vegetation. In general, most sites display a progression through strandline, foredunes, mobile dunes and fixed dunes. Where the sandy substrate is decalcified, fixed dunes may give way to dune heath. Wet hollows, or dune slacks, occur where the dunes have been eroded down to the level of the water-table. Transitional communities can occur between dune habitats and they may also form mosaics with each other. Dune systems are in a constant state of change and maintaining this natural dynamism is essential to ensure that all of the habitats present at a site achieve favourable conservation condition.

All the dune habitats indicated above occur as a complex mosaic of constantly changing and evolving vegetation communities. They are inextricably linked in terms of their ecological functioning and should be regarded as single geomorphological units. As such, no dune habitat should be considered in isolation from the other dune habitats present at a site, or the adjoining semi-natural habitats with which they often form important transitional communities.

The overall objective for the five sand dune habitat types is to restore the favourable conservation condition of the habitats.

These objectives are based on an assessment of the recorded condition of each habitat under a range of attributes and targets divided into three main headings (Area, Range and Structure and Function).

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The conservation target for habitat area of the sand dune habitats is that the area is stable or increasing (or increasing only in the case of humid dune slacks and annual vegetation of drift lines), subject to natural processes, including erosion and succession. The conservation target for habitat distribution of the sand dune habitats is that there is no decline, or change in habitat distribution, subject to natural processes. There is no possibility whatsoever that the proposed marine site investigations will present any threat to maintaining the area or range of the sand dune habitats in North Dublin Bay cSAC.

Turning then to structure and function, there are ten attributes to be considered across the five dune habitat types:

- Physical structure
  - (i) functionality and sediment supply
  - (ii) hydrological and flooding regime
  
- Vegetation structure
  - (iii) zonation
  - (iv) bare ground
  - (v) vegetation or sward height
  
- Vegetation composition
  - (vi) plant health of dune grasses
  - (vii) typical species & sub-communities
  - (viii) negative indicator species
  - (ix) scrub / trees
  - (x) cover of creeping willow

The target for functionality and sediment supply is to maintain the natural circulation of sediments and organic matter, without any physical obstructions. The proposed marine site investigations will not present any threat to the natural circulation of sediments and organic matter in the dune habitats as there will be no physical obstructions introduced as part of the proposed development anywhere near North Dublin Bay cSAC.

The target for hydrological and flooding regime (in the case of humid dune slacks) is to maintain the natural hydrological regime of the water table as measured by groundwater fluctuations. The proposed marine site investigations will not present any threat to the maintenance of the natural hydrological regime of the water table in humid dune slacks of North Dublin Bay cSAC.

The target for zonation is to maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession. The proposed marine site investigations will not present any threat to the maintenance of the range of coastal sand dune habitats including transitional zones in North Dublin Bay cSAC.

The target for bare ground in the case of Fixed coastal dunes is that bare ground should not exceed 10% of fixed dune habitat, subject to natural processes. The target for bare ground in the case of humid dune slacks is that bare ground should not exceed 5% of dune slack habitat, with the exception of pioneer slacks which can have up to 20% bare ground. The proposed marine site investigations will not present any threat to achieving the conservation targets for bare ground in the fixed dune or humid dune slack habitats in North Dublin Bay cSAC.

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The target for vegetation height in the case of humid dune slacks (and sward height in the case of fixed dunes) is to maintain structural variation within the sward. The proposed marine site investigations will not present any threat to the maintenance of the structural variation within the fixed dune or humid dune slack swards of North Dublin Bay cSAC.

For Embryonic shifting dunes, the target for plant health of foredune grasses is that more than 95% of sand couch and/or lyme-grass should be healthy (i.e. green plant parts above ground and flowering heads present). For Shifting dunes along the shoreline, the target for plant health of dune grasses is that 95% of marram grass and/or lyme-grass should be healthy. The proposed marine site investigations will not present any threat to achieving the conservation targets for plant health of dune grasses in the Embryonic shifting dunes or Shifting dunes along the shoreline habitats in North Dublin Bay SAC.

The target for typical species and sub-communities in Annual vegetation of drift lines, Embryonic shifting dunes and Shifting dunes along the shoreline is to maintain the presence of species-poor communities with typical species (and those typical species vary between the different dune habitat types). In the case of fixed dunes and humid dune slacks the target is to maintain range of sub-communities with typical species. The proposed marine site investigations will not present any threat to maintaining the presence of species-poor communities or range of sub-communities with typical species in the sand dune habitats of North Dublin Bay cSAC.

The target for negative indicator species is for negative indicator species (including non-natives) to represent less than 5% cover. The proposed marine site investigations will not present any threat to achieving the conservation targets for negative indicator species in the sand dune habitats in North Dublin Bay cSAC.

The target for scrub/trees in fixed dunes and humid dune slacks is that there will be no more than 5% cover of scrub/trees or that the scrub/trees will be under control. The proposed marine site investigations will not present any threat to achieving the conservation targets for scrub/trees in the fixed dunes and humid dune slack habitats of North Dublin Bay cSAC.

The target for cover of creeping willow *Salix repens* in humid dune slacks is to maintain less than 40% cover of *S.repens*. The proposed marine site investigations will not present any threat to achieving the conservation targets for cover of creeping willow in the humid dune slacks of North Dublin Bay cSAC.

It follows from the foregoing that the possibility of LSEs as a result of water quality and habitat deterioration effects on the sand dune habitats in North Dublin Bay SAC does not arise and may be excluded at the screening stage in the absence of mitigation measures.

### 4.4.2.1.3.3 Petalwort

Petalwort *Petalophyllum ralfsii* is a rare liverwort and an Annex II species, and its occurrence on Bull Island within North Dublin Bay cSAC is the only location this species has been recorded in Ireland which is not on the west coast. The conservation objective for this species is to maintain the favourable conservation condition of Petalwort in North Dublin Bay cSAC, defined by the following list of attributes and targets:

<i>Distribution of populations:</i>	No decline
<i>Population size:</i>	No decline
<i>Area of suitable habitat:</i>	No decline
<i>Hydrological conditions (soil moisture):</i>	Maintain hydrological conditions so that substrate is kept moist and damp throughout the year, but not subject to prolonged inundation by flooding in winter

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*Vegetation structure (height and cover):* Maintain open, low vegetation with a high percentage of bryophytes (small acrocarps and liverwort turf) and bare ground

There is no possibility whatsoever that the proposed marine site investigations will present any threat to maintaining the five conservation targets for petalwort in North Dublin Bay cSAC. LSEs shall not occur and may be excluded at the screening stage.

### 4.4.2.1.3.4 Mudflats and sandflats not covered by seawater at low tide

Within North Dublin Bay cSAC three benthic community types are recorded in the Annex I habitat. The conservation objective for this marine habitat is to maintain the favourable conservation condition of Mudflats and sandflats not covered by seawater at low tide in North Dublin Bay cSAC, as defined by four conservation attributes and targets which relate to the three benthic community types:

<i>Habitat Area:</i>	The permanent habitat area is stable or increasing, subject to natural processes
<i>Community extent:</i>	Maintain the extent of the <i>Mytilus edulis</i> dominated community, subject to natural processes
<i>Community structure (Mytilus edulis density):</i>	Conserve the high quality of the <i>Mytilus edulis</i> dominated community, subject to natural processes
<i>Community distribution:</i>	Conserve the following community types in a natural condition: <ul style="list-style-type: none"> <li>• Fine sand to sandy mud with <i>Pygospio elegans</i> and <i>Crangon crangon</i> community complex</li> <li>• Fine sand with <i>Spio martinensis</i> community complex</li> </ul>

NPWS (2013) notes that in relation to habitat area, the conservation target refers to activities or operations that propose to permanently remove habitat from a site, thereby reducing the permanent amount of habitat area, rather than long or short term disturbance to the biology of the site. Given the distance of the cSAC from the proposed site investigations, the works will not present any threat to maintaining the conservation target for area of Mudflats and sandflats not covered by seawater at low tide in North Dublin Bay cSAC.

Conservation targets for the *Mytilus edulis* community seek to maintain its extent and conserve its high quality. The conservation target for community distribution seeks to conserve the two remaining principal benthic communities of the Annex I habitat in a natural condition.

The Annex I mudflat and sandflat habitat of North Dublin Bay cSAC is 1.5km by sea from the locations of proposed site investigations. It has already been shown in section 4.4.2.1.1 above that suspended sediment plumes as a result of the site investigations pose no risk whatsoever in relation to the conservation objectives set for the principal benthic communities of the Annex I habitat. The possibility of LSEs as a result of diminution of water quality and habitat deterioration effects on the mudflat and sandflat habitats in North Dublin Bay cSAC does not arise and may be excluded at the screening stage in the absence of mitigation measures.

#### 4.4.2.1.4 Other SAC sites

Given that there is no possibility of likely significant effects on the Annex I coastal and marine habitats of North Dublin Bay cSAC, then for all other cSAC or SAC sites at a greater distance (such as North South Dublin Bay SAC, Rockabill to Dalkey Island SAC, Howth Head Coast SAC, Baldoyle Bay SAC or Malahide Estuary SAC), there is equally no possibility that sediment plumes arising as a result of the proposed works could likely significantly affect their qualifying interests when tested against their conservation objectives. Plumes do not extent as far as any SAC under any modelled wave and tidal scenario.

#### 4.4.2.2 Accidental Pollution

In relation to potential sources of pollution as a result of the proposed site investigations, section 3 above notes that a Jack Up vessel will use hydraulic oil in the jacking system which is sealed with an anti-pollution ring / scupper inside the jackhouse. The legs of the Jack Up vessel do not have any oil or grease on them and have no oil or grease system. Cone penetration testing equipment does not consume oil or produce any oil spills under normal production. All fluid systems on rigs are closed circuits.

The equipment used in the marine site investigations does not release fuel or oil products into the water column. The equipment bores into or agitates sediments and strata on or below the seabed. There is no release of chemicals. Even in the event that small quantities of vegetable oil-based lubricants that the contractor is permitted to use do escape to the marine environment, any potentially polluting substance or debris that escape will mix with discharge from industrial installation cooling water outfalls and treated wastewater outfalls at Ireland's busiest port, and diluted by tidal flows and currents in the Lower Liffey and Tolka Estuary, and the wind and wave climate which help mixing and dilution throughout Dublin Bay. Any elevated concentration of debris or polluting substance at the site of the boreholes and Vibrocores will be diluted or dispersed immediately upon entering the water and will further dilute or disperse as it moves away from the point of release on the tide or with the current.

The potential for pollution effects can very reasonably be characterised as *de minimis*. On this basis, there is no potential for significant diminution of water quality or resulting likely significant effects on the qualifying features of South Dublin Bay and River Tolka Estuary SPA, North Bull Island SPA or North Dublin Bay cSAC; nor indeed any European site further afield. Accordingly, the possibility of likely significant effects as a result of pollution can be excluded at the screening stage. That is the case in the absence of any mitigation measures being applied as part of the proposed works.

#### 4.4.3 Underwater Noise and Disturbance

Marine site investigations have the potential to create underwater noise causing disturbance to or displacement of, or injure individuals of marine mammal species. The investigations could result in potential underwater noise effects in the area of the proposed site investigation, including:

- Disturbance from vibration and underwater noise associated with surveys
- Injury due to collision (survey vessels/Sampling equipment)

Underwater noise is not a persistent effect, and once the noise source ceases noise levels drop very quickly to pre-existing levels. The natural underwater soundscape of Dublin Port and Dublin Bay is not silent - biological sounds from fish and marine mammals are mixed with sounds from waves and surface noise; current flow and turbulence; rain and wind/storm noise; and noise from shipping and leisure craft activities. The ambient noise levels in coastal and inshore water, bays and harbours are subject to huge variation.



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Lambay Island cSAC is designated for its populations of harbour and grey seals. Rockabill to Dalkey Island SAC is designated for its harbour porpoise community. No other European site within 25km of Dublin Bay or its surrounds is designated for a species of marine mammal. Having said this, Bull Island is a known seal haul out site and grey seals occur here and also at Lambay Island (22km from the site investigations) and Ireland's Eye (12.9km from the site investigations) which are known breeding sites. Harbour seals also haul out at Bull Island, Lambay Island and Ireland's Eye.

There is a potential for exposure to underwater noise to affect the Rockabill to Dalkey Island SAC harbour porpoise community or the Lambay Island cSAC (including Bull Island and Ireland's Eye) seal populations through physical injury or disturbance.

### 4.4.3.1 Harbour Seal

Conservation objectives for these Annex II species are to maintain the favourable conservation condition of Harbour seal (or Grey seal as the case may be) population in Lambay Island cSAC, as defined by 5 no SSCO attributes and targets:

<i>Access to suitable habitat:</i>	Species range within the site should not be restricted by artificial barriers to site use
<i>Breeding behaviour:</i>	Species range within the site should not be restricted by artificial barriers to site use
<i>Moulting behaviour:</i>	The moult haul-out sites should be maintained in a natural condition
<i>Resting behaviour:</i>	The resting haul-out sites should be maintained in a natural condition
<i>Disturbance:</i>	Human activities should occur at levels that do not adversely affect the Harbour seal (or Grey seal) population at the site

The targets for the SSCO attribute 'Access to suitable habitat' is measured in 'number of artificial barriers'. The target for 'Breeding behaviour' is measured in 'Breeding sites'. The target for 'Moulting behaviour' is measured in 'Moult haul-out sites'. The target for 'Resting behaviour' is measured in 'Resting haul-out sites'. The target for 'Disturbance' is measured in 'Level of impact'.

The 'Conservation objectives supporting document – Marine habitats and species' for Lambay Island cSAC (NPWS, 2013) notes that Harbour seal occurs in estuarine, coastal and offshore waters but also utilises a range of intertidal and terrestrial habitats for important life history functions such as breeding, moulting, resting and social activity. Its aquatic range for foraging and inter-site movement extends into continental shelf waters. When hauling out ashore, harbour seals tend to prefer comparatively sheltered locations where exposure to wind, wave action and precipitation, for example, are minimised. Thus in Ireland the species is more commonly found ashore in sheltered bays, inlets and enclosed estuaries.

Harbour seals in Lambay Island cSAC occupy both aquatic habitats and intertidal shorelines that become exposed during the tidal cycle. The species is present at the site throughout the year during all aspects of its annual life cycle which includes breeding (May to July approx.), moulting (August to September approx.) and non-breeding foraging and resting phases.

Harbour seals are vulnerable to disturbance during periods in which time is spent ashore, or in shallow waters, by individuals or groups of animals. This occurs immediately prior to and during the annual breeding season, which takes place predominantly during the months of May to July. Pups are born on land, usually on sheltered shorelines, islets or skerries and uninhabited islands removed from the risk of predation and human interference. While there may be outliers in any year, specific established locations tend to be used annually for breeding-associated behaviour by adult males, adult females and

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their newborn pups. Such habitats are critical to the maintenance of the species within any site. Pups are able to swim soon after birth and may be observed accompanying their mother close to shore in the early days or weeks of life. They are nursed for a period of several weeks by the mother prior to weaning and abandonment. During this period adult females mate with adult males, an activity that takes place in the water.

Moulting is considered an intensive, energetically-demanding process which incurs further vulnerability for individuals during this period. Terrestrial or intertidal locations where seals can be found ashore are known as haul-out sites. The harbour seal moult season takes place predominantly during the months of August to September.

### 4.4.3.2 Grey Seal

Conservation objectives for this Annex II species is to maintain the favourable conservation condition of Grey seal population in Lambay Island cSAC, as defined by 5 no SSCO attributes and targets:

<i>Access to suitable habitat:</i>	Species range within the site should not be restricted by artificial barriers to site use
<i>Breeding behaviour:</i>	Species range within the site should not be restricted by artificial barriers to site use
<i>Moulting behaviour:</i>	The moult haul-out sites should be maintained in a natural condition
<i>Resting behaviour:</i>	The resting haul-out sites should be maintained in a natural condition
<i>Disturbance:</i>	Human activities should occur at levels that do not adversely affect the Grey seal population at the site

The targets for the SSCO attribute 'Access to suitable habitat' is measured in 'number of artificial barriers'. The target for 'Breeding behaviour' is measured in 'Breeding sites'. The target for 'Moulting behaviour' is measured in 'Moult haul-out sites'. The target for 'Resting behaviour' is measured in 'Resting haul-out sites'. The target for 'Disturbance' is measured in 'Level of impact'.

The 'Conservation objectives supporting document – Marine habitats and species' for Lambay Island cSAC (NPWS, 2013) notes that Grey seal occupies both aquatic and terrestrial habitats in Lambay Island cSAC, including intertidal shorelines and skerries that become exposed during the tidal cycle. It is present at the cSAC throughout the year during all aspects of its annual life cycle which includes breeding (August to December approx.), moulting (December to April approx.) and non-breeding, foraging and resting phases.

Grey seals are vulnerable to disturbance during periods when time is spent ashore by individuals or groups of animals. This occurs immediately prior to and during the annual breeding season, which takes place predominantly during the months of August to December. Pups are born on land, usually on remote beaches and uninhabited islands or in sheltered caves. While there may be outliers in any year, specific established sites are used annually for breeding-associated behaviour by adult females, adult males, newborn and weaned pups. Such habitats are critical to the maintenance of the species within any site since pups are nursed there for a period of several weeks by the mother prior to weaning and abandonment. During this period, adult females also mate with adult males at, or adjacent to, breeding sites.

Current breeding sites in Lambay Island cSAC are broadly distributed around the island among its numerous gullies, caves, beaches, rock ledges and coves where access for seals to intertidal shorelines and the area above high water mark is possible.

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Grey seal also occurs at the site during the annual moult (i.e. hair shedding and replacement), a protracted period during which individual animals spend significant periods of days or weeks on the shore. Moulting is considered an intensive, energetically-demanding process that all seals must undergo, incurring further vulnerability for individuals during this period.

Terrestrial or intertidal sites where seals can be found ashore are known as haul-out sites. Moulting locations may be preferentially selected by the species, with specific established sites used annually by moulting adult females, adult males and juveniles. The moulting phase in the annual life cycle occurs predominantly during the months of December to April.

