Haulbowline Dredging Works

Supporting Information for Screening for Appropriate Assessment Report

Ayesa

P00006195

June 2025

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1. Introduction

APEM Ltd was commissioned by Ayesa, on behalf of the Department of Defence, to prepare a report of Supporting Information for Screening for Appropriate Assessment (SISAA) for the proposed maintenance dredging works at the Haulbowline Naval Base in County Cork.

1.1 Background

Maintenance dredging at Haulbowline has been carried out at regular intervals. Previous dredging campaigns were carried out in 2010 and 2016. The Department of Defence (DOD) is seeking a Dumping at Sea Permit to run from Q3 2025 to Q3 2033. During this period, the DOD plans to execute four maintenance dredging campaigns to sustain the Basin, Entrance Channel, and Graving Dock at -5.5 meters Chart Datum (CD). This process is crucial for maintaining the navigational integrity and operational efficiency of the Haulbowline Harbour, ensuring safe access for vessels utilising the facility.

This report provides Supporting Information for Screening for Appropriate Assessment (SISAA) for the maintenance dredging works.

1.2 General Description of the Site

The dredge location is located at Haulbowline Naval Base on Haulbowline Island in Cork Harbour, County Cork (see **Error! Reference source not found.** and Figure **2**). The dredge area is enclosed within Haulbowline Island except to the north where the approach channel provides access to Cork Harbour.

Material from the dredging is anticipated to be disposed of at sea at the Roches Point dump site. This is an existing spoil dump site (spoil ground) located south of Power Head, at the edge of the approaches to Cork Harbour (see Figure 3). This dump site lies at least 3.7 km outside of the limit of the Cork Harbour Authority, in open water of between 25 and 50 m water depth below CD (see Ayesa (2024) for more information).

1.3 Project Description

The primary activities of the dredging works are indicated in the Dumping at Sea (DaS) Permit Report (Ayesa 2024) and in the AIMU submitted with this SISAA. They are summarised here but Ayesa (2024) and the AIMU should be referred to for additional information. The DaS permit is for 90,000 m3 of offshore disposal of dredged material over an 8-year period.

The dredge area is approximately 4,800 m^2 and the dredging works are planned within two areas of the Licence Application Area. The main location is the Basin Approach area (4,600 m^2 (Area A on Figure 2)) and the other area is the Graving Dock within the Naval Dockyards (200 m^2 (Area B on Figure 2)). The dredging campaigns are anticipated to involve the removal of approximately 105,630 m^3 of material (the greatest dredge volume would be in the first campaign with anticipated removal of approximately 32,000 m^3). It is projected that 90,000 m^3

of this volume will be allocated for disposal at sea and it is anticipated that contaminated material would only be collected during the first dredging campaign (15,630 m^3) and this material would be disposed of in a licensed landfill facility (see AIMU submitted alongside this SISAA for more information).

The duration of each of the dredge campaigns (including mobilisation and demobilisation) is approximately four months. This includes approximately three weeks of mobilisation and preparatory works, 12 weeks of dredging operations and one week of demobilisation following completion of the works. The works are assumed to be undertaken in the following timescales (see submitted AIMU for more detail):

- Dredging Campaign 1 Removal of Contaminated material (graving dock) – Q3/Q4 2025
- Dredging Campaign 2 Removal of Non-Contaminated material (basin) – Q1 2026

The dredger that is proposed to be used will be one of two dredger options, a DOP dredge pump or backhoe dredger (long reach back-hoe excavator). The dredger used will depend on the characteristics of the material being dredged and accessibility. The dredging works may be procured under different stages with stage 1 being the dredging of the Graving Dock. The preferred method for dredging the Graving Dock is the DOP dredge, which will allow contaminated material to be pumped directly into landside geotubes for onward disposal at landfill. Stage 2 is the dredging of the basin and approach channel and may be undertaken by either dredging method.

For the DOP dredge pump option, a Sorensen Kobelco BM 800 crawler crane would lower the DOP 200 dredge pump, equipped with a water jet cutter, from the dockside into the water. The DOP would then pump material from the dock at a rate of 700 m^3/hour at the anticipated working head (20m).

The backhoe dredger option would employ a bucket or grab lowered to the seabed to excavate the intended sediment material and lift it to the surface. For both options, uncontaminated dredged sediment would be collected and transported utilising ‘hopper barges’ to the licenced dump site at sea or, for contaminated sediment from the Graving dock, into geotubes for disposal at a licensed landfill facility as described above.

The appointed contractor will determine the final methodology for dredging and disposal of both uncontaminated and contaminated material, ensuring that the most effective and compliant approach is implemented based on their expertise and adherence to regulatory standards.

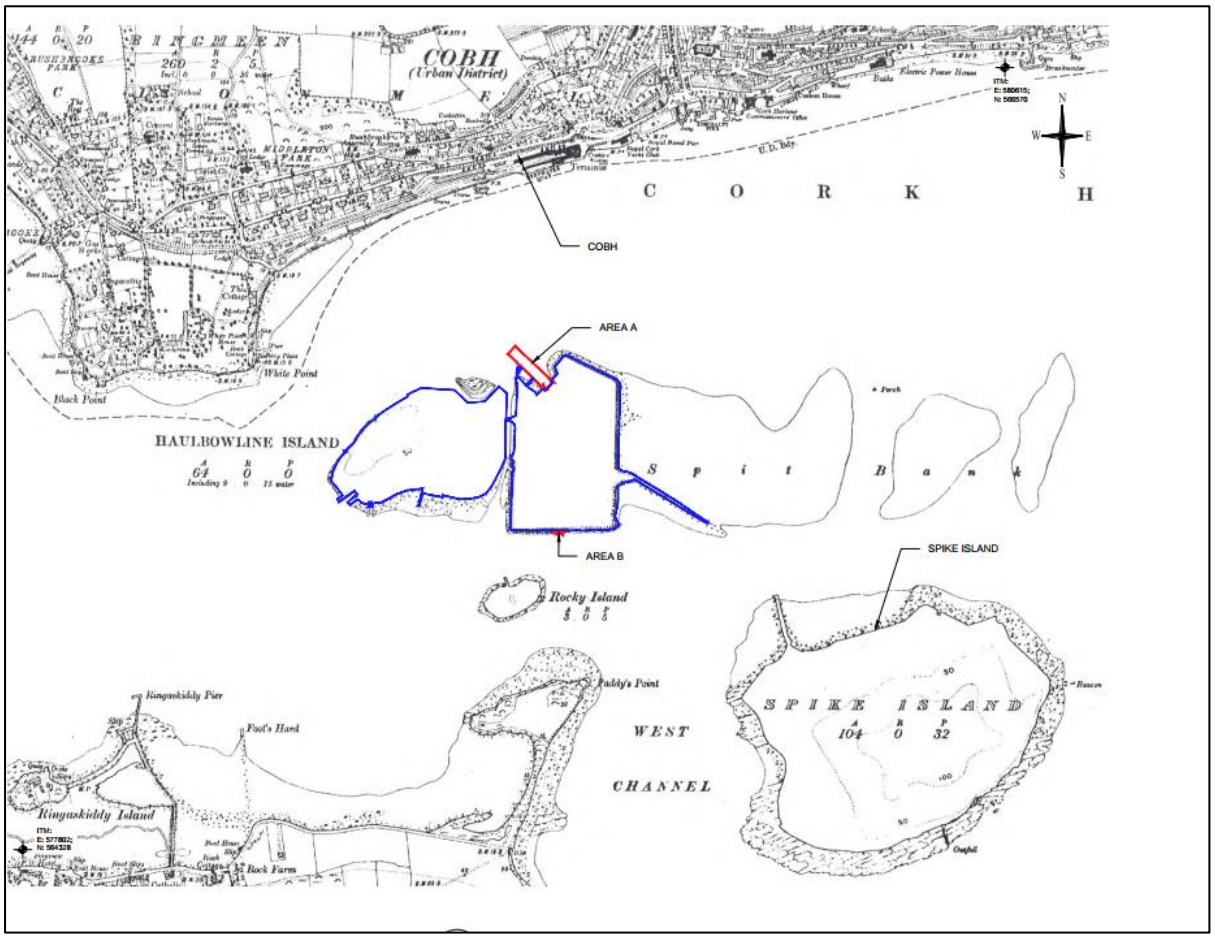

Figure 1. Haulbowline site location map.

