# An Daingean Small Craft Harbour

# Supporting Information for Screening for Appropriate Assessment and Natura Impact Statement

# Volume 1 – Main Report

**Produced by**

**AQUAFACT International Services Ltd**

**On behalf of**

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# 1. Introduction

## *1.1. Overview*

The Department of Agriculture, Food and the Marine (DAFM) proposes the construction and operation of a Small Craft Harbour (SCH) at An Daingean, Co. Kerry. This report has been prepared to provide competent authorities with the relevant information of the An Daingean SCH (referred to herein as the Proposed Development) to carry out Appropriate Assessment (AA) as required under Part XAB of the Planning and Development Act 2000 (as amended).

The Proposed Development is located at Dingle Fishery Harbour Centre (FSC) and consists of an approximately 150 berth small craft harbour just south of the west breakwater at Dingle inner harbour. The project consists of dredging of an area of seabed, installation of anchoring piles, installation of floating breakwaters, small craft type pontoons, walkways and fingers, a sloped gangway from the west breakwater to the small craft area, trolley bays, toilet facilities, power and water kiosks and other ancillary furniture. The project also includes operations required for the disposal of dredge material to sea in an area east of the mouth of Dingle Harbour.

The location of the Proposed Development is shown in **Figure 1.1** and **Figure 1.2**. The overall above-water area of the SCH is approximately 120 m x 220 m (26,400 $m^2$). The layout plan for the SCH is presented in **Figure 1.3**. A detailed description of the Proposed Development is presented in **Section 2.1**.


**Figure 1.1: Location of the Proposed Development south of the west breakwater at Dingle inner harbour shown in blue.**

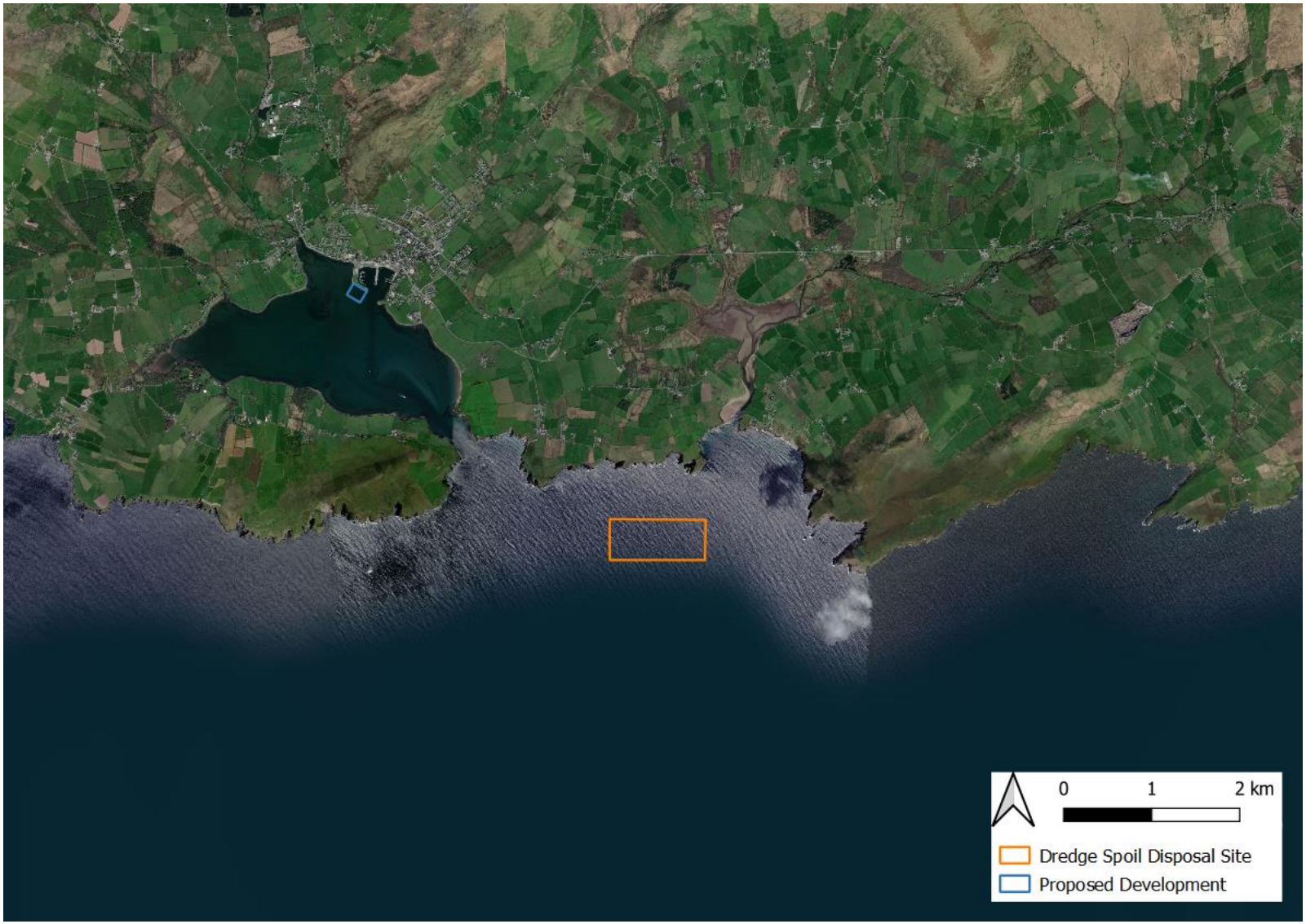


**Figure 1.2: Location of the Proposed Development and Proposed Dredge Spoil Disposal Area.**

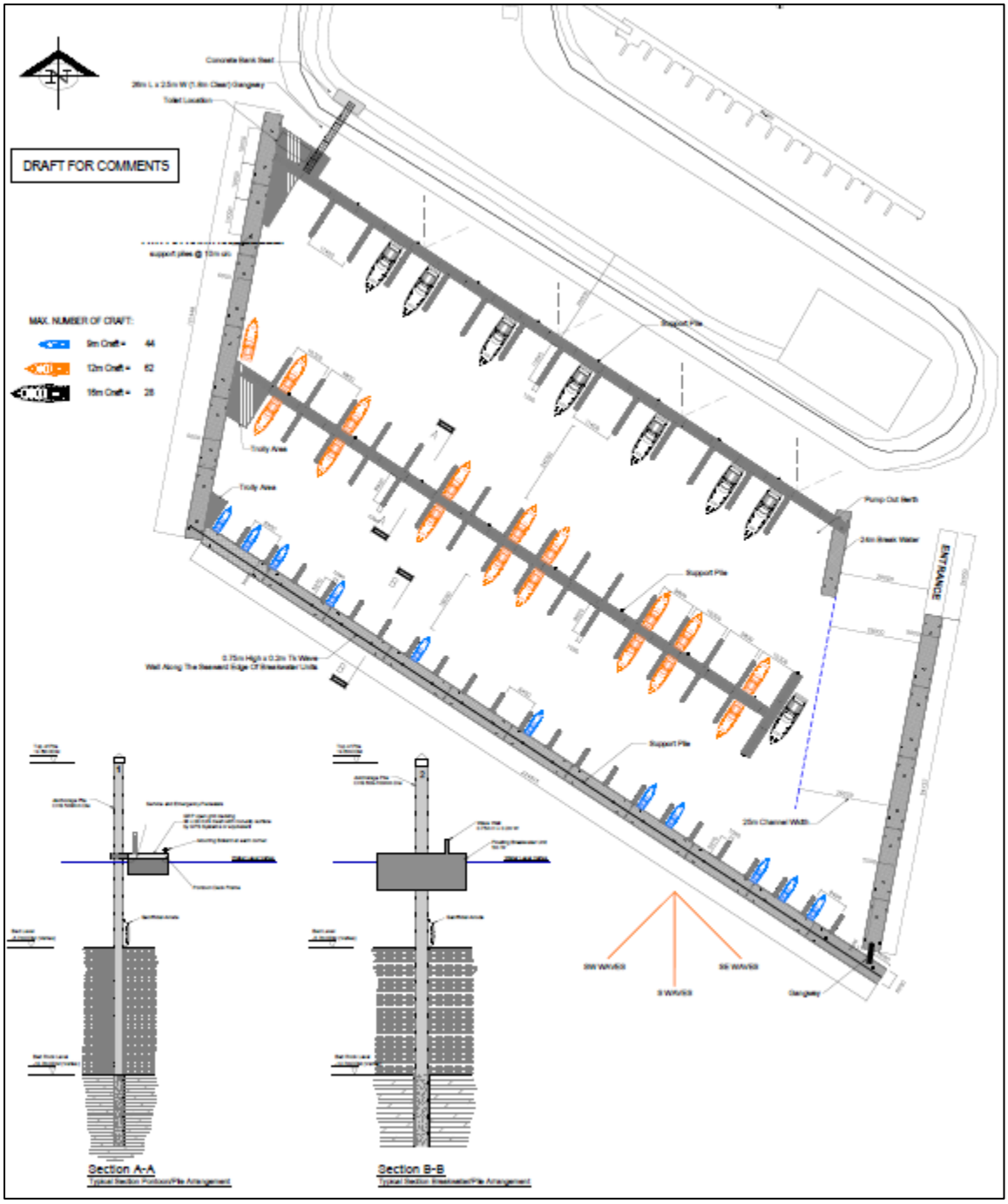


**Figure 1.3: Layout Plan**

## *1.2. Appropriate Assessment*

Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (commonly known as the Habitats Directive) is European Community legislation regarding nature conservation established to ensure biodiversity is conserved through the conservation of natural habitats and wild fauna and flora in Europe.

Under Articles 6(3) and 6(4) of the Habitats Directive competent authorities are required to conduct a screening for Appropriate Assessment (AA) and, if necessary, an AA on any plan or project for which it receives an application for consent, or which the authority itself wishes to undertake or adopt.

The Habitats Directive was originally transposed into Irish law by the *European Communities (Natural Habitats) Regulations, 1997* (S.I. No. 94 of 1997). The 1997 Regulations were subsequently revoked and replaced by the *European Communities (Birds and Natural Habitats) Regulations 2011*, as amended (herein referred to as the 2011 Birds and Natural Habitats Regulations).

Under Regulation 42 of the 2011 Birds and Natural Habitats Regulations all competent authorities are required to conduct a screening for Appropriate Assessment (AA) and, if necessary, an AA on any plan or project on the foreshore for which it receives an application for consent, or which the authority itself wishes to undertake or adopt. This obligation derives from Article 6(3) of the Habitats Directive.

The AA provision of the Habitats Directive is also transposed in Ireland by Part XAB of the Planning and Development Act 2000 (as amended) in respect of land use plans and proposed developments requiring development consent.

A network of sites of conservation importance hosting habitats and species as needing to be either maintained or, where appropriate, restored to favourable conservation status have been identified by each Member State. These sites are known as European sites within the Natura 2000 network. Sites, species and habitats protected under Directive 92/43/EEC (Habitats Directive) and Directive 2009/147/EC (Birds Directive) are referred to as Natura 2000 sites. Natura 2000 sites are referred to as European sites in Part XAB of the Planning and Development Act 2000 (as amended). These terms are synonymous. European sites in Ireland that form part of the Natura 2000 network of protected sites comprise Special Area of Conservation (SAC) sites designated due to their significant ecological importance for habitats and species protected under Annex I and Annex II respectively of the Habitats Directive, and Special Protection Area (SPA) sites designated for the protection of populations and habitats of bird species protected under the EU Birds Directive (Council Directive 2009/147/EC). The specific named habitat and/or (non-bird) species for which an SAC or SPA is selected are called 'Qualifying Interests' (QI) of the site while specific named bird species for which an SPA is selected are

called 'Special Conservation Interests' (SCIs) of the site (OPR, 2021[2]). In this report, SCIs and QIs are collectively referred to as conservation features. Candidate SAC sites (cSAC) and candidate SPA sites (cSPA) have the same level of protection as fully designated sites under Irish Law[3].

### 1.2.1. Stages of the Appropriate Assessment Process

Articles 6(3) and Article 6(4) of the Habitats Directive outline the decision-making tests for considering plans and projects that may have a significant effect on a Natura 2000 site. The Department of the Environment, Heritage and Local Government guidelines (DEHLG, 2009, rev 2010) promote a four stage process to complete AA and outlines the issues and tests at each stage. An important aspect of the process is that the outcome at each successive stage determines whether a further stage in the process is required.

The four stages are summarised diagrammatically in **Figure 1.4** and an outline of the steps and procedures involved in completing each stage follows below. Stage 1 and Stage 2 deal with the main requirements for assessment under Article 6(3) of the Habitats Directive. Stage 3 may be part of the Article 6(3) Assessment or may be a necessary precursor to Stage 4. Stage 4 is the main derogation step of Article 6(4).

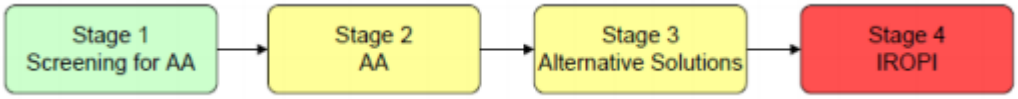


**Figure 1.4: Four Stages of Appropriate Assessment**

In complying with the obligations under Article 6(3) this report has been structured as a stage-by-stage approach as outlined below.

### 1.2.2. Stage 1: Screening for Appropriate Assessment

Stage 1 AA Screening is the process that addresses and records the reasoning and conclusions in relation to the first two tests of Article 6(3):

[2] OPR 2021. Office of the Public Regulator Practice Note PN01. Appropriate Assessment Screening for Development Management https://www.opr.ie/wp-content/uploads/2021/03/9729-Office-of-the-Planning-Regulator-Appropriate-Assessment-Screening-booklet-15.pdf

[3] Candidate sites are those that have been submitted to the European Commission, but not yet formally adopted under Ministerial Statutory Instrument (S.I.) (OPR, 2021). Legal protection, and therefore, the requirement for AA, arises from the date that the Minister gives notice of his/her intention to designate the site.

i. whether a plan or project is directly connected to or necessary for the management of a European site, and

ii. whether a plan or project, alone or in combination with other plans and projects, is likely to have significant effects on a European site in view of its conservation objectives.