### 4.4.3.3 Harbour Porpoise

Conservation objectives for this Annex II species is to maintain the favourable conservation condition of harbour porpoise in Rockabill to Dalkey Island SAC, as defined by 2 no SSCO attributes and targets:

*Access to suitable habitat:* Species range within the site should not be restricted by artificial barriers to site use

*Disturbance:* Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site

The 'Conservation objectives supporting document – Marine habitats and species' for Rockabill to Dalkey Island SAC (NPWS, 2013) notes that the targets for the SSCO attribute 'Access to suitable habitat' is measured in 'number of artificial barriers'. The target for 'Disturbance' is measured in 'Level of impact'.

This small toothed cetacean species (from the mammal Order Cetacea - whales, dolphins and porpoises) occurs in estuarine, coastal and offshore waters in which it carries out breeding, foraging, resting, social activity and other life history functions. Its distribution extends predominantly throughout continental shelf waters and the species may range over many hundreds or thousands of kilometres. As air-breathing mammals, harbour porpoises must return to the water surface to breathe but they are otherwise wholly aquatic. Individual porpoises of all ages use sound as their primary sensory tool in order to navigate, communicate, avoid predators, or locate and facilitate the capture of prey under water. Group sizes tend to be small (i.e. in single figures, more commonly 2 to 3 individuals) although larger aggregations may occasionally be recorded, particularly in the summer months. Harbour porpoise breed annually in Ireland, predominantly during the months of May to September. The principal calving period in Irish waters is thought to occur in the months of May and June, although it may extend throughout the summer months and into early autumn. Newborn calves are weaned before they are one year old. Mating commonly occurs several weeks after the calving season.

NPWS (2013) notes that harbour porpoise is an aquatic predator that feeds on a wide variety of fish, cephalopod and crustacean species occurring in the water column or close to the seabed, with dive depths in excess of 200m having been recorded for the species. Foraging areas for harbour porpoise are often associated with areas of strong tidal current and associated eddies; and the occurrence of porpoises close to shore or adjacent to islands and prominent headlands is commonly reported.

### 4.4.3.4 Underwater Noise Levels in Dublin Port

Dublin Bay is home to Dublin Port along with a number of smaller harbours and marinas. Marine traffic includes large cargo ships, passenger cruise ships, large ferry vessels, fast ferries, trawlers and leisure traffic. The main shipping channels from the Irish Sea are north and south of the Burford Bank towards the Great South Wall light and into the dredged shipping channel on the eastern approaches to the port up the River Liffey as far as the East-Link/Tom Clarke Bridge.

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Dublin Port has been in operation for over 300 years with motorised vessels for over 100 years. While the level of traffic has increased, the North Quay Wall was constructed 150 years ago and the port area has centred on the two Alexandra Basins throughout this time.

The central port area where site investigations are proposed is heavily trafficked on a daily basis. This working area in Dublin Port is relatively noisy in comparison to the greater Dublin Bay area. Noise in the port area comes from shipping and a multitude of industrial sources. The port is accessed via the dredged channel which extends some 2.5 km from the Great South Wall light to Berth 53.. This narrow shallow channel has the effect of confining noise from the port within that area and a short section of the channel and the River Liffey upstream.

All traffic to and from port uses the dredged navigation channel to the eastern end of the Great South Wall and then heads either north or south of the Burford Bank. West of the Great South Wall light in the dredged channel, noise levels are elevated in the navigation channel as a vessel passes but again fade quickly. The outer Dublin Bay area is also a shallow water area (<30 m deep) and underwater sound does not propagate efficiently, resulting in short elevations in noise levels while a vessel is passing by.

Underwater noise levels were measured at locations around Ireland, including Dublin Bay and reported for the EPA by Beck *et al.* (2011). For Dublin Bay, the noise monitoring equipment was located on the -10m CD contour line on two sites, north and south of the main shipping channel. Weather conditions at each location during the measurements were fair weather with winds of less than 10 knots. Background Noise levels are expected to be higher in adverse weather conditions.

The results were reported as broadband (5 Hz to 20 kHz) RMS values. At the northern side of Dublin Bay, noise levels were between 125 dB and 135 dB re 1  $\mu$ Pa across all frequency bands whereas at the southern site the noise levels were marginally higher, while still remaining below 140 dB re 1  $\mu$ Pa.

Underwater noise modelling has been undertaken in Dublin Port for impact piling activities associated with construction phase of the ABR and MP2 Projects. Appendix 3 to the MP2 Project NIS contains an underwater noise modelling report, which predicts noise levels of 150 dB re 1  $\mu$ Pa @ 1m for operating a jack up barge, and 170 dB re 1  $\mu$ Pa @ 1m for moving a jack up barge. This report also predicted noise levels of 170 dB re 1  $\mu$ Pa @ 1m for vibratory piling, and 222 dB re 1  $\mu$ Pa @ 1m for impact piling. These activities and associated sound sources resulted in the following predicted potential injury zones:

- Permanent Threshold Shift injury to marine mammals is limited to 1m from the source; and
- Disturbance to marine mammals is limited to 120m from the source.

The NIS prepared for marine site investigations at Arklow Bank Wind Park was also reviewed, and it provided a TTS injury zone of 757m predicted for harbour porpoise for drilling activities and 607m for Vibrocoring activities. A TTS injury zone of 4m for seal species was predicted for Vibrocoring activities.

### 4.4.3.5 Lambay Island SAC

In relation to the conservation targets set for harbour seal and grey seal in their conservation objectives, NPWS (2013) advises that in relation to Target 1 '*Species range within the site is not restricted by artificial barriers to site use*', the target is relevant to proposed activities or operations that will result in the permanent exclusion of harbour seal or grey seal from part of its range within the site, or will permanently prevent access for the species to suitable habitat within the site, and does not refer to short-term or temporary restriction of access or range.

In relation to Target 2 '*Conserve the breeding sites in a natural condition*', the target is relevant to proposed activities or operations that will result in significant interference with or disturbance of (a) breeding behaviour by harbour seal or grey seal within the site and/or (b) aquatic/terrestrial/intertidal habitat used during the annual breeding season.

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In relation to Target 3 '*Conserve the moult haul-out sites in a natural condition*', the target is relevant to proposed activities or operations that will result in significant interference with or disturbance of (a) moulting behaviour by harbour seal or grey seal within the site and/or (b) aquatic/terrestrial/intertidal habitat used during the annual moult.

In relation to Target 4 '*Conserve the resting haul-out sites in a natural condition*', the target is relevant to proposed activities or operations that will result in significant interference with or disturbance of (a) resting behaviour by harbour seal or grey seal within the site and/or (b) aquatic/terrestrial/intertidal habitat used for resting.

In relation to Target 5 '*Human activities should occur at levels that do not adversely affect the harbour seal (or grey seal) population at the site*', the target is relevant to proposed activities or operations that introduce man-made energy at levels that could result in a significant negative impact on individuals and/or the population of harbour seal or grey seal within the site. This refers to both the aquatic and terrestrial/intertidal habitats used by the species in addition to important natural behaviours during the species annual cycle.

These conservation targets relate to things that do or do not occur within Lambay Island SAC. Recall that Lambay Island cSAC is over 20km from the proposed marine site investigations. The injury zone for seal species as a result of noise arising from marine site investigations extends only to a few metres. There is no aspect of the proposed investigations that could permanently exclude seals from part of their range within Lambay Island cSAC. There is no aspect of the proposed investigations that could:

- permanently prevent access to suitable habitat within Lambay Island cSAC;
- restrict either temporarily or in the short-term, access to suitable habitat or from part of the seals' range within Lambay Island cSAC;
- result in significant interference with or disturbance of breeding behaviour within Lambay Island cSAC;
- result in significant interference with or disturbance of aquatic/terrestrial/intertidal habitat used during the annual breeding season within Lambay Island cSAC;
- result in significant interference with or disturbance of moulting behaviour within Lambay Island cSAC;
- result in significant interference with or disturbance of aquatic/terrestrial/intertidal habitat used during the annual moult within Lambay Island cSAC;
- result in significant interference with or disturbance of resting behaviour within Lambay Island cSAC;
- result in significant interference with or disturbance of aquatic/terrestrial/intertidal habitat used for resting within Lambay Island cSAC; or
- result in underwater noise levels causing a significant negative impact on individuals and/or the seal populations of harbour seal or grey seal within Lambay Island cSAC.

The conservation objectives for the harbour and grey seal populations at Lambay Island SAC will not be undermined by the proposed marine site investigations. Likely significant effects will not occur. That is the case in the absence of any mitigation measures being applied as part of the proposed works.

#### 4.4.3.6 Rockabill to Dalkey Island SAC

In relation to the conservation targets set for harbour porpoise in its conservation objectives, NPWS (2013) advises that in relation to Target 1 '*Species range within the site is not restricted by artificial barriers to site use*', the target is relevant to proposed activities or operations that will result in the permanent exclusion of harbour porpoise from part of its range within the site, or will permanently prevent access for the species to suitable habitat within the site, and does not refer to short-term or temporary restriction of access or range.

In relation to Target 2 '*Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site*', the target is relevant to proposed activities or operations that introduce man-made energy at levels that could result in a significant negative impact on individuals and/or the community of harbour porpoise within the site. This refers to the aquatic habitats used by the species in addition to important natural behaviours during the species annual cycle.

These conservation targets relate to things that do or do not occur within Rockabill to Dalkey Island SAC. Recall that Rockabill to Dalkey Island SAC is 6km from the proposed marine site investigations but the sea disposal site is located within the European site. The injury zone for harbour porpoise as a result of noise arising from marine site investigations extends to several hundred metres. There is no aspect of the proposed investigations that could possibly result in the permanent exclusion of harbour porpoise from part of its range within the site, or will permanently prevent access for the species to suitable habitat within the site. NPWS (2013) advises that the conservation target does not apply to short-term or temporary restrictions of access or range. As such, Target 1 and Target 2 cannot be undermined as a result of the potential effects of the proposed marine site investigation activities.

The conservation objectives for the harbour porpoise community in Rockabill to Dalkey Island SAC will not be undermined by the proposed marine site investigations. Likely significant effects will not occur. That is the case in the absence of any mitigation measures being applied as part of the proposed works.

#### 4.4.4 Aerial Noise and Visual Disturbance

##### 4.4.4.1 Loss of attractiveness of a breeding site

South Dublin Bay and River Tolka Estuary SPA is designated for its breeding and passage tern colonies. The Dublin Port tern colony nests on dolphins and other structures along the south bank of the River Liffey channel, as described in **Table 4.2**.

**Table 4.2: Nesting Locations of the Dublin Port Tern Colony**

Location	Distance from proposed Site Investigations
Great South Wall pontoon	1.2 km east
ESB Dolphin	25m
CDL Dolphin	25m
Clontarf pontoon	1.3 km north

Terns forage widely in Dublin Bay and further afield where prey items shoal on offshore sandbanks. The mean maximum foraging range of Arctic Tern is 25.7km (maximum 46km; mean 6.1km) and the



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mean maximum foraging range of Common Tern is 18km (maximum 30km; mean 6.4km) (Woodward *et al*, 2019<sup>1</sup>).

The conservation objective for Roseate Tern and Arctic Tern is to maintain the favourable conservation condition of the two species in South Dublin Bay and River Tolka Estuary SPA, as defined by five conservation attributes and targets:

<i>Passage population: Individuals:</i>	No significant decline
<i>Distribution: Roosting areas:</i>	No significant decline
<i>Prey Biomass Available:</i>	No significant decline
<i>Barriers to connectivity:</i>	No significant increase
<i>Disturbance at roosting site:</i>	Human activities should occur at levels that do not adversely affect the numbers of roseate tern (or arctic tern) among the post-breeding aggregation of terns

The target for the SSCO attribute '*Passage population: Individuals*' is measured in 'number'. The target for '*Distribution: Roosting areas*' is measured in 'Number; location; area (hectares)'. The target for '*Barriers to connectivity*' is measured in 'Number; location; area (hectares)'. The target for '*Disturbance at roosting site*' is measured in 'Level of impact'.

The conservation objective for Common Tern is to maintain the favourable conservation condition of the species in South Dublin Bay and River Tolka Estuary SPA, as defined by nine conservation attributes and targets:

<i>Breeding population abundance: apparently occupied nests (AONs):</i>	No significant decline
<i>Productivity rate: fledged young per breeding pair:</i>	No significant decline
<i>Passage population: Individuals:</i>	No significant decline
<i>Distribution: breeding colonies:</i>	No significant decline
<i>Distribution: roosting areas:</i>	No significant decline
<i>Prey Biomass Available:</i>	No significant decline
<i>Barriers to connectivity:</i>	No significant increase
<i>Disturbance at breeding site:</i>	Human activities should occur at levels that do not adversely affect the breeding common tern population
<i>Disturbance at roosting site:</i>	Human activities should occur at levels that do not adversely affect the numbers of common tern among the post-breeding aggregation of terns

The target for the SSCO attribute '*Breeding population abundance: apparently occupied nests (AONs)*' is measured in 'number'. The target for the SSCO attribute '*Productivity rate: fledged young per breeding pair*' is measured in 'mean number'. The target for the SSCO attribute '*Passage population: Individuals*' is measured in 'number'. The target for '*Distribution: breeding colonies*' is measured in

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<sup>1</sup> Woodward I., Thaxter, C.B., Owen, E and Cook, A.S.C (2019) Desk-based revision of seabird foraging ranges used for HRA screening. BTO Research Report No. 724, The British Trust for Ornithology, Thetford.



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'Number; location; area (hectares)'. The target for '*Distribution: Roosting areas*' is measured in 'Number; location; area (hectares)'. The target for '*Barriers to connectivity*' is measured in 'Number; location; area (hectares)'. The target for '*Disturbance at breeding site*' is measured in 'Level of impact'. The target for '*Disturbance at roosting site*' is measured in 'Level of impact'.

As noted above, boreholes will be taken within 25m of the CDL and ESB dolphins. Vibrocores will also be taken 50m of these structures. The possibility of vessels undertaking marine site investigations within 25m of the structures causing disturbance amounting to loss of attractiveness of a breeding site must be considered.

Terns are only present in Dublin Port between the months of April and August in any given year. The site investigations shall commence after tern chicks have substantially fledged from the breeding sites and gather on Sandymount Strand prior to autumn migration. Works shall commence at the eastern edge of the port (at the Irish Water and ESB Power Station cooling water outfall adjacent to Poolbeg Tank Farm at the base of the Great South Wall in the Liffey channel) and work westwards towards the dolphin structures. Terns will have left the dolphins before marine site investigation works come into close proximity. The site investigation campaign will be completed prior to the arrival of the terns in 2023.

The breeding waterbirds of South Dublin Bay and River Tolka Estuary SPA shall not be present, or present in any significant numbers, during the proposed site investigations. The proposed site investigation works will not result in any barriers to connectivity in the range of the terns, and will not cause –

- a significant decline in breeding population abundance (apparently occupied nests)
- a significant decline in productivity rate (fledged young per breeding pair)
- a significant population decline in the passage population
- a significant decline in the distribution of breeding colonies
- a significant decline in the distribution of roosting areas
- a significant decline in the availability of prey biomass
- significant levels of disturbance at the breeding or roosting sites

Given this outcome, at the, there is no possibility of any loss of attractiveness of a breeding site, and no likely significant effect arising from noise or visual stimuli upon the breeding and passage population of terns from the proposed site investigation works. That is the case in the absence of any mitigation measures being applied as part of the proposed works.

### 4.4.4.2 Loss of attractiveness of a feeding site

Overwintering waterbird species can be vulnerable to noise and visual triggers of disturbance. All of the SPAs considered in this exercise are designated for waders or waterbirds falling into that category. South Dublin Bay & River Tolka Estuary SPA is located 345m to the north of the proposed site investigation works at their closest point, and it has 10 nr. special conservation interest waterbird species:

- Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]
- Oystercatcher (*Haematopus ostralegus*) [A130]
- Ringed Plover (*Charadrius hiaticula*) [A137]

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- Grey Plover<sup>2</sup> (*Pluvialis squatarola*) [A141]
- Knot (*Calidris canutus*) [A143]
- Sanderling (*Calidris alba*) [A144]
- Dunlin (*Calidris alpina*) [A149]
- Bar-tailed Godwit (*Limosa lapponica*) [A157]
- Redshank (*Tringa totanus*) [A162]
- Black-headed Gull (*Chroicocephalus ridibundus*) [A179]

The conservation objective for the populations of overwintering waterbirds is to maintain the favourable conservation condition of the nine species in South Dublin Bay and River Tolka Estuary SPA, as defined by two conservation attributes and targets:

<i>Population trend:</i>	Long term population trend stable or increasing
<i>Distribution:</i>	No significant decrease in the range, timing or intensity of use of areas by the species, other than that occurring from natural patterns of variation

The target for the SSCO attribute '*population trend*' is measured in '% change'. The target for '*distribution*' is measured in 'Range, timing and intensity of use of areas'.

These waterbird special conservation interest species of South Dublin Bay & River Tolka Estuary SPA principally use the Tolka Estuary either for feeding on intertidal flats at low tide, or roosting in certain areas at high tide. The nearest intertidal area within the SPA used for feeding is located 1.2km NNE of the Irish Water and ESB outfall weir at the end of Pigeon House Road. This intertidal area is beside the North Bull Wall.

Outside of the South Dublin Bay & River Tolka Estuary SPA, there is an area used both as a low tide feeding area at the Irish Water and ESB Power Station cooling water outfall adjacent to Poolbeg Tank Farm at the base of the Great South Wall in the Liffey channel. This area is not a coded Dublin Bay IWeBS count sub-site but is included in the survey areas for the Dublin Bay Birds Project and holds regular numbers of Black-headed Gulls, and smaller numbers of Sanderling, Black-tailed Godwits and Redshank. The distance from this area to the nearest point where site investigations are proposed to be undertaken is 50m (from BH-N-06, BH-N-12 and VC-36).