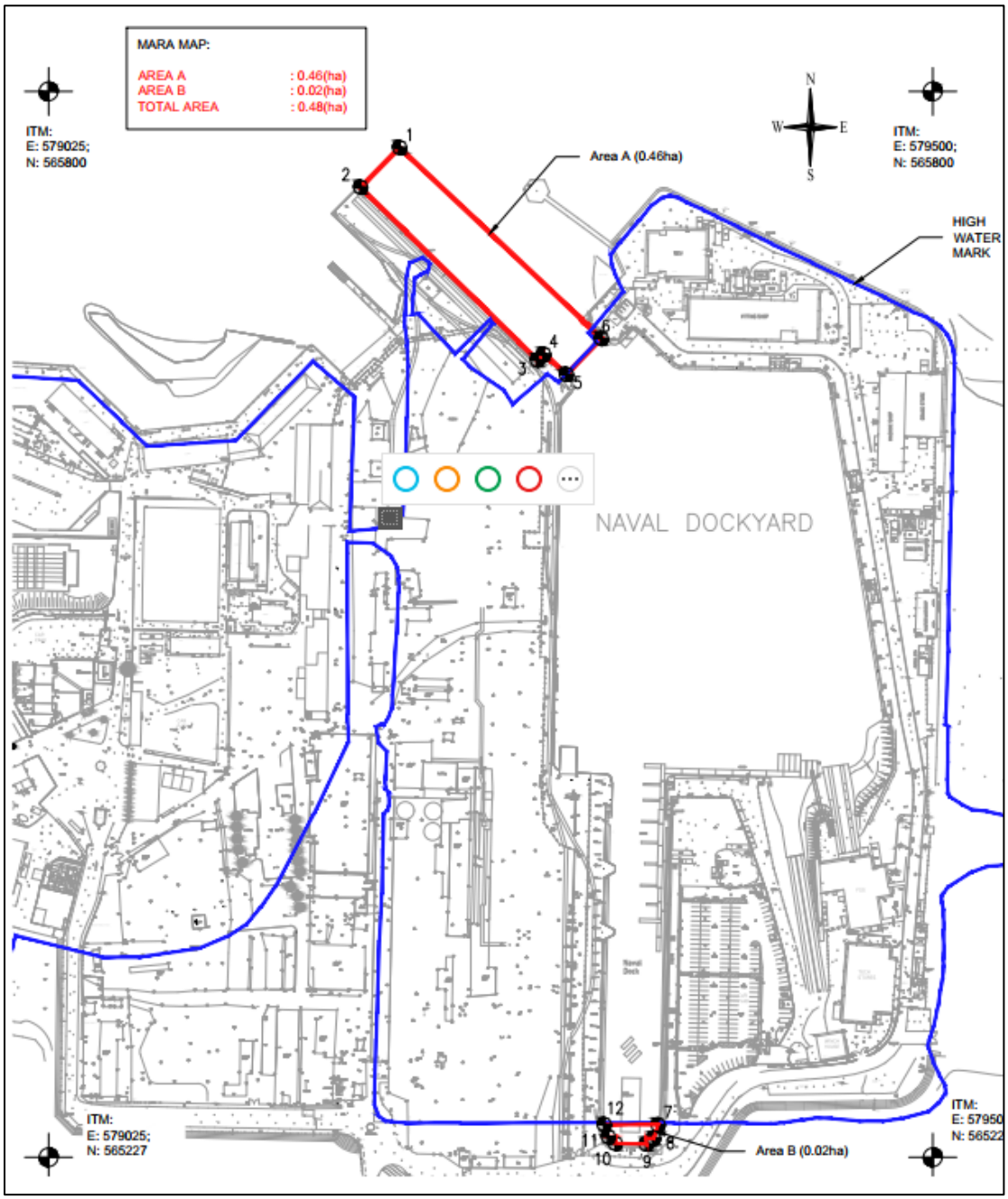

Figure 2. Map showing the proposed dredging works area.

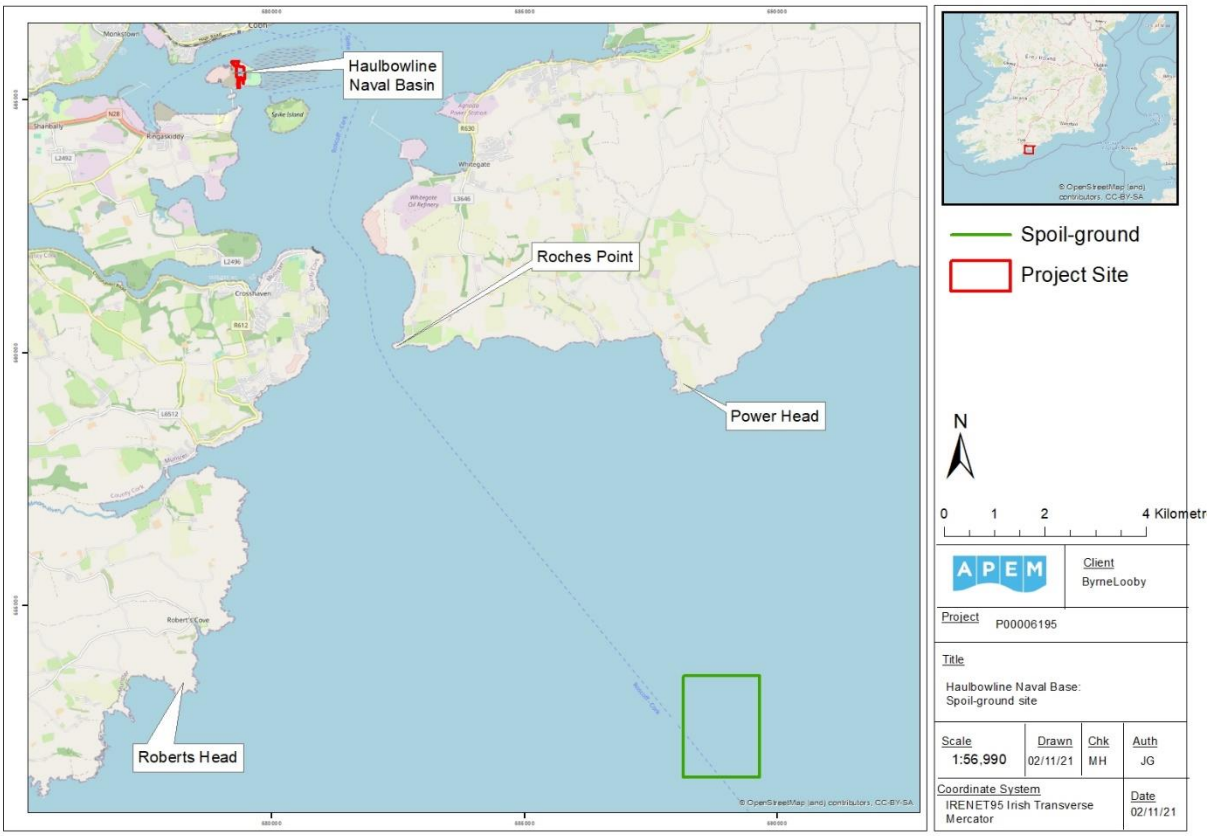

Figure 3. Map showing the proposed dump site (spoil ground) location.

