



MERC Consultants  
environmental and conservation services

# Supporting Information for Screening for Appropriate Assessment

and

# Natura Impact Statement

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## Ballycotton Harbour Dredging

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# 1. INTRODUCTION

## 1.1. Background

Ballycotton Harbour is located approximately 40km (by road) east of Cork city. The harbour is utilised on a regular basis by a number of commercial fishing vessels and is also the base for a Royal National Lifeboat Institution Trent Class All-weather Lifeboat. The harbour is also the landing point for seasonal tours of the adjacent Ballycotton Lighthouse and maintenance access for the Commissioner of Irish Lights.

The harbour is heavily silted which is restricting the usage of the harbour at low tides. There is regular grounding of fishing vessels and the pontoon, and the all-weather RNLI lifeboat is unable to launch, or access the pier and pontoon for casualty removal, at a number of low tides. The harbour was dredged by Cork County Council in 1984 and again in 1998 with the dredging limited to the removal of mud from the channel at the entrance to the harbour. The berthing area of the pier and the head of the breakwater were reinforced with sheet piles in 2006, emergency repairs were completed to the Breakwater in 2011 and a Pontoon and Gangway installed in 2015.

Cork County Council have proposed a project to carry out a capital dredge project of the Harbour to restore it to navigable depths.

## 1.2. Purpose of this report

Cork County Council have proposed a project to carry out capital dredging of the Harbour to restore it to navigable depths.

All EU Member States are obliged to establish a network of sites of conservation importance known as the Natura 2000 network. The network is made up of Special Areas of Conservation (SACs) established under the EU Habitats Directive (92/43/EEC) and Special Protection Areas (SPAs) established under the EU Birds Directive (2009/147/EC). Under Article 6(3) of the Habitats Directive, Member States are required to consider the potential for likely significant effects of any project or plan on the conservation objectives of a SAC or SPA (European site) before a decision can be made to allow that project or plan to proceed.

Appropriate Assessment (AA) is the process whereby the potential impacts of a project or plan are assessed in view of a European site's conservation objectives. The first step in the process is to conduct AA screening to determine, on the basis of a preliminary assessment and objective criteria, whether the project or plan, alone or in combination with other projects or plans could have significant effects on the conservation objectives of a European site. Where significant effects are likely, uncertain or unknown at the screening stage, Appropriate Assessment is required to enable a consent authority to carry out an appropriate assessment.

Screening for AA was carried out for the proposed works and is presented in section 6 of this report. The Screening assessment concluded that *"it cannot be excluded, on the basis of objective information, that the proposed development, individually or in combination with other plans or projects, will have a significant effect on the Conservation Objectives of a European site. Accordingly, it is concluded that an Appropriate*

Assessment of the proposed project is required". A Natura Impact Statement (NIS) was subsequently prepared and is presented in section 7 of this report.

## 2. STATEMENT OF AUTHORITY

This report was prepared by MERC Consultants Ltd. MERC are a specialist marine ecological survey and consultancy firm. Core staff have many years combined experience and specialist knowledge in relation to Irish marine and coastal habitats, species and ornithology as well as assessment and management of conservation interests.

Most recently MERC have completed [NPWS national monitoring of marine Annex I habitats](#) for compliance under Article 17 of the EU Habitats Directive. In this context MERC were responsible for the assessment and reporting of marine Annex I habitats in Ireland and were the authors of all Article 17 reports and overarching site monitoring reports.

In addition to their scientific expertise MERC have an in-depth knowledge of Irish and European Environmental legislation and policy. In 2011 MERC prepared the text describing Activities Requiring Consent (ARCs) for inclusion in a handbook detailing the regulatory framework for all developments within designated sites in Ireland on behalf of the National Parks and Wildlife Service. They have also produced numerous Conservation Management Plans for the same department. To-date MERC have conducted in excess of 200 ecological reports in support of Appropriate Assessment under Article 6(3) of the EU Habitats Directive. MERC have also contributed specialist ecological advice for the preparation of a number of Environmental Impact Statements related to a variety of proposed developments in Ireland.

## 3. METHODS

### 3.1 Relevant guidelines and legislation

This report has been prepared with reference to the following European Directives, national legislation and guidance on the appropriate assessment of projects and plans with regard to the implementation of the provisions of Article 6(3) and (4) of the EU Habitats Directive 92/43/EEC.

- *Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild flora and fauna.* Official Journal of the European Communities.
- *Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (codified version).*
- *European Communities (Birds and Natural Habitats) Regulations 2011.* SI No. 477 of 2011.
- *Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC.* European Commission 2018. 7621 final. Office for Official Publications of the European Communities, Luxembourg.
- *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.* European Commission, 2002;
- *Appropriate Assessment of Plans and Projects in Ireland, Guidance for Planning Authorities.* DoEHLG, 2009.
- *Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters.* Department of Arts, Heritage and the Gaeltacht, 2014

- Relevant case law.

### 3.2 Description of the proposed project and its associated scope of works

A detailed description of the proposed project was compiled and is set out in Section 4. The description details all works required to carry out the proposed project.

### 3.3 Impact assessment approach

The zone of influence (ZOI) of 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. In the context of AA screening, the ZOI is the area over which a plan or project could affect the receiving environment such that it could potentially have significant effects on the conservation status of European Sites. This has the potential to extend far beyond the project site, for example where there are ecological or hydrological links beyond the site boundaries.

In the marine environment, zones of influence can be extensive and lead to effects well beyond the construction site (CIEEM, 2018). This is particularly relevant in the case of sediment and nutrient transport and also where highly mobile or migratory species may be present. Within the ZOI those receptors that are sensitive to change must be identified and considered.

To define the ZOI of a project the potential for project related effects on sensitive receptors must first be established. For this purpose, a **Source-Path-Receptor-Consequence (SPRC)** model was applied. The SPRC model is a well-established model frequently applied to the analysis of project related effects on ecosystems and is the one which we have applied to the assessment of the proposed site investigations.

The SPRC model we have applied is summarised below:

- 1. Identify the Source** - The origin of a hazard e.g., noise generation from site investigation equipment.
- 2. Identify the Pathway** - Route that a hazard takes to reach Receptors e.g., through water. A pathway must exist for a Hazard to be realised.
- 3. Identify the geographical range** – The range the source, by way of the identified pathway, could extend.
- 4. Identify the Receptor** - The entity that may be affected (e.g., a marine mammal, a habitat etc.).
- 5. Assess the Consequence** - An effect e.g., hearing damage as a consequence of noise generation.

Using this approach all elements of the proposed project were reviewed to assess potential pathways and receptors which might be affected so that a ZOI could be established for the proposed project. It should be noted that the ZOI may extend well beyond the geographical range of the impact. This is usually the case where mobile species e.g. marine mammals or birds have the potential to be impacted.

This process involved the following steps:

- The identification of sources of potential impacts and their pathways from the proposed projectsite to species and/or habitats associated with European Sites.
- Consideration of sensitive receptors and their dependent ecosystems within the aforementioned European sites.



- Identifying and characterising project related impacts and their likely effects, direct, indirect and cumulative on the identified sensitive receptors.

Once the ZOI was established, the following steps were taken to assess potential for likely significant effects on sensitive receptors:

1. The scale, scope and type of the site investigations were examined.
2. A desk review of the available literature describing the habitats and species known to occur at the proposed project site and surrounding area was undertaken.
3. Any project related activities likely to affect migratory or highly mobile species was considered.
4. Any use of the proposed project site by mobile species that make regular movements to, from, or across the site was assessed.
5. An assessment was carried out of the key ecological processes and species activity periods including seasonal variations in distribution, abundance and activity.
6. An assessment was carried out of the key hydrodynamic processes, e.g., by reference to Admiralty data for the area at the site, and any seasonal or cyclic variations in these.

### 3.4 Review of relevant European Sites

Once the ZOI of the proposed project was determined all European sites within this ZOI were documented and an analysis of the sensitivity of ecological receptors therein was conducted. In determining the sensitivity of ecological receptors consideration was given to the scale, scope and location of the proposed project relative to the aforementioned receptors.

### 3.5 Description of the receiving environment

#### 3.5.1 Desk study

To fully understand the receiving environment, relative to project related effects, the literature consulted included:

- National Parks and Wildlife Service data sources for all European sites within the ZOI of the proposed project. This included the individual site synopsis for each designated area, standard Natura 2000 data forms, conservation objectives and conservation objectives supporting documentation and GIS layers (habitats, species and marine community mapping).
- Irish Wetland Bird Survey (I-WeBS) data.
- European seabird colony data (JNCC).
- Available benthic data (NPWS, Marine Institute and INFOMAR)
- Relevant literature on the impact of noise and other anthropogenic impacts on marine mammals and fish was also reviewed.

#### 3.5.2 Commissioned reports

- Marine Mammal Risk Assessment (Appendix I).
- Breeding bird survey of the project location and environs (Appendix II).
- Sampling for contaminant analysis of dredge area within Ballycotton Harbour according to a schedule of sampling proposed by the Marine Institute.

### 3.5.3 Field survey

Field surveys were undertaken to further understand the receiving environment. These included a survey of the subtidal and intertidal benthic habitats and coastal habitats as detailed below.

#### 3.5.3.1 Benthic habitats

##### **Subtidal benthic habitat**

A survey of the subtidal benthos was undertaken in June 2019. The full results of this survey are presented in Appendix III of this report. In summary, four (4) benthic grab samples were collected using a Day Grab from within Ballycotton harbour and its environs.

##### **Intertidal benthic habitat**

A survey of the intertidal benthos was undertaken in June 2019. The full results of this survey are presented in Appendix IV of this report. In summary, three (3) intertidal stations (5 replicates per station) were collected using a standard 20cm hand core from Ballycotton Bay.

#### 3.5.3.2 Coastal habitats

A site walkover was conducted to obtain an overview of the ecology of the coastal and intertidal habitat within Ballycotton Harbour (conducted when low water was <0.6 meters) and environs and within Ballycotton bay during June 2019.

## 4. DETAILS OF PROPOSED PROJECT OR PLAN

The schedule of works, which comprises a single dredging programme, is summarised below and detailed in sections 4.1.

- Dredge the area outlined in orange in figure 4.1 to bedrock or -3.5m Chart Datum whichever is shallowest.
- Dredge remainder of the harbour outlined in purple to bedrock or -2.5m Chart Datum whichever is shallowest.
- Disposal of suitable dredged materials at the previously used dumping site to the south of Powers Head, 16km southwest of Ballycotton (figure 4.2).
- Dispose of contaminated dredged material outlined in cyan to a licenced landfill facility.

### 4.1 Construction method statement

This construction method statement is outline only, and subject to change based on the outcome of foreshore and other statutory licence applications as well as the preferred contractor methodology.

#### 4.1.1 Mobilisation

A pre-condition survey of the site will be carried out by the contractor to determine the suitability of the plant proposed. The following will be mobilised to the site for the dredging elements of the works:

- Long Reach back-hoe excavator
- Dredge barge
- 1000m<sup>3</sup> hopper barge
- Tugboat
- Articulated dump trucks
- Safety boat
- Road sweeper

#### 4.1.2 Site Compound

A site compound will be set up upon mobilising to site. Appropriate fencing will be erected around the perimeter of the site where required. The site compound will be minimised to limit obstructions to the normal operation of the port. The compound will incorporate a site office, canteen, welfare facilities and storage.

#### 4.1.3 Existing Swing Moorings

All existing swing moorings will be removed from the seabed before commencing dredging works. All swing moorings will be stored off site in a location agreed with Cork County Council while dredging works take place. Swing moorings will be reinstalled on completion of dredging works.

#### 4.1.4 Dredging Works (Overburden Material)

A bathymetric survey will be carried out to determine exact seabed levels prior to dredging. A dredge barge will be towed to the area to be dredged by a tugboat.

### Contaminated Material

A long reach excavator, located on the dredge barge, will use a dig control system to determine dredge level achieved. The excavated material will be placed in a hopper barge. This material will then be later discharged into tipper trucks where appropriate which will transport contaminated material to a suitably licenced facility for disposal.

### Uncontaminated Material

Similarly, the excavated material will be placed in a hopper barge and towed to the disposal site, south of Powers Head for disposal at sea. Storage of the material will not take place on the quay. It is likely that dredging activities will take place 24hrs per day, 7 days per week to achieve the maximum production rates within tidal envelopes.

### Rock Material

It is not anticipated that there will be any requirement to dredge rock from the harbour.

#### 4.1.5 Disposal of Dredge Arisings

Table 4.1 gives the estimated volumes of dredge materials.