It must be recalled that marine site investigations require a vessel or barge, and possibly a tug, in the lower Liffey channel. This is a single additional vessel present above the water line in an operational port environment. Excluding small craft, pleasure sailing vessels and DPC work boats, the MP2 Project EIAR (at Appendix 13.1) states that there are circa 48 existing shipping movements per day at Dublin Port through the lower Liffey channel (24 arrivals and 24 departures). No negative effects of disturbance to waterbirds as a result of these existing shipping movements has been observed to date. One additional vessel present in the Lower Liffey channel each day for an 8-10 week period does not represent, by any reasonable yardstick, an intensification of use of the shipping channel when considered from the perspective of waterbirds.

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<sup>2</sup> Version 1 of the [Conservation Objectives](#) for South Dublin Bay & River Tolka Estuary SPA, published in March 2015, note that "Grey Plover is proposed for removal from the list of Special Conservation Interests for South Dublin Bay and River Tolka Estuary SPA. As a result, a site-specific conservation objective has not been set for this species".

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In addition, shipping is not generally perceived to be a threat to non-breeding waterbirds and that they will quickly habituate to it. Black-headed Gulls in particular are highly habituated to human activity and normal port operations and will regularly forage in areas where people walk on the intertidal area or on coastal grassland. This species is one of the most habituated, adaptable and opportunistic SCI species of South Dublin Bay and River Tolka Estuary SPA. The type of vessels involved in marine site investigations are slow-moving when not stationary, and would not represent any greater threat to waterbirds than any other commercial shipping movements.

A behavioural observation bird survey was undertaken at the ESB Power Station cooling water outfall adjacent to Poolbeg Tank Farm and the Great South Wall over six days between 22-27 October 2019 when a dredging vessel was present in proximity to this intertidal area. Appendix 2 to this report contains that bird survey report. The dredging vessel, Freeway, was a 92m LOA hopper dredger. During monitoring the dredger slowly passed by the survey area at the inner limit of the dredging area, approximately 150m from the low water mark. During operations, the dredger was passing the survey area for 10-15 minutes.

Twenty four hours of observations of dredging activities were made over six days. In summary, 18 disturbance events out of 100 potential events resulted in behavioural change of the birds present:

- Eleven events, all caused by small wakes produced by passing ships (arrivals or departures in the navigation channel), resulted in behavioural change (e.g. vigilance or alarm call) but not flight;
- Five events, all caused by potentially predatory birds flying over, resulted in some of the birds present taking flight, but they soon returned to the site; and
- Two events, both caused by wakes produced by a DPC pilot vessel passing at speed, resulted in some of the birds present taking flight and not returning.

No disturbance whatsoever was observed to occur as a result of the dredging activities, the presence of vessels or the presence of seamen on the deck of the vessel. There was no disturbance from dredging activities to cause impacts on the SPA Special Conservation Interest species in this area used both as a low tide feeding area at the Irish Water and ESB Power Station cooling water outfall adjacent to Poolbeg Tank Farm. Dredging of the navigation channel in front of the cooling water outfall at the Great South Wall was observed not to cause ex-situ effects that could potentially impact upon the attainment of the conservation objectives for the overwintering Special Conservation Interest species of South Dublin Bay and River Tolka Estuary SPA.

The non-breeding waterbirds of South Dublin Bay and River Tolka Estuary SPA shall be present during the proposed site investigations, but they represent one additional vessel within close range. It is considered in light of this evidence that the likelihood of disturbance effects during site investigation activities is low, in the context of the existing levels of shipping activity and associated noise and visual disturbance which occur within Dublin Port on a daily basis. It will cause no appreciable decrease in the range, timing or intensity of use of this area by any SPA Special Conservation Interest species as a result of site investigation activities.

Given this outcome, there is no possibility of any loss of attractiveness of a feeding site, and no likely significant effect arising from noise or visual stimuli upon the non-breeding population of overwintering waterbirds from the proposed site investigation works. That is the case in the absence of any mitigation measures being applied as part of the proposed works.

Given that there is no possibility of noise or visual stimuli resulting in a likely significant effect on the breeding or non-breeding waterbirds of South Dublin Bay and River Tolka Estuary SPA, for all SPA sites at a greater distance than South Dublin Bay and River Tolka Estuary SPA, there is equally no possibility that noise or visual triggers of disturbance, arising as a result of the proposed works could

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likely significantly affect their overwintering special conservation interests when tested against their conservation objectives.

The proposed marine site investigations will not delay or prevent achieving the target for the long-term population trend of the feature species to be stable or increasing. The proposed marine site investigations will also not delay or prevent achieving the target for no significant decrease in the range, timing or intensity of use of areas by the feature species other than that occurring from natural patterns of variation.

Similarly, there is no possibility that noise or visual triggers of disturbance arising as a result of the proposed works could likely significantly affect the breeding seabird special conservation interests of the various inshore island SPAs (Ireland's Eye, Dalkey Island) when tested against their conservation objectives.

Potential aerial noise and visual disturbance phase effects as a result of the marine site investigations on these more distant SPA sites shall not arise. In the absence of any further evaluation and analysis and the application of measures intended to avoid or reduce the harmful effects of the proposed marine site investigations on these more distant SPAs, likely significant effects as a result of potential noise and visual disturbance can be excluded at screening stage.

### 4.5 In-Combination Effects

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

#### *Dublin Port Company Projects*

- Alexandra Basin Redevelopment (ABR) Project - (Strategic Infrastructure) - Reg. Ref. PL29N.PA0034
- Masterplan 2 (MP2) Project - (Strategic Infrastructure) - Reg. Ref. PL29N.304888
- Dublin Port 2019-2021 Maintenance Dredging Campaign - S0004-02
- Dublin Port 2022 - 2029 Maintenance Dredging Programme (Dumping at Sea application submitted to the EPA in February 2021 (Ref S0004-03), not yet determined
- Dublin Harbour Capital Dredging Project (Dumping at Sea application submitted to the EPA on 26th August 2021 (Ref S0033-01), not yet determined
- Berth 49 Ramp - Reg. Ref 2756/19
- Dublin Port Internal Road Network – Reg. Ref. 3084/16
- Extension Terminal 2 Check-In area - Reg. Ref. 2299/12
- Floating Dock Section Reg. Ref. 4216/17
- Interim Unified Passenger Terminal - Reg. Ref. 3638/18
- Dublin Ferryport Terminals Access - Reg. Ref. 3314/18
- Vehicular and pedestrian entrances off Breakwater Road South - Reg. Ref.2596/15
- Demolition of Calor Offices and Provision of Yard - Reg. Ref. 3540/18

- Asahi demolition and Provision of Yard - Reg. Ref. 3488/18

*Developments in the Surrounding Area*

- Vehicle service/maintenance facility and office accommodation - Reg. Ref. 3143/18
- Demolition of buildings and Provision of Yard - Reg. Ref. 2429/17
- Ringsend Wastewater Treatment Plant – BP Ref. PL29S.301798

#### 4.5.1 Dublin Port Company. Maintenance Dredging Programme (2022-2029)

Dublin Port Company (DPC) need to carry out regular maintenance dredging of the navigation channel, basins and berthing pockets in order to maintain their advertised charted depths and hence provide safe navigation for vessels to and from the Port.

The loading of dredged material will be restricted to those areas of the navigation channel, basins and berthing pockets which contain sediments which are suitable for disposal at sea (Class 1: uncontaminated, no biological effects likely). Confirmation of the suitability of the dredged sediments for disposal at sea was made through a programme of sediment chemistry sampling and analysis and eco-toxicological testing. It is proposed to dispose of the dredged sediments at the existing licenced offshore disposal site located at the entrance to Dublin Bay to the west of the Burford Bank, 6.75 km from the lighthouse at the end of the Great South Wall.

The maximum amount of material to be dredged is 300,000 m<sup>3</sup> per annum and it consists mostly of silt and sand with elements of clay, gravel and cobbles. Dredging will be carried out by a trailer suction hopper dredger and support vessels. It is proposed to undertake the maintenance dredging and disposal at sea operations within the period April to September each year between 2022 and 2029. An additional closed period will operate within the inner Liffey channel upstream of Berth 49, including the main channel and channel side berths but not including the basins between 1<sup>st</sup> April and 14<sup>th</sup> May to protect migrating Atlantic salmon smolts and River lamprey. The dredging campaign within each of these periods is expected to last approximately 4-6 weeks, depending on weather conditions.

These works have been subject to appraisal under the Habitats Directive. Subject to the implementation of mitigation measures in respect of the proposed maintenance dredging and associated dumping it is not envisaged that the maintenance dredging programme alone will give rise to any adverse impacts upon the integrity of any European site. Furthermore, maintenance dredging will take place in the summer months only, while the proposed marine site investigations will take place within the autumn/winter months only.

Likely significant cumulative or in-combination effects of the proposed marine site investigations and the Dublin Port maintenance dredging programme 2022-2029 can be excluded beyond scientific doubt.

#### 4.5.2 Dublin Harbour Capital Dredging Project

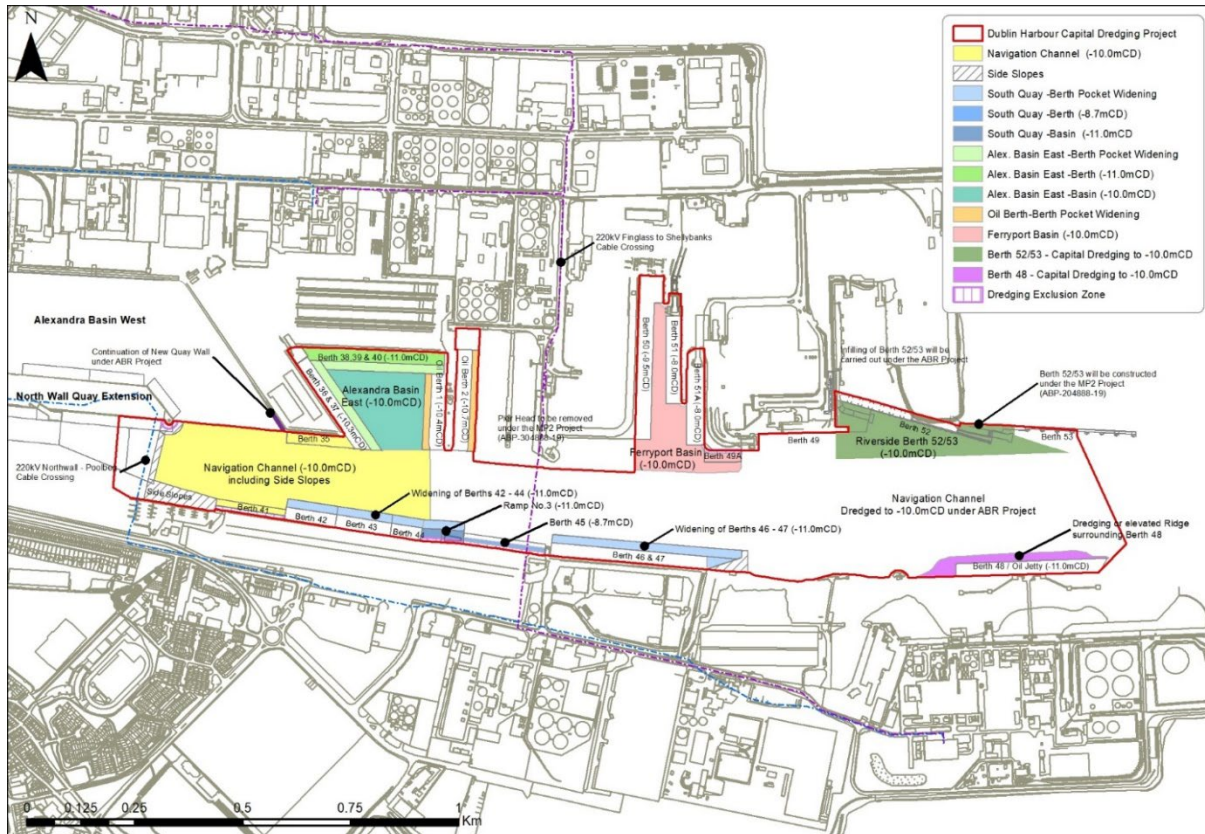
The Dublin Harbour Capital Dredging Project brings forward for consent key elements of the capital dredging works required to create the required depth of the navigation channel, basins and berthing pockets as set out in the Dublin Port Masterplan 2040, reviewed 2018. The works proposed in the Dublin Harbour Capital Dredging Project are shown in **Figure 4.8** and comprise a number of elements:

- Deepening the navigation channel between North Wall Quay Extension and the Western Oil Jetty, including riverside Berth 35;



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- Deepening of Alexandra Basin East and deepening/widening of berths;
- Deepening of the Oil Basin and widening of berths;
- Deepening of the Ferryport Basin;
- Deepening of riverside Berth 52;
- Widening the South Port (Berths 42 - 47) berths, and
- Removal of ridge between the navigation channel and the Poolbeg Oil Jetty (Berth 48).



**Figure 4.8: Main elements of the Dublin Harbour Capital Dredging Project**

The loading of dredged material will be restricted to those areas of the navigation channel, basins and berthing pockets which contain sediments which are suitable for disposal at sea (Class 1: uncontaminated, no biological effects likely). Confirmation of the suitability of the dredged sediments for disposal at sea was made through a programme of sediment chemistry sampling and analysis and eco-toxicological testing. It is proposed to dispose of the dredged sediments at the existing licenced offshore disposal site located at the entrance to Dublin Bay to the west of the Burford Bank, 6.75 km from the lighthouse at the end of the Great South Wall.

The total estimated dredge volume is estimated to be 500,000 m<sup>3</sup> and includes a siltation tolerance/contingency to account for material which has settled in Dublin Harbour in the period between successive maintenance dredging campaigns and the commencement of the capital dredging campaign. The material to be dredged comprises clays, silts, sands and gravels with occasional cobbles. No dredging of rock is required.

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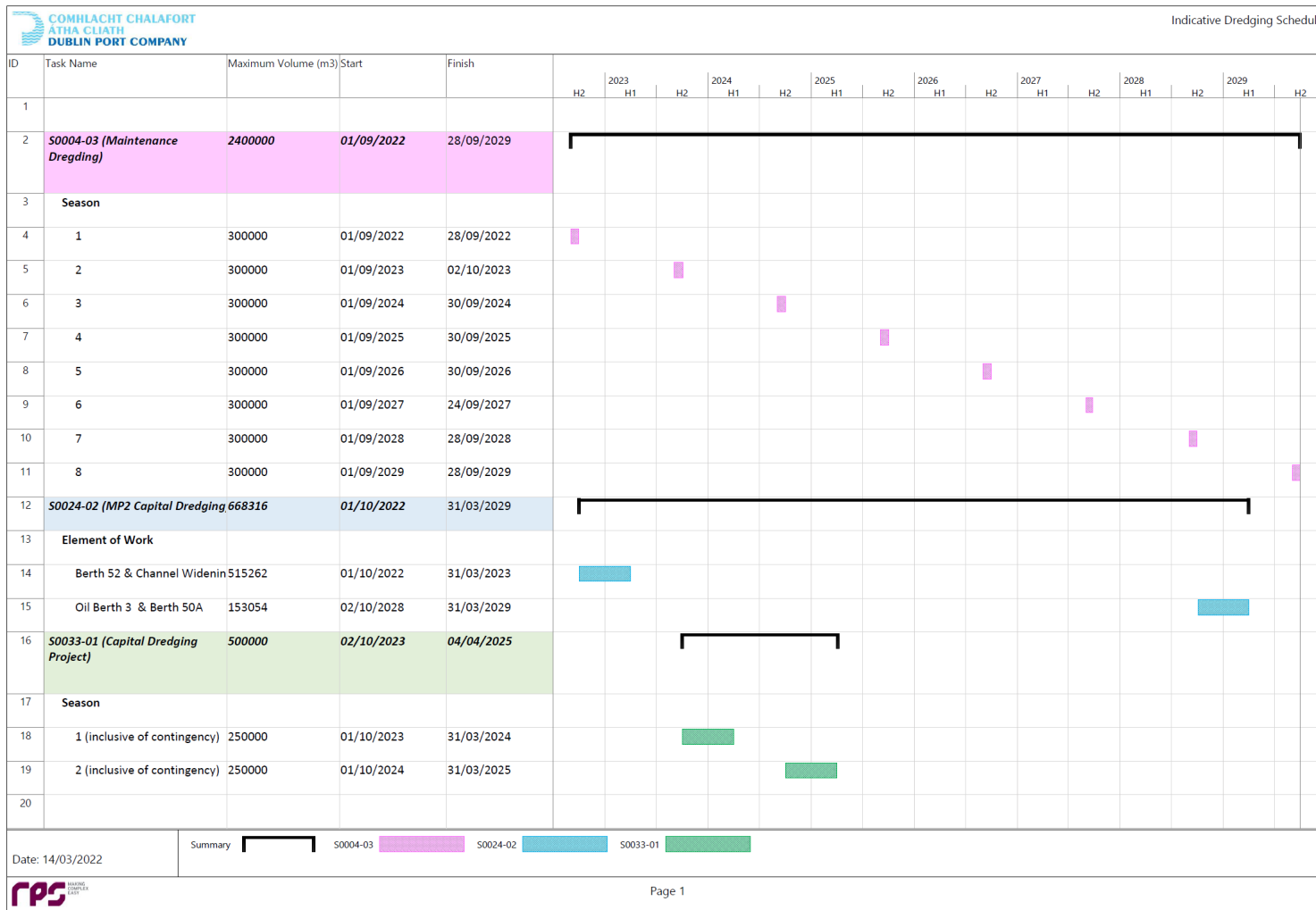
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The proposed capital dredging works will be restricted to the winter period (October – March) over an eight year period (estimated at the time of application to be between October 2022 – March 2030 and subject to the grant of a Foreshore Licence and Dumping at Sea Permit), but the consents have not yet been granted and so works are not now scheduled to commence until autumn 2023 (refer **Figure 4.9**).

The capital dredging associated with the Dublin Harbour Capital Dredging Project will occur over the same winter periods as the capital dredging required under the MP2 Project.