If the effects are deemed to be significant, potentially significant or uncertain, or if the screening process becomes overly complicated, then the process must proceed to Stage 2 (AA). Screening should be undertaken without the inclusion of mitigation, unless potential impacts clearly can be avoided through the modification or redesign of the plan or project, in which case the screening process is repeated on the altered plan. The greatest level of evidence and justification will be needed in circumstances when the process ends at screening stage on grounds of no impact.

### 1.2.3. Stage 2: Appropriate Assessment

This stage considers whether the plan or project, alone or in combination with other projects or plans, will adversely affect the integrity of a European site and includes any mitigation measures necessary to avoid, reduce or offset negative effects. The proponent of the plan or project will be required to submit a Natura Impact Statement (NIS), *i.e.* the report of a targeted professional scientific examination of the plan or project and the relevant European sites, to identify and characterise any possible implications for the site in view of the site's conservation objectives, taking account of in-combination effects. This should provide information to enable the competent authority to carry out the appropriate assessment. If the assessment is negative, *i.e.* adverse effects on the integrity of a site cannot be excluded, then the process must proceed to Stage 3 or the plan or project should be abandoned.

The AA is carried out by the Competent Authority and is supported by the NIS with input from the National Parks and Wildlife Service (NPWS) who are a statutory consultee.

### 1.2.4. Stage 3: Alternative Solutions

This stage examines any alternative solutions or options that could enable the plan or project to proceed without adverse effects on the integrity of a European site. The process must return to Stage 2, as any alternative proposal must be subject to a Stage 2 AA before it can be subject to the Article 6(4) test. If it can be demonstrated that all reasonable alternatives have been considered and assessed, the AA progresses to Stage 4.

### 1.2.5. Stage 4: Imperative Reasons of Overriding Public Interest/Derogation

Stage 4 is the main derogation process of Article 6(4) which examines whether there are imperative reasons of overriding public interest (IROPI) for allowing a plan or project that will have adverse effects on the integrity of a European site. The extra protection measures for Annex I priority habitats come into effect when making the IROPI case. Compensatory measures must be proposed and assessed. The European Commission must be informed of the compensatory measures. Compensatory measures must be practical, implementable, likely to succeed, proportionate and enforceable.

## *1.3. Purpose of this Report*

This report has been prepared to provide information to enable the competent authority to carry out a *Stage 1: Screening for AA* and a *Stage 2: AA* of the Proposed Development as required under Article 6(3) obligations of the Habitats Directive. Specifically, this report focuses on the potential *in situ* and *ex situ* effects of the Proposed Development on the conservation features of European sites (*i.e.* potential effects to conservation features within or away from European sites respectively).

## *1.4. Guidance*

This report has been prepared in accordance with the following guidance:

- EC (2018) Managing Natura 2000 sites. The provisions of Article 6 of the Habitats Directive 92/43/EEC Commission Notice (2018)
- OPR (2021) Appropriate Assessment Screening for Development Management. Practice Note PN01. Office of the Planning Regulator. March 2021
- DEHLG (2009) Appropriate Assessment of Plans and Projects in Ireland Guidance for Planning Authorities (Revised 2010)
- Department of Arts, Heritage and the Gaeltacht – National Parks and Wildlife Service DAHG - NPWS (2012) Marine Natura Impact Statements in Ireland Special Areas of Conservation, A Working Document

The report was informed by a review of available records of protected species and habitats including the following sources:

- Conservation Status Assessment Reports, Backing Documents and Maps prepared to inform national reporting[4] required under Article 17[5] of the Habitats Directive (NPWS 2019) and Article 12[6] of the Birds Directive
- Site Synopsis, Conservation Objective Reports and Natura 2000 Standard Data Forms available from NPWS
- Published and unpublished NPWS reports on protected habitats and species including Irish Wildlife Manual reports, Species Action Plans, and Conservation Management Plans
- Existing relevant mapping and databases *e.g.* waterbody status, species and habitat distribution *etc*. (sourced from the Environmental Protection Agency - http://gis.epa.ie/, the National Biodiversity Data Centre (NBDC) - http://maps.biodiversityireland.ie and the NPWS - http://www.npws.ie/mapsanddata/
- Field surveys and studies carried out for the Proposed Development (see **Section 1.5**)

### *1.5. Surveys and Studies*

The desk studies carried out for the Proposed Development include:

- Ecological Survey (Draft) (Goldcrest Environmental Services Ltd.)
- Benthic Ecological Report (Aquatic Services Unit, UCC)
- Marine Mammal Risk Assessment (Irish Whale and Dolphin Group (IWDG) Consulting)
- Numerical Modelling of Tidal Currents, Dredge and Disposal Plumes, and Waves (MaREI, University College Cork)

### *1.6. Statement of Authority*

This report has been prepared by Dr Brendan O'Connor (BSc PhD MCIEEM) and Dr James Forde (BSc MSc PhD MCIEEM).

Brendan O'Connor is the ecology lead for the An Daingean SCH development. He is expert in ecological matters and the full spectrum of environmental assessment techniques, methodologies and statutes.

[4] The most recent Article 17 report *The Status of EU Protected Habitats and Species in Ireland 2019* is available at https://www.npws.ie/publications/article-17-reports/article-17-reports-2019

[5] Most recent Article 17 report is available at https://www.npws.ie/publications/article-17-reports/article-17-reports-2019

[6] Most recent Article 12 report is available at https://www.npws.ie/news/birds-directive-article-12-reporting

Professionally, he is a member of relevant institutes requiring the highest standards of professional competence and integrity. He is a full member of the Chartered Institute of Ecology and Environmental Management (CIEEM).

Brendan has 40 years of experience in the field of marine science and has published *c.* 75 scientific papers and numerous reports specialising in the biology and ecology of sea-floor communities. Brendan is an internationally recognised polychaete taxonomist and has led numerous international workshops in polychaete taxonomy including workshops as part of the UK BEQUALM/NMBAQC. He has 33 publications on marine invertebrate taxa including descriptions of new species, revisions of families and additions to the European and Irish fauna.

As Managing Director of AQUAFACT Brendan has been responsible for all aspects of management including the design, execution and reporting of numerous desk studies, surveys, assessments and environmental outputs including NIS, AA screening and EIARs.

James has a PhD in Marine Ecology and is a full member of the CIEEM. James has over fifteen years' experience in marine research and environmental consultancy. James specialises in marine ecology and has a full appreciation of the objectives and mechanisms of national and international environmental legislation and policy.

James' academic research has focused on benthic habitats and communities, and techniques used to assess ecological impacts under European environmental legislation including the Habitats Directive and the Water Framework Directive.

As part of James' consultancy work, he has delivered assessment reports to meet the provisions of the Habitats Directive and EIA Directive to accompany planning applications for a wide range of developments including pier enhancement projects, coastal defence projects and aquaculture. Of particular relevance to the An Daingean SCH development is James' specialist input on similar projects including the Rossaveal Small Harbour Extension[7] for the DAFM.

James formed part of the technical advisory team for the national implementation of the Marine Strategy Framework Directive (MSFD). James was responsible for specialist input on biodiversity.

James was a member of the International Union for Conservation of Nature (IUCN) expert working group for marine red-list habitats for the North Atlantic and has collaborated with international

[7] DAFM planning application to Galway County Council (dated 26th April 2021) in relation to Small Craft Harbour Phase 3 development at Rossaveel Fishery Harbour (application ref: 21300)

experts on the designation of sensitive marine habitats including *Ostrea edulis* beds, *Mytilus edulis* beds, seagrass meadows and offshore biogenic and geogenic reef habitats.

James has collaborated with national experts on the assessment of deep-water reef habitats in Irish waters to support Ireland's national assessment of reefs as required under Article 17 of the Habitats Directive. Recently James has also worked with national experts on the classification of lagoon habitats, a Habitats Directive Annex I priority habitat.

### *1.7. Structure of this Report*

This report has been prepared to provide information to enable the competent authority to carry out a Stage 1 Screening for AA, and if deemed necessary, a Stage 2 AA of the Proposed Development as required under Article 6(3) obligations of the Habitats Directive. Specifically, this report focuses on the potential effects of the Proposed Development on the conservation features of European sites.

The content of this report is as follows:

- **Section 2** Stage I Screening for Appropriate Assessment
    - **Section 2.1** Description of the Proposed Development
    - **Section 2.2** Baseline Environment
    - **Section 2.3** Screening Exercise
    - **Section 2.4** Screening Outcome
- **Section 3** Stage 2 Appropriate Assessment - Natura Impact Statement
    - **Section 3.1** Overview
    - **Section 3.2** Description of the Proposed Development
    - **Section 3.3** Description of Receiving Environment
    - **Section 3.4** Impact Prediction
    - **Section 3.5** Potential for Adverse Effects on Site Integrity
    - **Section 3.6** Mitigation Measures
    - **Section 3.7** Outcomes and Conclusions

# 2. Stage 1 Screening for Appropriate Assessment

There is an obligation to undertake AA according to the Planning and Development Act 2000 and the 2011 Birds and Natural Habitats Regulations, which derives from Articles 6(3) and 6(4) of the Habitats Directive. Regulation 42(1) of the Regulations requires that:

> *A screening for Appropriate Assessment of a plan or project for which an application for consent is received, or which a public authority wishes to undertake or adopt, and which is not directly connected with or necessary to the management of the site as a European Site, shall be carried out by the public authority to assess, in view of best scientific knowledge and in view of the conservation objectives of the site, if that plan or project, individually or in combination with other plans or projects is likely to have a significant effect on the European site*.

The Proposed Development is not associated with the 'management' of European sites within the Natura 2000 Network having regard to Article 6 of the Habitats Directive and as such it is appropriate that the Proposed Development is subject to a screening for AA.

This screening exercise investigates, in view of best scientific knowledge, whether the Proposed Development, individually or in combination with other plans and projects, would be likely to have a significant effect on European sites.

As outlined in **Section 0**, the *Screening Statement for AA* for the Proposed Development, which has been prepared to address Article 6(3) obligations of the Habitats Directive and associated national regulations, focuses on the potential for likely significant effects of the Proposed Development to European sites and conservation features. **Section 2.1** below describes the Proposed Development while **Section 2.2** provides a description of the baseline environment of the areas adjacent to and in the vicinity of the Proposed Development. The screening exercise for the Proposed Development for potential likely significant effects to conservation features of European sites is presented in **Section 2.3**. Where the screening exercise cannot exclude 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 a conservation feature of a European site then it is necessary to carry out a stage 2 AA (*i.e.* the conservation feature is brought forward for further consideration of potential effects in **Section 3 - Stage 2 AA - NIS**). The screening outcome is summarised in **Section 2.4**.

## *2.1. Description of the Proposed Development*

### 2.1.1. Introduction

The Proposed Development at Dingle FHC comprises two works areas. The first area is located in Dingle Harbour where a new small craft harbour (SCH) comprising approximately 150 berths will be constructed just south of the west breakwater at Dingle inner harbour. The second works area is a dredge spoil site located to the east of the mouth of Dingle Harbour. The locations of the works areas are shown in **Figure 2.1** and **Figure 1.2**. The project consists of dredging of an area of seabed, installation of anchoring piles, installation of floating breakwaters, small craft type pontoons, walkways and fingers, a sloped gangway from the west breakwater to the small craft area, trolley bays, toilet facilities, power and water kiosks and other ancillary furniture. The overall above-water area of the SCH is approximately 120 by 220m (26,400 $m^2$). The SCH will be constructed within the confines of Dingle inner harbour. Disposal of dredge material will take place outside the harbour. There is no spatial overlap of the Proposed Development with any European site; therefore, there will be no land-take within any European site. The works comprise:

- Dredging
- Piling
- Breakwaters, pontoons and fingers
- Ancillary items

### 2.1.2. Construction Phase

The following sections provide a description of the construction phase of the Proposed Development.

#### *2.1.2.1. Dredging*

The total seabed footprint of the works is approximately 3.2 ha. This includes a dredge area of 2.7 ha dredged to -3.1 m Chart Datum (CD), plus the area of the side slopes around the perimeter of the -3.1 m CD area which will be at 5 horizontals to 1 vertical. The project requires the dredging of some 100,000 $m^3$ of material from within the proposed SCH area and of side slopes around the perimeter of the area. The material to be dredged is a mix of cohesive and non-cohesive sediments overlying rock. Ground investigations comprising 15 boreholes indicate rock levels to be 2 m or more below the planned dredge level. Of the material to be dredged 41.6% is in the silt/clay fraction, 51.3% is in the sand fraction and 7.1% is in the gravel fraction. A contingency of 1,000 $m^3$ for any rock outcrops is included. It is proposed to dispose of the dredge material to sea in Dingle Bay in an area east of the

mouth of Dingle Harbour. The location of the proposed dredge spoil disposal[8] area is shown in **Figure 1.2**. Dredging will be undertaken using a backhoe or grab from a floating platform which fills a dredge spoil barge beside the floating platform. When full the dredge spoil barge will carry the material to the disposal site and deposit the material there. Dredging will take approximately 2.5 months, based on *c.* 1,600 $m^3$ per day. There will be approximately 350 trips to the disposal site, based on 300 $m^3$ capacity of disposal barge. If a larger barge is used there will be fewer trips.

The small craft area is to be protected from wave action by means of a floating breakwater installed around the perimeter of the area. The floating breakwater will consist of concrete breakwater units some 4-5 m wide and with a draft of 1-1.5 m depending on their location around the perimeter. The overall length of the floating breakwater will be approximately 470 m. Breakwater units will be approximately 20 m each and the southern leg of the breakwater will have a low (0.75 m) wave wall on top.

It is proposed that there will be two lines of marina type walkways with fingers for berthing of craft from smaller than 9 m length up to 16 m length. There will be a line of berths that can accommodate up to 16 m length craft and lines for up to 9 m and 12 m craft. In all it is anticipated that the harbour will have a capacity for approximately 150 craft.

**Figure 2.1: Looking south toward the proposed extension area (red) for the existing Dingle port and marina, Dingle Harbour (February 2021)**

[8] A Dumping at Sea application for the disposal of the dredge material has been sought by DAFM

#### *2.1.2.2. Piling*

The breakwaters and walkways will be held in position using approximately 100 No. CHS 508-610 mm diameter steel piles. These piles will be driven through the seabed overburden and socketed into the rock underneath the overburden. Socketing involves the drilling of a vertical cylindrical hole in the rock, the placing of concrete in the hole and the installation of the pile in the concrete and the holding of the pile in position for perhaps 24hours until the concrete goes off (cures). The holes will be approximately 800 mm in diameter and will extend up to 4 m into the rock. In places where the rock levels are low no socketing will occur; it is likely however that all piles will require to be socketed.