1.4 Aim of the Report

The aim of this report is to inform the Appropriate Assessment (AA) process as required under the Habitats Directive (92/43/EEC), whereby the screening assessment (in Section 3 of this Report) determines whether the proposed dredging works at Haulbowline Island would result in a Likely Significant Effect (an LSE) on any Natura 2000 sites[1]. Where the potential for an LSE is determined, then a report to inform AA and the production of a Natura Impact Statement (NIS) is required to further assess and determine whether the potential effects identified could be the cause of an adverse effect on the integrity (AEoI) of a Natura 2000 site or undermine the achievement of any conservation objectives associated with any Natura 2000 sites.

[1] Sites of European Community importance designated as Special Areas of Conservation (SAC) under the Habitats Directive or as Special Protection Areas (SPA) under the Birds Directive.

1.5 Objectives of the Appropriate Assessment Process

The process promotes a hierarchy of avoidance, mitigation and compensatory measures to be addressed in the AA process as detailed in Scott-Wilson & Levitt-Therivel (2006):

- Firstly, a plan / project should aim to avoid any negative impacts on Natura 2000 sites by identifying possible impacts early and designing the project / plan to avoid such impacts.
- Secondly, mitigation measures should be applied during the AA process (after Stage 1 screening, so it should be applied at Stage 2 if required) to the point where no adverse impacts on the site(s) remain.
- Thirdly a plan / project may have to undergo an assessment of alternative solutions. Under this stage of the assessment, compensatory measures are required for any remaining adverse effects, but they are permitted only if (a) there are no alternative solutions and (b) the plan / project is required for imperative reasons of overriding public interest (the 'IROPI test'). European case law highlights that consideration must be given to alternatives outside the plan / project boundary area in carrying out the IROPI test.

1.6 Relevant Legislation

The SISAA process is based on the requirements of the following specific European Union Directives and the Regulations that implement their requirements in national law.

1.6.1 Birds Directive

The European Union (EU) Directive on the Conservation of Wild Birds (79/409/EEC) (hereafter called the 'Birds Directive') provides a framework for the conservation and management of wild birds in Europe. The relevant provisions of the Directive are the identification and classification of Special Protection Areas (SPAs) for rare or vulnerable species listed in Annex I of the Directive and for all regularly occurring migratory species (required by Article 4). The Directive requires national governments to establish SPAs and to have in place mechanisms to protect and manage them. The SPA protection procedures originally set out in Article 4 of the Birds Directive have been replaced by the Article 6 provisions of the Habitats Directive.

1.6.2 Habitats Directive

The EU Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC) (hereafter called the 'Habitats Directive') provides a framework for the conservation and management of natural habitats, wild fauna (except birds) and flora in Europe. Adopted in 1992, transposed into Irish law in 1997 and as subsequently amended, its aim is to maintain or restore natural habitats and wild species at a favourable conservation status. The relevant provisions of the Directive are the identification and classification of Special Areas of Conservation (SACs) (Article 4) and procedures for the protection of SACs and SPAs (Article 6). SACs are identified based on the presence of natural habitat types listed in Annex I and populations of the species listed in Annex II. The Directive requires national

governments to establish SACs and to have in place mechanisms to protect and manage them.

Together they form a coherent network of protected areas (SACs and SPAs), called Natura 2000, which are safeguarded against potentially damaging developments. The Irish legislation applicable to these Natura 2000 sites is found in the European Communities (Birds and Natural Habitats) Regulations 2011-2015 (hereafter called 'the Habitats Regulations').

1.6.3 In-combination Assessment

The Habitats Regulations require the consideration of the potential effects of a project on Natura 2000 sites both alone and in-combination with other plans or projects. The identification of plans and projects to include in the in-combination assessment can be based on:

- Approved plans;
- Constructed projects;
- Approved but as yet unconstructed projects; and
- Projects for which an application has been made, are currently under consideration and/or will be consented before the proposed works begin.

2. Methods

2.1 Desk Study

A desk study was carried out to collate information available on Natura 2000 sites within the potential Zone of Influence (ZoI) of the proposed development. The dredge area, dump site and surrounding area were viewed using satellite imagery (Google Maps 2024). The Cork County Council planning portal[2], MARA website[3] and the Department of Housing, Local Government and Heritage foreshore applications portal[4] were accessed for information on other permitted and proposed developments within the ZoI of the project.

The National Parks and Wildlife Service (NPWS) website was accessed for information on relevant features of Natura 2000 sites.

2.2 Sediment dispersion modelling

Sediment dispersion modelling has been undertaken to determine the fate of the suspended fractions of material for both dredging and disposal phases of the proposed operations. The

[2] https://planning.corkcoco.ie/ePlan/searchexact
[3] https://www.maritimeregulator.ie/applications-received/
[4] Gove.ie - https://www.gov.ie/en/foreshore-notices/?q=&sort_by=published_date&county=CORK

Sediment Plume Dispersion Assessment report (RPS, 2025) used numerical modelling techniques to provide information on tides, sediment characteristics (including particle size and contamination) and sediment transport. The assessment modelled a trailing suction hopper dredger (TSHD) to represent a worst-case scenario for the sediment dispersion assessment due to the potential for higher production rates and losses relative to the other dredge methods being considered (backhoe and DOP pump dredgers). It should be noted that TSHD is not considered as a potential dredge option for the proposed works.

Results showed that approximately 96% of the material to be dredged was identified as silt, with the remaining 3.4% of material having a grain size equivalent to or greater than that of sand. The assessment for both dredging and disposal operations based on a maximum design "worst case" scenario basis found that the average total suspended sediment concentrations (SSC) do not exceed 0.5 mg/l in the wider Port of Cork area. In closer proximity to the harbour, sediment plumes generally did not extend more than 1,000 m along an east-west axis during flood or ebb tidal flows, with a maximum concentration of around 40-50 mg/L and an average concentration typically below 3 mg/L due to dispersion. Most plumes were carried by ebb tides around the eastern coast of Haulbowline Island. Within Haulbowline Harbour, the restricted nature of the tidal currents limits tidal flushing which results in higher SSC of an average of 20 mg/L. Higher concentrations of SSC observed in the harbour were almost always restricted to times when the dredger was active. Deposition of sediment as a result of dredging works would likely be less than 0.01 m and 0.6 m outside and inside the harbour respectively.