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**Figure 4.9: Indicative dumping at sea programme for S0024-02, S0004-03 and S0033-01**

However, the capital dredging for the two projects will be undertaken sequentially, that is, only one dredger will operate at any given time. The modelled rates of dredging and dumping will therefore not be exceeded at any given time, and the modelled extent of dredge or dumping plumes, their predicted concentrations of suspended sediments and predicted rates of sedimentation at proximate shorelines remain valid when these activities are considered in combination.

To validate this hypothesis, a cumulative deposition modelling run was undertaken in March 2022, to examine the predicted cumulative deposition of silts within Dublin Bay arising from proposed Dumping at Sea Activities under MP2 Project (EPA DaS application S0024-02), the Dublin Port 2022-2029 Maintenance Dredging Programme (EPA DaS application S0004-03) and the Dublin Harbour Capital Dredging Project (EPA DaS application S0033-01). The programme of dumping at sea activities for all three projects is shown in **Figure 4.9**.

As the proposed marine site investigations will not result in any sedimentation effects alone, likely significant cumulative or in-combination effects of the proposed marine site investigations and the Dublin Harbour Capital Dredging Project can be excluded beyond scientific doubt.

#### 4.5.3 Alexandra Basin Redevelopment (ABR) Project

DPC was granted planning permission subject to conditions (ABP Reg. Ref. PL29N.PA0034) in July 2015 for the redevelopment of Alexandra Basin, Berths 52 and 53 and dredging of the channel of the River Liffey together with associated works in Dublin Port. Elements of the proposed development can be summarised as follows:

##### Alexandra Basin West:

- The infilling of graving Dock No. 2 having an area of 6,055sq.m;
- The excavation and restoration of historic Graving Dock No. 1;
- The demolition of the bulk jetty having an area of 3,200sq.m;
- A section of North Wall Quay extension having an area of 21,700sq.m;
- Extension of Alexandra Quay West of 130m in length;
- New 273 m long Ro-Ro jetty and provision of three Ro-Ro ramps; and
- The dredging of: 470,000sq.m of contaminated material to a depth of -10.0m Chart Datum (CD) over an area of 194,000sq.m within the redeveloped Alexandra Basin and its remediation.

##### Berth 52 and 53:

- The demolition of existing berths 52 and 53;
- Jetty at Berth 52 having an area of 500sq.m;
- Concrete Dolphin at Berth 53 having an area of 500sq.m;
- The construction of:
  - A new river berth at Berths 52/53, 300m long;
  - New 75 m mooring jetty at new river berth;
  - New 40 m long mooring jetty to extend existing berth 49, 50m long;

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- The infilling of the Terminal 5 Ro-Ro basin, an area of 45,650sq.m;
- Raising of existing levels by 1.4 m over an area of 95,000sq.m; and
- Dredging of new river berth to -10.0m CD.

### Liffey Channel:

- Construction of a marina protection structure to a height of +7.0m CD and a length of 220m on the south side of the river channel. Dredging of the shipping channel to a depth of -10m CD from a point 55m to the east of the East link bridge, to a location in the vicinity of Dublin Bay, a total distance of 10,320m.

The ABR Project is now being implemented by DPC. The AA Screening Report/NIS prepared for ABR Project 'screened in' likely significant effects upon North Dublin Bay SAC; South Dublin Bay cSAC; Rockabill to Dalkey Island cSAC; North Bull Island SPA; and South Dublin Bay & Tolka Estuary SPA.

Measures intended to avoid or reduce the harmful effects of the proposed development on the sites concerned were proposed and conditioned to the permission. Adverse effects upon the integrity of all sites assessed will not occur as a result.

As the proposed marine site investigations will not result in any sedimentation, diminution of water quality or disturbance effects alone, likely significant cumulative or in-combination effects of the proposed marine site investigations and the ABR Project can be excluded beyond scientific doubt.

### 4.5.4 MP2 Project

DPC was granted planning permission subject to conditions (ABP Reg. Ref. ABP-304888-19) in July 2020 for the redevelopment of lands to the north of the River Liffey in Dublin Port including Alexandra Basin, Berths 52 and 53 and dredging of the channel of the River Liffey together with associated works in Dublin Port. Elements of the proposed development can be summarised as follows:

- Construction of a new Ro-Ro jetty (Berth 53) for ferries up to 240m in length on an alignment north of the Port's fairway and south and parallel to the boundary of the South Dublin Bay & River Tolka SPA (004024).
- A reorientation of the already consented Berth 52 (ABP Ref. 29N.PA0034). Berth 52 is also designed to accommodate ferries up to 240m in length. The works will also comprise an amendment to the consented open dolphin structure (ABP Ref. 29N.PA0034) to create a closed berthing face at the eastern end of Berth 49.
- [Elsewhere within the ABR Project, the extension of the existing Berth 49 is already consented to also make this berth capable of accommodating ferries up to 240m in length. The combination of the ABR Project with the MP2 Project will therefore deliver three river berths all capable of accommodating ferries up to 240m in length].
- A lengthening of an existing river berth (50A) to provide the Container Freight Terminal with additional capacity to handle larger container ships. These works will include the infilling of the basin east of the now virtually redundant Oil Berth 4 on the Eastern Oil Jetty. These works will also include dredging to a standard depth of -11.0m CD which is a proposed amendment to the channel dredging as permitted under the ABR Project (ABP Ref. 29N.PA0034).
- As part of the infilling of Oil Berth 4, it is proposed to redevelop Oil Berth 3 as a future deep-water container berth (standard depth of -13.0m CD) for the Container Freight Terminal. This will facilitate the change of use of the berth from petroleum importation to container handling when the throughput of petroleum products through Dublin Port declines as a result of national policies to decarbonise the economy.

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- The dredging of a berthing pocket to a standard depth of -13.0m CD at Oil Berth 3 will require stabilisation of the existing quay wall at Jetty Road. It is not proposed to use this quay wall for the berthing of vessels.
- Dredging at the proposed Berth 53 and channel widening to a standard depth of -10.0m CD which is a proposed amendment to the channel dredging as permitted under the ABR Project (ABP Ref. 29N.PA0034).
- Consolidation of passenger terminal buildings, demolition of redundant structures and buildings, and removal of connecting roads to increase the area of land for the transit storage of Ro-Ro freight units as a Unified Ferry Terminal (UFT). Works include reorganisation of access roads; two proposed check in areas comprising a total of 14 check lanes; proposed set down and parking area for the existing Terminal 1 building; proposed pedestrian underpass to access the existing Terminal 1 building; three proposed toilet blocks and a proposed ESB Substation. These works will comprise amendments to consented developments with planning reference numbers 3084/16 & 3638/18, and the ABR Project (ABP Ref. 29N.PA0034).
- A heritage zone adjacent to Berth 53 and the Unified Ferry Terminal set down area. This will comprise an alteration to consented development planning reference 3084/16.

The AA Screening Report and NIS prepared for MP2 Project screened in likely significant water quality effects upon North Dublin Bay cSAC; South Dublin Bay cSAC; Rockabill to Dalkey Island SAC; North Bull Island SPA; and South Dublin Bay & Tolka Estuary SPA. The NIS also screened in likely significant disturbance effects upon North Bull Island SPA; and South Dublin Bay & Tolka Estuary SPA

Measures intended to avoid or reduce the harmful effects of the proposed development on the sites concerned were proposed. Adverse effects upon the integrity of all sites assessed will not occur as a result.

Marine construction associated with MP2 Project is not due to commence until 2024. Construction phase of marine elements of MP2 Project are thus not anticipated to overlap or occur in immediate succession with the proposed site investigations. As the proposed marine site investigations will not result in any sedimentation, diminution of water quality or disturbance effects alone, likely significant cumulative or in-combination effects of the proposed marine site investigations and the MP2 Project can be excluded beyond scientific doubt.

### 4.5.5 Berth 49 Ramp

DPC facilitated Irish Ferries plan to invest in two new vessels before 2020, of which one has been ordered, by submitting an application (Reg.Ref: 3176/19) in June 2019 to upgrade the existing infrastructure at Berth 49 to facilitate faster loading and unloading times of the new vessels. Permission was granted in September 2019. The permitted development consists of:

- c.189m long, c.10m wide approach way and ramp;
- 1 no. office and staff facilities building (c.193 sq.m and 7.7m in height);
- 1 no. control kiosk (c.6sq.m and 2.3m in height);
- 1 no. control cabin (c.20sq.m and 2.3m in height);
- new lighting (including 18 no. lighting columns 10m high);
- demolition of 5 no. existing staff facilities buildings with a combined area of c.329sq.m; and

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- associated site works to include 15 no. tug parking spaces, drainage, utility services, fencing 2.4m in height and pedestrian gate 2.4m in height on a site of approx. 1.3 hectares.

A screening for appropriate assessment and NIS was submitted with this application, and it was reviewed. That report did not predict any aerial or underwater noise, lighting or visual disturbance effects or habitat loss effects. The possibility of likely significant water quality and habitat deterioration effects on the wetland habitats of the Tolka estuary as a resource for the regularly occurring breeding and non-breeding waterbirds of South Dublin Bay & River Tolka Estuary SPA and North Bull Island SPA that utilise it could not be excluded at screening stage.

A subsequent Stage Two appraisal (a NIS) of the implications of the proposed development was undertaken to determine if it would adversely affect the integrity of the European sites concerned. A number of mitigation measures were required in order to address likely significant water quality effects associated with the proposed development.

The Berth 49 Ramp development is anticipated to be constructed and operational before the proposed capital dredging activities commence. Only construction stage pollution prevention measures were applied in the NIS. At operational phase the ramp forms part of the existing waterside port infrastructure to facilitate ongoing port operations. It will result in no more emissions to the aerial or marine environment than the various existing operations and activities within Port Estate. It will not result in any disturbance to those SPA feature species located in the South Dublin Bay and River Tolka Estuary SPA.

As the proposed marine site investigations will not result in any sedimentation, diminution of water quality or disturbance effects alone, likely significant cumulative or in-combination effects of the proposed marine site investigations and the Berth 49 Project can be excluded beyond scientific doubt.

### 4.5.6 Dublin Port Internal Road Network

DPC was granted planning permission in December 2017 (Reg. Ref. 3084/16) for works to the port's private internal road network which includes works on public roads at East Wall Road, Bond Road and Alfie Byrne Road. The development will consist of:

- Construction of new roads and enhancements to existing roads within the Dublin Port estate north of River Liffey;
- Construction of enhanced landscaping and a shared pedestrian and cycle amenity route of approximately 4km in length along the northern boundary of the port estate (the Greenway);
- Construction of new pedestrian and cycle overbridge at Promenade Road;
- Construction of access ramps to pedestrian and cycle overbridge at Promenade Road;
- Construction of new pedestrian and cycle underpass at Promenade Road;
- Construction of 11 no. new signage gantries;
- Ancillary construction works, including site clearance, demolitions, earthworks, pavement construction, construction of verges, modifications to accesses, construction of new and amended drainage services, diversion and installation of utility services, installation of road markings and signs and accommodation works;
- Works to existing boundaries and construction of new boundaries; and

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- Construction of minor works to the junctions of East Wall Road with Tolka Quay Road and East Wall Road with Alexandra Road.

This approval is now being implemented by DPC. A screening for appropriate assessment report accompanied the application and found that a range of disturbance effects could occur ranging from non-dispersive behavioural changes such as birds looking up or heads raised, temporarily stopping feeding or roosting; to dispersive behavioural changes such as taking flight or leaving the area. A range of measures were proposed to avoid or reduce the visual stimuli triggering behavioural changes in the waders and waterbirds.

Disturbance of the wintering waterbirds using that part of the Tolka estuary north of Berth 53 was identified as potentially arising as a result of operational phase of the Greenway development as part of permission Reg. Ref. 3084/16. Measures have been applied to reduce the disturbance effects as part of the Greenway development, to ensure that disturbance is avoided or at worst, remains at the lower end of the scale and does not result in dispersive behaviour.

As the proposed marine site investigations will not result in any sedimentation, diminution of water quality or disturbance effects alone, likely significant cumulative or in-combination effects of the proposed marine site investigations and the Dublin Port internal road network project can be excluded beyond scientific doubt.

### 4.5.7 Extension Terminal 2 Check-In area

DPC was granted planning permission (Reg. Ref. 2299/12) in June 2012 for the ground level extension and modifications of an existing single storey Terminal 2 building, consisting of a single storey extension to the check-in area. This approval has been implemented by DPC. The Planner's Report was reviewed, and no effects upon any European site were identified by the planning authority. Given that construction phase for this project has long since passed, only operational stage effects could possibly act in combination with effects associated with the proposed marine site investigations. The operational use of this development is contained within a building, itself contained within the heart of the industrial fabric of the operational Port estate. As such, when both projects are considered together, there will be no additional effects cumulatively or in combination in this regard beyond scientific doubt.

### 4.5.8 Floating Dock Section

DPC was granted planning permission (Reg. Ref. 4216/17) in January 2018 for floating dock sections (pontoons) with an area of c.321sq.m, access walkway and removal of internal structural and infrastructural elements including vegetation, plinths, fences and bollards; new access roadway. The pontoon shall provide enhanced docking facilities for tug boats operating in the port.

This approval is now being implemented by DPC. The Planner's Report was reviewed, and no effects upon any European site were identified by the planning authority. A screening for appropriate assessment report was submitted with this application, and it was reviewed. That report did not predict any likely water quality, habitat deterioration or habitat loss effects; and it did not predict any underwater, aerial or visual disturbance effects. Construction phase will not overlap between this consented project and the proposed marine site investigations. Operational phase of this development comprises the continuation of existing tug boat operations, albeit at enhanced facilities. As such, when both projects are considered together, there will be no additional effects cumulatively or in combination in this regard beyond scientific doubt.

### 4.5.9 Interim Unified Passenger Terminal

DPC was granted planning permission (Reg. Ref. 3638/18) in November 2018 for the upgrade of Terminal 1 and 2 facilities including consolidated vehicle check-in facilities and revised stacking and circulation arrangements. The proposed development also includes the provision of State Services facility for control and inspections of passengers and freight comprising:

- 2 no. Inspection Sheds
- 2 no. State Service office blocks
- 5 no. Immigration Control Booths
- 24 no. staff car parking spaces;
- 18 no. HGV parking spaces;
- 20 no. car parking spaces;
- Control Point with Canopy and gates (7.7m high) and 4 no. gateways;
- New 4 lane egress onto Tolka Quay Road.

This approval is now being implemented by DPC. Construction phase for this project and the proposed marine site investigations will not overlap. A screening for appropriate assessment report was submitted with this application, and it was reviewed. That report did not predict any likely water quality, habitat deterioration or habitat loss effects; and it did not predict any underwater, aerial or visual disturbance effects. It is a landside project contained within the heart of the industrial fabric of the operational Port estate. At operational phase it results in no more emissions to the aerial or marine environment than the various operations and activities within Port estate currently discharge, and it will not result in any disturbance to those SPA feature species located in the South Dublin Bay and River Tolka Estuary SPA. As such, when both projects are considered together, there will be no additional effects cumulatively or in combination in this regard beyond scientific doubt.

### 4.5.10 Dublin Ferryport Terminals Access

DPC was granted planning permission (Reg. Ref. 3314/18) in September 2018 for the upgrade of access to the Dublin Port Operations Centre and the Dublin Ferryport Terminals (DFT), including; re-alignment of traffic lanes and modification of Alexandra Road and Tolka Quay Road junctions; provision of Optical Character Recognition system to include traffic lights, camera, barriers and gantry; DFT check points with associated barriers, kiosks and traffic signals and; associated site works including fencing, gates, underground drainage and electricity infrastructure.

This approval is now being implemented by DPC. Construction phase for this project and the proposed marine site investigations will not overlap. The Planner's Report was reviewed, and no effects upon any European site were identified by the planning authority. A screening for appropriate assessment report was submitted with this application, and it was reviewed. That report did not predict any likely water quality, habitat deterioration or habitat loss effects; and it did not predict any underwater, aerial or visual disturbance effects. It is a landside project contained within the operational Port estate. At operational phase it results in no more emissions to the aerial or marine environment than the various operations and activities within Port estate currently discharge, and it will not result in any disturbance to those SPA feature species located in the South Dublin Bay and River Tolka Estuary SPA. As such, when both projects are considered together, there will be no additional effects cumulatively or in combination in this regard beyond scientific doubt.



#### 4.5.11 Vehicular and pedestrian entrances off Breakwater Road South

DPC was granted planning permission (Reg. Ref.2596/15) in July 2015 for relocation of the existing vehicular and pedestrian entrances off Breakwater Road South to a new location off Breakwater Road South, and alterations to the existing layout of the road.

This approval has been implemented by DPC. Given that construction phase for this project has already occurred, only operational stage effects could possibly act in combination with effects arising as a result of the marine site investigations. The Planner's Report was reviewed, and no effects upon any European site were identified by the planning authority. A screening for appropriate assessment report was submitted with this application, and it was reviewed. That report did not predict any likely water quality, habitat deterioration or habitat loss effects; and it did not predict any underwater, aerial or visual disturbance effects. It is a landside project contained within the operational Port estate. At operational phase it results in no more emissions to the aerial or marine environment than the various operations and activities within Port estate currently discharge, and it will not result in any disturbance to those SPA feature species located in the South Dublin Bay and River Tolka Estuary SPA. As such, when both projects are considered together, there will be no additional effects cumulatively or in combination in this regard beyond scientific doubt.

#### 4.5.12 Demolition of Calor Offices and Provision of Yard

DPC was granted planning permission (Reg. Ref. 3540/18) in October 2018 for the demolition of a single storey office building (785sq.m); maintenance shed building (840sq.m); reinforced concrete bund and steel tank (42sq.m); boiler room building; and all associated general site clearance. The development also comprises hard surfacing to provide a yard for storage across the extent of the site. The proposed development shall facilitate the consolidation of Calor activities within the Port lands.