The installation of the piles would be as follows:

A jack-up barge with drilling rig and crane would be towed into position and moved when required. Piles would have been transported to site and placed on the barge from the quayside within the fishing harbour. The piles will be transported to site via road. For each pile a temporary pile casing would be lifted into position using the crane and driven through overburden to refusal. The rock socket would be drilled through the temporary pile casing (typical socket depth *c*. 4 m). It is likely that the means of drilling will be rotary percussion. Concrete will be tremmied[9] into the hole using a hopper and pipe to supply the concrete to the bottom of the hole. As the hole is filled, the pipe will be raised to allow the flow of concrete. The pipe is to remain within the concrete however, during the pour. The tubular steel piles CHS508Ø will be lifted into the concrete within the rock-socket and secured. The temporary pile casing will be removed over the pile head. Piling works will be undertaken following completion of the dredging. There may be some element of overlap between the two operations. Piling will take some 5-6 months to complete, based on 70 piles at one pile every 1-2 days.

#### *2.1.2.3. Breakwaters, pontoons, and fingers*

The installation of the pontoons/breakwater units would be as follows:

Breakwater, walkway and finger units will be manufactured off site and brought to site via road. They and other items will be stored as required within a site compound on the breakwater adjacent to the proposed area. The breakwater units may, depending on their size and road constraints, be brought to site via sea.

Once on site the units will be lifted into the water from the shore using a large mobile crane. The units will then be floated into position and connected to each other and the support piles.

[9] A tremie is a pipe that will be used to pour concrete underwater in a way that avoids washout of cement from the mix due to water contact.

A mobile crane will also lift the access gangway (25 x 2.5 m) into position. The gangway will be fixed to a concrete bank seat constructed on the west breakwater and allowed to move on the pontoon as the tide rises and falls.

Works will be required to provide ducting, pipes and cabling to connect services to the berths via the gangway. Services will be lighting, water supply, toilets and electricity supply.

Ancillary items will include the installation of trolley bays on the pontoons, toilet facilities on the pontoons/breakwaters, small craft harbour furniture such as power and water outlets, lights and ducting for same, lifebuoys and fire extinguishers, emergency ladders and cleats and bollards for tying up to. These will be installed on the pontoon and breakwater units when these units are in position. Breakwaters, walkway pontoons, fingers, *etc.* will be manufactured off site and installed once the piles are in place. There can be some overlap between these operations and the piling, perhaps one month. The ancillary items will take 2 to 3 months to install.

### 2.1.3. Operation Phase

**Maintenance**

Activities associated with the operation phase of the Proposed Development will include occasional inspection and minor maintenance of floating breakwaters, pontoons, walkways and fingers and gangway. Other facilities that will be maintained include toilet facilities, power and water kiosks and other ancillary furniture.

**Vessel Traffic**

The operation phase of the Proposed Development will see an increase in vessel traffic moving in and out of Dingle Harbour. However, as Dingle port and marina are currently quite busy ports any increases in traffic due to the SCH will not be significant changes and volume of traffic utilising and moving in and out of Dingle Harbour will not change significantly**.**

### 2.1.4. Decommission Phase

The Proposed Development will be maintained in the long term and will not be decommissioned.

## *2.2. Baseline Environment*

This section provides a description of the baseline environment of the Proposed Development area. The description of the baseline environment is based on a series of baseline field surveys commissioned for the An Daingean SCH, a review of relevant mapping and reports by the National Biodiversity Data Centre (NBDC) and associated environmental documents prepared for the An Daingean SCH (see **Table 2.1**)

### 2.2.1. Overview of Dingle Port/Harbour

Dingle port and marina are active sites, the port receiving marine traffic, mainly trawlers, with a small fish processing plant nearby, has berths for numerous smaller fishing craft. The marina has 100 berths and 20 visitor berths. The area immediately adjacent to the port and marina is built-up urban fabric and much of the rest of the harbour area is rocky or stony shoreline, with some sand and mud substrate on the eastern side of the Harbour, at Milltown just to the west of Dingle town and at the far western end of the Harbour at Burnham Inlet (also known as Burnham Wood) (see **Figure 1.1**). The narrow entrance to Dingle Harbour is low rocky cliff and outside Dingle Harbour the coast is high rocky coastal cliff, up to 140m in places.

**Table 2.1: Biodiversity site visits/surveys undertaken for the An Daingean (SCH).**

| Biodiversity Element | Site Visit/ Survey Details | Notes |
|---|---|---|
| Ecological Survey - Goldcrest | Bird, Habitat and Otter Surveys | In 2021, A Wintering Bird Survey covering Dingle Harbour and the port and marina areas, was conducted by means of Vantage Point (VP) counts at five sites of all seabird and waterbird species on two days for the months of January through June, one at high tide, one at low tide.<br>The Breeding Birds Survey included an area to within 500 m of the proposed new SCG and included all the shoreline in the inner Dingle Harbour area in order to include any potential nesting waders or waterbirds<br>A Black Guillemot Survey was also undertaken in 2021. The scope of this was to determine the nesting locations and foraging areas and was conducted during one day in each of the four months April to June 2021. The survey covered all possible nesting habitats in Dingle Harbour and within 2 km of the proposed dump area outside of Dingle Harbour.<br>In 2021, a Foraging Chough Survey was carried out in May and June 2021 and covered 1 km from all coastal areas in Dingle Harbour and the outer sea cliffs, to 2 km from the proposed dump area. The survey considered habitats used by foraging birds.<br>In 2021, a Herring Gull Colony Survey was undertaken. The Herring Gull Colony Survey was to assess the two known colonies in the study area at Shirrag An Searreach and Máthair an tSearraigh and the Doonsheane |

| Biodiversity Element | Site Visit/ Survey Details | Notes |
|---|---|---|
| | | area, and to search further in the study area to locate any additional colonies, sub-colonies or isolated nesting pairs. This was to cover the outer Dingle Harbour coastal cliff areas and included the area within 2 km of the proposed dump zone. It was carried out on two days, one in May and one in June, during the recommended period to ascertain breeding status.<br>In 2021, a Cliff-nesting Seabird Survey was undertaken. As with the Herring Gull Colony Survey mentioned above, the Cliff-nesting Seabird Survey assessed all nesting seabirds on the coastal cliffs to 2 km from the proposed dump area. It was carried out over two full days, one each in May and June, and the peak nesting period for the possible nesting seabird species. Where possible, counts of nests were made and status of breeding of each species was confirmed.<br>The proposed extension of Dingle marina involves the dredging of material from the footprint of the site, with the proposed dredged material disposal site in the vicinity of the dump site used in the past *c.* 450 m from the nearest shore. A survey VP was selected as the nearest point to the Dump Area on the adjacent mainland with an uninterrupted view over the proposed site at an elevation of 55 m.<br>A detailed Habitats Survey was carried out in March, May and June 2021 that included the inner Dingle Harbour area, the port and marina areas and out to Dingle Harbour Entrance and included all maritime and littoral habitats up to the spring high tide line.<br>In 2021, Otter Survey work was also undertaken in the area. The scope of the surveys for the Otter Survey work was the whole of Dingle Harbour, including the marina and port areas, while the scope for the Dredge spoil disposal Area Survey is to be a visual survey of the 1 km x 0.5 km proposed dump area from the nearest cliff top vantage point, just west of Short Strand. |
| Marine benthic survey<br>Aquatic Service Unit (ASU) UCC | Survey for the Dingle Harbour Marina Development<br>&<br>Dredge Spoil Disposal | Aquatic Services Unit were commissioned to undertake a marine benthic assessment of the subtidal communities within the area of the proposed marina development in Dingle Harbour and the proposed site where the dredge spoil from the proposed marina site will be disposed. The survey was undertaken in June 2021. A total of 15 sub-tidal grab samples were collected; 5 samples were collected within the footprint of the proposed marina with 10 samples collected from within and adjacent to the disposal site. |

**Table 2.2: Desktop studies undertaken for the An Daingean (SCH).**

| Biodiversity Element | Details | Notes |
|---|---|---|
| Marine Mammal Risk Assessment<br>Irish Whale and Dolphin Group (IWDG) | Desktop Study | This risk assessment was based on original data collected by the IWDG and a review of the available literature. The IWDG Sightings dataset, which is validated and updated daily, was accessed (on 20th May 2021) and data from 2010 to present was exported and mapped. |

### 2.2.2. Goldcrest Ecological Survey (Birds, Otters and Habitats)

Goldcrest Environmental Services was commissioned to undertake an ecological survey consisting of bird, otter and habitat surveys of the coastal area around Dingle Harbour, Co. Kerry (Goldcrest, 2021) (see **Section 2.2.2**). The surveys were to assess the ecological importance of the area and inform the assessment of possible impacts due to the activities proposed for the construction and operation of the Proposed Development. The surveys were carried out between January and August 2021. These surveys were:

- Wintering Birds Survey
- Vantage Point Bird Survey of the proposed dredge spoil disposal site
- Black Guillemot Survey
- Breeding Birds Survey
- Foraging Chough Survey
- Herring Gull Colony Survey
- Cliff-nesting Seabird Survey
- Otter Survey
- Habitats Survey

#### *2.2.2.1. Birds*

As part of the Daingean SCH development a series of bird surveys were undertaken in Dingle Harbour and over the dredge spoil disposal site between January 2021 and June 2021.

**Wintering Birds Survey**

Wintering Bird Surveys were conducted twice monthly from January to April inclusive, one at high tide, one at low tide. Each survey comprised counts of all shore and seabird species from five vantage points in the Harbour and were of between three and a half and four hours duration. The five vantage points which are shown in **Figure 2.2** gave full visual coverage of all coastal Harbour areas.

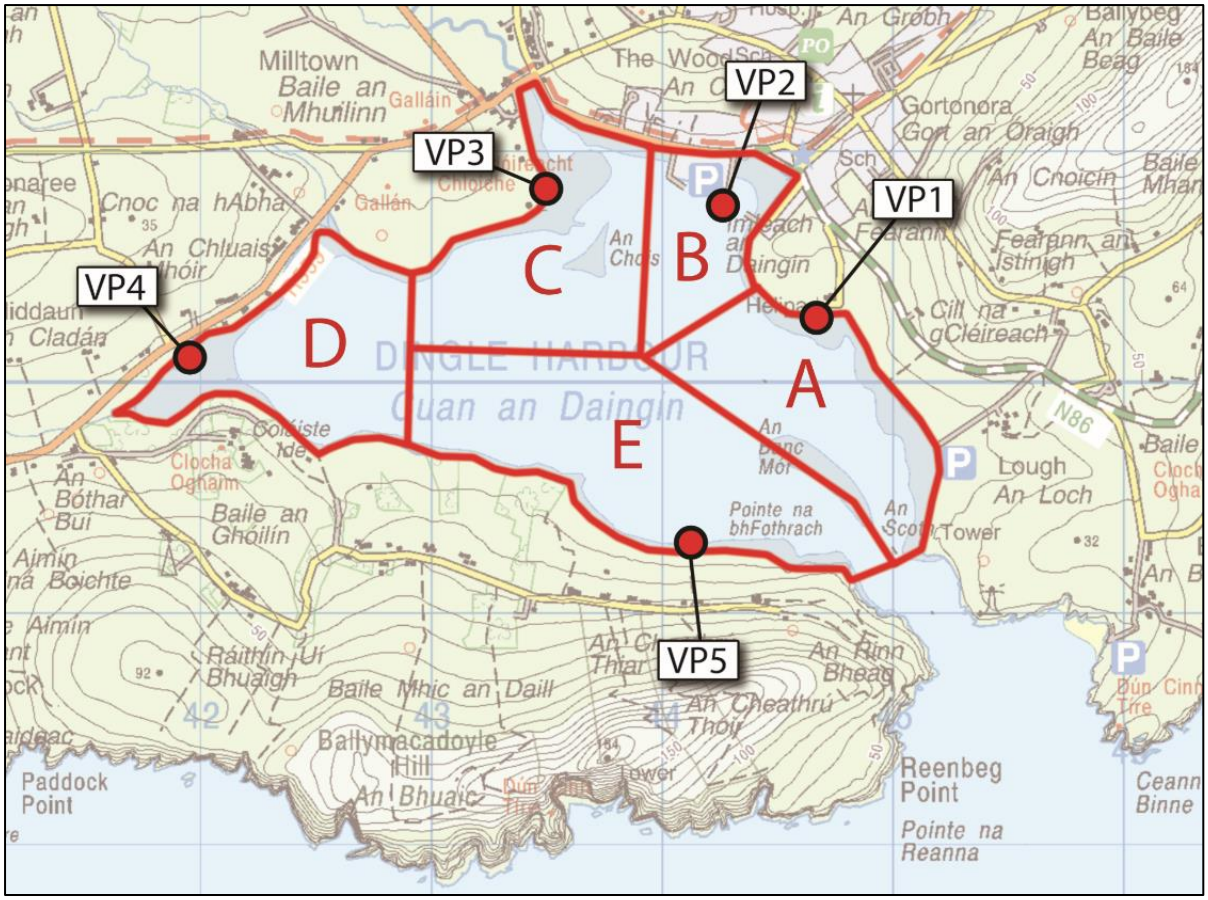


**Figure 2.2: Vantage Points and division of survey sectors (lettered A to E) for the Wintering Birds Survey January to April 2021.**

**Results:**

A total of 41 target species were recorded (see **Table 2.3**) (40 waterbird species and Kingfisher). The wintering waterbird species in Dingle Harbour are varied, with several Red- and Amber-listed species utilising the various littoral habitats, of which Red-breasted Merganser and Brent Goose (both of which are SCI species of SPAs in Ireland) are perhaps the most important on a local level. Of the 41 species recorded, 33 are SCI species of SPAs in Ireland.