**Table 4.1** Dredge volumes

Material to be dredged	Volume (m <sup>3</sup> )	Mass (tonnes)
Silts, Sands & Gravels	19,500	35,743

Subject to the quality of material dredged, it is estimated that and 18,000m<sup>3</sup> of gravel, silt and sand will be disposed of at sea. The remaining 1,500m<sup>3</sup> of contaminated gravel, silt and sand will require disposal at a suitably licensed site.

#### 4.1.6 Anticipated Dredge Production Rates

It is anticipated that overburden (gravel, silt, and sand) will have a maximum dredging rate of 500m<sup>3</sup> per 24 hours. It is estimated that the haulage contractor would dispose of overburden material over 12 hours per day.

#### 4.1.7 Programme of Works

Estimated timelines for each element of the proposed programme are given in table 4.2. It is proposed that mobilisation to site will take place in August, which includes removal of swing moorings. Dredging works will take place over 8 weeks between September & October. Demobilisation and reinstalment of pontoon & swing moorings will take place in November.

**Table 4.2** Estimated timelines

<b>Event</b>	<b>Time</b>	<b>Time of year</b>
Mobilisation	2 weeks	August
Removal of Existing Swing Moorings	1 week	August
Dredging	8 weeks	September-October
Swing Mooring Reinstallation	2 weeks	November
De-Mobilisation	1 week	November

#### 4.1.8 Additional information

An outline Construction Environmental Management Plan (CEMP) has been prepared for the proposed project. A final CEMP will be prepared prior to the project commencing.

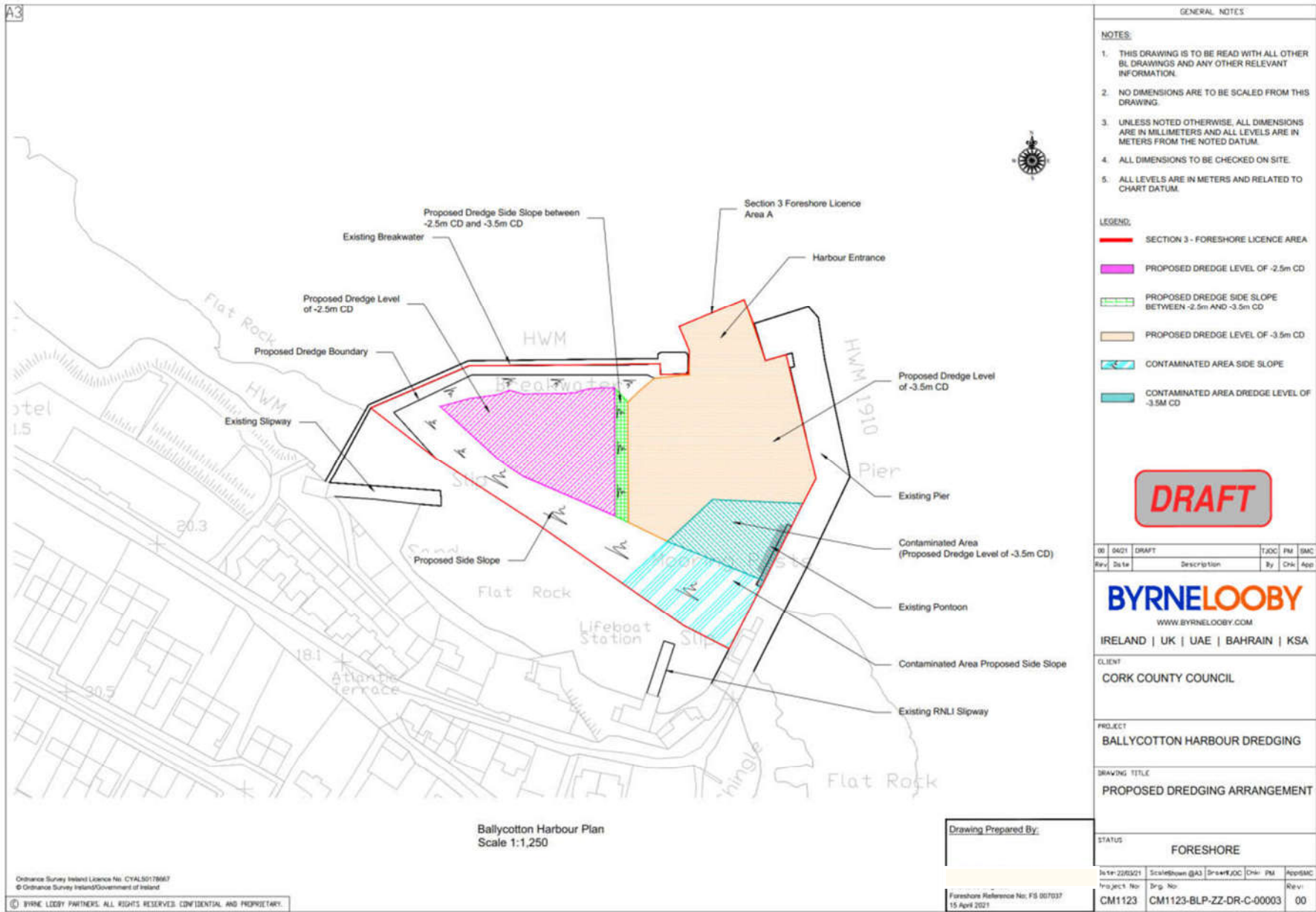


Figure 4.1. Overview of dredging area.



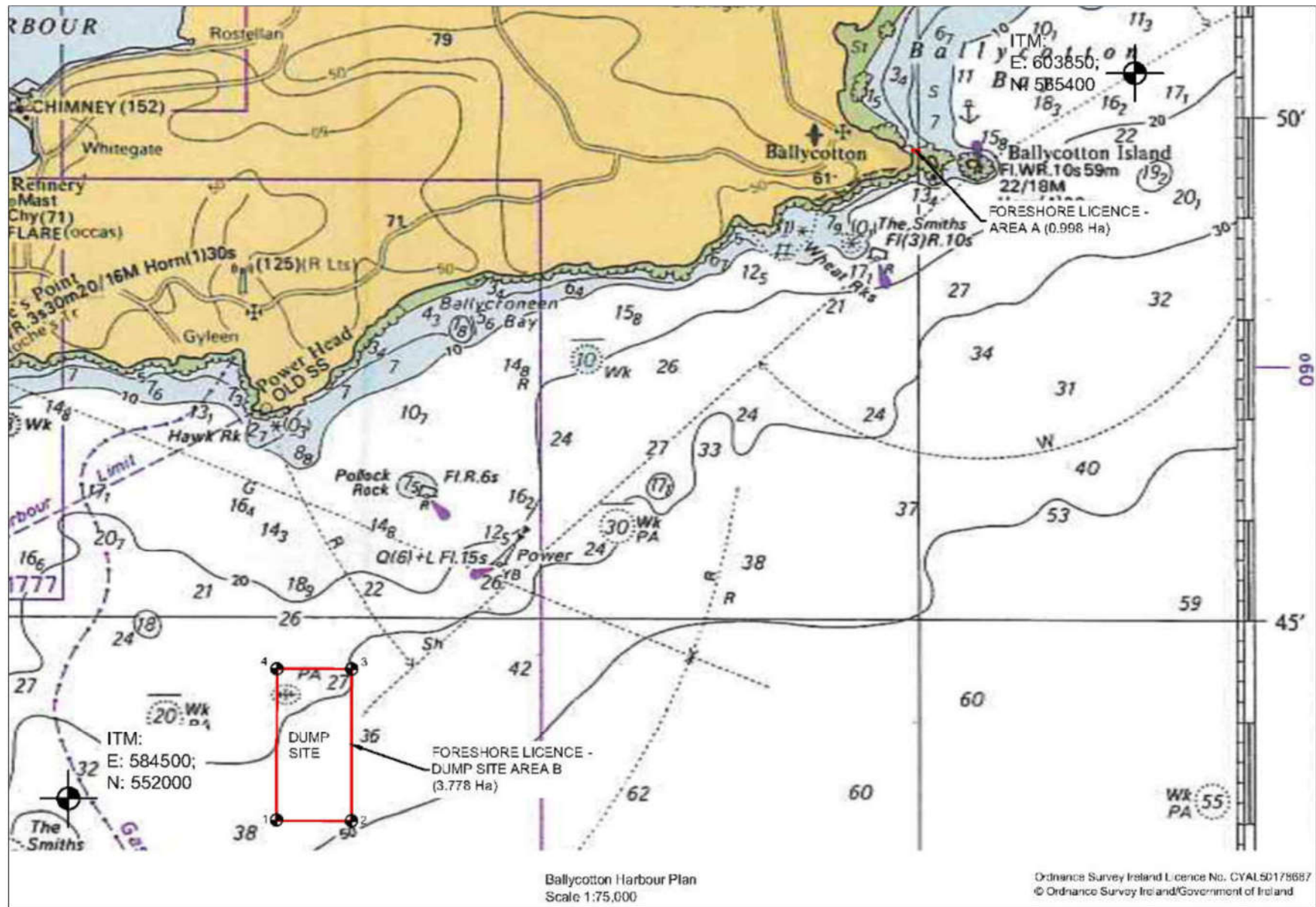


Figure 4.2. Proposed Dump site (Extract from Byrne Looby drawing No. CM1123-BLP-ZZ-DR-C-00005).

## 5. THE RECEIVING ENVIRONMENT

### 5.1 Overview

Ballycotton is a small coastal village located on the south side of Ballycotton Bay approximately 40km (by road) east of Cork city. The village is approached by the R629 public road, with the harbour situated at the east end of the village at the most south-easterly extent of Ballycotton Bay. The surrounding land use is characterised by improved agricultural grassland. The harbour is utilised on a regular basis by a number of commercial fishing vessels and is also the base for a Royal National Lifeboat Institution Trent Class All-weather Lifeboat. The harbour is also the landing point for seasonal tours of the adjacent Ballycotton Lighthouse and maintenance access for the Commissioner of Irish Lights.

The harbour is set beneath low sea cliffs which have largely been reinforced by stone walling (in the vicinity of the harbour), beneath which an intertidal area comprised of cobble and outcropping bedrock is present. See figure 5.1 and 5.2.

Two islands, Ballycotton Island (small) and Ballycotton Island, lie to the east of the harbour. The former is a continuation of the intertidal area while the latter, which is the location of Ballycotton Lighthouse, is approximately 970 meters due east of Ballycotton Harbour. Both islands are characterised by coastal grassland, on the relatively level summits, surrounded by hard sea cliffs.

Ballycotton Bay, to the northwest of the harbour is characterised by a large shallow bay with extensive sandflats. A number of coastal and marine habitats are represented within Ballycotton Bay including the sandflats together with shingle, sand dunes systems, saltmarsh and intertidal reef.



**Figure 5.1** Stone walling along the south western boundary of Ballycotton Harbour.





**Figure 5.2** Ballycotton Harbour. View looking north west.

## 5.2. Benthic habitats

### 5.2.1 Subtidal benthic habitat (Ballycotton Harbour and environs)

Based on the results of the benthic grab survey (Appendix III), the subtidal sediment habitat within the dredge areas of Ballycotton Harbour is comprised of Muddy sand (Subtidal stations BCTN1 and BCTN2, Appendix III). The subtidal sediment habitat immediately outside the harbour (BCTN3, Appendix IV) is comprised of Sandy mud, while BCTN 4, to the northwest of the harbour is mud. The characterising biotopes at all of these stations is *Mysella bidentata* and *Abra* spp. in *infralittoral sandy mud*. JNCC habitat code: SS.SMu.ISaMu.MysAbr or a variation of this biotope. This habitat is characterised by cohesive sandy mud, sometimes with a small quantity of shell in shallow water and may contain the bivalves *Mysella bidentata* and *Abra* spp. (typically *A. alba* and *A. nitida*). Other characteristic taxa may include *Scoloplos armiger*, *Mya* sp., and *Thyasira flexuosa*. Tube building amphipods are also characteristic of this biotope, in particular *Ampelisca* spp. and Aoridae such as *Microprotopus maculatus*. This biotope is generally found in sheltered marine inlets or sea lochs.

Stations BCTN1 and BCTN2 had elevated numbers of *Mediomastus fragilis*, a possible indicator of anthropogenic impact at this location within the harbour area. While stations BCTN1 and BCTN2 were a variation of the described biotope which has a higher proportion of mud and lower species diversity.

Of the dominant species recorded: *Abra* spp. are opportunistic bivalves, capable of exploiting newly disturbed substratum through larval recruitment. *Mediomastus fragilis* is a polychaete that is likely to recolonise disturbed areas first, although the actual pattern will depend on recovery of the habitat, season of occurrence and other factors.