This approval is now being implemented by DPC. Construction phase for this project and the proposed marine site investigations will not overlap. The Planner's Report was reviewed, and no effects upon any European site were identified by the planning authority. A screening for appropriate assessment report was submitted with this application, and it was reviewed. That report did not predict any likely water quality, habitat deterioration or habitat loss effects; and it did not predict any underwater, aerial or visual disturbance effects. It is a landside project contained within the operational Port estate. At operational phase it results in no more emissions to the aerial or marine environment than the various operations and activities within Port estate currently discharge, and it will not result in any disturbance to those SPA feature species located in the South Dublin Bay and River Tolka Estuary SPA. As such, when both projects are considered together, there will be no additional effects cumulatively or in combination in this regard beyond scientific doubt.

#### 4.5.13 Asahi demolition and Provision of Yard

DPC was granted planning permission (Reg. Ref. 3488/18) in November 2018 for the demolition of a redundant storage tank including associated pipework and general site clearance. The area is to be hard surfaced to provide a yard for storage across the extent of the site. CCTV poles, new lighting and a new 4m high security fence on all boundaries is proposed. The development also includes the closure of the existing site access and provision of a 12m wide sliding gate access on Breakwater Road North.

This approval is now being implemented by DPC. Construction phase for this project and the proposed marine site investigations will not overlap. The Planner's Report was reviewed, and no effects upon any European site were identified by the planning authority. A screening for appropriate assessment report was submitted with this application, and it was reviewed. That report did not predict any likely

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water quality, habitat deterioration or habitat loss effects; and it did not predict any underwater, aerial or visual disturbance effects. It is a landside project contained within the operational Port estate. At operational phase it results in no more emissions to the aerial or marine environment than the various operations and activities within Port estate currently discharge, and it will not result in any disturbance to those SPA feature species located in the South Dublin Bay and River Tolka Estuary SPA. As such, when both projects are considered together, there will be no additional effects cumulatively or in combination in this regard beyond scientific doubt.

### 4.5.14 Vehicle service/maintenance facility and office accommodation

DPC was granted planning permission (Reg. Ref. 3143/18) in August 2018 for the construction of a vehicle service/maintenance facility and office accommodation contained in one building (approx. 946sq.m) incorporating vehicle service/maintenance bays, a two storey office area of 260sq.m with offices, meeting/training room, canteen and changing area, toilets, building signage. Associated site works including fencing, 55 no. car parking spaces, reconfiguration and widening of existing entrances/exits and connection to existing services on Tolka Quay Road. The proposed development shall facilitate the consolidation of Calor activities within the Port lands.

The subject site lies to the north of the proposed marine site investigations. The Planner's Report was reviewed, and no effects upon any European site were identified by the planning authority. A screening for appropriate assessment report was submitted with this application, and it was reviewed. That report did not predict any likely water quality, habitat deterioration or habitat loss effects; and it did not predict any underwater, aerial or visual disturbance effects. It is a landside project contained within the operational Port estate. At operational phase it will not result in any disturbance to those SPA feature species located in the South Dublin Bay and River Tolka Estuary SPA. As such, when both projects are considered together, there will be no additional effects cumulatively or in combination in this regard beyond scientific doubt.

### 4.5.15 Demolition of buildings and Provision of Yard

DPC was granted planning permission (Reg. Ref. 2429/17) in September 2017 for the demolition of 3 no. existing buildings comprising a blockwork structure of c. 283sq.m, a temporary modular structure of c. 303sq.m and a portal frame shed building of c. 112sq.m) and removal of all structural and infrastructural elements, vegetation, plinths, fences etc. A new concrete surface treatment is to be provided across entire site. The new yard facility includes CCTV, new lighting and new approx. 4m high security fence to northern, eastern and southern (Tolka Quay Road) boundaries. The development also includes the closure of the existing (eastern) vehicular entrance and widening of the existing western entrance to provide a 12m sliding gate on Tolka Quay Road.

The subject site is to the northwest of the proposed marine site investigations. This approval is now being implemented by the DPC. Construction phase for this project and the marine site investigations will not overlap. The Planner's Report was reviewed, and no effects upon any European site were identified by the planning authority. A screening for appropriate assessment report was submitted with this application, and it was reviewed. That report did not predict any likely water quality, habitat deterioration or habitat loss effects; and it did not predict any underwater, aerial or visual disturbance effects. It is a landside project contained within the operational Port estate. At operational phase it results in no more emissions to the aerial or marine environment than the various operations and activities within Port estate currently discharge, and it will not result in any disturbance to those SPA feature species located in the South Dublin Bay and River Tolka Estuary SPA. As such, when both

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projects are considered together, there will be no additional effects cumulatively or in combination in this regard beyond scientific doubt.

### 4.5.16 Ringsend Wastewater Treatment Plant

Irish Water has submitted a planning application for strategic infrastructure development to An Bord Pleanála (Ref. PL29S.301798) seeking permission to further progress the upgrade of the Ringsend Wastewater Treatment Plant (WwTP). The application seeks permission for works required to facilitate the use of Aerobic Granular Sludge (AGS) technology, to omit the previously permitted long sea outfall tunnel and to upgrade the sludge treatment facilities at Ringsend, Dublin 4, and to provide for a Regional Biosolids Storage Facility in Newtown, Dublin 11. The proposed development at Ringsend is on the south bank of the River Liffey. The application was granted permission in April 2019.

A project website (<https://www.ringsendwwtupgrade.ie/environmental-documents/>) exists and contains a screening for appropriate assessment and NIS. These documents were reviewed. Likely significant effects on the following European sites could not be excluded at the screening stage:

- South Dublin Bay and River Tolka Estuary SPA
- South Dublin Bay SAC
- North Bull Island SPA
- North Dublin Bay SAC
- Howth Head Coast SPA
- Dalkey Islands SPA
- Rockabill to Dalkey Island SAC

Further evaluation and analysis as part of a Stage 2 assessment predicted that

- water quality in Inner Dublin Bay will be enhanced because of a reduction in nutrient load once the proposed development is operational.
- it is unlikely that the food resource of waterbirds in the Tolka Estuary will be negatively affected
- reductions in nutrients in the receiving waters resulting from the proposed development will not have any impacts on fish populations in Dublin Bay
- disturbance and displacement of certain qualifying SPA feature species during construction may occur
- accidental spillage of hazardous substances resulting in water quality deterioration of the Liffey Channel and hydrologically connected areas during construction may occur
- significant dust deposition on the grasslands to the south of the site that form part of the South Dublin Bay and River Tolka Estuary SPA may occur

Measures intended to avoid or reduce these potentially significant effects on the European sites were proposed as part of the Stage Two Appropriate Assessment, and there will be no adverse effect on the integrity of any European site as a result.

As the proposed marine site investigations will not result in any sedimentation, diminution of water quality or disturbance effects alone, likely significant cumulative or in-combination effects of the proposed marine site investigations and the Ringsend Wastewater Treatment Plant can be excluded beyond scientific doubt.

#### 4.5.17 Howth Yacht Club

Only Howth Yacht Club (HYC) and Dublin Port Company currently hold Dumping at Sea Permits for use of the Dublin Bay dumping site. HYC has the benefit of a Dumping at Sea Permit (Ref. No. S0010-01) to load and dump a maximum of 120,000 tonnes of dredged material from Howth Marina over a one year period. In its application documents, HYC estimated a maximum daily quantity for dumping of 1,200 tonnes and 800 tonnes in each load. It also suggested a spring or winter commencement and campaign duration of six months. This volume of material is equivalent to approximately 6% of the annual permitted quantity of material that may be dumped at this site by Dublin Port Company under Dumping at Sea Permit S0024-01. Dumping will be subject to the approval of the Dublin Port Harbourmaster and dumping activity will not be permitted by the Harbourmaster for DPC and HYC operations simultaneously.

As the proposed marine site investigations will not result in any sedimentation, diminution of water quality or disturbance effects alone, likely significant cumulative or in-combination effects of the proposed marine site investigations and the Howth Yacht Club dredging permit can be excluded beyond scientific doubt.

### 4.6 Summary of Screening Appraisal

Table 4.2 summarises the outcome of the screening exercise for each European site considered.

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**Table 4.3: Screening Summary for European sites considered**

Site Code	Site Name	Can the possibility of Likely Significant Effects be excluded at the Screening Stage of assessment?			
		Habitat Loss	Water Quality and Habitat Deterioration	Underwater Noise and Disturbance	Aerial Noise and Visual Disturbance
IE000204	Lambay Island SAC	✓	✓	✓	✓
IE000205	Malahide Estuary SAC	✓	✓	✓	✓
IE000199	Baldoyle Bay SAC	✓	✓	✓	✓
IE002193	Ireland's Eye SAC	✓	✓	✓	✓
IE000202	Howth Head SAC	✓	✓	✓	✓
IE000206	North Dublin Bay SAC	✓	✓	✓	✓
IE000210	South Dublin Bay SAC	✓	✓	✓	✓
IE003000	Rockabill to Dalkey Island SAC	✓	✓	✓	✓
IE004024	South Dublin Bay & River Tolka Estuary SPA	✓	✓	✓	✓
IE004006	North Bull Island SPA	✓	✓	✓	✓
IE004016	Baldoyle Bay SPA	✓	✓	✓	✓
IE004113	Howth Head Coast SPA	✓	✓	✓	✓
IE004117	Ireland's Eye SPA	✓	✓	✓	✓
IE004172	Dalkey Islands SPA	✓	✓	✓	✓
IE004025	Malahide Estuary SPA	✓	✓	✓	✓

## 4.7 Conclusion of the Screening Appraisal

The Screening appraisal was completed in compliance with EU and Irish law and the relevant European Commission and national guidelines to determine whether or not Likely Significant Effects on any European site could be excluded as a result of the proposed marine site investigations. From the findings of the Screening appraisal, the possibility of Likely Significant Effects upon the European sites considered in the appraisal is summarised below.

### 4.7.1 Special Areas of Conservation

#### 4.7.1.1 Lambay Island SAC

The possibility of likely significant **Habitat Loss** effects can be excluded for this European site, even without consideration of mitigation measures.

The possibility of likely significant **Water Quality and Habitat Deterioration** effects can be excluded for this European site, even without consideration of mitigation measures.

The possibility of likely significant **Underwater Noise and Disturbance** effects can be excluded for this European site.

The possibility of likely significant **Aerial Noise and Visual Disturbance** effects can be excluded for this European site, even without consideration of mitigation measures.

The proposed marine site investigations, individually or in combination with other plans or projects is not likely to have a significant effect on Lambay Island SAC. It can be excluded, on the basis of objective information, that the proposed marine site investigations, individually or in combination with other plans or project, will have a significant effect on this European site.

#### 4.7.1.2 Malahide Estuary SAC

The possibility of likely significant **Habitat Loss** effects can be excluded for this European site, even without consideration of mitigation measures.

The possibility of likely significant **Water Quality and Habitat Deterioration** effects can be excluded for this European site, even without consideration of mitigation measures.

The possibility of likely significant **Underwater Noise and Disturbance** effects can be excluded for this European site, even without consideration of mitigation measures.

The possibility of likely significant **Aerial Noise and Visual Disturbance** effects can be excluded for this European site, even without consideration of mitigation measures.

The proposed marine site investigations, individually or in combination with other plans or projects is not likely to have a significant effect on Malahide Estuary SAC. It can be excluded, on the basis of objective information, that the proposed marine site investigations, individually or in combination with other plans or project, will have a significant effect on this European site.



#### 4.7.1.3 Baldoyle Bay SAC

The possibility of likely significant **Habitat Loss** effects can be excluded for this European site, even without consideration of mitigation measures.

The possibility of likely significant **Water Quality and Habitat Deterioration** effects can be excluded for this European site, even without consideration of mitigation measures.

The possibility of likely significant **Underwater Noise and Disturbance** effects can be excluded for this European site, even without consideration of mitigation measures.

The possibility of likely significant **Aerial Noise and Visual Disturbance** effects can be excluded for this European site, even without consideration of mitigation measures.

The proposed marine site investigations, individually or in combination with other plans or projects is not likely to have a significant effect on Baldoyle Bay SAC. It can be excluded, on the basis of objective information, that the proposed marine site investigations, individually or in combination with other plans or project, will have a significant effect on this European site.

#### 4.7.1.4 Ireland's Eye SAC

The possibility of likely significant **Habitat Loss** effects can be excluded for this European site, even without consideration of mitigation measures.

The possibility of likely significant **Water Quality and Habitat Deterioration** effects can be excluded for this European site, even without consideration of mitigation measures.

The possibility of likely significant **Underwater Noise and Disturbance** effects can be excluded for this European site, even without consideration of mitigation measures.

The possibility of likely significant **Aerial Noise and Visual Disturbance** effects can be excluded for this European site, even without consideration of mitigation measures.

The proposed marine site investigations, individually or in combination with other plans or projects is not likely to have a significant effect on Ireland's Eye SAC. It can be excluded, on the basis of objective information, that the proposed marine site investigations, individually or in combination with other plans or project, will have a significant effect on this European site.

#### 4.7.1.5 Howth Head SAC

The possibility of likely significant **Habitat Loss** effects can be excluded for this European site, even without consideration of mitigation measures.

The possibility of likely significant **Water Quality and Habitat Deterioration** effects can be excluded for this European site, even without consideration of mitigation measures.

The possibility of likely significant **Underwater Noise and Disturbance** effects can be excluded for this European site, even without consideration of mitigation measures.

The possibility of likely significant **Aerial Noise and Visual Disturbance** effects can be excluded for this European site, even without consideration of mitigation measures.

The proposed marine site investigations, individually or in combination with other plans or projects is not likely to have a significant effect on Howth Head SAC. It can be excluded, on the basis of objective information, that the proposed marine site investigations, individually or in combination with other plans or project, will have a significant effect on this European site.

#### 4.7.1.6 North Dublin Bay SAC

The possibility of likely significant **Habitat Loss** effects can be excluded for this European site, even without consideration of mitigation measures.

The possibility of likely significant **Water Quality and Habitat Deterioration** effects can be excluded for this European site, even without consideration of mitigation measures.

The possibility of likely significant **Underwater Noise and Disturbance** effects can be excluded for this European site, even without consideration of mitigation measures.

The possibility of likely significant **Aerial Noise and Visual Disturbance** effects can be excluded for this European site, even without consideration of mitigation measures.

The proposed marine site investigations, individually or in combination with other plans or projects is not likely to have significant effect on North Dublin Bay Island SAC. It can be excluded, on the basis of objective information, that the proposed marine site investigations, individually or in combination with other plans or project, will have a significant effect on this European site.

#### 4.7.1.7 South Dublin Bay SAC

The possibility of likely significant **Habitat Loss** effects can be excluded for this European site, even without consideration of mitigation measures.

The possibility of likely significant **Water Quality and Habitat Deterioration** effects can be excluded for this European site, even without consideration of mitigation measures.

The possibility of likely significant **Underwater Noise and Disturbance** effects can be excluded for this European site, even without consideration of mitigation measures.

The possibility of likely significant **Aerial Noise and Visual Disturbance** effects can be excluded for this European site, even without consideration of mitigation measures.

The proposed marine site investigations, individually or in combination with other plans or projects is not likely to have significant effect on South Dublin Bay SAC. It can be excluded, on the basis of objective information, that the proposed marine site investigations, individually or in combination with other plans or project, will have a significant effect on this European site.

#### 4.7.1.8 Rockabill to Dalkey Island SAC

The possibility of likely significant **Habitat Loss** effects can be excluded for this European site, even without consideration of mitigation measures.

The possibility of likely significant **Water Quality and Habitat Deterioration** effects can be excluded for this European site, even without consideration of mitigation measures.

The possibility of likely significant **Underwater Noise and Disturbance** effects can be excluded for this European site, without consideration of mitigation measures.

The possibility of likely significant **Aerial Noise and Visual Disturbance** effects can be excluded for this European site, even without consideration of mitigation measures.

The proposed marine site investigations, individually or in combination with other plans or projects is not likely to have significant effect on Rockabill to Dalkey Island SAC. It can be excluded, on the basis of objective information, that the proposed marine site investigations, individually or in combination with other plans or project, will have a significant effect on this European site.

## 4.7.2 Special Protection Areas

### 4.7.2.1 South Dublin Bay & River Tolka Estuary SPA

The possibility of likely significant **Habitat Loss** effects can be excluded for this European site, even without consideration of mitigation measures

The possibility of likely significant **Water Quality and Habitat Deterioration** effects on the wetland habitat as a resource for the regularly occurring overwintering SCI species that utilise it can be excluded for this European site.

The possibility of likely significant **Underwater Noise and Disturbance** effects can be excluded for this European site, even without consideration of mitigation measures.

The possibility of likely significant **Aerial Noise and Visual Disturbance** effects on the breeding and overwintering Special Conservation Interest species can be excluded for this European site.

The proposed marine site investigations, individually or in combination with other plans or projects is not likely to have significant effect on South Dublin Bay & River Tolka Estuary SPA. It can be excluded, on the basis of objective information, that the proposed marine site investigations, individually or in combination with other plans or project, will have a significant effect on this European site.

### 4.7.2.2 North Bull Island SPA

The possibility of likely significant **Habitat Loss** effects can be excluded for this European site, even without consideration of mitigation measures.

The possibility of likely significant **Water Quality and Habitat Deterioration** effects on the wetland habitat as a resource for the regularly occurring overwintering SCI species that utilise it can be excluded for this European site.

The possibility of likely significant **Underwater Noise and Disturbance** effects can be excluded for this European site, even without consideration of mitigation measures.

The possibility of likely significant **Aerial Noise and Visual Disturbance** effects can be excluded for this European site, even without consideration of mitigation measures.

The proposed marine site investigations, individually or in combination with other plans or projects is not likely to have significant effect on North Bull Island SPA. It can be excluded, on the basis of objective

information, that the proposed marine site investigations, individually or in combination with other plans or project, will have a significant effect on this European site.

#### 4.7.2.3 Baldoye Bay SPA

The possibility of likely significant **Habitat Loss** effects can be excluded for this European site, even without consideration of mitigation measures.

The possibility of likely significant **Water Quality and Habitat Deterioration** effects can be excluded for this European site, even without consideration of mitigation measures.

The possibility of likely significant **Underwater Noise and Disturbance** effects can be excluded for this European site, even without consideration of mitigation measures.