**Table 2.3: Summary of peak counts of each High and Low Tide count during the Winter Bird Survey, January to April 2021. Highest counts for the period are highlighted (pale orange). BoCCI classification is red (Red-listed, High Conservation Concern), orange (Amber-listed, Medium Conservation Concern) and green (Low Conservation Concern).**

| Winter Bird Survey | | HW Jan | LW Jan | HW Feb | LW Feb | HW Mar | LW Mar | HW Apr | LW APR |
|---|---|---|---|---|---|---|---|---|---|
| Species | BoCCI | Total | Total | Total | Total | Total | Total | Total | Total |
| Brent Goose | | 101 | 103 | 96 | 98 | 87 | 97 | 101 | 101 |
| Red-breasted Merganser | | 16 | 14 | 15 | 14 | 14 | 14 | 13 | 13 |
| Wigeon | | 46 | 46 | 20 | 28 | 45 | 43 | 13 | 13 |
| Mallard | | 4 | 5 | 3 | 7 | 7 | 8 | 4 | 8 |
| Teal | | 25 | 23 | 14 | 17 | 12 | 15 | 5 | 9 |
| Little Grebe | | 4 | 4 | 1 | 1 | 3 | 2 | 0 | 1 |
| Red-throated Diver | | 1 | 3 | 2 | 0 | 0 | 0 | 1 | 0 |
| Great Northern Diver | | 3 | 2 | 1 | 3 | 0 | 1 | 1 | 2 |
| Fulmar | | 0 | 1 | 0 | 0 | 5 | 0 | 2 | 0 |
| Grey Heron | | 2 | 4 | 0 | 4 | 5 | 4 | 6 | 5 |
| Little Egret | | 3 | 3 | 0 | 3 | 3 | 4 | 6 | 6 |
| Gannet | | 3 | 2 | 0 | 0 | 3 | 0 | 25 | 11 |
| Shag | | 2 | 4 | 7 | 19 | 6 | 13 | 7 | 11 |
| Cormorant | | 3 | 9 | 16 | 16 | 16 | 14 | 18 | 10 |
| Oystercatcher | | 7 | 2 | 12 | 28 | 23 | 28 | 2 | 12 |
| Grey Plover | | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ringed Plover | | 0 | 3 | 0 | 6 | 12 | 7 | 5 | 5 |
| Lapwing | | 4 | 0 | 0 | 0 | 7 | 0 | 0 | 0 |
| Curlew | | 2 | 5 | 9 | 16 | 17 | 37 | 1 | 8 |
| Whimbrel | | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 3 |
| Bar-tailed Godwit | | 2 | 0 | 0 | 0 | 0 | 4 | 0 | 1 |
| Turnstone | | 0 | 2 | 0 | 3 | 4 | 6 | 0 | 4 |
| Sanderling | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Dunlin | | 0 | 1 | 0 | 3 | 0 | 6 | 0 | 9 |
| Snipe | | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Greenshank | | 3 | 6 | 7 | 7 | 7 | 12 | 3 | 5 |
| Redshank | | 11 | 11 | 22 | 23 | 32 | 25 | 12 | 23 |
| Black-legged Kittiwake | | 1 | 0 | 0 | 1 | 0 | 1 | 2 | 0 |
| Black-headed Gull | | 10 | 20 | 27 | 38 | 67 | 105 | 17 | 14 |
| Mediterranean Gull | | 0 | 1 | 0 | 5 | 0 | 1 | 0 | 1 |
| Common Gull | | 5 | 13 | 23 | 36 | 9 | 27 | 0 | 11 |
| Lesser Black-backed Gull | | 1 | 0 | 1 | 2 | 2 | 1 | 31 | 32 |
| Herring Gull | | 59 | 71 | 24 | 95 | 26 | 121 | 115 | 236 |
| Iceland Gull | | 1 | 0 | 1 | 2 | 2 | 2 | 0 | 0 |
| Glaucous Gull | | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Great Black-backed Gull | | 18 | 10 | 0 | 10 | 29 | 39 | 42 | 81 |
| Sandwich Tern | | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |
| Black Guillemot | | 6 | 3 | 4 | 5 | 11 | 7 | 6 | 0 |
| Razorbill | | 1 | 0 | 0 | 0 | 2 | 5 | 6 | 23 |
| Guillemot | | 0 | 1 | 0 | 0 | 1 | 2 | 6 | 4 |
| Kingfisher | | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Highest total per species

**The Breeding Birds Survey**

The Breeding Birds Survey focused on the immediate area of and around the proposed marina site and the coastline of the inner Dingle Harbour area. The survey was carried out on two dates of each month, April to July inclusive, and one final visit in early August to ensure any late-nesting species or second or third broods were included. All species recorded in the 500 m buffer and to 100 m on transects and the breeding status of each species was assessed as the breeding season progressed. A map of the survey area is shown **Figure 2.3** below.

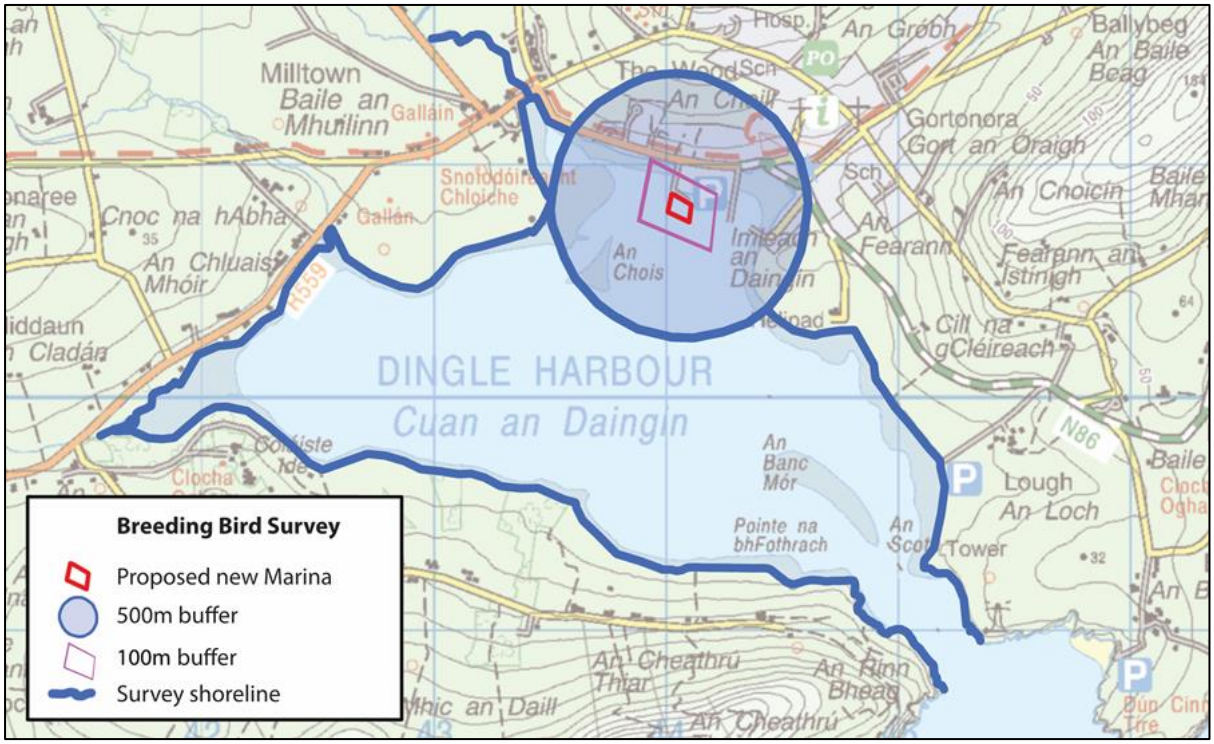


**Figure 2.3: Breeding Birds Survey area (shaded blue circle) showing 500 m buffer around the proposed new marina area and the coastal survey area (blue line) of the remaining Dingle Harbour shoreline, conducted from April to August 2021.**

**Results:**

The Breeding Birds Survey found a total of 84 species in the survey area, of which 28 were confirmed breeding, 10 were probable breeders, 10 were possible breeders and the remaining 36 were migrant or summering birds. Of the 84 species recorded, 31 are SCI species of SPAs in Ireland. The breeding status of the 84 species in the full survey area along with SCI species highlighted in bold is shown in the **Table 2.4** below.

**Table 2.4: Breeding status of species recorded during the Breeding Birds Survey, Dingle Harbour, April to August 2021.**

| Species | | April 2 survey days | May 2 survey days | June 2 survey days | July 2 survey days | August 1 survey day | Notes | Highest breeding status |
|---|---|---|---|---|---|---|---|---|
| Conservation status (BoCCI, 2021, breeding, passage) | | | | | | | | |
| **Great Northern Diver** | | M | M | | | | Wintering birds, none nesting | |
| **Red-throated Diver** | | M | M | | | | Wintering birds, none nesting | |
| **Fulmar** | | F | F | | | F | Nesting just outside area | |
| **Gannet** | | F | F | F | | F | | |
| **Cormorant** | | F | M | F | F | F | | |
| **Shag** | | F | F | F | F | F | | |
| **Grey Heron** | | ON | ON | NY | NY | FL | 4 pairs in Burnham Wood | Confirmed |
| Little Egret | | N | ON | NY | FL | FL | 6-7 pairs in Burnham Wood | Confirmed |
| **Brent Goose** | | M | M | | | | Wintering birds, none nesting | |
| **Mallard** | | P | FL | FL | | | 2 pairs nested in Burnham Wood | Confirmed |
| **Wigeon** | | M | M | | | | Wintering birds, none nesting | |
| **Eurasian Teal** | | M | M | | | | Wintering birds, none nesting | |
| **Red-breasted Merganser** | | M | M | | | | Wintering birds, none nesting | |
| Sparrowhawk | | F | F | F | ON | | 1 pair nested successfully at Burnham Wood | Confirmed |
| Kestrel | | F | H | H | | | Regularly hunting over area, but no nesting | Possible |
| **Peregrine Falcon** | | | F | 2 | | | Not breeding in area | |
| Pheasant | | H | H | H | H | H | Near Milltown Bridge | Possible |
| **Oystercatcher** | | H | H | H | H | H | Feeding in area, no nesting | Possible |
| **Ringed Plover** | | H | H | H | H | H | Suitable habitat on S shore, but no nesting | Possible |
| **Lapwing** | | M | | | | M | Wintering birds, none nesting | |
| Knot | | M | | | | | | |
| **Sanderling** | | M | M | | | | | |
| **Turnstone** | | M | M | | | | | |
| **Dunlin** | | M | M | | | | | |
| Common Sandpiper | | | M | P | P | | Pair present, but no nest found, on S shore | Probable |
| **Redshank** | | M | M | | | M | | |
| **Greenshank** | | M | M | | M | M | | |
| **Bar-tailed Godwit** | | | M | | | | Wintering birds, none nesting | |
| **Curlew** | | M | M | | | M | Wintering birds, none nesting, no suitable habitat | |
| Whimbrel | | M | M | | | M | Migrants | |
| Woodcock | | H | | | | | Recorded on trail cam, Burnham Wood, in April, but no subsequent sightings | Possible |
| Snipe | | M | | | | | | |

| Species | | April 2 survey days | May 2 survey days | June 2 survey days | July 2 survey days | August 1 survey day | Notes | Highest breeding status |
|---|---|---|---|---|---|---|---|---|
| **Black-headed Gull** | | M | M | | M | M | Wintering birds, none nesting, no suitable habitat | |
| **Common Gull** | | M | M | M | M | M | | |
| Mediterranean Gull | | M | | | M | M | | |
| **Herring Gull** | | F | F | F | F | F | Breeding just outside this study area | |
| Great Black-backed Gull | | F | F | F | F | F | Breeding just outside this study area | |
| **Lesser Black-backed Gull** | | F | F | F | F | F | Breeding just outside this study area | |
| **Sandwich Tern** | | M | | | | | Regularly fishing in Harbour area, but no nesting, no suitable habitat | |
| Black Guillemot | | H | H | H | H | H | Breeding just outside this study area | Possible |
| **Guillemot** | | M | M | | M | M | | |
| **Razorbill** | | | M | M | | M | | |
| Rock Dove | | H | D | D | A | | Several probable nests in urban area of Dingle | Probable |
| Woodpigeon | | H | D | FL | FL | H | Confirmed nesting in garden in urban Dingle, and near Burnham | Confirmed |
| Collared Dove | | P | P | FL | | | Confirmed nesting in garden in urban Dingle | Confirmed |
| Cuckoo | | | S | | | | One singing on one date in May at Burnham | Possible |
| Swift | | | | N | N | | 2-4 pairs, in urban Dingle | Probable |
| Skylark | | H | S | D | D | | Fields to SE of Dingle town | Probable |
| Sand Martin | | M | D | | | | Display noted at Milltown Bridge, but no nesting | Possible |
| House Martin | | | M | ON | ON | ON | 4+ occupied nests in urban Dingle | Confirmed |
| Barn Swallow | | | M | ON | FL | FL | Common, around farms, sheds, c.10-15 nests | Confirmed |
| Meadow Pipit | | H | D | FF | FF | H | Fields to SE, W and SW of Dingle town | Confirmed |
| Rock Pipit | | H | D | FF | FF | FL | 2-3 pairs on Dingle seafront, including 1 at marina | Confirmed |
| Pied Wagtail | | H | P | FF | FF | FL | 10+ pairs, in and around town Dingle town | Confirmed |
| Grey Wagtail | | H | P | P | FL | | 1 pair, stream near centre of Dingle town | Confirmed |
| Wren | | S | S | P | FL | P | Common in well-vegetated gardens, hedgerow | Confirmed |
| Dunnock | | S | H | P | P | P | Common in well-vegetated gardens, hedgerow | Probable |
| Robin | | P | FL | P | FL | | Common in well-vegetated gardens, hedgerow | Confirmed |
| Wheatear | | | M | | | | | |
| Stonechat | | P | P | FL | FL | | Common along field edges, rough ground | Confirmed |
| Song Thrush | | P | P | T | T | | Common in gardens and hedgerow | Probable |
| Mistle Thrush | | P | T | T | T | H | 2-4 pairs, in gardens, hedgerow, fields | Probable |
| Blackbird | | T | D | FL | T | H | Common in gardens, hedgerow, woodland | |
| Blackcap | | | S | T | T | | 3-4 singing birds Burnham, 3-5 singing elsewhere, in mature hedgerow, gardens | Probable |
| Willow Warbler | | S | T | FF | T | T | 6-8 singing birds/territories, in hedgerow, woodland edge | Confirmed |
| Chiffchaff | | S | T | ON | T | | 2 pairs/territories Burnham | Confirmed |
| Goldcrest | | H | H | T | H | H | Regular, in gardens, hedgerow, woodland | Probable |

| Species | | April 2 survey days | May 2 survey days | June 2 survey days | July 2 survey days | August 1 survey day | Notes | Highest breeding status |
|---|---|---|---|---|---|---|---|---|
| Great Tit | | H | FF | FL | H | | Common in gardens, hedgerow, woodland | Confirmed |
| Blue Tit | | P | ON | FL | H | | Common in gardens, hedgerow, woodland | Confirmed |
| Coal Tit | | S | T | T | P | | Small numbers in mature gardens, conifers | Probable |
| Magpie | | P | ON | ON | FL | | Common in gardens, hedgerow, woodland | Confirmed |
| Jackdaw | | ON | ON | FL | | | Common in all areas, many nests, in chimneys and old buildings | Confirmed |
| **Chough** | | F | F | | | F | Foraging in area but not nesting | |
| Rook | | ON | ON | FL | FL | | Common in all areas, several colonies | Confirmed |
| Hooded Crow | | T | T | FL | FL | | Common in all areas, several family parties | Confirmed |
| Raven | | T | P | FL | | | Pairs and young feeding in area but not nesting | Possible |
| Starling | | T | ON | FL | FL | FL | Common, 10-12 nests, all in buildings | Confirmed |
| House Sparrow | | T | ON | FF | FF | | Common, urban areas and farms | Confirmed |
| Chaffinch | | T | T | FL | FL | | Common, urban areas, hedgerow and woodland | Confirmed |
| Linnet | | P | P | FL | FL | | Scarce, fields and hedgerow, gorse | Confirmed |
| Redpoll | | F | F | F | | | | |
| Goldfinch | | H | T | T | FL | | Common, gardens and hedgerow | Confirmed |
| Greenfinch | | | H | H | H | | Uncommon, gardens and hedgerow | Possible |
| Siskin | | F | F | | F | | | |
| Bullfinch | | H | H | P | T | | | Probable |