At the licensed dump site, the average total SSC did not generally exceed 10 mg/L outside of the immediate vicinity of the site. The average SSC quickly dispersed to less than 0.5 mg/L approximately 2 km from the dump site boundary. Bed thickness changes did not exceed 0.06 m at the dump site.

Overall, it is anticipated that any changes to SSC and deposition in Haulbowline harbour and channel will be minor/negligible and temporary.

2.3 Zone of Influence

The ZoI for a project is the area over which ecological features may be affected by biophysical changes as a result of the proposed project and associated activities. This is likely to extend beyond the project site, for example where there are ecological or hydrological links beyond the site boundaries. The ZoI will vary for different ecological features depending on their sensitivity to an environmental change (CIEEM 2018).

Irish guidance (DoEHLG 2010) states, for the ZoI of plans, that "*A distance of 15 km is currently recommended in the case of plans derived from UK guidance (Scott Wilson et al, 2006)*". The guidance goes on to state that "for projects, the distance could be much less than 15 km and in some cases less than 100 m, but this must be evaluated on a case-by-case basis with reference to the nature, size and location of the project, the sensitivities of the ecological receptors and the potential for in-combination effects."

The ZoI for this project (encompassing the dredging and sediment disposal at the dump site), was identified through a review of the types of works the project will involve, the type of impacts and effects that could arise as a result, the Sediment Plume Dispersion Assessment report (RPS, 2025), the distance between the project and Natura 2000 sites and the qualifying interests of the Natura 2000 sites. The ZoI of the project is discussed in further detail later in this report. Once the ZoI of the project was determined, Natura 2000 sites within this area were identified and the information on each was collated.

2.4 Screening Report

The approach taken in preparing the screening report is based on standard methods and best practice guidance, such as:

- Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities (Department of Environment, Heritage and Local Government, 2010 revision);
- Assessment of Plans and Projects Significantly Affecting Natura 2000 sites: Methodical Guidance on the Provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC (European Commission Environment Directorate General, 2001); and
- Managing Natura 2000 sites - The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (European Commission - 21 November 2018).

The approach to preparing the SISAA report is summarised as follows:

- Identify Natura 2000 sites within the potential ZoI of the project;
- Identify the features of interest of the Natura 2000 sites and review their conservation objectives;
- Review whether there is potential for the features of interest to be affected by the project based on information such as the vulnerabilities of features of the Natura 2000 site, proximity to the Site and the nature and scale of the works associated with the project;
- Consider the likelihood of the identified potential impacts occurring based on the information collated and professional judgement;
- Consider the likelihood of effects arising from the project in-combination with other plans and projects; and
- Identify the likelihood of significant effects on Natura 2000 sites occurring because of the project.

2.5 In-combination Effects

In-combination effects can result from individually insignificant but collectively significant actions taking place over a period of time or concentrated in a location. In-combination effects can occur where a proposed development results in individually insignificant impacts that, when considered in-combination with impacts of other proposed or permitted plans and projects, can result in significant effects (CIEEM 2018).

Other plans and projects to be considered would include the following types of future development within the same ZoI:

- proposals for which consent has been applied which are awaiting determination in any regulatory process (not necessarily limited to planning permission);
- projects which have been granted consent (not limited to planning permissions) but which have not yet been started or which have been started but are not yet completed (i.e. under construction);
- proposals which have been refused permission, but which are subject to appeal and the appeal is undetermined; and
- to the extent that their details are in the public domain, proposed projects that will be implemented by a public body but for which no consent is needed from a competent authority. (CIEEM 2018).

3. Information to Support Appropriate Assessment Screening

This section of the report identifies the potential ZoI of the proposed development, provides information on the Natura 2000 sites within the identified ZoI and sets out the potential impacts and effects and the potential for LSE.

3.1 Identification of Natura 2000 Sites

The closest Natura 2000 site to the dredge area is the Cork Harbour SPA at approximately 2 km to the east. The next closest Natura 2000 site is Great Island Channel SAC which is approximately 4.3 km to the north (Figure 4).

The closest Natura 2000 site to the dump site is the Cork Harbour SPA, which is approximately 8.6 km northwest (Figure 4).

There is no landscape or ecological connectivity to any Natura 2000 sites beyond the Cork Harbour SPA and Great Island Channel SAC and there are no other Natura 2000 sites that have the potential to be impacted by the project through other means. Therefore, the ZoI for the project is limited to these two closest Natura 2000 sites.

3.2 Description of Natura 2000 Sites

The summarised description of Cork Harbour SPA and Great Island Channel SAC has been prepared using the supporting information available in the site synopses (NPWS 2013 & 2015).

3.2.1 Cork Harbour SPA (004030)

The SPA site comprises most of the main intertidal areas of Cork Harbour and some areas of shallow bay water (NPWS 2015). A small brackish lake (Rostellan Lake) and areas of marginal wet grassland used by feeding and roosting birds are also included.

The site is of major ornithological significance being of international importance for both the total number of wintering birds (> 20,000) and also for its populations of black-tailed godwit and redshank. It also supports nationally important wintering populations of 22 species as well as a nationally important breeding colony of common tern. Several of the species that occur regularly are listed on Annex I of the EU Birds Directive (whooper swan, little egret, golden plover, bar-tailed godwit, ruff, Mediterranean gull and common tern), (NPWS 2015).

3.2.2 Great Island Channel SAC (001058)

The Great Island Channel is located in the north of Cork Harbour and stretches from Little Island to Middleton and is bounded to the south by Great Island (NPWS 2013). Compared to the rest of Cork Harbour, the channel is considered relatively undisturbed.

The main habitats of conservation interest are the EU Habitats Directive Annex I habitats 'Mudflats and sandflats not covered by seawater at low tide' (code 1140) and 'Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)' (code 1330). The intertidal flats are composed primarily of soft muds and support a range of macroinvertebrate and algal species and, in places, cordgrass (*Spartina* spp.).

The site is very important for wintering waterfowl and is considered to include three of the top five overwintering areas within Cork Harbour.

The primary activity within the site is aquaculture (oyster farming), however, the greatest threats are considered to be from road works, infilling, sewage outflows and possible marina developments.