Initially five surface samples were taken for sediment contaminant analysis from within Ballycotton Harbour. Following a review of the data from this sampling program a further ten samples were collected from the harbour to further assess the levels of copper, lead, TBT/DBT and PAH. These data showed that an area of the harbour, close to the slip way, had elevated levels of these contaminants. This data has been used to inform the project methodology relative to the disposal of dredged sediment.

The wider marine habitat, extending to 20km from Ballycotton harbour is known from Infomar surveys of the area and is described as being dominated by circalittoral rock and biogenic reef with patches of circalittoral sand. Much of the inshore area is unclassified by Infomar, however data collected from similar inshore areas on the south coast as part of NPWS marine monitoring (e.g., Ballymacoda Bay 10km to the north of Ballycotton Harbour) shows the inshore area to be dominated by compact hard sand.

### 5.2.2 Subtidal benthic habitat (Powers Head dump site)

Regular dumping of spoil has been carried out at the Powers Head I site since 1978. An impact hypothesis report (Irish Hydrodata, 2013) described the site based on surveys comprised of sub-bottom profiling and multibeam surveys as consisting mainly of exposed bedrock with patches of sediment. Geophysical survey data from the INFOMAR survey of 2008 shows the sediment thickness to be typically about 1m, occasionally reaching 2m.

A 2004 survey of the area by benthic grab sampling and drop down video (ASU, 2004) describes three different habitats at the dump site as follows:

- Muddy mixed sediment of muddy sand/mud with shell debris and pebbles.
- Bedrock and boulders
- Muddy plain.

The results of the video surveys indicated that the muddy and sandy habitats did not support an extensive faunal community on the surface. However, there was substantial evidence on the surface that an extensive infaunal habitat was present i.e., burrows and mounds. It was clear from the camera shots in every part of this study area that the seabed comprises a mosaic of many different habitats including jagged, step-like ledged bedrock, low moulded bedrock, gravel, cobbles, boulders and silted coarse sandy gravel and muddy sand or mud over sand. No one habitat predominates within the whole area and most camera drops revealed a range of habitats. Some of the hard substrate areas had a fair dusting of silt, which was thick in places and some areas had extensive mud patches but there was no obvious indication that soft sediment had built up anywhere (ASU, 2004).

The results of the Grab survey indicated that across the 8 stations sampled (P1-P5 inside the site and P6-P8 outside and to the east), a total of 60 taxa were identified. The majority of these were taken to family level, although Nematoda and Nemertea were left as higher taxa. Several burrowing anemones were encountered at several stations; these were identified as *Peachia cylindrica*. This identification must remain tentative, however, as it was based on a single extended individual and it remains possible this taxon belongs to the Edwardsiidae. Most families (and their constituent species) are of widespread occurrence in Irish waters. A notable exception is *Chaetoderma nitidulum* (family Chaetodermatidae), a

rarely recorded burrowing mollusc, whose distribution in Irish waters is uncertain. Although only family level data are presented and analysed, in several cases more than one species per family was present.

This report further notes that *“Although the Dump Site has been in use for several years, and undergoes a disturbance event nearly every year, (the most recent being July of 2003) due to dumping of dredge spoil, it seems that the site is acting as a dispersive site, with little evidence of organic enrichment and prolonged disturbance. Although, high densities of potential organic enrichment indicators (Capitella capitata) were encountered at two replicate grabs from station P1, and although smaller abundances of this species and other taxa which indicate disturbance (esp. Lumbrineridae) were present, it seems plausible that these isolated patches are remnants of past dumping effects, rather than indicative of a more prolonged degradation in community health. This may be supported by the fact that (i) the two replicates in question (P1B and P1C) were only separated by 10m, with the third replica (P1A) harbouring far lower densities (of Capitella) was separated by 50m and (ii) that although disturbance taxa are present at other stations, their numbers tend to be low and highly variable, again indicative of spatial patchiness”*.

### 5.2.3 Intertidal benthic habitat: Intertidal sediment

The Intertidal habitat within Ballycotton Bay is characterised by an exposed sandy beach with an easterly aspect. The Killmachahill watercourse drains through the beach area towards the south and the Shanagarry and Monagurra join to enter the beach area further north. Sediment cores taken demonstrated that the intertidal area was characterised by fine and medium grained sand which were characteristic of the Biotope *“Polychaetes in littoral fine sand. JNCC Habitat Code: LS.LSa.FiSa.Po”*. The intertidal area is very homogeneous and dominated by rippled sand with frequent worm casts (Appendix IV).

This biotope is characterised by moderately exposed or sheltered beaches of medium and fine, usually clean, sand, though the sediment may on rare occasions contain a small silt and clay fraction. The sediment is relatively stable, remains damp throughout the tidal cycle, and contains little organic matter. It is often rippled and typically lacks an anoxic sub-surface layer. Where an anoxic layer is present, it occurs at a depth below 10 cm and tends to be patchy. The biotope occurs mainly on the lower part of the shore, and relatively frequently on the mid shore. It is only rarely present above mid shore level, except where coastal defences cause backwash onto the upper shore.

### 5.2.4 Intertidal benthic habitat: Intertidal reef

Intertidal reef is present as a band extending for approximately 40 meters from the shore from Ballycotton Harbour to the southern end of Ballycotton Strand. It also occurs in band extending from the south-eastern wall of Ballycotton Harbour to Ballycotton Island small and around the entire perimeter of both islands and along the south coast of the headland.

Within Ballycotton harbour the intertidal reef is dominated by cobble and gravel and outcrops of bedrock. Here the reef is very sheltered and dominated by *Ascophyllum nodosum* and furoids where stable bedrock is present. The biotope in the area is characteristic of *Furoids on sheltered marine shores* (LR.LLR.F).

The intertidal area is backed by stone walling and the Invasive Alien Species (IAS) Japanese knotweed (*Reynoutria japonica*) is present along this wall.

The intertidal reef area, outside of the harbour running north of Ballycotton Harbour, is exposed and extends to a maximum width of circa 70 meters from the base of the sea cliffs along this area of the coastline. It is characterised by steeply sloping bedrock and characterised by High energy littoral rock and very species poor (dominated by barnacles: *Chthamalus* spp. and *Semibalanus balanoides* and limpets; *Patella vulgata*).

To the south of the harbour, in the area extending east to Ballycotton Island small (figure 5.2), the intertidal area is more sheltered and level and is characterised by bedrock with areas of cobble and gravels/mixed sediments higher up the shore. Here the dominant species are fucoids with frequent *Ascophyllum nodosum* and patches of ulva. Numerous rock pools with *Osmundea pinnatifida*, *Osmundea hybrida*, *Mastocarpus stellatus*, *Lomentaria articulata* and *Odonthalia dentata* are present throughout. This habitat extends across to Ballycotton Island (small).



**Figure 5.2** Intertidal area extending to Ballycotton Island little.

### 5.3 Coastal habitats

The principle, Annex I, coastal habitats in the vicinity of Ballycotton Harbour and within the ZOI of the proposed project are the salt marsh habitats behind Ballycotton Strand and at Ballymacoda Bay. At Ballycotton strand Salt marshes fringe the flats in the sheltered inlets while at Ballymacoda Bay Atlantic



salt meadows are particularly well-developed and are extending in parts of site. *Salicornia* and other annuals of intertidal sand and mud flats also occur within this site.

#### 5.4 Avifauna

Ballycotton Bay is designated as an SPA (Ballycotton Bay SPA, Site code: 004022) and the site is monitored as part of the IWeBS program of surveys by BirdWatch Ireland. I-WeBS data is available for Ballycotton Bay (Ballycotton-Shanagarry IWeBS site) and provided in (Appendix V). These data indicate that the bay supports an excellent diversity of wintering waterfowl species, and has nationally important populations of five species: *Anas crecca*, *Pluvialis apricaria*, *Pluvialis squatarola*, *Limosa limosa*, *Numenius arquata*. Formerly it was of importance for *Cygnus columbianus bewickii* but the birds have abandoned the site since the reversion of the lagoonal habitat to estuarine conditions. Numbers of *Charadrius hiaticula*, *Vanellus vanellus*, *Limosa lapponica* and *Arenaria interpres* appear to have declined below the National threshold in recent years. NPWS (NPWS, 2020) data on the quality and importance of the site notes that Ballycotton Bay is also important for wintering gulls, especially *Larus fuscus* in autumn and early-winter. Passage waders, such as *Philomachus pugnax* and *Calidris minuta*, are regular, especially in autumn. The site provides both feeding and roosting areas for the waterfowl species. *Acrocephalus scirpaceus* breeds at the site, which is near the western edge of the range of the species in Ireland.

A summer breeding bird survey was carried out in support of this Screening for Appropriate Assessment Report (Appendix II). This report did not record any breeding birds recorded within Ballycotton Harbour, however it noted that small numbers of secretive species such as Wren and Dunnock may utilise the dense vegetation at the landward side of the harbour for nesting. The smaller Ballycotton Island appears to support at least one pair of breeding Shelduck and Oystercatcher, and may support a small number of breeding Herring Gull. The larger island supports a moderate seabird colony on its steeper eastern and southern (seaward) side consisting of various gulls, Fulmar and Cormorant.

IWeBS data for Ballymacoda Bay (Ballymacoda IWeBS site), which is within the ZOI of the proposed project, approximately 10km north of Ballycotton Harbour (Appendix V). The data for this site indicates that it is of high ornithological importance for supporting an excellent diversity and large number of wintering waterbirds – it is of international importance because it regularly supports an assemblage of over 20,000 birds. The site provides both feeding and roosting areas for the birds.

Golden Plover occurs at this site in internationally important numbers. However, numbers for Black-tailed Godwit, which had been present in internationally important numbers, has declined in recent years. A further four species occur here in nationally important numbers (Bar-tailed Godwit, Little Egret, Grey Plover and Dunlin). The most recent IWeBS data indicates significant declines in a further seven species which had previously been present at this site in Nationally important numbers.

IWeBS data for the Blackwater Estuary (Blackwater Estuary IWeBS site), which is within the ZOI of the proposed project, approximately 18km north of Ballycotton Harbour (Appendix V). The Blackwater Estuary is of high ornithological importance for wintering waterfowl, providing good quality feeding areas for an excellent diversity of waterfowl species. The site supports an internationally important population of Black-tailed Godwit and has a further seven species with nationally important populations: Wigeon,

Curlew, Redshank, Shell duck, Little egret, Grey Heron and Green shank. While there have been increases in some of these species in recent years, numbers of other species, which had previously been present in nationally important numbers (Golden Plover, Lapwing and Dunlin) have declined.

## 5.5 Marine mammals

A marine mammal Risk Assessment (MMRA) was carried out in support of this Screening for Appropriate Assessment Report (Appendix I). Full details of the distribution of marine mammals relative to the proposed project locations are given in this report and summarised below. All references supporting the summaries provided below are available within the MMRA.

### **Bottlenose dolphins (*Tursiops truncatus*)**

While Bottlenose dolphins are widespread and relatively abundant off the Irish coast with most sightings along the western seaboard, they are also frequently recorded off Ballycotton Harbour and adjacent to the Powers Head disposal site.

### **Common dolphin (*Delphinus delphis*)**

Common dolphins are distributed around the entire Irish coast but highest concentrations are off the south west and west coasts. However, in the winter large numbers of common dolphins enter the Celtic sea to feed on schools of pelagic fish such as herring and sprat. Common dolphin were sighted throughout the area of interest but almost exclusively during the winter period. They have been reported adjacent to the Powers Head disposal site.

### **Harbour porpoise (*Phocoena phocoena*)**

Harbour porpoise are the most widespread and abundant cetacean in inshore Irish waters, with highest abundances in the Irish Sea. Harbour porpoise were sighted in small numbers throughout the area of interest but with most sightings off Cork Harbour to the west of the disposal site. Sightings (although few) occurred at the proposed dredge site and adjacent to the Powers Head disposal site throughout the year though there were more sightings in winter.

### **Killer whale (*Orcinus orca*)**

Killer whales or Orca in Ireland are widespread and recorded off all coasts but unpredictable. There have been 7 sightings of a total of 14 individuals over the past 20 years in the area of interest but with the proximity to Cork Harbour these are likely to include the three that took up residency in 2001.

### **Risso's dolphin (*Grampus griseus*)**

Risso's dolphins are patchily distributed around the Irish coast but seem to favour islands, especially off west Kerry, Galway and the Saltee Islands. There were two sightings of a total of 20 individuals, both west of the disposal site in the mouth of Cork Harbour.