BoCCi Status

Red-listed (high conservation concern), breeding, passage

Amber-listed (medium conservation concern), breeding

Green-listed (low conservation concern)

BTO Breeding status

Confirmed breeding

Probable breeding

Possible breeding

Non-breeding

**Black Guillemot Survey**

Black Guillemots are coastal seabirds which nest in sea caves, coastal boulder fields at the base of cliffs and occasionally on man-made structures such as pier walls and groynes (Walsh *et al*., 1995). They are frequently recorded in and around the Dingle port and marina areas, so the survey was to include this area, the whole of the Dingle Harbour area, as well as the outer Dingle Harbour area to 2 km from the proposed dredge spoil disposal site.

A pre-survey check of the coastline identified potentially suitable nesting areas (areas with coastal cliff/boulder fields and man-made structures, piers, *etc*. >3 m high), and eliminated unsuitable stretches of coast (flat, estuarine and/or gently sloped coastline, no boulders, cliffs of structures >3 m high). The unsuitable areas were thus excluded from further investigation.

The survey area for Black Guillemots is shown in **Figure 2.4** below.

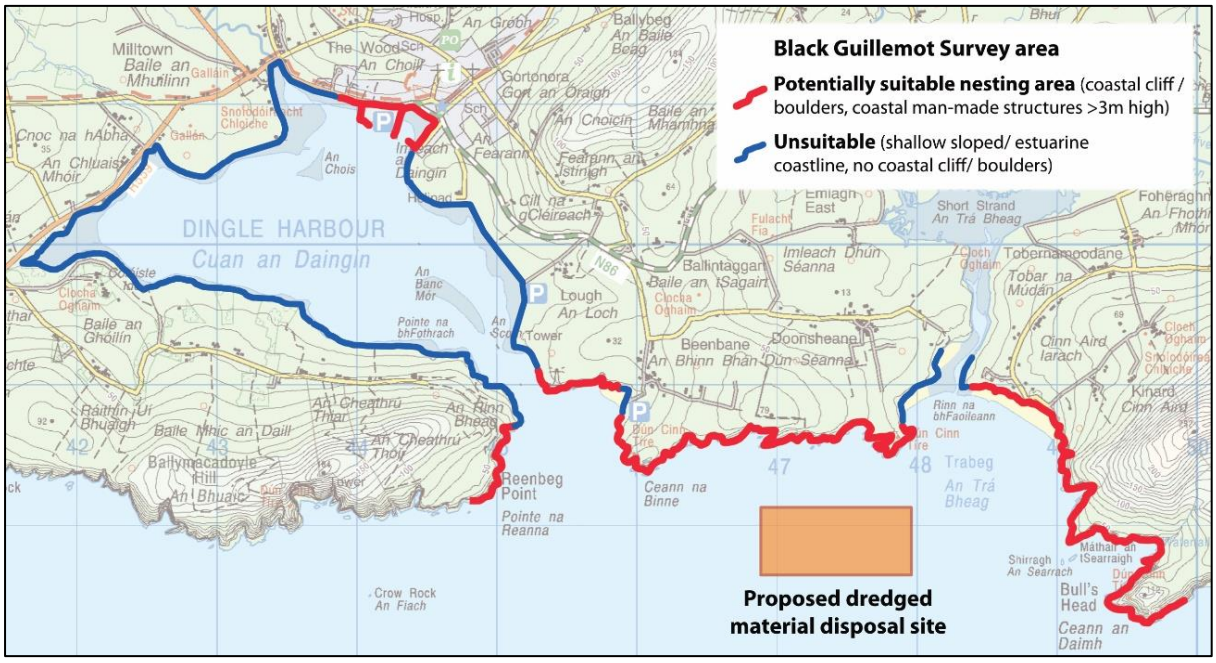


**Figure 2.4: The Black Guillemot Survey area, showing potentially suitable coastal nesting habitat included in the Survey (red), and unsuitable coastal nesting habitat (blue) excluded from the Survey work.**

Observations were made in accordance with survey guidelines published in the *Seabird Monitoring Handbook* (Walsh *et al*., 1995) and included visual inspection of suitable sites to detect adult birds on the water at or close to potential nesting sites. Flat or gently shelving estuarine coastal habitats, such

as parts of the inner Dingle Harbour area, offered no possible nest sites so were excluded from the search area.

The recommended census unit is 'individual adult' recorded before 0900 BST in the pre-breeding season (April), the best proof of breeding, though according to Walsh *et al*. (1995), Apparently Occupied Sites (AOS) can sometimes be counted reasonably accurately at small colonies later in the season, but numbers are easily underestimated. Accurate correction factors to breeding pairs require specialised study of individual breeding groups, impractical for most general surveys other than very localised monitoring. It was however considered possible, given the small survey area, that a full determination of occupied nest sites could be made, rather than relying on the pre-breeding adult counts alone. With this consideration, further observations made during the Cliff-nesting Seabird Survey (which were to cover the same coastal cliffs), and the Wintering Birds Survey and the Breeding Birds Survey (which would be covering the inner Dingle Harbour area, the port and marina), could further inform the breeding status and nesting sites for Black Guillemot in the survey area as the breeding season progressed.

As the preferred observation time for detecting nesting Black Guillemots, especially in the pre-breeding season, was before 0900 BST, the April and May survey days were split into 3 hours, starting at or close to dawn, while the later survey days in June and July concentrated on confirming potential nesting status at the nest sites detected in early spring.

**Results:**

Black Guillemots were detected in Dingle Harbour and the port and marina area throughout the Wintering Birds Survey, from January to April 2021. However, the only suitable nesting sites for Black Guillemot all fell within Sector B – the port and marina area, and the winter counts for that sector were as follows: January – 4 individuals; February – 3 individuals; March – 4 individuals; April – 0 individuals. No further sightings of Black Guillemots were made during survey work in and around the port and marina area after 21st April (during the Black Guillemot Survey), nor during the Breeding Bird Survey conducted in that area from April to August.

The four early morning pre-breeding survey visits in April and May detected up to eight individuals at or close to coastal cliffs in the outer Dingle Harbour area and display behaviour between pairs was recorded. On the 21st April and 4th May surveys, three pairs were seen actively displaying close to a large boulder field below a high cliff at Ceann na Binne, to the east of Dingle Harbour entrance and another pair were on the water below and were seen flying into another boulder field below a high coastal cliff near Doonsheane.

Survey visits in June and July confirmed these two sites, with 3 and 1 active nests respectively, with adult birds recorded flying into the boulder fields carrying fish on the visits undertaken on 8th June and 16th July. The areas where individual Black Guillemots were recorded on the sea during the four April and May survey visits and the confirmed nest sites from the June and July survey visits are shown in **Figure 2.5** below.

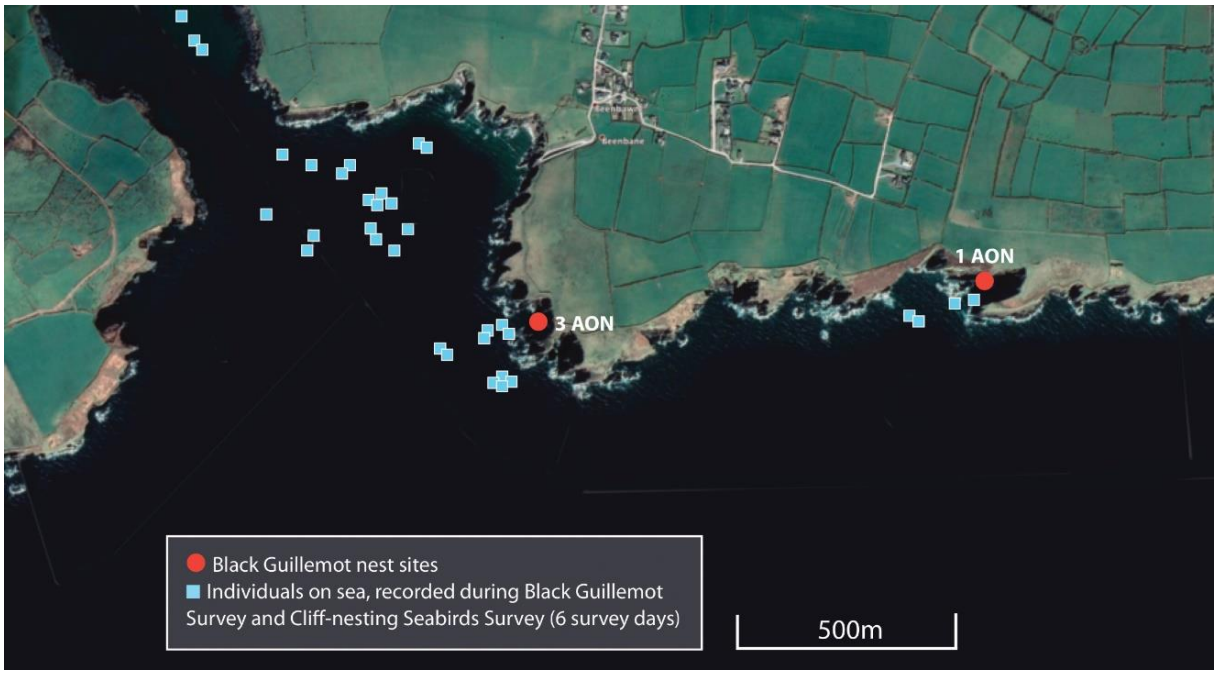


**Figure 2.5: Black Guillemots recorded on the sea (blue) in the four pre-breeding survey visits in April and May 2021 and the two nest sites of 3 and 1 pairs confirmed in two June and July 2021 survey visits.**

**Foraging Chough Survey**

Chough is an SCI species of SPAs in Ireland. The survey area included was within 1 km of all coastal areas in the inner Dingle Harbour area as well as the outer sea cliffs to within 2 km of the dredge spoil disposal area (as with the Cliff-nesting Seabird Survey). The coastal areas were searched by a combination of walking/scanning with binoculars and telescope and on the inland areas by driving and stopping every 100-200 m to scan and listen for any Chough. Whenever flying Choughs were encountered, they were observed until landing and foraging or until out of view and all foraging birds were mapped and assigned the habitat type on which they were feeding, in accordance with the habitat classification in *Fosset, 2000*.

A map of the Foraging Chough Survey area is shown in **Figure 2.6** below.


**Figure 2.6: Foraging Chough Survey area, including all areas 1 km from the Dingle Harbour coastline and the coastal cliffs up to 2 km from the proposed dredge spoil disposal area.**

**Results:**

The survey recorded a total of 55 foraging Chough during the 12 hours of survey work. The flock sizes varied from 1 to 7, resulting in 21 specific sites where the habitat was assessed. These are shown in **Figure 2.7** below.


**Figure 2.7: Numbers and location of foraging Chough detected during the survey on 12th May and 10th June 2021.**

There were 21 encounters with flocks or individual Choughs (12 during the May count, 9 in the June count) of a total of 55 birds (26 during the May count, 29 during the June count). The average flock size was 2.61, with the lowest being single individuals, the highest flock size was of 7 birds and included recently fledged young.

The habitat types on which foraging Chough were recorded is shown in **Table 2.5** below.

18 of the 21 (85.7%) flock encounters were foraging on GA1 Improved Agricultural Grassland, the remaining 4 (flocks of 2, 1, 3 and 1 individuals) were foraging on CS Sea Cliffs (3) and HH Heath (1).

All Choughs encountered during the survey occurred along a thin coastal stretch, none further than 250 m from the sea. None were encountered on improved agricultural grassland or any other habitat further inland and none were recorded in or around Dingle town or the port and marina area.