The possibility of likely significant **Aerial Noise and Visual Disturbance** effects can be excluded for this European site, even without consideration of mitigation measures.

The proposed marine site investigations, individually or in combination with other plans or projects is not likely to have a significant effect on Baldoye Bay SPA. It can be excluded, on the basis of objective information, that the proposed marine site investigations, individually or in combination with other plans or project, will have a significant effect on this European site.

#### 4.7.2.4 Howth Head Coast SPA

The possibility of likely significant **Habitat Loss** effects can be excluded for this European site, even without consideration of mitigation measures.

The possibility of likely significant **Water Quality and Habitat Deterioration** effects can be excluded for this European site, even without consideration of mitigation measures.

The possibility of likely significant **Underwater Noise and Disturbance** effects can be excluded for this European site, even without consideration of mitigation measures.

The possibility of likely significant **Aerial Noise and Visual Disturbance** effects can be excluded for this European site, even without consideration of mitigation measures.

The proposed marine site investigations, individually or in combination with other plans or projects is not likely to have a significant effect on Howth Head Coast SPA. It can be excluded, on the basis of objective information, that the proposed marine site investigations, individually or in combination with other plans or project, will have a significant effect on this European site.

#### 4.7.2.5 Ireland's Eye SPA

The possibility of likely significant **Habitat Loss** effects can be excluded for this European site, even without consideration of mitigation measures.

The possibility of likely significant **Water Quality and Habitat Deterioration** effects can be excluded for this European site, even without consideration of mitigation measures.

The possibility of likely significant **Underwater Noise and Disturbance** effects can be excluded for this European site, even without consideration of mitigation measures.

The possibility of likely significant **Aerial Noise and Visual Disturbance** effects can be excluded for this European site, even without consideration of mitigation measures.

The proposed marine site investigations, individually or in combination with other plans or projects is not likely to have a significant effect on Ireland's Eye SPA. It can be excluded, on the basis of objective information, that the proposed marine site investigations, individually or in combination with other plans or project, will have a significant effect on this European site.

#### 4.7.2.6 Dalkey Islands SPA

The possibility of likely significant **Habitat Loss** effects can be excluded for this European site, even without consideration of mitigation measures.

The possibility of likely significant **Water Quality and Habitat Deterioration** effects can be excluded for this European site, even without consideration of mitigation measures.

The possibility of likely significant **Underwater Noise and Disturbance** effects can be excluded for this European site, even without consideration of mitigation measures.

The possibility of likely significant **Aerial Noise and Visual Disturbance** effects can be excluded for this European site, even without consideration of mitigation measures

The proposed marine site investigations, individually or in combination with other plans or projects is not likely to have a significant effect on Dalkey Islands SPA. It can be excluded, on the basis of objective information, that the proposed marine site investigations, individually or in combination with other plans or project, will have a significant effect on this European site.

#### 4.7.2.7 Malahide Estuary SPA

The possibility of likely significant **Habitat Loss** effects can be excluded for this European site, even without consideration of mitigation measures.

The possibility of likely significant **Water Quality and Habitat Deterioration** effects can be excluded for this European site, even without consideration of mitigation measures.

The possibility of likely significant **Underwater Noise and Disturbance** effects can be excluded for this European site, even without consideration of mitigation measures.

The possibility of likely significant **Aerial Noise and Visual Disturbance** effects can be excluded for this European site, even without consideration of mitigation measures.

The proposed marine site investigations, individually or in combination with other plans or projects is not likely to have a significant effect on Malahide Estuary SPA. It can be excluded, on the basis of objective information, that the proposed marine site investigations, individually or in combination with other plans or project, will have a significant effect on this European site.

## 5 CONCLUSION OF THE HABITATS DIRECTIVE SCREENING APPRAISAL

Having regard to the relevant legislation and the methodology followed, a Stage One Screening appraisal was prepared of as to whether or not the proposed 3FM Project Marine Site investigations are likely to have a significant effect on 8 nr SACs and 7 nr SPAs as described in **Table 4.1**.

Likely Significant Effects could be excluded at screening stage for the following European sites, without further evaluation and analysis, or the application of measures intended to avoid or reduce the harmful effects of the proposed development on the sites concerned:

- Lambay Island SAC
- Malahide Estuary SAC
- Baldoyle Bay SAC
- Ireland's Eye SAC
- Howth Head SAC
- North Dublin Bay SAC
- South Dublin Bay SAC
- Rockabill to Dalkey Island SAC
- South Dublin Bay & River Tolka Estuary SPA
- North Bull Island SPA
- Baldoyle Bay SPA
- Howth Head Coast SPA
- Ireland's Eye SPA
- Dalkey Islands SPA
- Malahide Estuary SPA

It is concluded that the proposed development:

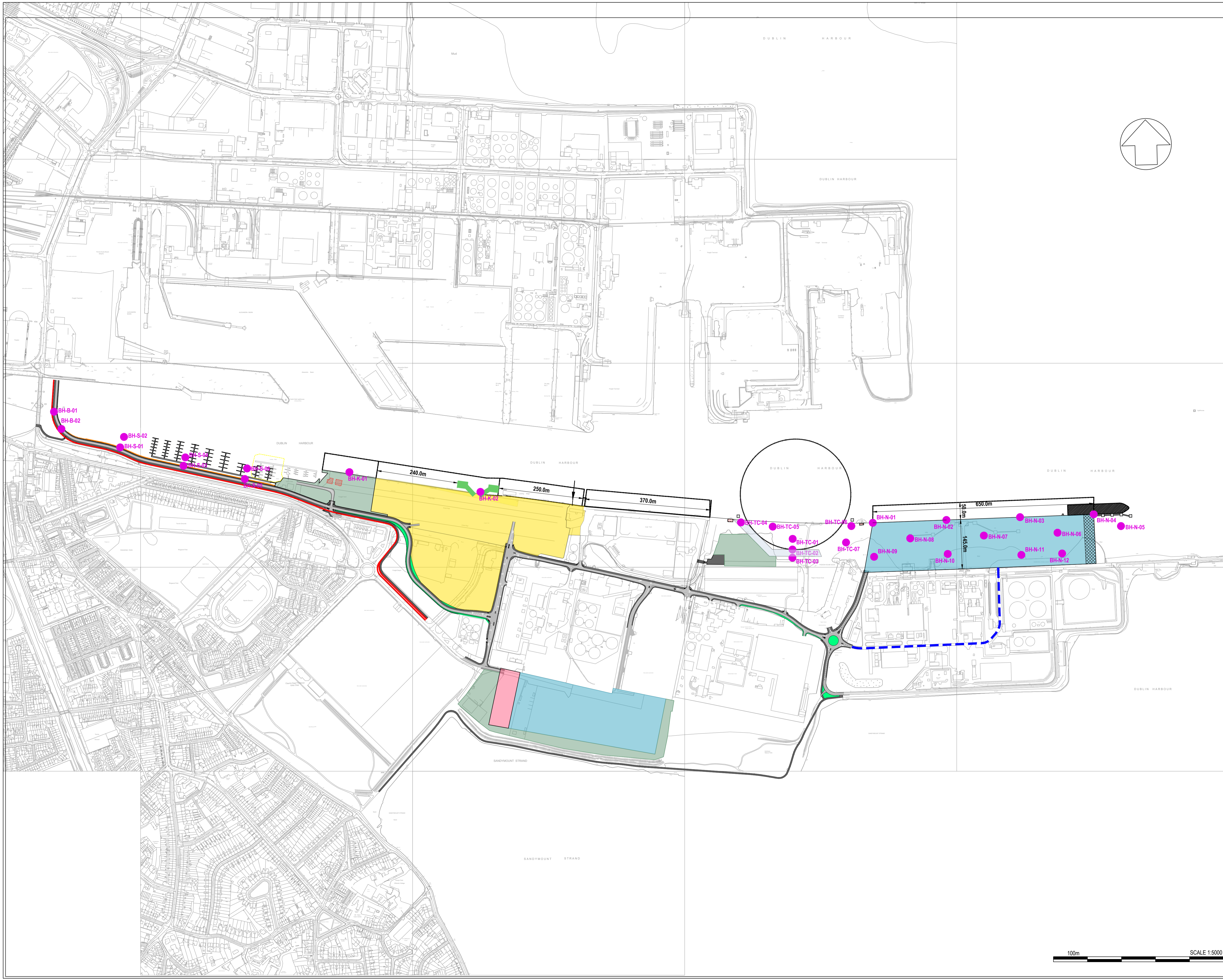
- Is not directly connected with or necessary to the management of any European site;
- Will not give rise to potential significant effects on the Qualifying Interests or Special Conservation Interests of any European site; and
- Will not give rise to potential in-combination effects with the other projects considered.

Having regard to the methodology employed and the findings of this screening appraisal, it has been concluded that Stage 2 Appropriate Assessment is not required in relation to any European site.



## Appendix 1: 3FM Project Marine Site Investigation Location Drawings





**NOTES**

1. Verifying Dimensions.  
The contractor shall verify dimensions against such other drawings or site conditions as pertain to this part of the work.
2. Existing Services.  
Any information concerning the location of existing services indicated on this drawing is intended for general guidance only. It shall be the responsibility of the contractor to determine and verify the exact horizontal and vertical alignment of all cables, pipes, etc. (both underground and overhead) before work commences.
3. Issue of Drawings.  
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4. Datum. N/A

5. Key  
● BH-x-0x Proposed Marine Borehole Position

<b>P02</b>	Borehole positions amended to be located on DPC owned lands	SAH	28.04.22
rev	amendments	check	date

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Client  
**Dublin Port Company**

Project  
**3FM**

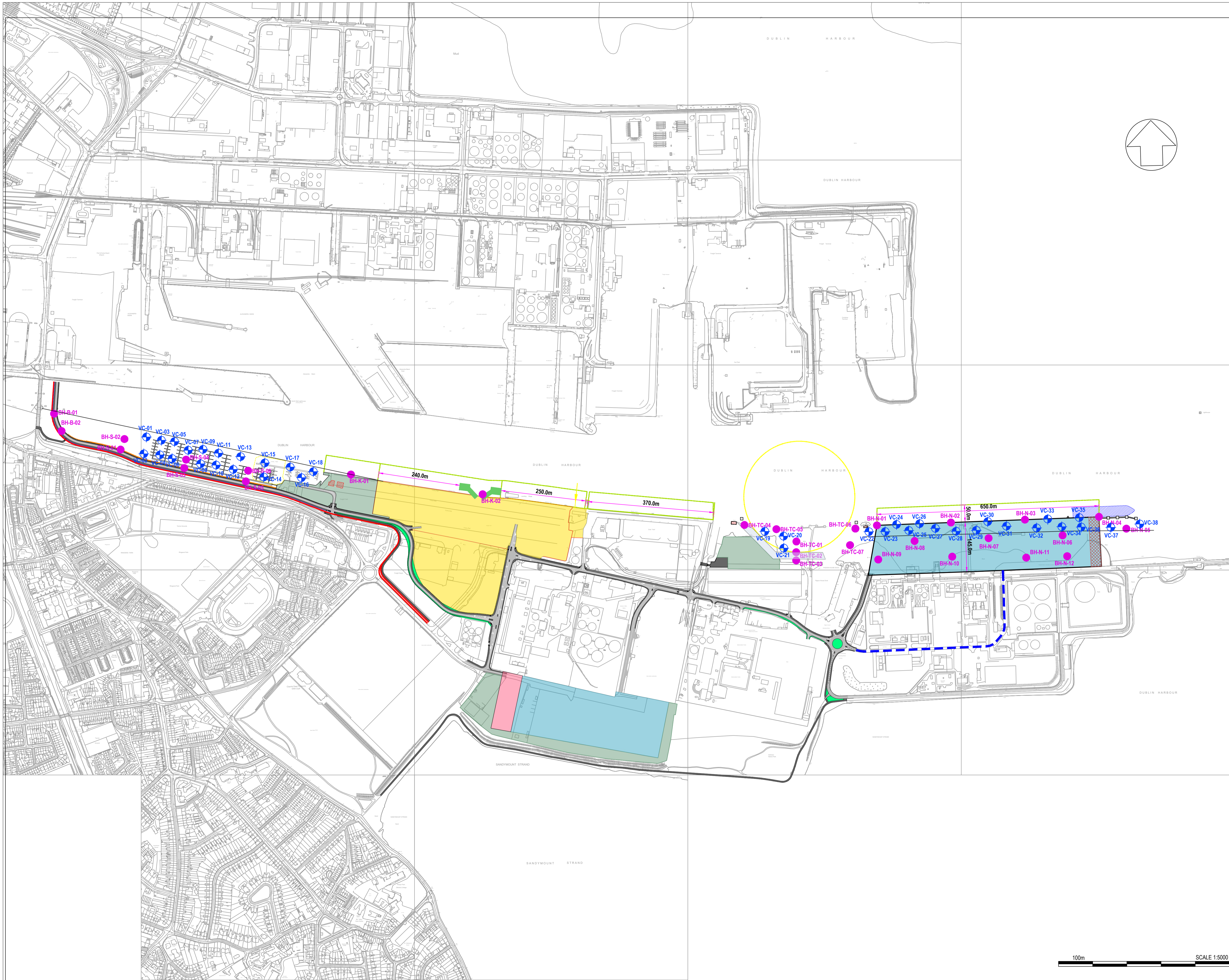
Title  
**Proposed Marine SI Layout**

Project Number IBM0842	Sheet Size A1	Drawing Scale 1:5000
Drawing Number <b>M0842-RPS-XX-XX-DR-C-1001</b>		

Drawn By SAH	Status S0	Revision P02
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Checked By MMcC	Approved By MMcC	Date 15.04.22
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**NOTES**

1. Verifying Dimensions.  
The contractor shall verify dimensions against such other drawings or site conditions as pertain to this part of the work.
2. Existing Services.  
Any information concerning the location of existing services indicated on this drawing is intended for general guidance only. It shall be the responsibility of the contractor to determine and verify the exact horizontal and vertical alignment of all cables, pipes, etc. (both underground and overhead) before work commences.
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4. Datum. N/A
5. Key
  - BH-x-0x Proposed Marine Borehole Position
  - VC-01 Proposed Vibrocore Location

rev	amendments	check	date

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Project  
**3FM**

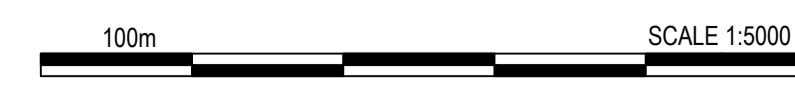
Title  
**Proposed Vibrocore Locations**

Project Number <b>IBR1397</b>	Sheet Size <b>A1</b>	Drawing Scale <b>1:5000</b>
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Drawing Number  
**001**

Drawn By <b>JC</b>	Status <b>P</b>	Revision <b>01</b>
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Checked By <b>JMcG</b>	Approved By <b>JMcG</b>	Date <b>05/05/2022</b>
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## Appendix 2: Poolbeg Dredging Disturbance Study

# ECOLOGICAL SURVEY FOR BIRDS

ESB Cooling Water Outfall, Poolbeg



NI1893 | Dublin Port  
Company  
MP2 Project  
Final  
November 2019

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# 1 INTRODUCTION

RPS was commissioned by Dublin Port Company to undertake an Ecological Survey for Birds at the ESB Power Station cooling water outfall adjacent to Poolbeg Tank Farm and the Great South Wall, Dublin Bay.

The purpose of these surveys was to record any disturbance events relevant to Special Conservation Interest species of South Dublin Bay and River Tolka Estuary Special Protection Area (SPA), observed by the ornithologist before, during and after dredging being carried out under [Dumping at Sea Permit S0024-01](#) in the navigation channel in October 2019

## 1.1 Ecological Survey for Birds

The Ecological Survey Report has been written in accordance with the Chartered Institute of Ecological and Environmental Management (CIEEM) *Guidelines for Ecological Report Writing* (CIEEM 2017).

The aim of the report is to provide a description of the bird survey methods used and to provide the results of bird surveys; to inform an interpretation of the results by the appointed MP2 Project ornithologist.

## 2 METHODOLOGY

### 2.1 Statement of Authority

The ornithological surveyor and report author, Adam McClure BSc, is a Senior Ecologist with RPS with over 10 years of experience in the field of ornithology. Adam has extensive expertise and experience in conducting a wide range of ornithological surveys, including bird disturbance surveys. Adam is also a Full member of CIEEM and is currently a member of the CIEEM Irish Section Committee.

The second ornithological surveyor, Nick Veale BSc MSc, is an independent ecologist with over 18 years' experience in consulting ecology and specialising in ornithology. Nick has extensive expertise and experience in conducting a wide range of ornithological surveys, including bird disturbance surveys.

The information prepared and provided is true and accurate at the time of issue of this report and has been prepared and provided in accordance with the CIEEM Code of Professional Conduct (CIEEM, 2019).

We confirm that the professional judgement expressed herein is the true and bona fide opinion of our professional ecologists.

### 2.2 Consultation

As part of the planning application determination process, An Bord Pleanála received a submission from BirdWatch Ireland dated 6<sup>th</sup> September 2019.

BirdWatch Ireland raised concerns that the proposed dredging works to widen the current navigation channel could cause disturbance to an area which they identified as “a notable area for waterbirds”, including “many gulls, but also smaller numbers of Sanderling, Black-tailed Godwits, Redshank and others”.

The area in question is the cooling water outfall from ESB's Poolbeg Power Station located at the base of the Great South Wall in the Liffey Channel, where a small area of mudflat is exposed at low-tide.

BirdWatch Ireland noted that they were unable to discount the possibility of disturbance from dredging activities to Special Conservation Interest (SCI) species from neighbouring SPA sites, and in particular Black-headed Gull.

### 2.3 Disturbance Monitoring Survey

Permission has been granted under Dumping at Sea Permit S0024-01 to allow Dublin Port Company to dredge the navigation channel as part of Alexandra Basin Redevelopment

A dredging campaign was programmed for late October 2019 and a decision was taken to make use of that campaign as it presented an opportunity to capture any disturbance events that might occur when the permitted dredging activity was taking place.