### **Fin whale (*Balaenoptera physalus*)**

Fin whales were the most frequently recorded baleen whale, accounting for 11.7% of all sightings. Fin whales are regularly recorded off the south coast of Ireland especially during winter. Photo-identification showed

that it was frequently the same individual fin whales returning each year to the south coast and they stayed in coastal waters for many months. They were recorded offshore along the entire area of interest and adjacent to the disposal site and almost exclusively during the winter from October to February.

**Minke whale (*Balaenoptera acutorostrata*)**

Minke whales are widespread and abundant in inshore Irish waters from May to October. The summer distribution tends to be concentrated around southwest Ireland. They were recorded within the entire area of interest including adjacent Ballycotton Harbour and within the area of the Powers Head disposal site. They were reported mainly between April and August.

**Humpback whale (*Megaptera novaengliae*)**

Humpback whales are regularly recorded off the south coast of Ireland especially during winter. The same individual humpback whales are recorded each year and spend many months feeding. Sightings of humpback whales were made throughout the area of interest and adjacent to the Powers Head disposal site and were nearly all of single individuals sighted during January and February.

**Basking shark (*Cetorhinus maximus*)**

Although not currently protected under Irish wildlife law, basking sharks are listed under threatened and/or declining species by OSPAR and are frequently recorded throughout the area of interest largely between April and June.

**Harbour Seal (*Phoca vitulina*)**

There were no major harbour seal haul-out or breeding sites recorded near Ballycotton during the National Parks and Wildlife Service (NPWS) surveys during 2002 or 2003. A small number of harbour seals (six) were recorded hauled out at Dungarvan to the east and in Kinsale Harbour to the west in 2003. No seals were counted during an August/September 2012 survey using thermal imagery. A repeat survey carried out in 2017/18 also recorded along the south coast. Harbour seals generally forage close to their haul out sites and are unlikely to occur at the dredging or dumping sites.

**Grey Seal (*Halichoerus grypus*)**

There were no major grey seal haul-out or breeding sites recorded near Ballycotton reported during the National Parks and Wildlife Service (NPWS) surveys since 2003. 6 grey seals hauled out in Kinsale Harbour were reported in August 2003 during an aerial survey for harbour seals. No grey seals east of Saltee Islands and west of Kedge Island to the west during an aerial survey during the moulting period in 2006. No seals between Power Head and Youghal in August/September 2012 were reported during a survey using thermal imagery. A repeat survey carried out in 2017/18 recorded single grey seals hauled out in Ballycotton Bay. Grey seals forage locally and may also range long distances and are likely to be encountered at the dump site and during dredging. Grey seals are typically encountered as individuals when foraging.

**Otters**

The area at the proposed dredge site does not provide suitable habitat for otter. Freshwater and coastal habitats are used by otters, but otters utilising the marine environment require access to freshwater

habitats to drink and bathe (NPWS, 2013). The nearest watercourse to the proposed dredge site is the Sunville stream, 2 km to the north. The Powers Head dump site is too far from the coast to support otter habitat.

## 5.6 Fish (Annex II species)

Annex II migratory fish species in Ireland include Atlantic salmon, Sea lamprey, River lamprey, Allis shad and Twaite shad. There are currently significant gaps in the knowledge base of the migratory routes taken by these species. The nearest significant river, in terms of spawning habitat to the proposed dredge site is the Munster Blackwater, approximately 18km (hydrologically) from the proposed dredge site. This site is designated for all of the aforementioned Annex II migratory fish species. With due consideration to the lack of detailed knowledge on the migratory routes of these species, and based on the precautionary principle, it is assumed here that all of these species have the potential to migrate through the ZOI of the proposed project.



## 6. Screening for Appropriate Assessment

### 6.1 Zone of Influence

The first step in screening for appropriate assessment is to identify project related impacts (the source) and the pathway through which they could transmit such impacts to the receiving environment. All of the works described in section 3 were reviewed to establish if a source/pathway existed between them and the various elements of the receiving environment. The second step is to establish the zone of influence (ZOI) over which such impacts could arise.

Table 6.1 summarises the ZOI for each of the sensitive receptors identified in section 4 and the rationale for the assessment is provided in section 5.1.1 to 5.1.5 below.

**Table 6.1** Source, path, receptor matrix

<b>Ballycotton Harbour dredge site</b>			
<b>Source</b>	<b>Path</b>	<b>ZOI (km)</b>	<b>Receptor</b>
Dredging: Sediment disturbance & mobilisation	Sediment and water	3	Benthic habitats & associated species, coastal habitats, foraging seabirds, fish
Dredging: Noise	Water	10*	Marine mammals, fish, avifauna
Vessel operations: disturbance/ noise/pollution, IAS	Water and air	20	Marine mammals, fish, avifauna, coastal habitats, benthic habitats
<b>Powers Head Dump site</b>			
Dredge spoil dumping	Sediment and water	3	Benthic habitats & associated species, fish, foraging seabirds

\* It is recognised that the ZOI on migratory species may be far greater than that described above. This could be the case if the impact of the project was at a scale which could lead to impacts the receptor at a population level. As such the potential for project relate impacts need to be considered to assess the ZOI. Sections 6.1.3 describes the rationale for our assessment of impacts relative to mobile species.

#### 6.1.1 Sediment disturbance:

##### *Benthic habitats and species*

Sediment mobilisation in subtidal and intertidal benthic habitats has the potential to lead to negative effects on a range of benthic habitats and species and fish it can also lead to erosion and or accretion of coastal habitats. The extent to which sediments will mobilise is dependent on the nature of the sediment (coarse sediments settle out rapidly following disturbance), the exposure of the site (sediments in exposed sites will frequently be subject to natural disturbance due to wave action), the tidal regime of the area (tide swept sediments are generally devoid of “fines”). The impact of sediment mobilisation on benthic habitats and their constituent species is dependent on the sensitivity of those species to burial and smothering resulting from sediment mobilisation and transport. The species found in exposed sediments are generally robust specialists capable of withstanding disturbance and smothering while those in more sheltered areas are generally more sensitive to disturbance. The subtidal sediments on the east and south coast of Ireland are subject to a high degree of natural disturbance and mobilisation due to the exposed, shallow nature of the area and the predominantly sandy seabed. As a result, natural turbidity is a common feature of the marine environment on the east and south coast of Ireland.

While the dredged material will be removed from the site in the bucket of the excavator, disturbance of residual mobilised sediment will occur. Depending on the exact location within the harbour where the material is being dredged from a quantity of this will settle out again within the confines of the harbour while the remainder will be washed out of the harbour and will settle out at a location determined by on the nature and direction of the following tide. Given that the majority of the dredged material will be removed from the site it is considered that sediment disturbance and residual settlement would be limited and any sediment would settle out or disperse within a very short time period (days). Sediment mobilisation on this scale does in this area of the Irish coast not have the potential to impact the benthic fauna present either at the site or within the adjacent area. While sediment dispersion modelling for the proposed project is not available, it is considered reasonable to assume that suspended sediment, as a result of mobilisation, would be expected to be remain in suspension for a number of days dispersing over a large area, possible up to 2-3km. However, the sediment load over such a wide area of such an exposed coast would not be considered to be significant except in the immediate vicinity of the dredging operations (up to 1km radius) and for a limited period of time (days).

#### *Coastal habitats*

Sediment dredging has the potential to lead to erosion and/or accretion of coastal habitats. The potential for dredging to lead to such impacts is a factor of the location and volume of dredged material and location of the dredge site relative to prevailing tidal currents and exposure. However, given the size, scale and location of the dredged sediment within the confines of Ballycotton Harbour and its subsequent disposal at the Powers Head disposal site the potential for erosion and/or accretion of coastal habitats is not considered possible

#### *Avifauna*

The British Trust for Ornithology (BTO) completed a review of the potential impacts of marine aggregate extraction on seabirds (Cook & Burton, 2010). While the impact of aggregate dredging is different to dredging within a harbour, the effects of dredging and disposal are similar. Cook and Burton describe the mobilisation of sediments during dredging which increases turbidity and reduces water clarity. This may affect seabirds which feed by sight such as terns, common guillemot and northern Gannet (Cook and Burton, 2010). An increase in turbidity will also result from dumping at sea. Birds such as sea ducks, divers, grebes and mergansers which forage under water are likely to be similarly affected. The impact of increases in turbidity is considered to be dependent on initial background levels (Cook & Burton, 2010).

#### *Fish*

Potential stressors on fish associated with dredging include sediment mobilisation, release of toxic contaminants, hydraulic entrainment and noise. The risk of significant impacts depends on the scale of the particular stressor and the tolerance thresholds of individual species.

Behaviours changes (avoidance) by fish to elevated suspended sediment is well documented in the literature and varies depending on the species and level of turbidity. Recent scientific research (Wenger *et al*, 2017) has demonstrated that among all of the potential stressors associated with dredging, the mobilisation of contaminated sediment leads to greater impacts than that from clean sediment or sound.

This research further demonstrated that early life stages such as eggs and larvae are most likely to suffer lethal impacts. It notes that, while a single event exposure to contaminants realised from sediment may have little impact, repeat maintenance dredging of contaminated sediments will expose resident fish populations to multiple pulses of Suspended Sediments and released toxicants which has the potential to lead to cumulative impacts over time.

**The ZOI relative to sediment disturbance is therefore considered to be the direct footprint of the site investigations within the confines of the harbour extending out to a maximum of 3 km distance to allow for dispersion. In the absence of modelling this ZOI is based on expert opinion and the authors extensive knowledge of the marine habitats off the east coast of Ireland.**

### 6.1.2 Noise

#### *Fish*

Underwater sounds are detectable by fishes and may affect their behaviour, causing them to move away from their migration routes or leave favoured habitats (Normandeau Associates, Inc., 2012).

Hearing range and sensitivity varies considerably among fish species depending on the hearing mechanism of the species e.g., whether a swim bladder is involved in the hearing mechanism or not. Furthermore, within that class, some species with a swim bladder are sound pressure-sensitive at higher frequencies while others having a swim bladder are not e.g., Atlantic salmon (Hawkins & Johnstone, 1978). Lamprey are known to be able to detect sound at low frequencies and behavioural responses from sound, in sea lamprey, at the low frequency range are known from limited studies (Mickle *et al*, 2018). Twait Shad are known to be able to detect sound at frequencies greater than 1.8Mhz, typically moving away from the sound source (Gregory *et al*, 2007).

However, given the low level of vessel activity associated with the proposed project which requires only the mobilisation of the barge to the dredge area by a tug boat, vessel noise is not considered a significant factor. In view of the fact that the normal vessel activity associated with the harbour will be suspended during dredging operations, noise levels associated with vessel traffic would be lower than normal in the immediate area of the harbour for the duration of the dredging operations.

**For this reason, the ZOI resulting from dredging noise for Annex II fish species is considered to be the area of the site investigations extending to 10km from the proposed project site.** This is considered to be a highly conservative distance relative to the noise effects on the relevant Annex II fish species (Atlantic salmon, Sea lamprey, River lamprey and Twait Shad).

#### *Marine mammals*

Marine mammal sensory systems are adapted to life in the water or, in the case of seals, both in water and on land. Marine mammals rely on sound to navigate, to communicate with one another and to sense and interpret their surroundings. Behavioural responses of marine mammals to a sound are known to be strongly influenced by the context of the event and individual factors such as the animal's experience, motivation, conditioning and activity (Nowacek *et al*, 2007, Southall *et al*, 2007 and Wartzok, *et al* 2004).

Healthy new-born and younger animals may have the greatest hearing sensitivity while individual hearing ability declines progressively with age and prior exposure to harmful sound levels, disease, etc. Such features and variability may also require consideration in the case-specific assessment of impact on marine mammals from introduced sound sources (NPWS 2014). Sound waves dissipate through the water with distance from the source. While local oceanographic conditions affect the path of the sound and its transmission.

Dredging operations have been reported to produce low frequency omnidirectional sound of several tens of Hz to several thousand Hz (and up to approximately 20 kHz) at sound pressure levels of 135-186 dB re: 1  $\mu$ Pa<sub>3,44,45</sub>. Therefore some coastal dredging operations can be detected at received levels (RL) exceeding ambient sound more than 10km from shore. While sound exposure levels from such operations are thought to be below that expected to cause injury to a marine mammal, they have the potential to cause lower-level disturbance, masking or behavioural impacts (NPWS, 2014). The dredging within Ballycotton Harbour will be limited to a period of 8 weeks and limited to backhoe dredging of soft sediments. Therefore, noise levels will be at the lower range of the scale. Nonetheless, dredging may have the potential to lead to behavioural changes in marine mammals if within the area during dredging operations.