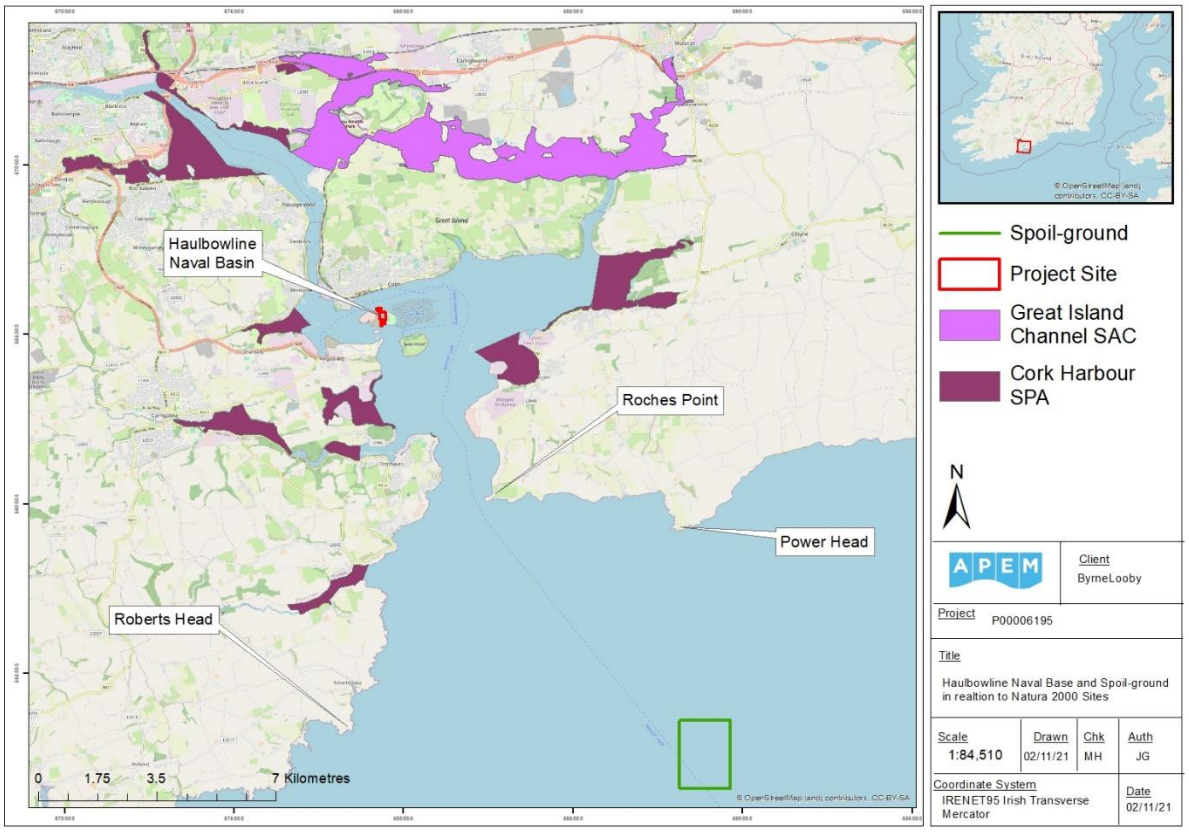

Figure 4. Dredging works area, dump site (spoil ground) and Natura 2000 sites.

3.3 Qualifying Interests and Conservation Objectives

The qualifying interests and conservation objectives for Cork Harbour SPA and Great Island Channel SAC are listed in Table 1 below. This information was also obtained from the resources available on the NPWS website.

Table 1. Natura 2000 Sites within 15 km of the Project Site.

Natura 2000 site	Distance from the Project (km)	Features of Natura 2000 site	Conservation Objectives
Cork Harbour SPA (004030)	2.0	• A004 Little grebe *Tachybaptus ruficollis*	The conservation objectives for the qualifying interests of the SAC can be broadly summarised as "*To maintain the favourable conservation condition of Cork Harbour SPA, which is defined by a list of specific attributes and targets*" The conservation objectives for the qualifying interests of the SPA were considered in preparation of this report and can be accessed at this link: https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004030.pdf
		• A005 Great crested grebe *Podiceps cristatus*	
		• A017 Cormorant *Phalacrocorax carbo*	
		• A028 Grey heron *Ardea cinerea*	
		• A048 Shelduck *Tadorna tadorna*	
		• A050 Wigeon *Anas penelope*	
		• A052 Teal *Anas crecca*	
		• A054 Pintail *Anas acuta*	
		• A056 Shoveler *Anas clypeata*	
		• A069 Red-breasted merganser *Mergus serrator*	
		• A130 Oystercatcher *Haematopus ostralegus*	
		• A140 Golden plover *Pluvialis apricaria*	
		• A141 Grey plover *Pluvialis squatarola*	

Natura 2000 site	Distance from the Project (km)	Features of Natura 2000 site	Conservation Objectives
		• A142 Lapwing *Vanellus vanellus*	
		• A149 Dunlin *Calidris alpina alpina*	
		• A156 Black-tailed godwit *Limosa limosa*	
		• A157 Bar-tailed godwit *Limosa lapponica*	
		• A160 Curlew *Numenius arquata*	
		• A162 Redshank *Tringa totanus*	
		• A179 Black-headed gull *Chroicocephalus ridibundus*	
		• A182 Common gull *Larus canus*	
		• A183 Lesser black-backed gull *Larus fuscus*	
		• A193 Common tern *Sterna hirundo*	
		• A999 Wetlands	

Natura 2000 site	Distance from the Project (km)	Features of Natura 2000 site	Conservation Objectives
Great Island Channel SAC (001058)	4.3	• 1140 Mudflats and sandflats not covered by seawater at low tide • 1330 Atlantic sea meadows (*Glauco-Puccinellietalia maritimae*)	*"To maintain the favourable conservation condition of Mudflats and sandflats not covered by seawater at low tide in Great Island Channel SAC, which is defined by a list of specific attributes and targets"* *"To restore the favourable conservation condition of Atlantic salt meadows (Glauco-Puccinellietalia maritimae) in Great Island Channel SAC, which is defined by a list of specific attributes and targets"* Conservation objectives are available here: https://www.npws.ie/protected-sites/sac/001058

3.4 Identification of potential impacts on Natura 2000 Sites

The potential impacts of the project on the habitats and species listed as qualifying interests for the Cork Harbour SPA and Great Island Channel SAC are discussed in this section.

DoEHLG (2010) guidance for planning authorities states "*If the effects are deemed to be significant, potentially significant, or uncertain, or if the screening process becomes overly complicated, then the process must proceed to Stage 2 (AA). Screening should be undertaken without the inclusion of mitigation, unless potential impacts clearly can be avoided through the modification or redesign of the plan or project, in which case the screening process is repeated on the altered plan. The greatest level of evidence and justification will be needed in circumstances when the process ends at screening stage on grounds of no impact*." This approach is adopted in this report to considering the likely significant effects of the proposed development.

A significant effect is defined in paragraph 49 of the Waddenzee Case C-127/02 (European Court Reports 2004) as follows "…..*pursuant to the first sentence of Article 6(3) of the Habitats Directive, where a plan or project not directly connected with or necessary to the management of a site is likely to undermine the site's conservation objectives, it must be considered likely to have a significant effect on that site. The assessment of that risk must be made in the light, inter alia, of the characteristics and specific environmental conditions of the site concerned by such a plan or project.*"

The likelihood of impacts occurring as a result of the proposed dredging and disposal of material at sea has been established in light of the type and scale of the works, the location of the works with respect to Natura 2000 sites within the ZoI and the qualifying interests and conservation objectives of those Natura 2000 sites.

3.4.1 Potential Impacts and Effects

The dredging works and material disposal at sea described in Sections 1.3 & 3 have the potential to have effects on the surrounding environment. Impacts that could potentially result in an effect on Natura 2000 sites due to the dredging works are as follows:

- Changes in suspended solids (water clarity);
- Visual disturbance and above water noise; and
- Pollution events from vessels and equipment.

These potential impacts and effects are discussed in more detail below.

The dredging works can also result in the following effects; however, there is no pathway to impact on the Natura 2000 sites due to the distance from the Sites and/or due to consideration of the features of the Sites being considered, so these effects are not considered further:

- Abrasion/disturbance of the substrate on the surface of the seabed;
- Penetration and/or disturbance of the substratum below the surface of the seabed, including abrasion;
- Direct loss of habitat;
- Smothering and siltation rate change;
- Disturbance due to underwater noise and vibration;
- Introduction or spread of invasive non-native species; and
- Disturbance due to introduction of light.