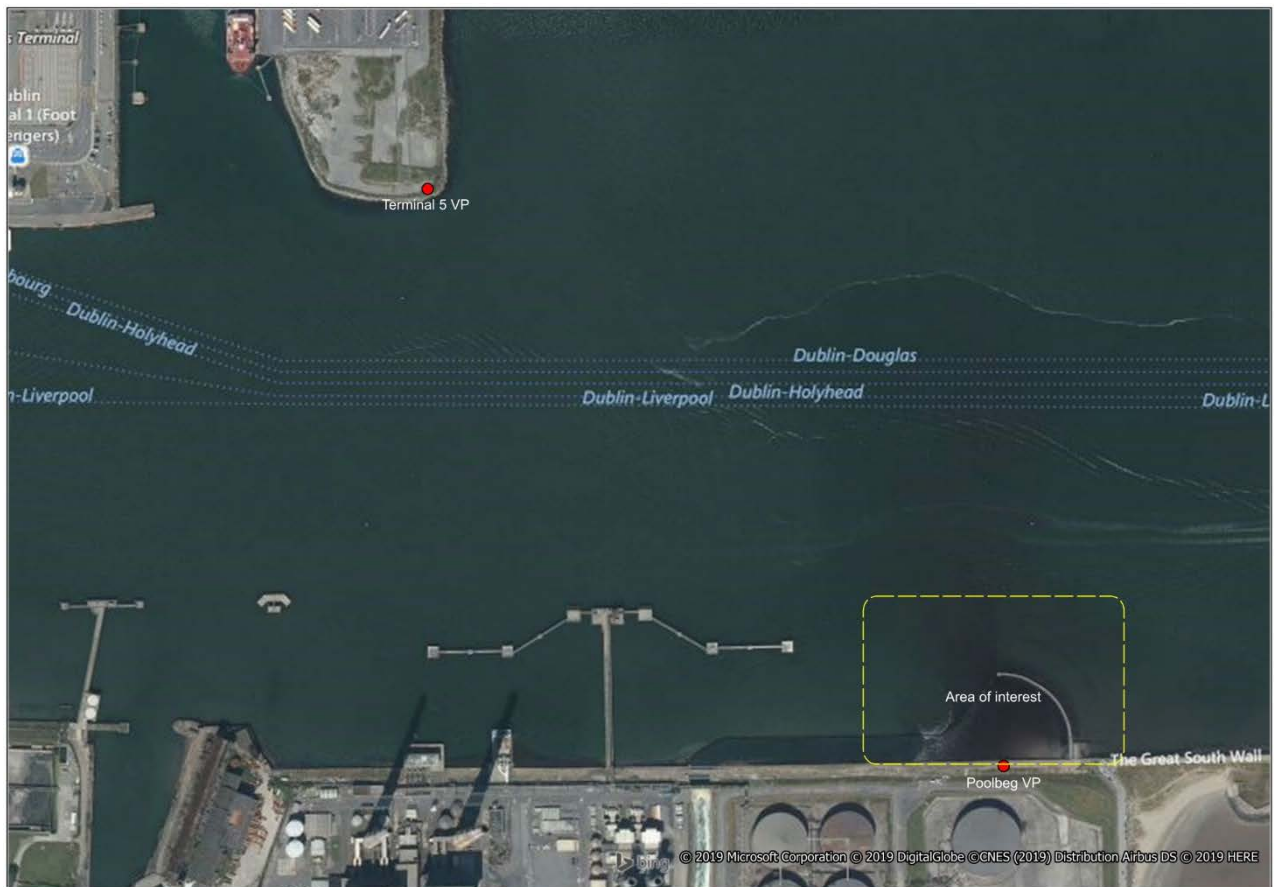
In order to assess potential disturbance events caused by the presence of the dredging vessel, suitable vantage points overseeing the outfall and surrounding lands were established.

The dredging vessel, Freeway, is a 92m hopper dredger. During monitoring the dredger slowly passed by the survey area at the inner limit of the dredging area, approximately 200m from shore, or approximately 150m from the low water mark. During operation, the dredger was passing the survey area for 10-15 minutes.

A vantage point (VP), located on the southern bank of the Liffey, on the quayside adjacent to Poolbeg Tank Farm was chosen.

Due to restrictions on access over a bank holiday weekend, a second vantage point was required. The second VP was located on reclaimed land adjacent to Terminal 5 on the northern bank of the Liffey (Figure 1.0).

**Figure 1.0 – Showing location of vantage points and area of interest**



Vantage point watches were conducted within a window, +/- 2.5 hours either side of low water on days where day light permitted.

Observers recorded all disturbance events during surveys, including potential disturbance events, noting the species and numbers present and their reaction to the disturbance event.

In order to provide a series of control observations, surveys were conducted over several days prior to the dredger moving into the area, as well as during dredging activities and after dredging activities had ceased.

The response of waterbirds present was assigned a score on a scale from 0 to 3:

- 0 - No behavioural change
- 1 - Behavioural change (e.g. vigilance or alarm call) but not flight
- 2 - Flew but soon returned to the site
- 3 - Flew and abandoned the site



## 3 RESULTS

### 3.1 Disturbance Monitoring Survey

A total of 24 hours and 40 minutes of survey were carried out over six days between 22<sup>nd</sup> October and 27<sup>th</sup> October 2019 (see Table 3.2).

Full results of disturbance events are presented as Appendix 2. A summary is presented below.

Observers recorded 100 events which had the potential to cause disturbance, mostly passing ships entering or leaving Dublin Port.

Eighty-two events did not cause any behavioural change in any of the birds present within the survey area (see Table 3.1).

The presence of the dredger, both during operation or when passing the survey area, did not cause any behavioural change in any of the birds present onsite.

**Table 3.1 – Disturbance events recorded and levels of severity**

Severity level	0	1	2	3	Total
<b>No. of disturbance events</b>	82	11	5	2	100

Eighteen disturbance events resulted in behavioural change:

- Eleven events, all caused by small wakes produced by passing ships, resulted in behavioural change (e.g. vigilance or alarm call) but not flight
- Five events, all caused by potentially predatory birds flying over, resulted in some of the birds present taking flight, but they soon returned to the site; and
- Two events, both caused by wakes produced by the Dublin Port Authority pilot vessel passing at speed, resulted in some of the birds present taking flight and not returning.

**Table 3.2 – Conditions during survey**

Date	Observer	VP	Control / Dredging	Start	End	Tide	Sunrise / Sunset	Cloud (Oktas)	Visibility (Met Eireann, 2019)	Wind (Beaufort scale)	Temp. (°C)	Precipitation
22.10.2019	AM	Poolbeg	Control	10:15	14:15	12:18	n/a	8/8	Excellent	1 SW	10	None
23.10.2019	NV	Poolbeg	Control	11:30	16:00	13:41	n/a	6/8	Very good	3-4 SW	13	None
24.10.2019	NV	Poolbeg	Dredging	12:10	16:50	14:50	18:09	2/8	Very good	4-5 NW	12	None
25.10.2019	AM	Poolbeg	Dredging	13:45	14:45	15:45	18:07	8/8	Moderate	2-3 SW	6	Rain throughout
		Terminal 5		15:15	17:45							
26.10.2019	AM	Terminal 5	Dredging	14:00	17:30	16:30	18:05	3/8	Excellent	3 SW	7	None
27.10.2019	NV	Terminal 5	Dredging	14:00	18:00	16:15	17:03	0/8	Excellent	1-2 NW	10-3	None

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# Appendices

## Appendix 1 - BTO Species Codes



## BTO SPECIES CODES

AC	Arctic Skua	GA	Gadwall	LE	Long-eared Owl	SM	Sand Martin
AE	Arctic Tern	GX	Gannet	LT	Long-tailed Tit	SS	Sanderling
AV	Avocet	GW	Garden Warbler	MG	Magpie	TE	Sandwich Tern
BO	Barn Owl	GY	Garganey	MA	Mallard	VI	Savi's Warbler
BY	Barnacle Goose	GC	Goldcrest	MN	Mandarin Duck	SQ	Scarlet Rosefinch
BA	Bar-tailed Godwit	EA	Golden Eagle	MX	Manx Shearwater	SP	Scaup
BR	Bearded Tit	OL	Golden Oriole	MR	Marsh Harrier	CY	Scottish Crossbill
BS	Berwick's Swan	GF	Golden Pheasant	MT	Marsh Tit	SW	Sedge Warbler
BI	Bittern	GP	Golden Plover	MW	Marsh Warbler	NS	Serin
BK	Black Grouse	GN	Goldeneye	MP	Meadow Pipit	SA	Shag
TY	Black Guillemot	GO	Goldfinch	MU	Mediterranean Gull	SU	Shelduck
BX	Black Redstart	GD	Goosander	ML	Merlin	SX	Shorelark
BJ	Black Tern	GI	Goshawk	M.	Mistle Thrush	SE	Short-eared Owl
B.	Blackbird	GH	Grasshopper Warbler	MO	Montagu's Harrier	SV	Showeler
BC	Blackcap	GB	Great Black-backed Gull	MH	Moorhen	SK	Siskin
BH	Black-headed Gull	GG	Great Crested Grebe	MS	Mute Swan	S.	Skylark
BN	Black-necked Grebe	ND	Great Northern Diver	N.	Nightingale	SZ	Slavonian Grebe
BW	Black-tailed Godwit	NX	Great Skua	NJ	Nightjar	SN	Snipe
BV	Black-throated Diver	GS	Great Spotted Woodpecker	NH	Nuthatch	SB	Snow Bunting
BT	Blue Tit	GT	Great Tit	OP	Osprey	ST	Song Thrush
BU	Bluethroat	GE	Green Sandpiper	OC	Oystercatcher	SH	Sparrowhawk
BL	Brambling	G.	Green Woodpecker	PX	Peafowl/Peacock	AK	Spotted Crane
BG	Brent Goose	GR	Greenfinch	PE	Peregrine	SF	Spotted Flycatcher
BF	Bullfinch	GK	Greenshank	PH	Pheasant	DR	Spotted Redshank
BZ	Buzzard	H.	Grey Heron	PF	Pied Flycatcher	SG	Starling
CG	Canada Goose	P.	Grey Partridge	PW	Pied Wagtail	SD	Stock Dove
CP	Capercaillie	GV	Grey Plover	PG	Pink-footed Goose	SC	Stonechat
C.	Carrion Crow	GL	Grey Wagtail	PT	Pintail	TN	Stone-curlew
CW	Cetti's Warbler	GJ	Greylag Goose	PO	Pochard	TM	Storm Petrel
CH	Chaffinch	GU	Guillemot	PM	Ptarmigan	SL	Swallow
CC	Chiffchaff	FW	Guineafowl (Helmeted)	PU	Puffin	SI	Swift
CF	Chough	HF	Hawfinch	PS	Purple Sandpiper	TO	Tawny Owl
CL	Cirl Bunting	HH	Hen Harrier	Q.	Quail	T.	Teal
CT	Coal Tit	HG	Herring Gull	RN	Raven	TK	Temminck's Stint
CD	Collared Dove	HY	Hobby	RA	Razorbill	TP	Tree Pipit
CM	Common Gull	HZ	Honey Buzzard	RG	Red Grouse	TS	Tree Sparrow
CS	Common Sandpiper	HC	Hooded Crow	KT	Red Kite	TC	Treecreeper
CX	Common Scoter	HP	Hoopoe	ED	Red-backed Shrike	TU	Tufted Duck
CN	Common Tern	HM	House Martin	RM	Red-breasted Merganser	TT	Turnstone
CO	Coot	HS	House Sparrow	RQ	Red-crested Pochard	TD	Turtle Dove
CA	Cormorant	JD	Jackdaw	FV	Red-footed Falcon	TW	Twite
CB	Corn Bunting	J.	Jay	RL	Red-legged Partridge	WA	Water Rail
CE	Corncrake	K.	Kestrel	NK	Red-necked Phalarope	W.	Wheatear
CI	Crested Tit	KF	Kingfisher	LR	Redpoll (Lesser)	WM	Whimbrel
CR	Crossbill (Common)	KI	Kittiwake	RK	Redshank	WC	Whinchat
CK	Cuckoo	KN	Knot	RT	Redstart	WG	White-fronted Goose
CU	Curlew	LM	Lady Amherst's Pheasant	RH	Red-throated Diver	WH	Whitethroat
DW	Dartford Warbler	LA	Lapland Bunting	RE	Redwing	WS	Whooper Swan
DI	Dipper	L.	Lapwing	RB	Reed Bunting	WN	Wigeon
DO	Dotterel	TL	Leach's Petrel	RW	Reed Warbler	WT	Willow Tit
DN	Dunlin	LB	Lesser Black-backed Gull	RZ	Ring Ouzel	WW	Willow Warbler
D.	Dunnock	LS	Lesser Spotted Woodpecker	RP	Ringed Plover	OD	Wood Sandpiper
EG	Egyptian Goose	LW	Lesser Whitethroat	RI	Ring-necked Parakeet	WO	Wood Warbler
E.	Eider	LI	Linnets	R.	Robin	WK	Woodcock
FP	Feral Pigeon	ET	Little Egret	DV	Rock Dove (not feral)	WL	Woodlark
ZL	Feral/hybrid goose	LG	Little Grebe	RC	Rock Pipit	WP	Woodpigeon
ZF	Feral/hybrid mallard type	LU	Little Gull	RO	Rook	WR	Wren
FF	Fieldfare	LO	Little Owl	RS	Roseate Tern	WY	Wryneck
FC	Firecrest	LP	Little Ringed Plover	RY	Ruddy Duck	YW	Yellow Wagtail
F.	Fulmar	AF	Little Tern	RU	Ruff	Y.	Yellowhammer

## Appendix 2 - Full results from disturbance survey

**REPORT**

Date	Time	Tide	Species and number present	Disturbance Event	Severity
22/10/2019	10:20	M-L falling	260 BH, 4 CA, 6 HG, 1 OC, 2 TT, 2 RK	Small survey boat passing inside bouy	0
22/10/2019	10:36	M-L falling	2 BW, 3 RK, 260 BH, 4 CA, 6 HG, 2 TT	Rib passing inside bouy	0
22/10/2019	10:46	M-L falling	2 BW, 3 RK, 260 BH, 4 CA, 6 HG, 2 TT	Rib passing inside bouy	0
22/10/2019	10:58	M-L falling	2 BW, 3 RK, 260 BH, 4 CA, 6 HG, 2 TT	Freight Craft "Mistral"	0
22/10/2019	11:09	M-L falling	3 RK, 9 BG, 12 HG, 280 BH	Rosbeg workboat passing	0
22/10/2019	11:16	M-L falling	3 RK, 9 BG, 12 HG, 280 BH	Ship Irish Ferries "WB Yeats" temporary wake surge	0
22/10/2019	11:42	M-L falling	16 HG, 1 GB, 2 BW, 6 TT, 2 RK, 330 BH, 2 CA	Buzzard flying over, being mobbed by 2 Hooded Crows	2
22/10/2019	11:46	M-L falling	16 HG, 1 GB, 2 BW, 6 TT, 2 RK, 330 BH, 2 CA	Kestrel flying over	2
22/10/2019	12:02	Low	1 RK, 3 CA, 4 HG, 6 TT, 350 BH	Stena Superfast ferry and small rib passing	0
22/10/2019	12:11	Low	1 RK, 3 CA, 4 HG, 6 TT, 350 BH	Seatruck	0
22/10/2019	13:06	L-M rising	2 CA, 3 TT, 1 RK, 150 BH	Heron flying in	0
22/10/2019	13:06	L-M rising	200 BH, 9 HG	Heron flying in	2
22/10/2019	13:18	L-M rising	9 HG, 2 CA, 3 TT, 1 RK, 350 BH	Ferry passing	0
22/10/2019	13:37	L-M rising	6 HG, 1 RK, 1 TT, 300 BH	Ferry passing	0
22/10/2019	13:41	L-M rising	6 HG, 1 RK, 1 TT, 300 BH	Dublin Port pilot boat passing causing small wake	0
23/10/2019	11:41	M-L falling	213 BH, 23 HG, 2 MU, 7 GB, 4 OC, 16 TT, 2 L, 6 RK,	Rosbeg tug 140m from Quay working and making manoeuvres	0
23/10/2019	12:02	M-L falling	236 BH, 15 HG, 3 MU, 4 GB, 2 OC, 22 TT, 9 RK,	Stena Superfast Passenger ferry	0
23/10/2019	12:13	M-L falling	265 BH, 11 HG, 4 MU, 6 GB, 4 OC, 16 TT, 7 RK, 2 CA, 1 H.	Seatruck	0
23/10/2019	12:28	M-L falling	305 BH, 14 HG, 3 MU, 8 GB, 2 OC, 10 TT, 16 RK, 4 CA, 2 H, 1 GG	Celtic Explorer	0
23/10/2019	12:49	M-L falling	360 BH, 10 HG, 2 MU, 7 GB, 5 OC, 19 TT, 6 RK, 13 CA, 3 H, 2 GG	Small Craft Boksalis RIB Escorting Dredger out at	0
23/10/2019	13:23	M-L falling	350 BH, 10 HG, 2 MU, 7 GB, 5 OC, 19 TT, 6 RK, 13 CA, 3 H, 2 GG	Freight Craft "WithDAWN"	0
23/10/2019	13:33	M-L falling	280 BH, 7 HG, 1 MU, 8 GB, 4 OC, 16 TT, 9 RK, 15 CA, 2 H,	Small Craft dublin pilot "liffey"	0
23/10/2019	13:41	Low	As above but around 60 BH took flight, 4 OC, 10 RK & 13 TT alerted and flew briefly before returning to normal	Heron flyover Study area	2
23/10/2019	13:58	Low	265 BH, 7 HG, 1 MU, 8 GB, 4 OC, 16 TT, 9 RK, 15 CA, 2 H,	Small Craft dublin pilot "liffey"	0