**The ZOI resulting from dredging noise for marine mammals is considered to be the area of the site investigations extending to 10km from the proposed project site.** This ZOI is considered to be highly conservative relative to the scale and scope of the proposed dredging operations. It notes that noise related effects from vessels normally accessing Ballycotton harbour will be reduced from normal levels during dredging. While noting that marine mammals are highly mobile species which may be associated with European sites a great distance away from the proposed project area it is considered that noise related impacts on marine mammals will be highly localised and not at a level with the potential to cause any significant impacts to marine mammals should they be present in the area during dredging or dumping operations.

#### *Noise: Avifauna*

Impacts of underwater noise on foraging seabirds are poorly understood (Leopold & Camphuysen, 2009). A review by Leopold and Camphuysen proposed that bird species most likely to be vulnerable to underwater sound are those that forage by diving for fish or shellfish. Owing to the nature of the works (dredging within a harbour and dumping at sea) interaction impacts are likely with bird species which forage over open water i.e. divers, seaducks, cormorant, shag, and seabirds (auks, gulls, petrels, terns). **Within this context effects on local bird populations i.e. those within 20km of the proposed project (dredge and dump site) only have been assessed.**

### **6.1.3 Vessel operations: Benthic habitats, coastal habitats, avifauna, fish, marine mammals Pollution**

Inshore working vessels, jack-up barges (not covered by international regulation) and equipment have the potential to lead to localised impacts on marine and coastal species and avifauna resulting from accidental spillage of hydrocarbons and drilling fluids and the introduction of marine IAS.

While due to the limited use and size of these vessels and platforms the use of hydrocarbons is relatively low, the potential for localised impacts on the marine environment and adjacent coastal habitats exists if not managed correctly. The extent of dispersal of hydrocarbons in marine waters is governed by a number of factors including spreading, drifting, evaporation, dissolution, photolysis, biodegradation and formation of both oil-in-water and water-in-oil emulsions.

Diesel and petrol are light, refined petroleum products with a relatively narrow boiling range, meaning that, when spilled on water, most of the oil will evaporate or naturally disperse within a few days or less. Wave or swell action may lead to some of the oil dispersing into the water column. Oil dispersed in the water column can adhere to fine-grained suspended sediments which then settle out and get deposited on the seafloor. This process is more likely to occur in estuaries and near river mouths where fine-grained sediment is present. It is less likely to occur in open marine settings. Diesel oil is readily and completely degraded by naturally occurring microbes, under time frames of one to two months. In terms of toxicity to water-column organisms, diesel is considered to be one of the most acutely toxic oil types. Fish, invertebrates and seaweed that come in direct contact with a diesel spill may be killed. Diesel spills can affect marine mammals and birds by direct contact (NOAA, no published date). The area of impact of accidental fuel spills will be depended on the volume spilled, weather and dispersion conditions. The volume of such fuel likely to be carried by jack-up barges and small vessels could potentially be in the order of 4-5 tonnes.

For this reason, **the ZOI, relative to potential pollution events, is considered to extend out from the source to a distance of 20km.** This is a considered a conservative approach and takes account of the open waters in the area outside of the harbour area and potential for tidal dispersion.

#### 6.1.4 Invasive Alien Species (IAS)

The risk of IAS introduction is considered very low. The main area of concern is the presence of Japanese knotweed to the back of the intertidal area within the harbour and the potential spread of this species by construction traffic (spoil disposal vehicles) leaving the harbour area. For this reason, **the ZOI, relative to the potential spread of IAS, is considered to include the intertidal area where site investigations are proposed.**

#### 6.1.5 Disturbance

Vessel activity for the duration of works will take place at the dredge site and dump site and transiting to the dump site. Some species of seabird such as gulls may be attracted to vessel activity, while others are disturbed and displaced. Some species are more likely to be disturbed than others. Garthe and Huppopp (2004) developed a wind farm sensitivity index for seabirds and as part of this index assessed divers (Great Northern and Red Throated), scoters (Velvet and Common) and cormorant as most sensitive to disturbance by vessels (strong escape/avoidance behaviour and/or large fleeing distance). Cook and Burton (2010) described that terns, shearwaters and grebes are known to activity avoid shipping lanes. Where birds are displaced, this is effective habitat loss. Prolonged vessel activity may create a barrier between breeding and foraging sites or increase the time required to reach alternative foraging sites. However, it is considered that the vessel activity associated with this project is not at a level likely to lead

to significant disturbance/displacement. Vessel activity at the dredge site will be reduced due to the removal of access to the harbour by fishing vessels during works. Transit to, from and at the dump site is considered insignificant above the current background levels.

The effect of vessel operations relative to disturbance effects on marine mammals are described in the MMRA (Appendix 1). The report indicates that vessel disturbance at the dredge site, dump site and while in transit would likely be insignificant.

**An ZOI for disturbance related impacts from vessel operations to marine mammals and avifauna is considered to extend to a 1km radius of the proposed project site.** This ZOI is considered to be appropriate and proportionate to the scale and scope of the proposed site investigations.

In summary The ZOI of the proposed project was considered to include:

- All European sites off the east coast of Ireland, within 20km of the proposed project site which includes the area of the proposed dumping site and its associated 3km ZOI.

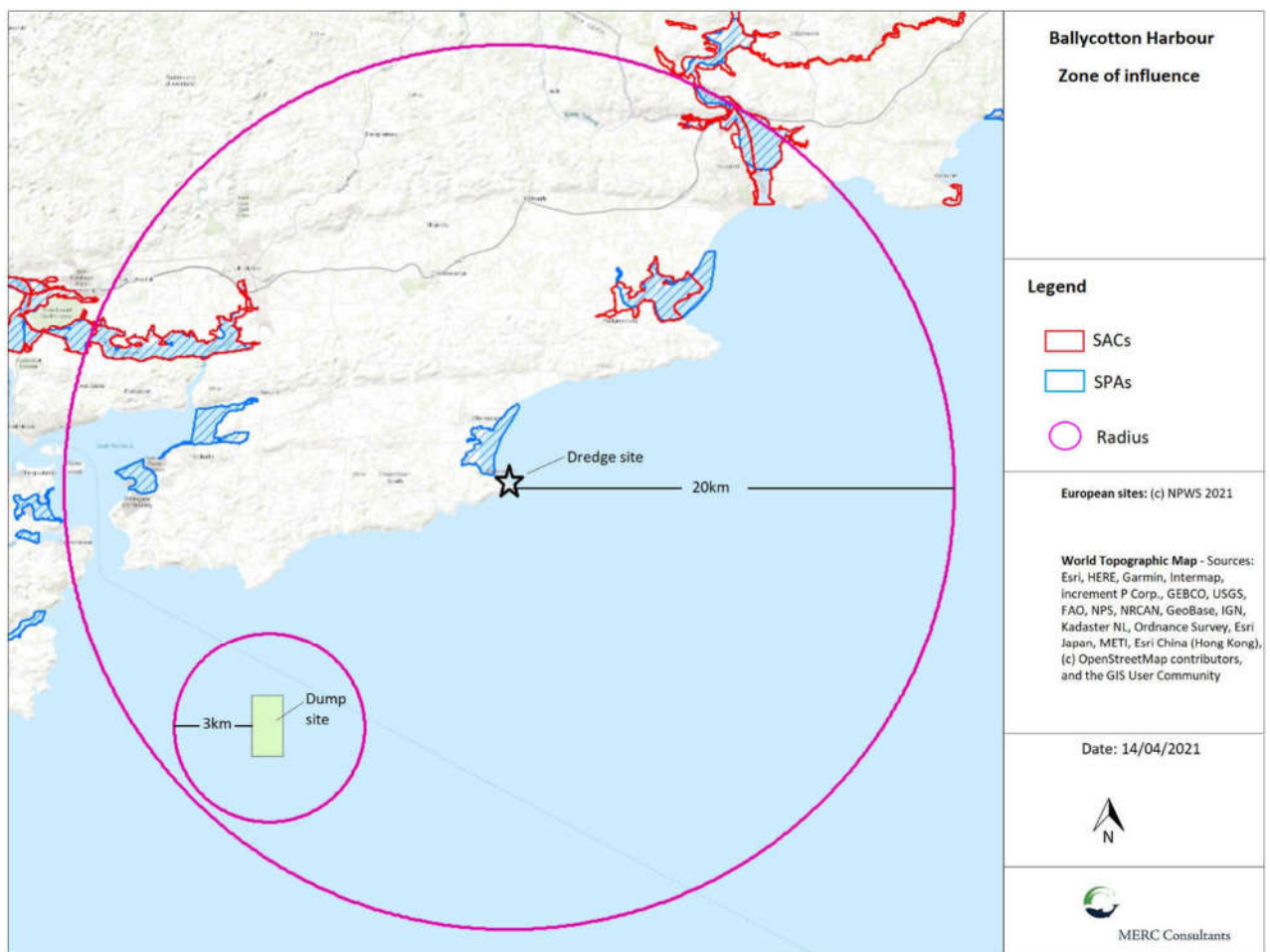
This ZOI is considered appropriate and proportionate to the scale and scope of the proposed project and its geographical location. It has considered the exposed nature of the area, potential use of the area by mobile species relative to, but not limited to, foraging opportunities, disturbance, displacement, noise including underwater noise.

## 6.2 European Sites

The project site is not within any European sites but is adjacent (790 meters) southeast of Ballycotton Bay SPA (EU Site code: 004022). The zone of influence of the proposed project has been established to cover an area extending to a maximum 20km for some sensitive receptors (Figure 6.1). All European sites within this ZOI are given in table 6.1.

**Table 6.1.** All hydrologically linked SACs within the ZOI extending to 20km of the proposed project site.

Site name	Site code
Ballycotton Bay SPA	004022
Ballymacoda Bay SPA	004023
Blackwater Estuary SPA	004028
Cork Harbour SPA	004030
Ballymacoda (Clonpriest and Pillmore) SAC	000077
Blackwater River (Cork/Waterford) SAC	002170
Great Island Channel SAC	001058



**Figure 6.1** All SACs within 20km of the proposed project site. This includes the 3km ZOI surrounding the dump site.

All Qualifying features for European sites within the ZOI of the proposed project are given in table 6.2.



**Table 6.2.** Qualifying features within the ZOI of the proposed project for which European sites are selected.

<b>Ballycotton Bay SPA (004022)</b>	<b>Initial screening</b>	<b>Rationale</b>
Teal ( <i>Anas crecca</i> ) [A052]	Screened in	<p>All QI species are vulnerable to pollution events.</p> <p>QI species most relevant within the context of other potential project interactions i.e. those which forage over subtidal habitats:</p> <ul style="list-style-type: none"> <li>• Lesser Black-backed Gull (<i>Larus fuscus</i>) [A183]</li> </ul> <p>IWeBs data shows the site is also used during the winter months by the following species which forage over subtidal habitats: Eider, Red-throated Diver, Great Northern Diver, Little Grebe, Great Crested Grebe, Cormorant, Shag, Black-headed Gull, Common Gull, Herring Gull, Great Black-backed Gull, Sandwich Tern. While these species are not Qis for Ballycotton Bay SPA, they may breed at sites in Ireland or the UK which are SPA's.</p> <p>Data from the JNCC Seabird Monitoring Database records Black Guillemot along the coastline.</p> <p>The open waters of Ballycotton Bay are likely to be used year-round by foraging seabirds which may be connected to SPAs in Ireland or the UK.</p>
Ringed Plover ( <i>Charadrius hiaticula</i> ) [A137]		
Golden Plover ( <i>Pluvialis apricaria</i> ) [A140]		
Grey Plover ( <i>Pluvialis squatarola</i> ) [A141]		
Lapwing ( <i>Vanellus vanellus</i> ) [A142]		
Black-tailed Godwit ( <i>Limosa limosa</i> ) [A156]		
Bar-tailed Godwit ( <i>Limosa lapponica</i> ) [A157]		
Curlew ( <i>Numenius arquata</i> ) [A160]		
Turnstone ( <i>Arenaria interpres</i> ) [A169]		
Common Gull ( <i>Larus canus</i> ) [A182]		
Lesser Black-backed Gull ( <i>Larus fuscus</i> ) [A183]		
Wetland and Waterbirds [A999]	Screened in	Wetlands and waterbirds, are vulnerable to pollution events.
<b>Ballymacoda Bay SPA (004023)</b>		
Wigeon ( <i>Anas penelope</i> ) [A050]	Screened in	<p>All QI species are vulnerable to pollution events.</p> <p>QI species most relevant within the context of other potential project interactions i.e. those which forage over subtidal habitats:</p> <ul style="list-style-type: none"> <li>• Black-headed Gull</li> <li>• Common Gull</li> <li>• Lesser Black-backed Gull</li> </ul> <p>IWeBs data shows the site is also used during the winter months by the following species which forage over subtidal habitats: Eider, Red-breasted Merganser, Red-throated Diver, Great Northern Diver, Little Grebe, Great Crested Grebe, Cormorant, Shag, Mediterranean Gull, Black-headed Gull, Common Gull, Lesser Black-backed Gull, Herring Gull, Iceland Gull, Great Black-backed Gull, Sandwich</p>
Teal ( <i>Anas crecca</i> ) [A052]		
Ringed Plover ( <i>Charadrius hiaticula</i> ) [A137]		
Golden Plover ( <i>Pluvialis apricaria</i> ) [A140]		
Grey Plover ( <i>Pluvialis squatarola</i> ) [A141]		
Lapwing ( <i>Vanellus vanellus</i> ) [A142]		
Sanderling ( <i>Calidris alba</i> ) [A144]		
Dunlin ( <i>Calidris alpina</i> ) [A149]		
Black-tailed Godwit ( <i>Limosa limosa</i> ) [A156]		
Bar-tailed Godwit ( <i>Limosa lapponica</i> ) [A157]		
Curlew ( <i>Numenius arquata</i> ) [A160]		