Marine mammals are not a feature of the Great Island Channel SAC, consequently the potential effects of underwater noise on marine mammals due to the dredging works are not considered here but they are considered in the project-specific Marine Mammal Risk Assessment.

Changes in suspended solids (water clarity)

Dredging has the potential to result in dispersal of sediments in the water column that can lead to an increase in turbidity and decrease in water clarity. The distance over which sediment may disperse can vary depending on tidal currents and the type of sediment being excavated (coarser sediments drop out of solution more rapidly than finer sediments). According to the Sediment Dispersion Modelling report (RPS, 2025), sediment plumes for dredging operations would not generally extend more than 1 km from the dredge site boundary during periods of flood or ebb tidal flows, with higher concentrations of SSC within the enclosed harbour (20 mg/L) and low concentrations outside of the harbour (<3 mg/L). As the modelling report used the “worst-case” scenario for sediment dispersion with the assessment of a TSHD, it is assumed that the use of a backhoe or DOP pump dredger within the naval basin environment would likely result in lower suspended sediment concentrations and dispersion with a relatively localised sediment plume. Additionally, it is anticipated that suspended sediment concentrations would decrease rapidly within 2 km distance from the dredge boundary site and the dump site due to tidal currents and other water movements.

Visual disturbance and above water noise

Disturbance effects on birds can manifest through their displacement from suitable or preferred habitat. During the proposed dredging works, both noise and visual disturbance have the potential to cause displacement as a result of the presence of vessels and above water noise generated during dredging and disposal. Different species show differing sensitivities to visual and auditory disturbance (Fliessbach *et al*. 2019). Diver species are especially sensitive to approaching boats and may dive or fly off when vessels are more than 1 km away (Schwemmer *et al.* 2011, Topping & Petersen 2011). Among the seaducks, common scoters are particularly vulnerable to being disturbed by boats (Kaiser *et al*. 2006, Schwemmer *et al*. 2011). Terns can be followed at a moderate distance by a small inflatable boat without apparently causing significant disturbance (Perrow *et al*. 2011) and some seabirds such as fulmars and shearwaters, appear to show little or no disturbance response to boats, with some gull species and gannets being attracted to vessels due to their association with fishery

discards (Bradbury *et al*. 2014). Wader and wildfowl species in the intertidal area are less likely to be disturbed by vessel survey activities in the nearshore region given likely levels of baseline visual disturbance onshore (Cutts & Allen 1999, Cutts *et al*. 2009). As with non-avian receptors, impulsive noise generated during vessel activities is more likely to cause disturbance than non-impulsive noise (Wright *et al*. 2010), although little data are available on species-specific responses to noise.

Taking a precautionary approach, more sensitive species (divers and scoters) may be considered to be subject to displacement out to a 2 km distance from any proposed vessel activities, whilst less sensitive species (such as auks and gannets) may be considered to be subject to displacement out to a distance of 1 km from any proposed vessel activities. Gull species are not considered to be sensitive to such activities and, therefore, are not considered to be displaced from any proposed vessel activities (MMO 2018).

Pollution events from vessels and equipment

With the utilisation of tugboats and barges there is the potential for release of oil, fuel and chemicals through accidental spills and operational discharges. This could pose a potential risk to Natura 2000 sites and associated features in the vicinity of the project areas.

All vessels will be MARPOL compliant and fully certified by the Marine Survey Office (MSO), as part of the Irish Maritime Administration Pollution events.

The refuelling of vessels and plant will be conducted by hand from small fuel cans (ByrneLooby 2021) so there is limited potential for large fuel spills during refuelling. The risk of pollution from vessels to the Natura 2000 sites closest to the project areas is extremely small as the dredging works will primarily take place within the naval basin of Haulbowline Island and the closest Natura 2000 site is 2 km away from the dredge area.

Due to the much more limited time and limited activities that will be carried out at the dump site, no refuelling is expected to be carried out at this location.

3.5 Likelihood of Significant Effects on Natura 2000 sites

For the screening process, Natura 2000 sites in the vicinity of the dredge area and dump site that could potentially be influenced were identified (see Section 3.1). The different interest features within these Natura 2000 sites were then considered individually.

The results of the screening exercise are provided in Table 2. If it is considered that a likely significant effect (LSE) could occur on a feature of a Natura 2000 site then that site and the potentially affected feature(s) has been screened into Stage 2 AA. If there is no LSE then that site has been screened out of further assessment.

Table 2. Evaluation of Likely Significant Effect on Great Island SAC and Cork Harbour SPA.

Site Name	Qualifying Interest	Likely Significant Effect (alone or in-combination)	Rationale – Screened in / out
Cork Harbour SPA	A004 Little grebe *Tachybaptus ruficollis*	No	**Screened out.** The preference of this species is to forage within freshwater bodies of water (Balmer *et al*. 2013) of the SPA, so it is unlikely to be found in significant numbers within the dredging works or dump site. This species is also unlikely to be disturbed by the negligible amount of additional vessel activities within the works areas considering the high levels of baseline visual disturbance already occurring at the harbour.
	A005 Great crested grebe *Podiceps cristatus*	No	**Screened out.** The preference of this species is to forage within freshwater and estuarine bodies of water (Balmer *et al*. 2013) of the SPA, so it is unlikely to be found in significant numbers within the dredging works or dump site. This species is also unlikely to be disturbed by the negligible amount of additional vessel survey activities within the works areas considering the high levels of baseline visual disturbance already occurring at the harbour.
	A017 Cormorant *Phalacrocorax carbo*	No	**Screened out.** The preference of this species is to forage within freshwater and estuarine bodies of water (Balmer *et al*. 2013) of the SPA, so it is unlikely to be found in significant numbers within the dredging works or dump site. This species is also unlikely to be disturbed by the negligible amount of additional vessel survey activities within the works areas considering the high levels of baseline visual disturbance already occurring at the harbour.
	A028 Grey heron *Ardea cinerea*	No	**Screened out.** The preference of this species is to forage within freshwater and estuarine bodies of water, so it is unlikely to be found in significant numbers within the dredging works or dump site. This species is also unlikely to be disturbed by the negligible amount of

Site Name	Qualifying Interest	Likely Significant Effect (alone or in-combination)	Rationale – Screened in / out
			additional vessel survey activities within the works areas considering the high levels of baseline visual disturbance already occurring at the harbour.
	A048 Shelduck *Tadorna tadorna*	No	**Screened out.** This species is likely to only occur within the estuaries, brackish lake and areas of marginal wet grassland within the SPA only (Balmer *et al*. 2013), outside of the works areas. Therefore, there is no potential for disturbance from the proposed works.
	A050 Wigeon *Anas penelope*	No	**Screened out.** This species is likely to only occur within the estuaries, brackish lake and areas of marginal wet grassland within the SPA only (Balmer *et al*. 2013), outside of the works areas. Therefore, there is no potential for disturbance from the proposed works.
	A052 Teal *Anas crecca*	No	**Screened out.** This species is likely to only occur within the estuaries, brackish lake and areas of marginal wet grassland within the SPA only (Balmer *et al*. 2013), outside of the works areas. Therefore, there is no potential for disturbance from the proposed works.
	A054 Pintail *Anas acuta*	No	**Screened out.** This species is likely to only occur within the estuaries, brackish lake and areas of marginal wet grassland within the SPA only (Balmer *et al*. 2013), outside of the works areas. Therefore, there is no potential for disturbance from the proposed works.
	A056 Shoveler *Anas clypeata*	No	**Screened out.** This species is likely to only occur within the estuaries, brackish lake and areas of marginal wet grassland within the SPA only (Balmer *et al*. 2013), outside of the works areas. Therefore, there is no potential for disturbance from the proposed works.
	A069 Red-breasted merganser *Mergus serrator*	No	**Screened out.** The preference of this species is to forage within freshwater and estuarine bodies of water of the SPA, so it is unlikely to be found in significant numbers within the works areas. This species is also unlikely to be disturbed by the negligible amount of