**Table 2.5: Habitat types used by foraging Chough in the study area in May and June 2021.**

| Date | Time | No. birds | Habitat type *Fosset, 2000* | Foraging habitat type | Notes |
|---|---|---|---|---|---|
| 12.05.2021 | 09:35 | 5 | GA1 | Improved agricultural grassland | Close cropped, grazed maritime sward |
| | 09:38 | 3 | GA1 | Improved agricultural grassland | Close cropped, grazed maritime sward |
| | 09:46 | 1 | GA1 | Improved agricultural grassland | Close cropped, grazed maritime sward |
| | 09:55 | 2 | HH | Sea cliffs | Soil patches on non-grazed maritime sward |
| | 10:17 | 2 | GA1 | Improved agricultural grassland | Grass field (cattle) |
| | 10:21 | 2 | GA1 | Improved agricultural grassland | Grass field (cattle) |
| | 10:30 | 1 | CS | Sea cliffs | Soil patches on non-grazed maritime sward |
| | 11:05 | 1 | GA1 | Improved agricultural grassland | Grass field (cattle/sheep) |
| | 14:20 | 2 | GA1 | Improved agricultural grassland | Grass field (cattle/sheep) |
| | 14:25 | 3 | GA1 | Improved agricultural grassland | Grass field (cattle/sheep) |
| | 14:34 | 1 | GA1 | Improved agricultural grassland | Grass field (cattle/sheep) |
| | 14:41 | 3 | GA1 | Improved agricultural grassland | Grass field (cattle/sheep) |
| 10.06.2021 | 13:14 | 3 | HH | Heath | Soil patches on heath-covered slope |
| | 13:20 | 2 | GA1 | Improved agricultural grassland | Close cropped, grazed maritime sward |

| Date | Time | No. birds | Habitat type *Fosset, 2000* | Foraging habitat type | Notes |
|---|---|---|---|---|---|
| | 13:26 | 2 | GA1 | Improved agricultural grassland | Close cropped, grazed maritime sward |
| | 13:47 | 1 | CS | Sea cliffs | Soil patches on non-grazed maritime sward |
| | 14:11 | 7 | GA1 | Improved agricultural grassland | Family party. Grass field (cattle/sheep) |
| | 14:25 | 4 | GA1 | Improved agricultural grassland | Grass field (cattle) |
| | 18:00 | 5 | GA1 | Improved agricultural grassland | Family party. Grass field (cattle/sheep) |
| | 18:02 | 3 | GA1 | Improved agricultural grassland | Grass field (cattle/sheep) |
| | 18:24 | 2 | GA1 | Improved agricultural grassland | Grass field (cattle/sheep) |

**Herring Gull Colony Survey**

The survey was carried out on two full survey days in May and June 2021. The survey area covered all coastal cliffs to within 2 km of the proposed dump area (see **Figure 2.8** below).

Observations were to be made on foot from the adjacent cliff tops, using 8x42 binoculars and 30x telescope. The census unit used was based on *The Seabird Monitoring Handbook* (Walsh *et al*., 1995), in which the recommended census unit for Herring Gull is an AON, *i.e.* a well-constructed nest attended by an adult and capable of holding eggs or an adult apparently incubating. Counts should be made during the mid-incubation period, usually late May-early June, between 0900 and 1600 BST.

Without repeated visits during the entire nesting season it was not possible to produce estimates of productivity, but the maximum breeding status based on BTO Breeding Bird Survey criteria (BTO, 2021) *e.g*. adult incubating eggs, nest building, display, *etc.* was possible, based on observation during the two visits.

Two Herring Gull colonies were known prior to the survey being carried out in 2021 at Doonsheane and Shirragh an Searrach/Mathair an tSearraigh (authors own notes, Balmer *et al.,* 2013), but a full search of the survey area was made to detect any additional unknown colonies or isolated nesting pairs. The Cliff-nesting Seabird Survey (see **Figure 2.8** below), carried out in May and June 2021 was also used to inform the presence of additional nest sites, if any, outside the known colony areas.

For recording purposes, the cliff areas were divided into survey sectors A – G, shown in **Figure 2.9** below.

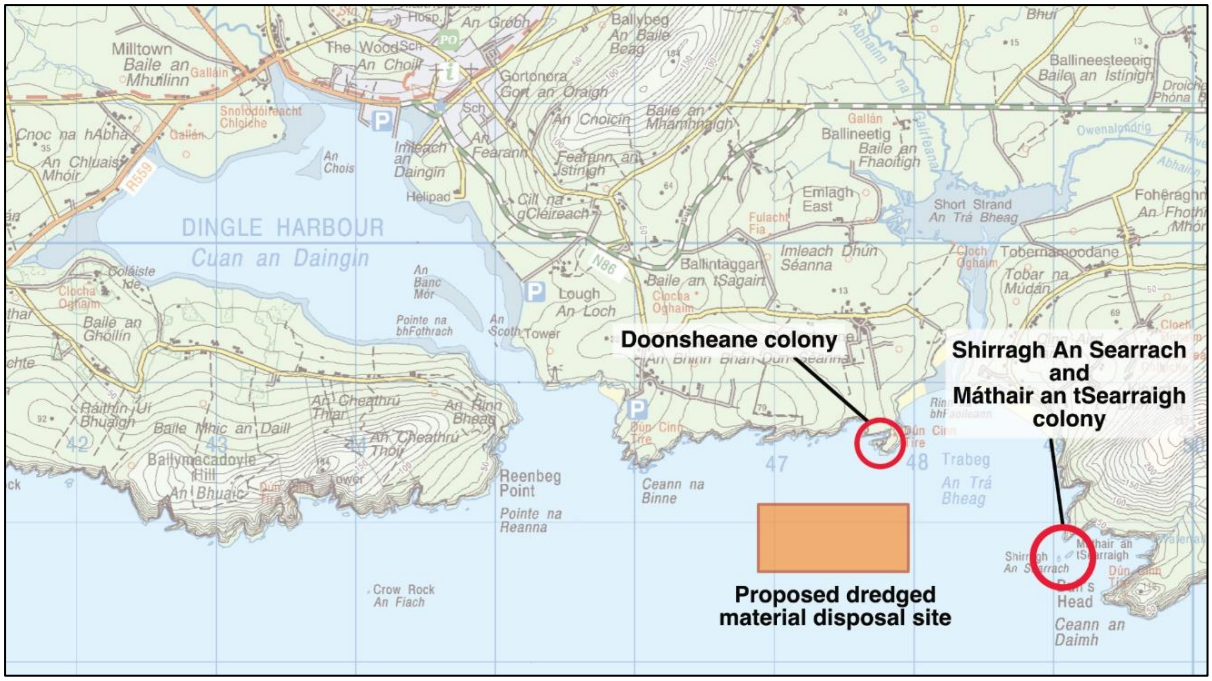


**Figure 2.8: The location of the two known Herring Gull colonies in the study area, Doonsheane and the two adjacent islets of Shirragh An Searrach and Máthair an tSearraigh in relation to the proposed dredge spoil disposal site.**


**Figure 2.9: Designated sectors A–G in the Herring Gull Colony Survey area.**

**Results:**

66 confirmed AONs were detected in 6 Sectors, 57 of which were at the two known colonies in the study area at Doonsheane (33) and Shirragh An Searreach /Máthair an tSearraigh (24). There was also a small sub-colony of 4 AON on a high vertical cliff 750 m east of Trabeg in Sector E and 3 AON on a steep cliff 1 km west of Doonsheane. The remaining 3 AON were single nests on the top of rock pinnacles in Sectors A, E and G.

There were numerous fledged and almost-fledged juvenile Herring Gulls recorded during the June survey, with 15 seen at Doonsheane and 22 at Shirragh An Searreach /Máthair an tSearraigh. Without constant repeated survey visits it is not possible to estimate overall productivity per nest and by the June visit there were numerous fully-fledged and independent Herring Gull fledglings, so it was not possible to determine their exact origin in relation to the colonies (see results in **Table 2.6** below).

**Table 2.6: Number and location of AON (Apparently Occupied Nests) found during the Herring Gull Colony Survey in May and June 2021 and breeding status for each species.**

| Sector | Site | Species | No. of AONS | Highest breeding status | Notes |
|---|---|---|---|---|---|
| A | SW of Dingle Harbour Entrance | **Herring Gull** | 1 | Probable Breeding | Single AON on small, isolated sea stack |
| B | E of Dingle Harbour Entrance | **Herring Gull** | 0 | No breeding | |
| C | E of Ceann na Binne | **Herring Gull** | 3 | ON, Confirmed | Sub-colony of 3 AON |
| D | Doonsheane | **Herring Gull** | 24 | ON, Confirmed | |
| E | Cliffs E of Trabeg | **Herring Gull** | 4 | ON, Confirmed | Sub-colony of 3 AON, one isolated AON |
| F | Shirragh An Searreach / Máthail an tSearraigh | **Herring Gull** | 33 | ON, Confirmed | The largest colony |
| G | Cliffs around Bull's Head | **Herring Gull** | 1 | Probable Breeding | Single AON on small, isolated sea stack |

**Cliff-nesting Seabird Survey**

A survey was to be made of the cliff-nesting seabirds in the outer Dingle Harbour area to a range of 2 km from the proposed 1 x 0.5 km offshore dump area, near Doonsheane. With the indented nature of the coastline, this represents approximately 9 km of coast. This survey area is shown in **Figure 2.10** below.

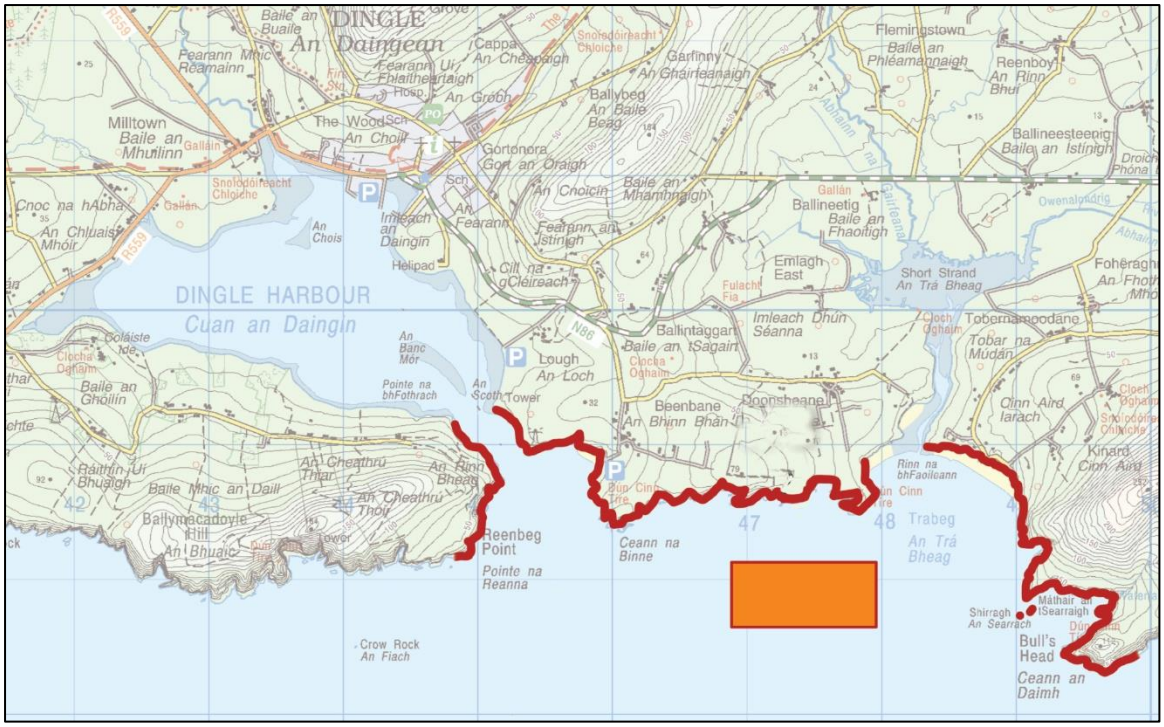


**Figure 2.10: Cliff-nesting Seabird Survey area (red) and the proposed offshore dredge spoil disposal site (orange rectangle).**

The survey was carried out on two full survey days in May and June 2021. The observations were made on foot from the adjacent cliff tops using 8x42 binoculars and 30x telescope. The different census units for each potentially nesting species described in *The Seabird Monitoring Handbook* (Walsh *et al*., 1995) were used and first (May) and second (June) visits were combined to give the breeding status of each. Without repeated visits during the entire nesting season it was not possible to produce estimates of productivity, but the maximum breeding status based on BTO Breeding Bird survey criteria (BTO, 2021) *e.g.* adult incubating eggs, nest building, display, *etc.* was possible based on observation during the two visits.

For recording purposes, the cliff areas were divided into survey sectors A–G, shown in the **Figure 2.10** above.

The census units used for each species (based on Walsh *et al*., 1995) were as follows:

**Fulmar** The recommended unit is the AOS. A site is counted as occupied only when a bird appears to be sitting tightly on a reasonably horizontal area judged large enough to hold an egg. Two birds on such a site, apparently paired, count as one site. As May visits might include prospecting or non-breeding birds, counts should be made in June, between 0900 and 1730 BST.

**Shag** The most consistent and accurate index of population size was the maximum number of nests occupied at one time, as breeding pairs often construct more than one nest during a season.

The recommended method involves counting all AON at the peak of the breeding season. This is typically late May in the SW but may be several weeks later in some years (Harris & Forbes, 1987). The recommended AON includes active nests (bird sitting tight whether or not eggs or young were seen or an unattended brood of young) and other attended, well-built nests (apparently capable of holding eggs).

**Great Black-backed Gull, Herring Gull** and **Lesser Black-backed Gull** The recommended census unit for these three large gull species is an AON, *i.e.* a well-constructed nest attended by an adult and capable of holding eggs or an adult apparently incubating. Counts should be made during the mid-incubation period, usually late May-early June, between 0900 and 1600 BST.

**Razorbill** The recommended census unit is the Individual Adult on land (IND). Counts of breeding pairs are virtually impossible without highly intensive observations of mapped study-plots. Counts are best made in the first three weeks of June (incubation/early nestling period), between 0800 and 1600 BST.

**Black Guillemot** The recommended counting unit is the IND, ideally counted in the early morning (before 0900 BST) in the pre-breeding season. Later in the season, AOSs can be counted reasonably accurately at small colonies (see also the Methodology in the Black Guillemot Survey, above).

Although other seabird species were seen offshore from the study area during this and other survey work, the seven listed above were the only ones showing any potential nesting activity.

**Results:**

The Cliff-nesting Seabird Survey found a total of 7 breeding species – 5 confirmed, 1 probable and 1 possible – within the survey area. Although recorded in the vicinity (<500 m) of the study area during the overall survey period of January to August 2021, there was no breeding evidence for a further 11 seabird species – Manx Shearwater, Storm Petrel, Gannet, Cormorant, Black-headed Gull, Kittiwake, Common Gull, Guillemot, Puffin, Arctic Tern and Sandwich Tern.

Of the 7 breeding species detected in the survey area, the number of AONs/AOSs is shown in

**Table 2.7** below.

The location of each of these nest sites is shown in **Figure 2.11** and **Figure 2.12** below.