Redshank ( <i>Tringa totanus</i> ) [A162]		Tern, Common Tern. While these species are not Qis for Ballymacoda SPA, they may breed at sites in Ireland or the UK which are SPA's.
Turnstone ( <i>Arenaria interpres</i> ) [A169]		
Black-headed Gull ( <i>Chroicocephalus ridibundus</i> ) [A179]		
Common Gull ( <i>Larus canus</i> ) [A182]		
Lesser Black-backed Gull ( <i>Larus fuscus</i> ) [A183]		
Wetland and Waterbirds [A999]	Screened in	The open waters of Ballymacoda Bay are likely to be used year-round by foraging seabirds which may be connected to SPAs in Ireland or the UK. Wetlands and waterbirds, are vulnerable to pollution events.
<b>Blackwater Estuary SPA</b>		
Wigeon ( <i>Anas penelope</i> ) [A050]	Screened in	All QI species are vulnerable to pollution events.  QI species most relevant within the context of other potential project interactions i.e. those which forage over subtidal habitats: NONE  IWeBs data shows the site is also used during the winter months by the following species which forage over subtidal habitats: Red-breasted Merganser, Great Northern Diver, Little Grebe, Great Crested Grebe, Cormorant, Shag, Little Gull, Black-headed Gull, Common Gull, Lesser Black-backed Gull, Herring Gull, Great Black-backed Gull, Sandwich Tern, Arctic Tern. While these species are not Qis for Blackwater Estuary SPA, they may breed at sites in Ireland or the UK which are SPA's.  The open waters of Blackwater Estuary are likely to be used year-round by foraging seabirds which may be connected to SPAs in Ireland or the UK.
Golden Plover ( <i>Pluvialis apricaria</i> ) [A140]		
Lapwing ( <i>Vanellus vanellus</i> ) [A142]		
Dunlin ( <i>Calidris alpina</i> ) [A149]		
Black-tailed Godwit ( <i>Limosa limosa</i> ) [A156]		
Bar-tailed Godwit ( <i>Limosa lapponica</i> ) [A157]		
Curlew ( <i>Numenius arquata</i> ) [A160]		
Redshank ( <i>Tringa totanus</i> ) [A162]		
Wetland and Waterbirds [A999]		Wetlands and waterbirds, are vulnerable to pollution events.
<b>Cork Harbour SPA (004028)</b>		
Little Grebe ( <i>Tachybaptus ruficollis</i> ) [A004]	Screen in	All QI species are vulnerable to pollution events.  QI species most relevant within the context of other potential project interactions ie those which forage over subtidal habitats: <ul style="list-style-type: none"> <li>• Little Grebe (<i>Tachybaptus ruficollis</i>) [A004]</li> <li>• Great Crested Grebe (<i>Podiceps cristatus</i>) [A005]</li> <li>• Cormorant (<i>Phalacrocorax carbo</i>) [A017]</li> <li>• Red-breasted Merganser (<i>Mergus serrator</i>) [A069]</li> </ul>
Great Crested Grebe ( <i>Podiceps cristatus</i> ) [A005]		
Cormorant ( <i>Phalacrocorax carbo</i> ) [A017]		
Grey Heron ( <i>Ardea cinerea</i> ) [A028]		
Shelduck ( <i>Tadorna tadorna</i> ) [A048]		
Wigeon ( <i>Anas penelope</i> ) [A050]		
Teal ( <i>Anas crecca</i> ) [A052]		
Pintail ( <i>Anas acuta</i> ) [A054]		

Shoveler ( <i>Anas clypeata</i> ) [A056]		<ul style="list-style-type: none"> <li>• Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179]</li> <li>• Common Gull (<i>Larus canus</i>) [A182]</li> <li>• Lesser Black-backed Gull (<i>Larus fuscus</i>) [A183]</li> <li>• Common Tern (<i>Sterna hirundo</i>) [A193]</li> </ul> <p>IWeBs data shows the site is also used during the winter months by the following species which forage over subtidal habitats: Long tailed duck, Eider, Common Scoter, Surf Scoter, Red-breasted Merganser, Black-throated Diver, Great Northern Diver, Little Grebe, Great Crested Grebe, Cormorant, Shag, Mediterranean Gull, Little Gull, Black-headed Gull, Common Gull, Lesser Black-backed Gull, Herring Gull, Great Black-backed Gull, Sandwich Tern, Common Tern, Arctic Tern. While these species are not Qis for Cork Harbour Bay SPA, they may breed at sites in Ireland or the UK which are SPA's.</p> <p>The open waters of Cork Harbour SPA are likely to be used year-round by foraging seabirds which may be connected to SPAs in Ireland or the UK.</p>
Red-breasted Merganser ( <i>Mergus serrator</i> ) [A069]		
Oystercatcher ( <i>Haematopus ostralegus</i> ) [A130]		
Golden Plover ( <i>Pluvialis apricaria</i> ) [A140]		
Grey Plover ( <i>Pluvialis squatarola</i> ) [A141]		
Lapwing ( <i>Vanellus vanellus</i> ) [A142]		
Dunlin ( <i>Calidris alpina</i> ) [A149]		
Black-tailed Godwit ( <i>Limosa limosa</i> ) [A156]		
Bar-tailed Godwit ( <i>Limosa lapponica</i> ) [A157]		
Curlew ( <i>Numenius arquata</i> ) [A160]		
Redshank ( <i>Tringa totanus</i> ) [A162]		
Black-headed Gull ( <i>Chroicocephalus ridibundus</i> ) [A179]		
Common Gull ( <i>Larus canus</i> ) [A182]		
Lesser Black-backed Gull ( <i>Larus fuscus</i> ) [A183]		
Common Tern ( <i>Sterna hirundo</i> ) [A193]		
Wetland and Waterbirds [A999]	Screened in	Wetlands and waterbirds, are vulnerable to pollution events.
<b>Sovereign Island SPA</b>		
Cormorant ( <i>Phalacrocorax carbo</i> ) [A017]	Screened in	This is an SPA for Cormorant, a species which may forage within the dump site.
<b>Ballymacoda (Clonpriest and Pillmore) SAC (000077)</b>		
Estuaries [1130]	Screened out	This habitat only occurs behind the spit at Ring Point within Ballymacoda Bay. It is considered that even in the unlikely event of accidental hydrocarbons spillage it would not have the potential to be impacted owing to its location behind the spit and the strong influence of the Womanagh River draining outwards at this location.
Mudflats and sandflats not covered by seawater at low tide [1140]	Screened in	Benthic habitat within the ZOI
Salicornia and other annuals colonising mud and sand [1310]	Screened out	This habitat is present behind the spit at Ring Point within Ballymacoda Bay. It is considered that even in the unlikely event of accidental hydrocarbons spillage it would not have the potential to be impacted owing to its location behind the spit and the strong influence of the Womanagh River draining outwards at this location.

Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritima</i> ) [1330]	Screened out	This habitat is present behind the spit at Ring Point within Ballymacoda Bay. It is considered that even in the unlikely event of accidental hydrocarbons spillage it would not have the potential to be impacted owing to its location behind the spit.
Mediterranean salt meadows ( <i>Juncetalia maritimi</i> ) [1410]	Screened out	As above
<b>Blackwater River (Cork/Waterford) SAC (002170)</b>		
Estuaries [1130]	Screened in	Benthic habitat within the ZOI
Mudflats and sandflats not covered by seawater at low tide [1140]	Screened in	Benthic habitat within the ZOI
Perennial vegetation of stony banks [1220]	Screened in	Habitat within the ZOI
Salicornia and other annuals colonising mud and sand [1310]	Screened in	Habitat within the ZOI
Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritima</i> ) [1330]	Screened in	Habitat within the ZOI
Mediterranean salt meadows ( <i>Juncetalia maritimi</i> ) [1410]	Screened in	Habitat within the ZOI
Water courses of plain to montane levels with the <i>Ranunculus fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation [3260]	Screened out	Habitat outside of the ZOI
Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0]	Screened out	Habitat outside of the ZOI
Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> ( <i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i> ) [91E0]	Screened out	Habitat outside of the ZOI
<i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029]	Screened out	Species outside of the ZOI: upstream of a hydrological gradient.
<i>Austropotamobius pallipes</i> (White-clawed Crayfish) [1092]	Screened out	Species outside of the ZOI: upstream of a hydrological gradient.
<i>Petromyzon marinus</i> (Sea Lamprey) [1095]	Screened in	Species within the ZOI
<i>Lampetra planeri</i> (Brook Lamprey) [1096]	Screened out	Species outside of the ZOI: upstream of a hydrological gradient
<i>Lampetra fluviatilis</i> (River Lamprey) [1099]	Screened in	Species within the ZOI
<i>Alosa fallax fallax</i> (Twaite Shad) [1103]	Screened in	Species within the ZOI
<i>Salmo salar</i> (Salmon) [1106]	Screened in	Species within the ZOI
<i>Lutra lutra</i> (Otter) [1355]	Screened out	Species outside of the ZOI
<i>Trichomanes speciosum</i> (Killarney Fern) [1421]	Screened out	Species outside of the ZOI
<b>Great Island Channel SAC (001058)</b>		
Mudflats and sandflats not covered by seawater at low tide [1140]	Screened out	Great Island Channel SAC is located in the extreme northern end of Cork harbour and protected by Great Island to the south. There are only two narrow entrances to the SAC, one of which is protected by means of a hydrological gradient.

		Therefore, even in the unlikely event of accidental hydrocarbons spillage it would not have the potential to reach this habitat.
Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritimae</i> ) [1330]	Screened out	As above

### 6.3 Assessment of impacts:

This section identifies and considers the likelihood of significant effects; direct and indirect, on the conservation status of the qualifying interests of the European sites considered to be within the ZOI and which also host habitats or species considered to be sensitive receptors relative to the scale, scope and location of the proposed project.

As described in section 3, the ZOI of 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. There is no direct spatial overlap between any element of the proposed project site and any European site. There is a hydrological connection, and potential flight path/suitable foraging habitat link in the case of avifauna, between the proposed project site and a number of European sites which may have the potential to lead to indirect impacts on the conservation objectives of these sites, especially with regard to *ex situ* species.

Following a review of the scope of works the likely sources of impact arising from the proposed site investigations relative to sensitive receptors present have been assessed and are described below.

#### 6.3.1 Benthic habitats (sediments and reef)

The accidental spillage of hydrocarbons from small vessels, jack-up barges and plant operating in the area may have the potential to lead to temporary impacts on benthic habitats in the event of any accidental spillage or leakage. It is considered that this may have the potential to result in significant effects on benthic habitats, including wetland habitat for waterbirds within a 20km zone surrounding the proposed project. For this reason, likely significant effects on the conservation objectives of benthic habitats within All European sites within the identified ZOI (table 6.1) cannot be excluded.

#### 6.3.2 Coastal habitats

**Salicornia and other annuals colonising mud and sand:** This habitat is present within Blackwater River (Cork/Waterford) SAC where it has the potential to be impacted by accidental hydrocarbon spillage, even though, given the distance of the site from the proposed project site, such an impact would be slight.