**REPORT**

23/10/2019	14:06	L-M rising	261 BH, 18 HG, 1 MU, 4 GB, 1 OC, 9 TT, 5 RK, 13 CA, 1 H, 1 GG	Seatruck Small Wake produced caused a small surge in study area which caused a handful of RK and TT to alert and walk	1
23/10/2019	14:26	L-M rising	250 BH, 16 HG, 8 GB, 1 OC, 14 TT, 8 RK, 1 H, 17 CA, 2 GG	Ship BGFreight "Andromeda"	0
23/10/2019	14:43	L-M rising	236 BH, 9 HG, 1 MU, 6 GB, 2 OC, 24 TT, 7 RK, 2 H, 12 CA, 1 GG	Ship Irish Ferries "WB Yeats" temporary oery wake surge	1
23/10/2019	14:50	L-M rising	225 BH, 15 HG, 2 MU, 6 GB, 4 OC, 17 TT, 9 RK, 3 H, 14 CA, 1 GG.	"Rosbeg" tug 140m from Quay working and making manoeuvres 2 divers in water, 5 deck crew. winch in operation	0
23/10/2019	15:05	L-M rising	203 BH, 21 HG, 3 MU, 8 GB, 2 OC, 19 TT, 13 RK, 2 H, 16 CA, 2 GG.	Stena Superfast Passenger ferry temporary wake surge	1
23/10/2019	15:10	L-M rising	168 BH, 11 HG, 4 MU, 5 GB, 1 OC, 8 TT, 3 RK, 1 H, 10 CA, 2 GG.	"Rosbeg" tug moved to 250m from Quay working and making manoeuvres 5 deck crew.	0
23/10/2019	15:38	L-M rising	175 BH, 12 HG, 6 GB, 2 OC, 12 TT, 5 RK, 2 H, 14 CA, 1 GG.	"Rosbeg" tug moved to 300m from Quay working and making manoeuvres 5 deck crew.	0
24/10/2019	12:10	M-L falling	325 BH, 23 HG, 2 GB, 5 MU, 2 CM, 1 OC, 25 TT, 2 RK, 1 H, 22 CA, 1 CU	Seatruck Westbound	0
24/10/2019	12:14	M-L falling	325 BH, 23 HG, 2 GB, 5 MU, 2 CM, 1 OC, 25 TT, 2 RK, 1 H, 22 CA, 1 CU	Ship Irish Ferries "Epsilon" Westbound	0
24/10/2019	12:31	M-L falling	325 BH, 23 HG, 2 GB, 5 MU, 2 CM, 1 OC, 25 TT, 2 RK, 1 H, 22 CA, 1 CU	Ship Stenna superfast westbound small wake surge up on beach, 15 TT moved up gull also moved a few metres up	1
24/10/2019	13:18	M-L falling	350 BH, 28 HG, 4 GB, 5 MU, 5 CM, 3 OC, 20 TT, 9 RK, 1 H, 18 CA,	kestrel female flew over vp and flushed approximately 60% of the BH and the waders. Disturbance was temporary and all affected returned to area.	2
24/10/2019	13:28	M-L falling	320 BH, 17 HG, 2 GB, 3 MU, 2 CM, 4 OC, 25 TT, 11 RK, 1 H, 16 CA, 1 GG	Seatruck Eastbound very very slow ahead no noticeable wake or bow wave produced	0
24/10/2019	13:35	M-L falling	320 BH, 17 HG, 2 GB, 3 MU, 2 CM, 4 OC, 25 TT, 11 RK, 1 H, 16 CA, 1 GG	Small Craft Boksalis RIB Eastbound	0
24/10/2019	13:38	M-L falling	340 BH, 24 HG, 2 GB, 3 MU, 2 CM, 4 OC, 25 TT, 11 RK, 1 H, 16 CA, 1 GG	Dredger "Freeway" Westbound 350m from vp	0
24/10/2019	13:52	M-L falling	390 BH, 29 HG, 2 GB, 5 MU, 1 CM, 3 OC, 5 TT, 6 RK, 1 H, 13 CA, 2 GG	Ship BGFreight "Andromeda" Westbound small wake surge in study area	1
24/10/2019	14:02	M-L falling	380 BH, 32 HG, 2 GB, 5 MU, 1 CM, 3 OC, 5 TT, 6 RK, 1 H, 13 CA, 2 GG, 2 CU	Ship Celtic Voyager Eastbound	0
24/10/2019	14:15	M-L falling	370 BH, 34 HG, 2 MU, 2 CM, 2 OC, 23 TT, 12 RK, 16 CA,	Dredger "Freeway" Eastbound 210m from vp Actively dredging	0
24/10/2019	14:30	M-L falling	350 BH, 28 HG, 4 GB, 5 MU, 5 CM, 3 OC, 20 TT, 9 RK, 1 H, 18 CA,	Dredger "Freeway" Westbound 210m from vp in Reverse	0
24/10/2019	14:40	Low	310 BH, 36 HG, 5 GB, 4 MU, 3 CM, 4 OC, 13 TT, 4 RK, 12 CA.	Ship Irish Ferries "WB Yeats" temporary wake surge	1
24/10/2019	14:42	Low	310 BH, 36 HG, 5 GB, 4 MU, 3 CM, 4 OC, 13 TT, 4 RK, 12 CA.	small craft brian boru	0
24/10/2019	14:58	L-M rising	300 BH, 27 HG, 5 GB, 3 MU, 4 CM, 2 OC, 8 TT, 6 RK, 5 CA, 1 CU	Ship Stena superfast westbound small wake surge up on beach, 15 TT moved up gull also moved a few metres up	1

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24/10/2019	15:09	L-M rising	300 BH, 27 HG, 5 GB, 3 MU, 4 CM, 2 OC, 8 TT, 6 RK, 5 CA, 1 CU	"Rosbeg" tug 250m from Quay working and making manoeuvres 5 deck crew.	0
24/10/2019	15:16	L-M rising	280 BH, 24 HG, 3 GB, 4 MU, 2 CM, 2 OC, 15 TT, 10 RK, 8 CA, 1 CU, z	Ship "Laureline" container vessel	0
24/10/2019	15:29	L-M rising	255 BH, 17 HG, 2 GB, 2 MU, 1 CM, 1 OC, 7 TT, 6 RK, 5 CA, 1 CU	ship Container "Mistral" Eastbound very small wake into survey area with no affect	0
24/10/2019	15:52	L-M rising	205 BH, 22 HG, 5 GB, 3 MU, 2 CM, 4 OC, 23 TT, 12 RK, 18 CA, 2 CU	Seatruck "Clipperpoint" Eastbound fast ahead large noticeable wake causing localised type 1 disturbance to @ 50 BH, 12 TT, 5 RK and 2 CU	1
24/10/2019	16:05	L-M rising	225 BH, 17 HG, 3 GB, 10 MU, 2 OC, 13 TT, 7 RK, 23 CA, 1 CU, 1 GG	Small Craft dublin pilot "liffey" Westbound	0
24/10/2019	16:23	L-M rising	295 BH, 23 HG, 6 GB, 8 MU, 6 OC, 2 BA, 20 TT, 4 RK, 26 CA, 4 CU, 2 GG	large Ship "Hermine" Westbound very slow no wake	0
24/10/2019	16:40	L-M rising	345 BH, 28 HG, 2 GB, 11 MU, 4 OC, 2 BA, 13 TT, 10 RK, 25 CA, 4 CU 2 CM.	"Rosbeg" tug moved 350m from Quay working and making manoeuvres 5 deck crew.	0
25/10/2019	13:53	M-L falling	1 RK, 3 TT, 3 CA, 17 HG, 1 OC, 412 BH	Pilot boat "Liffey" passing	0
25/10/2019	13:54	M-L falling	1 RK, 3 TT, 1 CU, 4 CA, 24 HG, 1 OC, 412 BH	Dredger "Freeway" passing by survey area	0
25/10/2019	14:03	M-L falling	1 RK, 3 TT, 1 CU, 4 CA, 24 HG, 1 OC, 452 BH, 1MU	Ship "Arklow Cape" passing	0
25/10/2019	14:07	M-L falling	6 RK, 3 TT, 1 CU, 4 CA, 24 HG, 1 OC, 551 BH, 1 MU	Dredger "Freeway" slowly passing survey area until 14:17	0
25/10/2019	15:32	Low	1 OC, 10 TT, 5 BW, 3 CA, 4 SS, 3 RK, 1 H., 39 HG, 551 BH	Ship "Mistral" passing	0
25/10/2019	15:50	Low	1 OC, 10 TT, 5 BW, 3 CA, 4 SS, 3 RK, 1 H., 39 HG, 551 BH	Ship "Hermine" passing	0
25/10/2019	16:26	L-M rising	1 OC, 10 TT, 5 BW, 3 CA, 4 SS, 3 RK, 1 H., 39 HG, 551 BH	Pilot boat "Liffey" passing	0
25/10/2019	16:49	L-M rising	c.400 BH, 4 MA, 3 TT, 3 HG	Seatruck "Power" passing	0
25/10/2019	16:57	L-M rising	c.400 BH, 4 MA, 3 TT, 3 HG	Stena "Adventurer" passing	0
25/10/2019	17:05	L-M rising	c.400 BH, 4 MA, 3 TT, 3 HG	P&O "Norbank" passing	0
25/10/2019	17:10	L-M rising	c.400 BH, 4 MA, 3 TT, 3 HG	Irish Ferries "Ulysses" passing	0
25/10/2019	17:19	L-M rising	c.400 BH, 4 MA, 3 TT, 3 HG	Work boat "Rosbeg" passing	0
26/10/2019	14:10	M-L falling	8 TT, 3 CA, 1 OC, 5 HG, 376 BH	Small pleasure craft passing inside of bouy	0
26/10/2019	14:37	M-L falling	18 SS, 4 CA, 9 HG, 1 CU, 360 BH	Pilot boat "Liffey" passing	0
26/10/2019	14:42	M-L falling	18 SS, 4 CA, 9 HG, 1 CU, 360 BH	Small pleasure craft passing inside of bouy	0
26/10/2019	15:00	M-L falling	18 SS, 4 CA, 9 HG, 1 CU, 360 BH	Stena Superfast X	0
26/10/2019	15:22	M-L falling	2 RK, 17 HG, 1 CA, 300 BH	Irish Ferrires "WB Yeats" departing, very slowly. Almost appeared to have stopped off survey area.	0

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26/10/2019	15:36	M-L falling	2 RK, 17 HG, 1 CA, 300 BH	Tanker "Sten Nordic" and ship "Peregrine" passing	0
26/10/2019	15:58	M-L falling	56 HG, 12 SS, 1 CA, 450 BH, 2 RK, 1 OC, 2 BW	Boskalis survey boat "Smit Leyland" passing	0
26/10/2019	16:10	Low	56 HG, 12 SS, 1 CA, 450 BH, 2 RK, 1 OC, 2 BW	Boskalis survey boat "Smit Leyland" passing	0
26/10/2019	16:14	Low	56 HG, 12 SS, 1 CA, 450 BH, 2 RK, 1 OC, 2 BW	Pilot boat "Liffey" passing	0
26/10/2019	16:16	Low	56 HG, 12 SS, 1 CA, 450 BH, 2 RK, 1 OC, 2 BW	Boskalis survey boat "Smit Leyland" passing back and forth by survey area until 16:25	0
26/10/2019	16:30	Low	56 HG, 12 SS, 1 CA, 450 BH, 2 RK, 1 OC, 2 BW	Boskalis survey boat "Smit Leyland" passing	0
26/10/2019	16:37	Low	56 HG, 12 SS, 1 CA, 450 BH, 2 RK, 1 OC, 2 BW	Tanker "Thun Genius" passing	0
26/10/2019	16:39	Low	56 HG, 12 SS, 1 CA, 450 BH, 2 RK, 1 OC, 2 BW	Irish Ferries "Epsilon"	0
26/10/2019	17:09	L-M rising	72 HG, 18 SS, 3 CA, 300 BH, 2 RK, 1 OC, 2 BW	Small pleasure craft passing	0
26/10/2019	17:11	L-M rising	72 HG, 18 SS, 3 CA, 300 BH, 2 RK, 1 OC, 2 BW	Norbank	0
26/10/2019	17:16	L-M rising	72 HG, 18 SS, 3 CA, 300 BH, 2 RK, 1 OC, 2 BW	Stena Adventurer	0
26/10/2019	17:23	L-M rising	72 HG, 18 SS, 3 CA, 300 BH, 2 RK, 1 OC, 2 BW	Seatruck "Power" passing	0
26/10/2019	17:29	L-M rising	72 HG, 18 SS, 3 CA, 300 BH, 2 RK, 1 OC, 2 BW	Irish Ferries "Ulysses" passing	0
27/10/2019	14:25	M-L falling	380 BH, 20 HG, 10 GB, 3 MU, 1 OC, 2 BA, 20 TT, 10 RK, 13 CA, 2 CU 8 CM, 4 GG,	small craft 2 men onboard fishing?	0
27/10/2019	14:39	M-L falling	380 BH, 20 HG, 10 GB, 3 MU, 1 OC, 2 BA, 20 TT, 10 RK, 13 CA, 2 CU 8 CM, 4 GG,	Ship Irish Ferries "WB Yeats" heading out Eastbound, temporary wake surge	1
27/10/2019	14:56	M-L falling	400 BH, 20 HG, 10 GB, 9 MU, 4 OC, 8 BA, 20 TT, 10 RK, 20 CA, 6 CU 8 CM, 4 GG,	Small yacht "Bona" Eastbound	0
27/10/2019	15:00	M-L falling	400 BH, 20 HG, 10 GB, 9 MU, 4 OC, 8 BA, 20 TT, 10 RK, 20 CA, 6 CU 8 CM, 4 GG,	Stena Superfast Passenger ferry eastbound wake into survey area temporary disturbance	1
27/10/2019	15:03	M-L falling	430 BH, 20 HG, 10 GB, 9 MU, 16 OC, 18 BA, 30 TT, 15 RK, 20 CA, 7 CU 9 CM, 4 GG, 5 MA,	Dublin Port Authority Pilot Eastbound fast small wake	0
27/10/2019	15:22	M-L falling	450 BH, 80 HG, 16 GB, 7 MU, 16 OC, 18 BA, 30 TT, 15 RK, 20 CA, 12 CU 9 CM, 6 GG, 5 MA,	Ship Freighter "Bit Ecco" Eastbound small wake very slow	0
27/10/2019	15:33	M-L falling	450 BH, 110 HG, 19 GB, 5 MU, 18 OC, 10 BA, 20 TT, 15 RK, 24 CA, 12 CU 9 CM, 2 GG, 5 MA,	Ship Freighter "MISTRAL" Eastbound small wake	1
27/10/2019	15:51	M-L falling	500 BH, 110 HG, 19 GB, 5 MU, 18 OC, 10 BA, 20 TT, 15 RK, 24 CA, 12 CU 9 CM, 2 GG, 5 MA, 1 H, 23 SS	small Yacht Westbound very slow no significant wake	0
27/10/2019	15:53	M-L falling	500 BH, 110 HG, 19 GB, 5 MU, 18 OC, 10 BA, 20 TT, 15 RK, 24 CA, 12 CU 9 CM, 2 GG, 5 MA, 1 H, 45 SS,	Small Craft Boksalis RIB Westbound no significant wake	0
27/10/2019	15:58	M-L falling	500 BH, 110 HG, 19 GB, 5 MU, 18 OC, 18 BA, 20 TT, 15 RK, 24 CA, 12 CU 9 CM, 2 GG, 5 MA, 2 H, 85 SS	Dublin Port Authority Pilot Westbound fast small wake	0



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27/10/2019	16:12	Low	500 BH, 110 HG, 15 GB, 5 MU, 18 OC, 18 BA, 10 BW, 20 TT, 15 RK, 24 CA, 12 CU 9 CM, 2 GG, 5 MA, 2 H, 65 SS, 30 DN,	Ship Freighter Matthew LPG slow Westbound small wake no significant disturbance	0
27/10/2019	16:15	Low	500 BH, 110 HG, 12 GB, 5 MU, 18 OC, 10 BA, 20 TT, 15 RK, 24 CA, 12 CU 9 CM, 2 GG, 5 MA, 2 H, 50 SS	Small yacht "Celtic Mist IWDG" Westbound	0
27/10/2019	16:40	L-M rising	600 BH, 160 HG, 54 GB, 8 MU, 25 OC, 15 BA, 10 BW, 10 TT, 10 RK, 20 CA, 17 CU 15 CM, 7 GG, 3 H, 50 SS, 30 DN	Dublin Port Authority Pilot Eastbound fast wake flushed approximately 40 SS and 20 DN which as a result flew northwest towards esturine mud south of the Bull wall	3
27/10/2019	17.01	L-M rising	600 BH, 160 HG, 54 GB, 8 MU, 25 OC, 15 BA, 10 BW, 10 TT, 10 RK, 20 CA, 17 CU 15 CM, 7 GG, 3 H, 50 SS, 30 DN	Stena Adventurer passenger ferry Westbound very slow small wake no percieved disturbance.	0
27/10/2019	17:13	L-M rising	600 BH, 190 HG, 50 GB, 8 MU, 30 OC, 15 BA, 10 BW, 10 TT, 10 RK, 20 CA, 12 CU 15 CM, 5 GG, 5 H, 35 SS, 20 DN	Irish Ferries "Ulysses" Westbound slow minimal wake onto survey area.	0
27/10/2019	17:22	L-M rising	520 BH, 130 HG, 40 GB, 6 MU, 13 OC, 8 RK, 26 CA, 6 CU 10 CM, 2 GG, 4 H, 13 SS, 20 DN, 2 TY	Dublin Port Authority Pilot Westbound very fast produced that wake flushed rest of 13 SS & 20 DN which as a result flew northwest towards esturine mud south of the Bull wall	3
27/10/2019	17:28	L-M rising	520 BH, 130 HG, 40 GB, 6 MU, 13 OC, 8 RK, 26 CA, 6 CU 10 CM, 2 GG, 4 H,	Container Freighter ""BG JADE" westbound slow no significant wake	0
27/10/2019	17:44	L-M rising	520 BH, 130 HG, 40 GB, 6 MU, 13 OC, 8 RK, 26 CA, 6 CU 10 CM, 2 GG, 4 H,	Container Freighter "ELB FEEDER" westbound slow	0