**Table 2.7: Number of Apparently Occupied Nests/Sites found during the Cliff-nesting Seabirds Survey in May and June 2021, combined with Confirmed, Probable and Possible breeding status for each species.**

| Species | | | Sector | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Conservation status Breeding (BoCCI, 2021) | | Nest Unit* | A | B | C | D | E | F | G | Total | Breeding status (BTO. 2021) |
| Fulmar | | AOS | **13** | **9** | **6** | **24** | **10** | **1** | **4** | **67 AOS** | ON, **Confirmed** |
| Shag | | AON | | | **2** | **1** | **3** | **3** | | **9 AON** | ON, **Confirmed** |
| Herring Gull | | AON | 1 | | **3** | **24** | **4** | **33** | **1** | **66 AON** | ON, **Confirmed** |
| Lesser Black-backed Gull | | AON | | | | **15** | | **3** | | **18 AON** | ON, **Confirmed** |
| Great Black-backed Gull | | AON | | | | 1 | | | | **1 AON** | ON, **Probable** |
| Black Guillemot | | IND/AOS | | 3 AOS | 1 AOS | | | | | **4 AOS** | FF, **Confirmed** |
| Razorbill | | AOS | | | 1 | | | | | **1 AON** | ON, **Possible** |

*__AON__ Apparently Occupied Nest **AOS** Apparently Occupied Site **IND** Individual adults on or near potential nest site

BoCCi Status
Red-listed (high conservation concern), breeding, passage
Amber-listed (medium conservation concern), breeding
Green-listed (low conservation concern)

BTO Breeding status
Confirmed breeding
Probable breeding
Possible breeding
Non-breeding

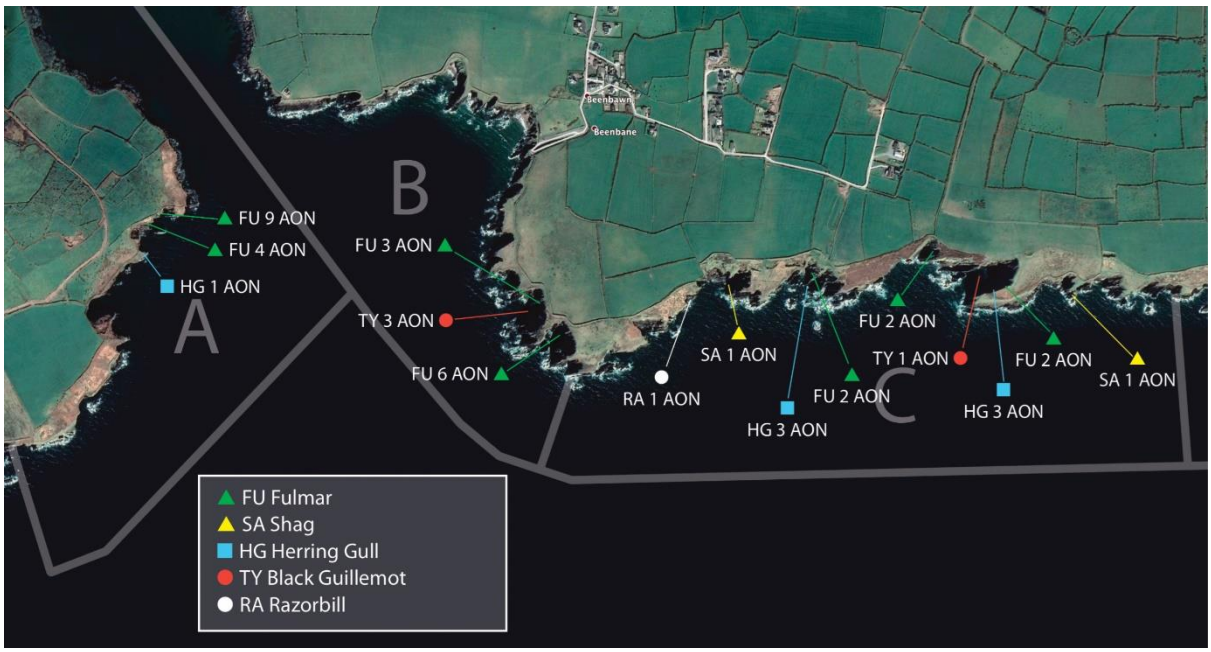


**Figure 2.11: Location of AON/AOS of seabird species in Sectors A, B and C, detected during the Cliff-nesting Seabird Survey, May and June 2021.**

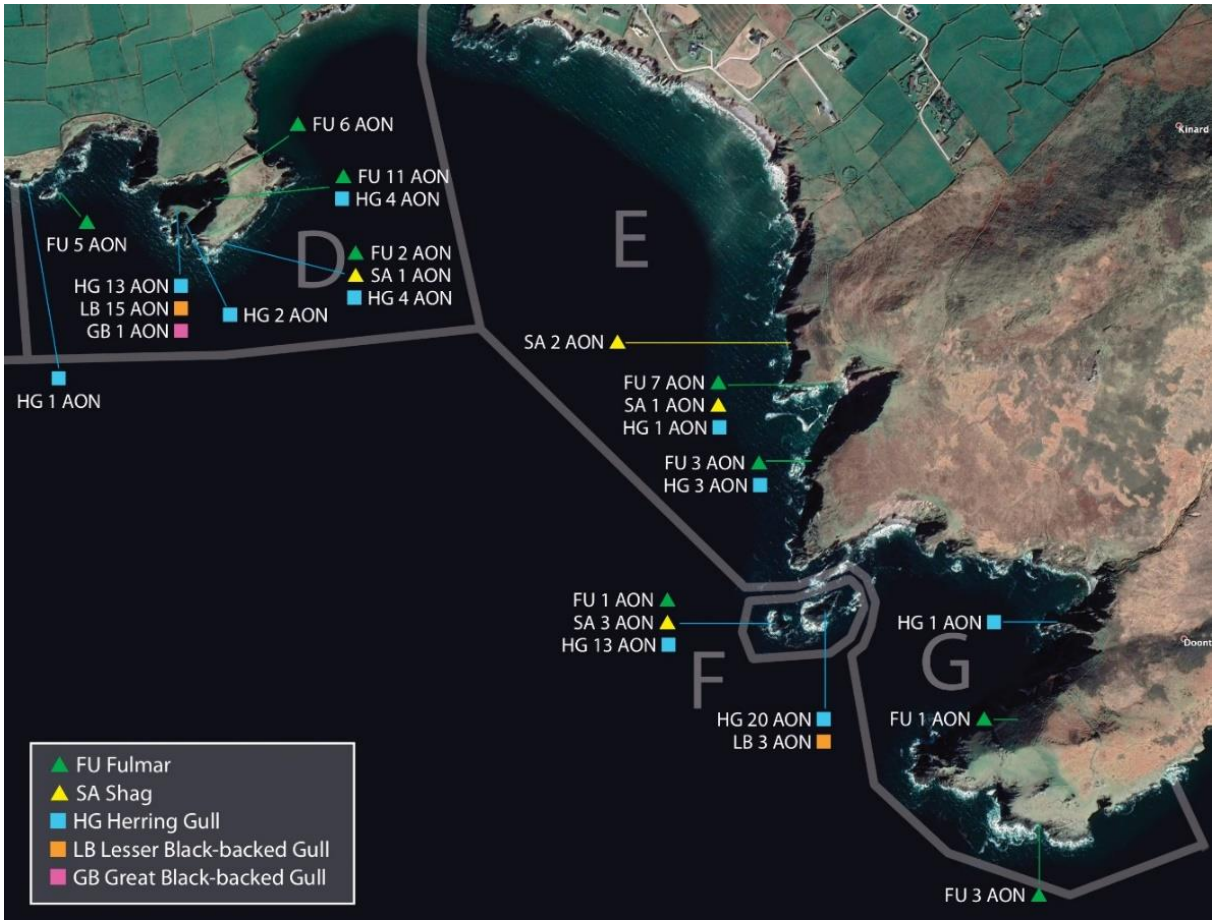


**Figure 2.12: Location of AON/AOS of seabird species in Sectors D, E, F and G detected during the Cliff-nesting Seabird Survey, May and June 2021.**

**Fulmar** A total of 67 AONs were found, with the greatest concentration (n=24) in Sector D, around Doonsheane.

**Shag** There were 9 AONs in four Sectors during the May survey visit, 6 of which had incubating adults and 3 of which had young/newly hatched young. Two further nests in Sector E were abandoned, most likely from the previous summer and not included in the results here. Five of the 9 nests had well-developed young on the June survey visit.

**Herring Gull** 66 confirmed AONs were detected in 6 Sectors, 57 of which were at the two known colonies in the study area at Doonsheane (33) and Máthair an tSearraigh (24). There was a small sub-colony of 4 AONs on a high vertical cliff 750 m NW of Bull's Head in Sector E and 3 AONs on a steep cliff 1 km W of Doonsheane. The remaining 3 AONs were single nests on the top of rock pinnacles, in Sectors A, E and G. See also Results of the Herring Gull Colony Survey above.

**Lessser Black-backed Gull** 15 AONs were at the Doonsheane gull colony and 3 AONs were in the Máithair an tSearraigh gull colony. At least 16 well-developed chicks were seen at the former site on the June survey visit and 3 at the latter.

**Great Black-backed Gull** The only pair in the survey area was on the upper slope of the Doonsheane gull colony area, with a pair present at a nest during the May survey visit, but seemingly abandoned during the June visit. No chicks or eggs were seen.

**Black Guillemot** Three AOS were detected just NW of Ceann na Binne and another 1 AOS was below the cliff just to the W of Doonsheane. See also the Results of the Black Guillemot Survey above.

**Razorbill** Three adult birds were observed on a low rock ledge near the base of a vertical section of cliff in Sector C and numerous calls and apparent display behaviour were seen and heard. However, on subsequent survey visits there were no birds present on the cliffs.

**Dredge Spoil Disposal Area Bird Survey**

The proposed extension of Dingle marina involves the dredging of *c.* 100,000 $m^3$ of material from the footprint of the site and the proposed dredged material disposal site is to be in the vicinity of the 2017 dump site, 450 m from the nearest shore (Dept. of the Marine/Malachy Walsh 2020). The VP was selected as the nearest point to the disposal area on the adjacent mainland with an uninterrupted view over the proposed site at an elevation of 55 m. The disposal area and VP are shown in **Figure 2.13** and **Figure 2.14** below.

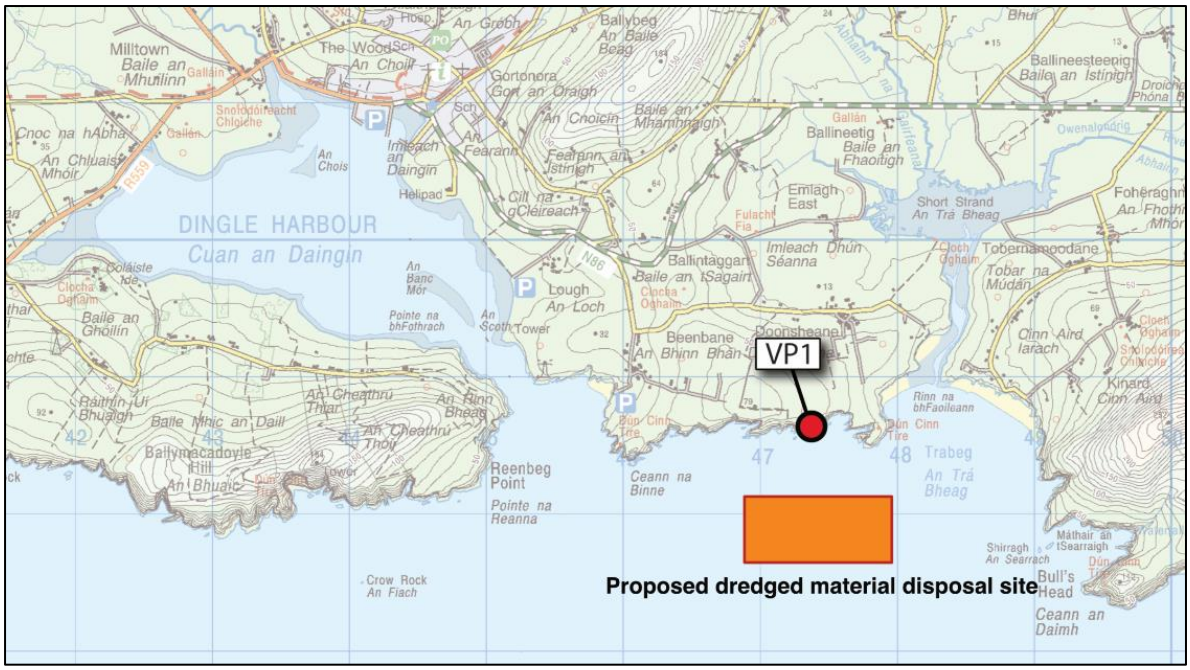


**Figure 2.13: Vantage Point (VP1) for survey area of proposed dredge spoil disposal site.**


**Figure 2.14: (Left) Overhead view of the Vantage Point (VP1) for survey area of proposed dredge spoil disposal site and (right) view of same from the cliff top to the west of the VP.**

The survey of this area included once-monthly, six-hour VP observations of all birds using the site. Distinction was recorded between those birds flying over the dump area (without stopping to forage or feed) and those feeding, foraging and or resting on or over the water of the proposed dump area. The site was observed with 8x42 binoculars and a 30x–60x telescope. All other marine mammals utilising the site were also recorded as incidental observations.

**Results:**

During the eight days of VP counts, over a combined total of 48 hours, 1,120 individual birds of 25 species were recorded in the study area. Of the 25 species recorded, 19 were SCIs of Irish SPAs.

The August count showed the highest overall numbers, with 445 birds of 18 species recorded, of which 349 were overflying the area and 96 were feeding on or over it. The counts on the first 6 months, January to June, were broadly similar, with 113, 77, 71, 72, 95 and 106 individuals recorded in January, February, March, April, May and June 2021, respectively, and a noticeable increase in the July count to 141 and higher again in August – 445 individuals.

The most common species overall was Manx Shearwater (n=377) followed by Northern Gannet (n=227) and then Fulmar (n=129).

A summary of the species recorded during the eight once-monthly, six-hour VP surveys that were using the 1 km x 0.5 km study area and the SCI species in bold is shown in **Table 2.8** below.