**Saltmarsh:** This habitat is also present within Blackwater River (Cork/Waterford) SAC where it has the potential to be impacted by accidental hydrocarbon spillage, even though, given the distance of the site from the proposed project site such an impact would be slight.

**Perennial vegetation of stony banks [1220]:** This habitat is also present within Blackwater River (Cork/Waterford) SAC where it has the potential to be impacted by accidental hydrocarbon spillage, even though, given the distance of the site from the proposed project site such an impact would be slight.

#### 6.3.3 Marine Mammals

No sites within the ZOI of the proposed project are designated for marine mammals. However, with due regard to the MMRA carried out in support of this project and the highly mobile nature of marine mammals it is considered that the potential for impacts as a result of hydrocarbon spillage and behaviour changes as a result of underwater noise may occur if marine mammals are present with the ZOI during dredging.

#### 6.3.4 Bird species associated with SPAs

Impacts from sedimentation may affect seabirds which feed by sight such as terns, common guillemot and northern Gannet (Cook and Burton, 2010). Birds such as sea ducks, divers, grebes and mergansers which forage under water are likely to be similarly affected. However, Given the short duration of works and once off occurrence significant effects on wintering and/or breeding birds are not considered likely as a result of this project. It is noted that the south coast sea environment is turbulent under natural conditions and any increase in turbidity as a result of the proposed dredging and dumping is not likely to be significant above normal levels.

Vessel activity at the dredge site will be reduced due to the removal of access to the harbour by fishing vessels during works. Transit to, from and at the dump site is considered insignificant above the current background levels.

Underwater noise associated with dredging and dumping operations and vessel activity will be short term and localised. Ambient noise off Ballycotton Harbour is expected to be dominated by environmental noise (e.g. tidal movement of water and sediment, and wind and wave noise) and shipping noise, especially with peaks in noise due to large vessels transiting to Cork and Waterford Harbours. As such the proposed project will not significantly contribute to increased noise levels above ambient.

Oil spillages can have serious implications for seabirds. Cook and Burton (2010) describe that even a small spill can have a serious effect on seabird populations. Oiling rates are higher for species which spend more time swimming, such as Guillemots, Razorbills and also seaducks and divers. For this reason impacts from accidental hydrocarbon spillage have the potential to impact on the conservation objectives of bird species associated with SPAs.

There is no direct spatial overlap with any element of the proposed project and wetland habitat for waterbirds associated with any SPAs. However, five SPAs (Ballycotton Bay SPA , Ballymacoda Bay, Blackwater Estuary SPA, Sovereign Islands SPA and Cork Harbour SPA) are within 20km of the project site and birds using these sites have the potential to be impacted by pollution events associated with the dredging operations.

#### Indirect effects

Impacts on benthic habitats may affecting some foraging seabirds. For example, Common Scoter forage in shallow waters to 20m depth for bivalve molluscs (Kaiser *et al.*, 2006). Increases in noise and turbidity may lead to the displacement of fish (see section 6.5.8). A number of seabirds are reliant on fish for feeding (e.g. terns, divers). Dredging and dumping may reduce foraging opportunities for these species.

#### 6.3.5 Fish

The conservation objectives for *Salmo salar* (Salmon), *Petromyzon marinus* (Sea lamprey), *Lampetra fluviatilis* (River Lamprey) and Twaite Shad (*Alosa fallax*) are to maintain the favourable conservation condition of these species within the freshwater habitat of SACs where they are designated for these species. These five species have a marine phase in their life cycle and while the conservations objectives

set for these species, in all Irish SAC's, relate to the freshwater phase of their life cycle, the proposed project has the potential to affect these species *ex-situ* during their marine phase by way of pollution in the unlikely event of hydrocarbon spillage.

Impacts related to the mobilisation of sediment and contaminated sediments in particular is unlikely to represent a significant impact to fish as the ZOI is relatively small (limited to 3km) and the contaminated sediment will be removed to landfill, thereby only providing limited opportunity for the mobilisation of contaminants into the water column. No contaminated sediment will be disposed of at the Powers Head dump site.

Noise has been identified as a source with the potential to have negative impacts on fish (see table 6.1). While there is the potential for temporary changes in the behaviour of the fish species, resulting from the impact of underwater noise, which form a qualifying interest for a number of SACs through which such mobile species may transit it is not considered likely that such temporary changes in the behaviour of fish would lead to significant effects in their migration through the area. The proposed site investigations would be over a short duration of time (weeks) and not considered to be at a scale which could lead to any significant effect on fish migration. However, a risk has been identified from the potential for accidental spillage of hydrocarbons associated with small vessels, jack-up barges and associated plant which may be required to operate in the proposed project area through which these species may migrate.

#### 6.3.6 Summary of potential for impacts

A summary of the potential for effects is given in table 6.8.

**Table 6.8** Summary of impact prediction (Direct, indirect and cumulative)

Feature of interest	Description of potential impact	Assessment of impact	Screening assessment
Mudflats and sandflats not covered by seawater at low tide [1140]	Potential for impact from accidental spillage of hydrocarbons associated with small vessels and the jack-up barge.	Damage to benthic species and sediments and impact on foraging resource to bird species utilising this habitat.	Potential for likely significant effects.
<i>Petromyzon marinus</i> (Sea Lamprey) [1095]	Potential for impact from accidental spillage of hydrocarbons associated with small vessels and the jack-up barge through which this species may pass.	Mortality due to oil spills.	Potential for likely significant effects.
<i>Lampetra fluviatilis</i> (River Lamprey) [1099]	Potential for impact from accidental spillage of hydrocarbons associated with small vessels and the jack-up barge through which this species may pass.	Mortality due to oil spills.	Potential for likely significant effects.
<i>Salmo salar</i> (Salmon) [1106]	Potential for impact from accidental spillage of hydrocarbons associated with small vessels and the jack-up barge through which this species may pass.	Mortality due to oil spills.	Potential for likely significant effects.
<i>Alosa fallax fallax</i> (Twaite Shad) [1103]	Potential for impact from accidental spillage of hydrocarbons associated with small vessels and the jack-up barge through which this species may pass.	Mortality due to oil spills.	Potential for likely significant effects.
<b>All bird species which form a qualifying interest for SPAs within the ZOI including seabirds within foraging range of the dredge site</b>			
All bird species which form a qualifying interest for SPAs within the ZOI including seabirds within foraging range of the dredge site	Potential for impact from accidental spillage of hydrocarbons associated with small vessels and the jack-up barge.	Impact to bird species which may be present in this area	Potential for likely significant effects.
Wetland and Waterbirds [A999]: Where this habitat occurs, within the ZOI	Potential for impact from accidental spillage of hydrocarbons associated with small vessels and the jack-up barge.	Damage to benthic species and sediments leading to an impact on foraging resource to bird species utilising this habitat.	Potential for likely significant effects.



## 6.4 In-combination impacts

While a single development may not in itself cause a significant impact on the conservation objectives of a site, a combination of projects within a localised area may cause a negative impact on a site. Therefore, the cumulative impacts of a project or plan in association with other projects and plans must be taken into consideration when assessing the possible impacts of a project.

The proposed project is entirely marine based. Therefore, only additional projects which have a marine component are considered in relation to the potential for cumulative effects.

### **Ongoing use of Powers Head disposal site**

This site has been used for the disposal of dredge spoil from Cork Harbour since 1978. Impact assessment carried out have not indicated the use of the site for disposal of dredged material has resulted in any significant effects on the receiving environment. Given the relatively low volume of dredge spoil from the proposed Ballycotton Harbour dredging works and the disposal of all contaminated material from the site at a separate on-shore licenced landfill, no in-combination impacts are considered likely.

A search of Foreshore licence applications on the Department of Housing, Local Government and Heritage website and Applications for Statutory Petroleum Consent on the website of the Department of the Environment, Climate and Communications does not indicate any other current projects within the ZOI of the proposed projects

Therefore, no potential for in-combination effects has been identified.

## 6.5 Appropriate assessment screening conclusions

Following a review of the proposed project, a screening assessment, following the guidelines for the *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 has been conducted.

The conclusion of this assessment is that the proposed project, without mitigation, may have the potential to lead to significant adverse effects, individually or in combination with other plans or projects, on Ballycotton Bay SPA, Ballymacoda Bay SPA, Blackwater Estuary SPA, Sovereign Islands SPA, Cork Harbour SPA, Ballymacoda (Clonpriest and Pillmore) SAC, Blackwater River (Cork/Waterford) SAC.

Accordingly, it is concluded that an Appropriate Assessment of the proposed project is required.

## 7.NATURA IMPACT STATEMENT

The Screening for Appropriate Assessment, alone and in-combination with other projects and plans, determined likely significant effects to the qualifying interests of a number of European sites within the ZOI. Mitigation measures to ensure the effects outlined in Screening for Appropriate Assessment are fully mitigated are proposed in section 7.1.

### 7.1 Mitigation

As the proposed project site has been identified as a location used by marine mammals and birds of several species for foraging and other behaviours, and also for a number of habitats and their associated species identified to lie within the potential ZOI of the proposed project activities, it is recommended that suitable mitigation methods be adopted during project activities.

#### 7.1.1 Benthic and coastal habitats

##### **Pollution derived from accidental spillage of hydrocarbons.**

To avoid the possibility for accidental spillage of any hydrocarbons associated with the use of plant, machinery or inshore shallow water vessels the mitigation measures set out below will be implemented:

- Vessels should be filled by a licensed operator prior to arriving on-site and no on-site refueling should take place.
- All plant and machinery and vessels will be regularly checked for leaks (fuel, oil and coolant).
- Drip trays will be used underneath mobile plant and drums whilst in use on site.
- All machinery and vessels to have an on-board spill kit.
- A hydrocarbon oil boom to be available at all times onsite in the event of it needing to be deployed.
- If required, generators to be on a hydrocarbon mat at all times.
- The Contractor will prepare a waste management plan to deal with any waste (domestic and industrial) generated. This will include methods for the safe disposal of all such waste.

#### 7.1.2 Invasive Alien Species

To avoid the potential for the spread of IAS the mitigation measures set out below will be implemented:

- No vehicles should enter the intertidal area to avoid the potential for pick up and spread of Japanese knotweed.

### 7.1.3 Marine Mammals.

NPWS (2014) provides guidance to manage the risk to marine mammals from man-made sound sources in Irish waters. This document provides guidance and mitigation measures to address key potential sources of anthropogenic sound that may impact negatively on marine mammals in Irish waters. The mitigation methods should follow the guidance prescribed by the National Parks and Wildlife Service. These are detailed in the MMRA and summarised below.

1. A qualified and experienced marine mammal observer (MMO) shall be appointed to monitor for marine mammals and to log all relevant events using standardised data forms (Appendix 6, NPWS, 2014).
2. Unless information specific to the location and/or plan/project is otherwise available to inform the mitigation process (e.g., specific sound propagation and/or attenuation data) and a distance modification has been agreed with the Regulatory Authority, acoustic surveying using the above equipment shall not commence if marine mammals are detected within a 500m radial distance of the sound source intended for use, i.e., within the Monitored Zone.

#### **Pre-Start Monitoring**

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

#### **Ramp-up Procedure**

7. In commencing an acoustic survey operation using the above equipment, the following Rampup Procedure (i.e., “soft-start”) must be used, including during any testing of acoustic sources, where the output peak sound pressure level from any source exceeds 170 dB re: 1µPa @1m:
  - (a) Where it is possible according to the operational parameters of the equipment

concerned, the device's acoustic energy output shall commence from a lower energy Start-up (i.e., a peak sound pressure level not exceeding 170 dB re: 1µPa @1m) and thereafter be allowed to gradually build up to the necessary maximum output over a period of 20 minutes.

(b) This controlled build-up of acoustic energy output shall occur in consistent stages to provide a steady and gradual increase over the ramp-up period.

(c) Where the acoustic output measures outlined in steps (a) and (b) are not possible according to the operational parameters of any such equipment, the device shall be switched "on" and "off" in a consistent sequential manner over a period of 20 minutes prior to commencement of the full necessary output.

8. In all cases where a Ramp-Up Procedure is employed the delay between the end of ramp-up and the necessary full output must be minimised to prevent unnecessary high-level sound introduction into the environment.
9. Once the Ramp-Up Procedure commences, there is no requirement to halt or discontinue the procedure at night-time, nor if weather or visibility conditions deteriorate nor if marine mammals occur within a 500m radial distance of the sound source, i.e., within the Monitored Zone.