Site Name	Qualifying Interest	Likely Significant Effect (alone or in-combination)	Rationale – Screened in / out
			additional vessel survey activities within the works areas considering the high levels of baseline visual disturbance already occurring at the harbour.
	A130 Oystercatcher *Haematopus ostralegus*	No	**Screened out.** This species is likely to only occur within the estuaries, brackish lake and areas of marginal wet grassland within the SPA only (Balmer *et al*. 2013), outside of the works areas. Therefore, there is no potential for disturbance from the proposed works.
	A140 Golden plover *Pluvialis apricaria*	No	**Screened out.** This species is likely to only occur within the estuaries, brackish lake and areas of marginal wet grassland within the SPA only (Balmer *et al*. 2013), outside of the works areas. Therefore, there is no potential for disturbance from the proposed works.
	A141 Grey plover *Pluvialis squatarola*	No	**Screened out.** This species is likely to only occur within the estuaries, brackish lake and areas of marginal wet grassland within the SPA only (Balmer *et al*. 2013), outside of the works areas. Therefore, there is no potential for disturbance from the proposed works.
	A142 Lapwing *Vanellus vanellus*	No	**Screened out.** This species is likely to only occur within the estuaries, brackish lake and areas of marginal wet grassland within the SPA only (Balmer *et al*. 2013), outside of the works areas. Therefore, there is no potential for disturbance from the proposed works.
	A149 Dunlin *Calidris alpina alpina*	No	**Screened out.** This species is likely to only occur within the estuaries, brackish lake and areas of marginal wet grassland within the SPA only (Balmer *et al*. 2013), outside of the works areas. Therefore, there is no potential for disturbance from the proposed works.
	A156 Black-tailed godwit *Limosa limosa*	No	**Screened out.** This species is likely to only occur within the estuaries, brackish lake and areas of marginal wet grassland within the SPA only (Balmer *et al*. 2013), outside of the works areas. Therefore, there is no potential for disturbance from the proposed works.

Site Name	Qualifying Interest	Likely Significant Effect (alone or in-combination)	Rationale – Screened in / out
	A157 Bar-tailed godwit *Limosa lapponica*	No	**Screened out.** This species is likely to only occur within the estuaries, brackish lake and areas of marginal wet grassland within the SPA only (Balmer *et al*. 2013), outside of the works areas. Therefore, there is no potential for disturbance from the proposed works.
	A160 Curlew *Numenius arquata*	No	**Screened out.** This species is likely to only occur within the estuaries, brackish lake and areas of marginal wet grassland within the SPA only (Balmer *et al*. 2013), outside of the works areas. Therefore, there is no potential for disturbance from the proposed works.
	A162 Redshank *Tringa totanus*	No	**Screened out.** This species is likely to only occur within the estuaries, brackish lake and areas of marginal wet grassland within the SPA only (Balmer *et al*. 2013), outside of the works areas. Therefore, there is no potential for disturbance from the proposed works.
	A179 Black-headed gull *Chroicocephalus ridibundus*	No	**Screened out.** This species is not sensitive to disturbance from dredging activities associated with the proposed work (MMO 2018). Therefore, no potential impact from the proposed works is anticipated.
	A182 Common gull *Larus canus*	No	**Screened out.** This species is not sensitive to disturbance from dredging activities associated with the proposed work (MMO 2018). Therefore, no potential impact from the proposed works is anticipated.
	A183 Lesser black-backed gull *Larus fuscus*	No	**Screened out.** This species is not sensitive to disturbance from dredging activities associated with the proposed work (MMO 2018). Therefore, no potential impact from the proposed works is anticipated.
	A193 Common tern *Sterna hirundo*	No	**Screened out.** This species is not sensitive to disturbance from dredging activities associated with the proposed work (MMO 2018). Therefore, no potential impact from the proposed works is anticipated.

Site Name	Qualifying Interest	Likely Significant Effect (alone or in-combination)	Rationale – Screened in / out
Great Island SAC	Mudflats and sandflats not covered by seawater at low tide (1140)	No	**Screened out.** This habitat feature is over 4 km from the dredge area. The sediment dispersion modelling showed that suspended sediments from the DOP pump or backhoe dredger are unlikely to be dispersed over this distance, with SSC concentrations estimated to rapidly dissipate to below 0.5 mg/L within 1 km from dredge boundary site. If any sediment is distributed 4 km from the dredge area, concentrations would be anticipated to be minor/negligible in relation to natural variability in suspended sediment levels across a tidal cycle, as concentrations of suspended sediments will rapidly decrease with increased distance from the dredge location. Similarly, the dredging activities and any potential pollution events are not likely to affect the habitat due to the nature of the activities (small-scale and localised), the confined nature of the dredge area (within the naval basin), the separation of the dredge area from the habitat by Great Island, and the distance between the dredge area and the habitat. Any contaminated dredged material will be removed from the site and disposed of in a licenced landfill facility on land. The dump site is located over 15 km from this habitat and is located outside of the main body of Cork Harbour itself. According to results from the worst-case scenario sediment dispersion analysis for the dump site, it's expected that SSC will rapidly disperse to below 0.5 mg/L within 2 km from the dump site. As such, the disposal of dredged sediment at the dump site is not likely to affect the habitat due to the separation of the site from the habitat by Great Island and the Roches Point headland and due to the distance between the dump site and this habitat feature.

Site Name	Qualifying Interest	Likely Significant Effect (alone or in-combination)	Rationale – Screened in / out
	Atlantic sea meadows *Glauco-Puccinellietalia maritimae* (1330)	No	**Screened out.** This habitat is over 4 km from the dredge area. The sediment dispersion modelling showed that suspended sediments from the DOP pump or backhoe dredger are unlikely to be dispersed over this distance, with SSC concentrations estimated to rapidly dissipate to below 0.5 mg/L within 1 km from dredge boundary site. If any sediment is distributed 4 km from the dredge area, concentrations would be anticipated to be minor/negligible in relation to natural variability in suspended sediment levels across a tidal cycle, as concentrations of suspended sediments will rapidly decrease with increased distance from the dredge location. Similarly, the dredging activities and any potential pollution events are not likely to affect the habitat due to the nature of the activities (small-scale and localised), the confined nature of the dredge area (within the naval basin), the separation of the dredge area and the habitat by Great Island and the distance between the dredge area and the habitat. Any contaminated dredged material will be removed from the site and disposed of in a licenced landfill facility on land. The dump site is located over 15 km from this habitat and is located outside of the main body of Cork Harbour itself. According to results from the worst-case scenario sediment dispersion analysis for the dump site, it's expected that SSC will rapidly disperse to below 0.5 mg/L within 2 km from the dump site. As such, the disposal of dredged sediment at the dump site is not likely to affect the habitat due to the separation of the site from the habitat by Great Island and the Roches Point headland and due to the distance between the dump site and this habitat feature.