#### **Breaks in sound output**

10. If there is a break in sound output for a period greater than 30 minutes (e.g., due to equipment failure, shut-down, survey line or station change) then all Pre-Start Monitoring and a subsequent Ramp-up Procedure (where appropriate following Pre-Start Monitoring) must be undertaken.
11. For higher higher output survey operations which have the potential to produce injurious levels of underwater sound (see sections 2.4, 3.2) as informed by the associated risk assessment, there is likely to be a regulatory requirement to adopt a shorter 5–10-minute break limit after which period all Pre-Start Monitoring and a subsequent Ramp-up Procedure (where appropriate following Pre-Start Monitoring) shall recommence as for start-up.

#### **Reporting**

12. Full reporting on MMO operations and mitigation undertaken must be provided to the Regulatory Authority as outlined in Appendix 6 of NPWS (2014).

#### **7.1.4 Construction Environment Management Plan**

All of the above mitigation measures should be documented in the final CEMP.

#### **7.1.5 Implementation of mitigation measures**

The project manager should insure all of the aforementioned mitigation measures are implemented and communicated to the on-site supervisor/foreman who should be responsible for ensuring they are fully implemented.

## 7.2 Summary of impacts with mitigation

It is considered that the mitigation measures detailed in this report are appropriate and sufficient to avoid significant adverse effects on the Conservation Objectives of any European site/s alone or in-combination with other projects and plans. A summary of the potential for impacts, with mitigation, relative to the conservation objectives of Ballycotton Bay SPA , Ballymacoda Bay SPA, Blackwater Estuary SPA, Sovereign Islands SPA, Cork Harbour SPA, Ballymacoda (Clonpriest and Pillmore) SAC, Blackwater River (Cork/Waterford) SAC. is given in table 7.1.

**Table 7.1** Summary of potential for impact with mitigation.

<b>Ballycotton Bay SPA</b>			
<b>Attribute</b>	<b>Measure</b>	<b>Target</b>	<b>Assessment</b>
To maintain the favourable conservation condition of the QI species in Ballycotton Bay SPA, as defined by the following list of attributes and targets (NPWS, 2015)			
Population trend	Percentage change	Long term population trend stable or increasing – for each QI species	No potential for impact with mitigation.
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by each QI species, other than that occurring from natural patterns of variation	No potential for impact with mitigation.
To maintain the favourable conservation condition of the wetland habitat in Ballycotton Bay SPA as a resource for the regularly occurring migratory birds that utilise it. This is defined by the following attribute and target:			
Habitat Area	Hectares (ha)	The permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 281 hectares, other than that occurring from natural patterns of variation.	No potential for impact with mitigation.
<b>Ballymacoda Bay SPA</b>			
As above for Ballycotton Bay SPA but applied to the Qualifying Interests of Ballymacoda Bay SPA (NPWS, 2015).			No potential for impact with mitigation.
<b>Blackwater Estuary SPA</b>			
As above for Ballycotton Bay SPA but applied to the Qualifying Interests of Blackwater Estuary SPA			No potential for impact with mitigation.
<b>Cork Harbour SPA</b>			
Except for Common Tern, the Conservation Objectives are as for Ballycotton Bay SPA but applied to the Qualifying Interests of Cork Harbour SPA (NPWS, 2014).			
Breeding population abundance: apparently occupied nests (AONs)	Number	No significant decline	No potential for impact with mitigation.
Productivity rate: fledged young per breeding pair	Mean number	No significant decline	No potential for impact with mitigation.
Distribution: breeding colonies	Number; location; area (ha)	No significant decline	No potential for impact with mitigation.
Prey biomass available	Kilogrammes	No significant decline	No potential for impact with mitigation.
Barriers to connectivity	Number; location; shape; area (ha)	No significant decline	No potential for impact with mitigation.

Disturbance at the breeding site	Level of impact	Human activities should occur at levels that do not adversely affect the breeding common tern population	No potential for impact with mitigation.
<b>Sovereign Islands SPA</b>			
No detailed conservation objectives are available for this SPA. The following generic objective is listed for the site (NPWS, 2021). Objective: To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA: Cormorant <i>Phalacrocorax carbo</i>			No potential for impact with mitigation.
<b>Ballymacoda (Clonpriest and Pillmore) SAC</b>			
<b>Mudflats and sandflats not covered by seawater at low tide</b>			
Habitat area	Hectares	The permanent habitat area is stable or increasing, subject to natural processes	No potential for impact with mitigation.
Community distribution	Hectares	Conserve the following community types in a natural condition: Sandy mud with <i>Hediste diversicolor</i> and <i>Tubificoides benedii</i> community; Sand with polychaetes and bivalves community complex. As per map 5 (NPWS, 2015).	No potential for impact with mitigation.
<b>Blackwater River (Cork/Waterford) SAC</b>			
<b>Mudflats and sandflats not covered by seawater at low tide</b>			
Habitat area	Hectares	The permanent habitat area is stable or increasing, subject to natural processes	No potential for impact with mitigation.
Community extent	Hectares	Maintain the extent of the <i>Zostera</i> and <i>Mytilus edulis</i> dominated communities, subject to natural process	No potential for impact with mitigation.
Community structure: <i>Zostera</i> shoot density	Shoots/m <sup>2</sup>	Conserve the high quality of the <i>Zostera</i> -dominated community, subject to natural processes	No potential for impact with mitigation.
Community structure: <i>Mytilus edulis</i> density	Individuals/m <sup>2</sup>	Conserve the high quality of the <i>Mytilus edulis</i> -dominated community, subject to natural processes	No potential for impact with mitigation.
Community distribution	Hectares	The following community types should be conserved in a natural condition: Intertidal estuarine sandy mud community complex and sand with polychaetes and crustaceans community complex	No potential for impact with mitigation.
<b>Estuaries</b>			
Habitat area	Hectares	The permanent habitat area is stable or increasing, subject to natural processes	No potential for impact with mitigation.
Community extent	Hectares	Maintain the extent of the <i>Mytilus edulis</i> -dominated community, subject to natural processes	No potential for impact with mitigation.



Community structure: <i>Mytilus edulis</i> density	Individuals/m <sup>2</sup>	Conserve the high quality of the <i>Mytilus edulis</i> -dominated community, subject to natural processes	No potential for impact with mitigation.
Community distribution	Hectares	Conserve the following community types in a natural condition: Intertidal estuarine sandy mud community complex	No potential for impact with mitigation.
<b>Perennial vegetation of stony banks</b>			
Habitat area	Hectares	Area stable or increasing, subject to natural processes including erosion and succession	No potential for impact with mitigation.
Habitat distribution	Occurrence	No decline, or change in habitat distribution, subject to natural processes	No potential for impact with mitigation.
Physical structure: functionality and sediment supply	Presence/absence of physical barriers	Maintain the natural circulation of sediment and organic matter without any physical obstructions	No potential for impact with mitigation.
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitat including transitional zones subject to natural processes including erosion and succession.	No potential for impact with mitigation.
Vegetation composition: Typical species and communities	Percentage cover at a representative sample of monitoring stops	Maintain the typical vegetated shingle flora including the range of sub-communities within the different zones	No potential for impact with mitigation.
Vegetation composition: negative indicator species	Percentage cover	Negative indicator species (including non-natives) to represent less than 5% cover	No potential for impact with mitigation.
<b>Salicornia and other annuals colonising mud and sand</b>			
Vegetation composition: negative indicator species: <i>Spartina angelica</i>	Hectares	No significant expansion of common cordgrass ( <i>Spartina angelica</i> ) with an annual spread of less than 1%	No potential for impact with mitigation.
<b>Saltmarsh (Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>))</b>			
Habitat area	Hectares	Area stable or increasing, subject to natural processes including erosion and succession for sub-site mapped	No potential for impact with mitigation.
Habitat distribution	Occurrence	No decline, or change in habitat distribution, subject to natural processes	No potential for impact with mitigation.
Physical structure: sediment supply	Presence/absence of physical barriers	Maintain the natural circulation of sediment and organic matter without any physical obstructions	No potential for impact with mitigation.
Physical structure: creeks and pans	Occurrence	Maintain creek and pan structure, subject to natural processes including erosion and succession	No potential for impact with mitigation.
Physical structure: flooding regime	Hectares flooded;	Maintain natural tidal regime	No potential for impact with mitigation.

Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and	No potential for impact with mitigation.
Vegetation structure: vegetation height	Centimetres	Maintain structural variation within sward	No potential for impact with mitigation.
Vegetation structure: vegetation cover	Percentage cover at a representative sample	Maintain more than 90% of the saltmarsh area vegetated	No potential for impact with mitigation.
Vegetation composition: typical species and sub-	Percentage cover	Maintain the presence of species-poor communities with typical species listed in saltmarsh Monitoring Project (McCorry	No potential for impact with mitigation.
Vegetation composition: negative indicator species: <i>Spartina angelica</i>	Hectares	No significant expansion of common cordgrass ( <i>Spartina angelica</i> ) with an annual spread of less than 1%	No potential for impact with mitigation.
<b><i>Sea lamprey (Petromyzon marinus)</i></b>			
Distribution: Extent of anadromy	% of river accessible	Greater than 75% of main stem length of rivers accessible from estuary	No potential for impact
Population structure of juveniles	Number of age/size groups	At least three age/size groups present.	No potential for impact with mitigation.
Juvenile density in fine sediment	Juveniles/m <sup>2</sup>	Juvenile density at least 1/m <sup>2</sup>	No potential for impact with mitigation.
Extent & distribution of spawning habitat	M <sup>2</sup> and occurrence	No decline in extent and distribution of spawning beds	No potential for impact
Availability of juvenile habitat	Number of positive sites in 2 <sup>nd</sup> order channels (& greater), downstream of spawning areas	More than 50% of sample sites positive	No potential for impact
<b><i>River lamprey (Lampetra fluviatilis)</i></b>			
Distribution	% of river accessible	Access to all watercourses down to first order streams	No potential for impact
Population structure of juveniles	Number of age/size groups	At least three age/size groups of river/brook lamprey present	No potential for impact with mitigation.
Juvenile density in fine sediment	Juveniles/m <sup>2</sup>	Mean catchment juvenile density of river/brook lamprey at least 2/m <sup>2</sup>	No potential for impact with mitigation.
Extent & distribution of spawning habitat	M <sup>2</sup> and occurrence	No decline in extent and distribution of spawning beds	No potential for impact with mitigation.

Availability of juvenile habitat	Number of positive sites in 2nd order	More than 50% of sample sites positive	No potential for impact.
<b><i>Atlantic Salmon (Salmo salar)</i></b>			
Distribution: Extent of anadromy	% of river accessible	100% of river channels watercourses down to second order accessible from estuary	No potential for impact.
Adult spawning fish number	Number	Conservation limit (CL) for each system constantly exceeded.	No potential for impact with mitigation.
Salmon fry abundance	Number of minutes electrofishing	Maintain or exceed 0+ fry mean catchment wide abundance threshold value. Currently set at 17 fry/15 minute sampling.	No potential for impact with mitigation.
Out-migrating smolt abundance	Number	No significant decline	No potential for impact with mitigation.
Number and distribution of redds	Number occurrence and	No decline in number and distribution of spawning redds due to anthropogenic causes.	No potential for impact.
Water quality	EPA Q value		
<b><i>Twaite Shad (Alosa fallax)</i></b>			
Distribution: Extent of anadromy	% of river accessible	100% of river accessible	No potential for impact.
Population structure - age classes	Number of classes age	More than one age class present	No potential for impact with mitigation.
Extent & distribution of spawning habitat	M <sup>2</sup> and occurrence	No decline in extent and distribution of spawning habitats	No potential for impact.
Water quality – oxygen levels	Mg/l	No lower than 5mg/l <sup>-1</sup>	No potential for impact.
Spawning habitat quality: Filamentous algae; macrophytes; sediment	occurrence	Maintain stable gravel substrate with very little fine material, free of filamentous algal (macroalgae) growth and macrophyte (rooted higher plants) growth.	No potential for impact.

### 7.3 Residual impacts

No residual impacts of the proposed project have been identified or are considered possible.

### 7.4 Natura Impact Statement conclusion

This Natura Impact Statement has assessed the implications of the project, alone and in-combination with other projects or plans, on the integrity of European sites in view of the site's conservation objectives.

The potential for significant effects as a result of the proposed site investigations have been mitigated. The NIS therefore objectively concludes that, provided the mitigation measures described in this document are fully implemented, **no adverse effect on the *features of interest* or *Conservation objectives*** of any European site is expected, *i.e.*, the integrity of the sites will not be adversely affected.

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## Appendix 1 Marine Mammal Risk Assessment