4. In-combination Effects

Using the information sources detailed in Section 2.1, a search was made for other plans or projects that, in-combination with the proposed dredging works, have the potential to have significant effects on the Natura 2000 sites. Projects identified were as follows:

Port of Cork Site Maintenance dredging

Maintenance dredging is undertaken in the Port of Cork. However, no dredging or supplementary dumping activities will occur from the Haulbowline site while maintenance dredging is underway in the Port of Cork. The Port of Cork's dredging program started in the second quarter of 2024 and is scheduled to end in the middle of the third quarter of 2024, with the anticipated maintenance campaigns roughly every three years.

Under the current programme no overlap is expected, and no in-combination effects are anticipated.

MUL240042/FS007098 Port of Cork Site Investigations at Dognose Bank Co.Cork (22/04/2024) - Status: Applied

Marine site survey work and Site Investigation (SI) works are proposed at Dognose Bank, Corkbeg, Whitegate, County Cork. These works are approximately 3.8 km from the proposed Haulbowline dredging site and will cover an area of 98.2 ha. The works will involve; geophysical surveys, geotechnical surveys, environmental surveys, intertidal benthic surveys and marine mammal surveys. Equipment required to undertake the surveys will include a jack-up platform to carry out geotechnical boreholes, as well as the use of a tug vessel and tug. There is no known start date for activities as it is dependent on the granting of a foreshore licence, however the works are expected to take place over a 19-week period. There is, therefore, the potential for the survey activities to temporarily overlap with the proposed dredging works at Haulbowline.

Due to the distance of the works from the dredging site, and the nature of the works, no in-combination effects are anticipated.

MUL240048/FS007376 Uisce Éireann ADCP Surveys at Cork Harbour (10/05/2023) - Status: Applied

Uisce Éīireann wish to conduct a strategic modelling study of water currents within Cork Harbour, which requires the deployment of up to nine Acoustic Doppler Current Profilers (ADCPs) across three sampling areas (A, B & C) within Cork Harbour. The ADCPs will collect salinity and temperature data and may be contained within trawl resistant frames to avoid potential damage. Sampling area B is the nearest to the proposed dredging site at 2.6 km from Haulbowline. The expected commencement and end date of works are unknown but will likely be published once the foreshore licence has been determined. The sampling duration has been identified as 35 days, with deployment and retrieval dependent on weather conditions.

There is, therefore, the potential for the survey activities to temporarily overlap with the proposed dredging works at Haulbowline.

Due to the distance of the works from the dredging site, and the nature of the works, no in-combination effects are anticipated.

FS007471 Floating Cork Offshore Wind Limited Site Investigations for proposed Offshore Wind Farm, off County Cork (30/04/2022) – Status: Applied

Floating Cork Offshore Wind Limited have applied for a foreshore licence to undertake marine surveys and SI works within an offshore export cable corridor area. The surveys will be conducted on the intertidal and subtidal areas off the coast of County Cork, with the survey area extend into Cork Harbour, 10.7 km from the proposed Haulbowline dredging site. The SI works will include geophysical survey (MBES, SSS, SBP, magnetometer survey), geotechnical survey (vibrocore, CPT and boreholes), metocean survey, environmental survey (grab samples, DDV, Intertidal survey), and archaeological survey. The surveys and SI works are expected to take 3 to 6 months to complete and will be undertaken in more than one campaign. The activities start and end dates are unknown and will be determined once the foreshore licence has been determined, therefore, there is a potential for a temporal overlap between the SI surveys and the proposed dredging works.

Due to the distance of the works from the dredging site, and the nature of the works, no in-combination effects are anticipated.

MUL240035 Gas Networks Ireland, Cork Harbour (06/09/2024) – Status: Applied

Gas Networks Ireland have proposed to conduct a marine survey within Cork Harbour, approximately 2 km from proposed dredging works and 8 km from the dump site. The surveys aim to provide high-quality baseline data to inform site selection for the Strategic Gas Emergency Reserve. The surveys include the deployment and retrieval of static acoustic monitoring (SAM) devices and up to two acoustic doppler current profilers within the study area. Surveys were expected to commence October 2024 and finish April 2027, therefore, temporal overlap with the proposed dredging and disposal works are possible.

Given the distance of the proposed surveys to the dredging operations and the nature of the works, no in-combination effects are anticipated.

MUL240036 EirGrid plc marine site investigation works for two offshore substations (11/11/2024) – Status: Applied

EirGrid plc have proposed for marine site investigations (SI) works to inform the engineering design and environmental assessments for two offshore substations, potential offshore transmission cable corridors, approaches to landfall zones and seven landfalls. The SI works will be located in the Tonn Nua Area A (as identified in the South Coast Designated Maritime Area Plan) which has the potential to overlap with the proposed dredge dump site south of Power Head. Operations will include the deployment of survey vessels to undertake

geophysical and geotechnical surveys, marine archaeological surveys, ornithology surveys and marine mammals surveys. Surveys are expected to be undertaken over a five-year period, with the activities start and end dates currently unknown and will be determined once the licence has been determined. Therefore, there is a potential for a temporal overlap between the SI surveys and the proposed dredging works.

Whilst there is potential for spatial and temporal overlap between the SI works and dredge dump site, both activities are temporary and will not overlap with the Greater Island Channel SAC and Cork Harbour SAC designated areas. Therefore, no in-combination effects are anticipated.

MUL230015 Uisce Éireann Strategic modelling study (31/10/2024) – Status: Applied

Uisce Éireann propose to conduct a strategic modelling study of water currents and bathymetry along six areas of the South Cork Coast (Areas A to F). Area A is located within 5 km of the dredge dump site for the proposed dredge activities. The study includes the deployment of fixed ADCPs, vessel based ADCPs and tidal gauges, as well as undertaking water sampling, CTD monitoring and bathymetry surveys (Single beam and multibeam Echosounders, LiDAR, GPS rover). The works for the strategic modelling study are expected to commence in the summer of 2025 and continue into 2026.

Given the distance of the proposed surveys to the dredging operations and the nature of the works, no in-combination effects are anticipated.

4.1 Summary

Overall, after considering the information above it is considered that there is no scope for in-combination effects with the proposed dredging works and other plans and projects that would have the potential to have significant effects on the Natura 2000 sites.

5. Consideration of Findings

The proposed dredging works for the Haulbowline Naval Base and associated disposal of sediments at sea, have the potential to interact with two Natura 2000 sites. As part of this assessment, protected sites in the vicinity of the dredge area and dump site which could potentially be influenced by effects arising from the works were identified. Interest features within these sites were then considered individually. Screening used the conceptual 'source-pathway-receptor' model to identify potential environmental effects resulting from the project.

Potential effects from the following impacts were taken through to the screening stage:

- Changes in suspended solids (water clarity);
- Visual disturbance and above water noise; and
- Pollution events from vessels and equipment.

Conclusions of the tests for LSE carried out on the Natura 2000 sites, on their interest features and on functionally linked land were as follows:

- No LSE for both Cork Harbour SPA and Great Island Channel SAC, as such no sites are required to be taken through to Stage 2 Appropriate Assessment for consideration of adverse effects on integrity of the site.
- The in-combination effects assessment concluded that no in-combination effects were anticipated when considering additional projects / plans.

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