**Table 2.8: Totals of seabirds flying over (Fly) or feeding/foraging (FF) on/over the 1 km x 0.5 km dump area during once monthly, six-hour Vantage Point watches, January to August 2021. Colours indicate BoCCI status: Red = Red-listed Species, Orange = Amber-listed Species and green = Green-listed Species.**

| Conservation status, winter, passage (BoCCI, 2021) | | January 2021 | | | February 2021 | | | March 2021 | | | April 2021 | | | Over all |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | | Fly | FF | Total | Fly | FF | Total | Fly | FF | Total | Fly | FF | Total | Total |
| **Great Northern Diver** | | 3 | 0 | **3** | 1 | 0 | **1** | 1 | 0 | **1** | 0 | 0 | **0** | **5** |
| **Red-throated Diver** | | 1 | 0 | **1** | 0 | 0 | **0** | 0 | 1 | **1** | 0 | 0 | **0** | **2** |
| **Fulmar** | | 11 | 0 | **11** | 23 | 0 | **23** | 10 | 0 | **10** | 10 | 2 | **12** | **56** |
| **Manx Shearwater** | | 0 | 0 | **0** | 0 | 0 | **0** | 7 | 0 | **7** | 5 | 0 | **5** | **12** |
| **Northern Gannet** | | 17 | 2 | **19** | 9 | 0 | **9** | 13 | 2 | **15** | 14 | 22 | **36** | **79** |
| **Great Cormorant** | | 2 | 0 | **2** | 1 | 0 | **1** | 0 | 0 | **0** | 0 | 0 | **0** | **3** |
| **European Shag** | | 5 | 0 | **5** | 0 | 3 | **3** | 1 | 0 | **1** | 0 | 0 | **0** | **9** |
| **Common Scoter** | | 1 | 0 | **1** | 0 | 0 | **0** | 0 | 0 | **0** | 0 | 0 | **0** | **1** |
| **Black-headed Gull** | | 1 | 0 | **1** | 3 | 0 | **3** | 0 | 0 | **0** | 0 | 0 | **0** | **4** |
| Mediterranean Gull | | 0 | 0 | **0** | 1 | 0 | **1** | 0 | 0 | **0** | 0 | 0 | **0** | **1** |
| **Common Gull** | | 0 | 0 | **0** | 0 | 0 | **0** | 2 | 0 | **2** | 0 | 0 | **0** | **2** |
| **Herring Gull** | | 20 | 27 | **47** | 13 | 3 | **16** | 14 | 3 | **17** | 0 | 4 | **4** | **84** |
| **Lesser Black-backed Gull** | | 0 | 0 | **0** | 8 | 0 | **8** | 5 | 0 | **5** | 1 | 0 | **1** | **14** |
| Great Black-backed Gull | | 5 | 5 | **10** | 10 | 1 | **11** | 4 | 0 | **4** | 0 | 1 | **1** | **26** |
| **Black-legged Kittiwake** | | 0 | 1 | **1** | 0 | 0 | **0** | 2 | 0 | **2** | 0 | 0 | **0** | **3** |
| Iceland Gull | | 1 | 0 | **1** | 1 | 0 | **1** | 0 | 0 | **0** | 0 | 0 | **0** | **2** |
| Black Guillemot | | 0 | 0 | **0** | 0 | 0 | **0** | 1 | 0 | **1** | 0 | 5 | **5** | **6** |
| **Guillemot** | | 7 | 0 | **7** | 0 | 0 | **0** | 0 | 2 | **2** | 1 | 0 | **1** | **10** |
| **Razorbill** | | 4 | 0 | **4** | 0 | 0 | **0** | 0 | 3 | **3** | 7 | 0 | **7** | **14** |
| | | | | | | | | | | | | | | |
| Total | | 78 | 35 | **113** | 70 | 7 | **77** | 60 | 11 | **71** | 38 | 34 | **72** | **333** |
| | | | | | | | | | | | | | | |
| Flying | | 78 | | | 70 | | | 60 | | | 38 | | | **246** |
| Feeding/foraging | | | 35 | | | 7 | | | 11 | | | 34 | | **87** |

| Conservation status, summer, passage (BoCCI, 2021) | | May 2021 | | | June 2021 | | | July 2021 | | | August 2021 | | | Overal l |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | | Fly | FF | Total | Fly | FF | Total | Fly | FF | Total | Fly | FF | Total | Total |
| **Great Northern Diver** | | 2 | 0 | **2** | 1 | 0 | **1** | 0 | 0 | **1** | 0 | 0 | **0** | **4** |
| **Red-throated Diver** | | 7 | 0 | **7** | 1 | 0 | **1** | 0 | 0 | **0** | 0 | 0 | **0** | **8** |
| **Fulmar** | | 4 | 0 | **4** | 9 | 0 | **9** | 3 | 0 | **3** | 18 | 28 | **46** | **73** |
| **Storm Petrel** | | 0 | 0 | **0** | 0 | 0 | **0** | 2 | 0 | **2** | 6 | 10 | **16** | **18** |
| **Manx Shearwater** | | 6 | 0 | **6** | 44 | 0 | **44** | 8 | 2 | **10** | 215 | 90 | **305** | **365** |
| Sooty Shearwater | | 0 | 0 | **0** | 0 | 0 | **0** | 0 | 0 | **0** | 0 | 3 | **3** | **3** |
| **Northern Gannet** | | 9 | 3 | **12** | 1 | 0 | **1** | 32 | 8 | **40** | 63 | 26 | **89** | **142** |
| **Great Cormorant** | | 0 | 0 | **0** | 0 | 0 | **0** | 3 | 0 | **3** | 0 | 0 | **0** | **3** |
| **European Shag** | | 0 | 4 | **4** | 1 | 0 | **1** | 9 | 0 | **9** | 12 | 10 | **22** | **36** |
| **Common Scoter** | | 5 | 0 | **5** | 0 | 0 | **0** | 0 | 0 | **0** | 0 | 0 | **0** | **5** |
| **Black-headed Gull** | | 5 | 0 | **5** | 8 | 2 | **10** | 6 | 0 | **6** | 2 | 7 | **9** | **30** |
| Mediterranean Gull | | 0 | 0 | **0** | 8 | 0 | **8** | 5 | 0 | **5** | 1 | 0 | **1** | **14** |
| **Common Gull** | | 5 | 5 | **10** | 10 | 1 | **11** | 4 | 0 | **4** | 0 | 1 | **1** | **26** |
| **Herring Gull** | | 0 | 1 | **1** | 0 | 0 | **0** | 2 | 0 | **2** | 0 | 0 | **0** | **3** |
| **Lesser Black-backed Gull** | | 1 | 0 | **1** | 1 | 0 | **1** | 0 | 0 | **0** | 0 | 0 | **0** | **2** |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Great Black-backed Gull | | 0 | 0 | **0** | 0 | 0 | **0** | 1 | 0 | **1** | 0 | 5 | **5** | **6** |
| **Black-legged Kittiwake** | | 7 | 0 | **7** | 0 | 0 | **0** | 0 | 2 | **2** | 1 | 0 | **1** | **10** |
| Iceland Gull | | 4 | 0 | **4** | 0 | 0 | **0** | 0 | 3 | **3** | 7 | 0 | **7** | **14** |
| Great Skua | | 0 | 0 | **0** | 0 | 0 | **0** | 0 | 0 | **0** | 0 | 2 | **2** | **2** |
| Black Guillemot | | 0 | 0 | **0** | 0 | 0 | **0** | 3 | 0 | **3** | 0 | 0 | **0** | **3** |
| **Guillemot** | | 4 | 12 | **16** | 0 | 15 | **15** | 0 | 26 | **26** | 7 | 0 | **7** | **64** |
| **Razorbill** | | 0 | 9 | **9** | 0 | 0 | **0** | 0 | 17 | **17** | 0 | 3 | **3** | **29** |
| **Atlantic Puffin** | | 0 | 0 | **0** | 0 | 0 | **0** | 3 | 0 | **3** | 1 | 11 | **12** | **15** |
| **Sandwich Tern** | | 2 | 0 | **2** | 0 | 0 | **0** | 0 | 0 | **0** | 7 | 0 | **7** | **9** |
| **Arctic Tern** | | 0 | 0 | **0** | 4 | 0 | **4** | 2 | 0 | **2** | 9 | 0 | **9** | **15** |
| | | | | | | | | | | | | | | |
| Total | | 61 | 34 | **95** | 88 | 18 | **106** | 83 | 58 | **141** | 349 | 96 | **445** | **787** |
| | | | | | | | | | | | | | | |
| Flying | | 61 | | | 88 | | | 83 | | | 349 | | | **581** |
| Feeding/foraging | | | 34 | | | 18 | | | 58 | | | 96 | | **206** |

### *2.2.2.2. Otter*

The entire Dingle Harbour area was surveyed for signs of otters on one day of each month, using a walkover technique and thorough inspection of likely habitats. Surveys were conducted considering best practice guidelines; in particular, *Ecological surveying techniques for protected flora and fauna during the planning of National Road Schemes* (National Roads Authority, 2008). The shoreline included in the survey is shown in **Figure 2.15** below.

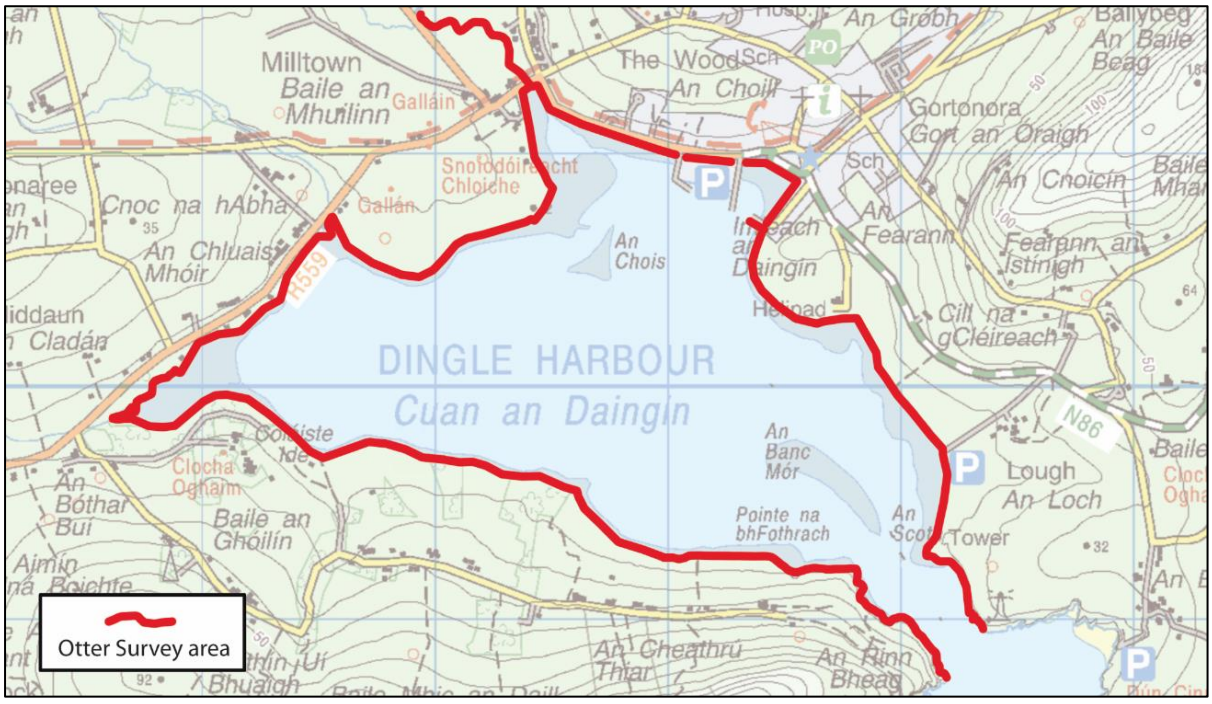


**Figure 2.15: Shoreline included in the Otter Survey in the inner Dingle Harbour area.**

The survey focused on finding evidence of use of the site by otter. The site was visually assessed and all visible evidence of otters recorded, in particular for potential breeding areas (holts), or resting or loafing areas and visual evidence such as 'spraints' (droppings) used to mark territory and 'chutes' where they might access the coast on steep slopes.

From late January to the end of April 2021, following an initial walkover of the entire coastal area of Dingle Harbour, two to three trail cameras (camera traps) were deployed continuously at coastal locations where otters may have accessed the shoreline, such as at resting places on or adjacent to the shore, at any possible resting places such as overhanging (or undercut) shore just above the high tide line and at possible 'chutes' or shallow slopes from the shore to the beach and other points where otters might be accessing the shoreline. These cameras are activated by motion or infra-red heat signatures. All were set to maximum sensitivity and, upon triggering, were set to record 20 seconds of video, with sound. All other incidental bird and mammal species that triggered the cameras were also recorded.

Otters can breed at any time of year, though this is most frequently recorded from May to August and cubs can stay with their mother for typically seven to eight months, though occasionally for as long as 12 months (Hayden & Harrington, 2000). As otters are usually nocturnal, deploying trail cameras over the entire period of the survey work from January to August would have a reasonable chance of recording any adults and cubs. Signs and sightings of otters were also monitored casually while conducting the other survey elements in the study area.

**Results:**

Signs of the presence of otter were initially found at two locations on the south shore of Dingle Harbour.

The first site was otter spraint on a raised platform of rock on the upper shoreline and an adjacent area of grass and Sea Thrift *Armeria maritima* which had been scuffed and disturbed, indicating an area where an otter had been marking territory. A trail camera was deployed at this site and recorded visits to the site by an otter on 8 of 11 nights of recording. A trail camera was subsequently deployed almost continuously at this site until survey end on 30$^{th}$ August, recording a total of 349 triggers by otters.

The second site where signs were found was an otter spraint on a flat, grassy patch *c.* 6 m from the high tide line, also on the southern shore of Dingle Harbour and approximately 1.4 km from the site above. The spraint was fresh and although a trail camera was deployed overlooking this site and later at sites nearby (<20 m) over the following 5 weeks, no further triggers by otters were recorded.

Four sightings of otter were made during survey work: one of an adult swimming close to the south shore of Dingle Harbour, seen during Otter Survey work on 30th January 2021; another was swimming close to shore near Milltown Bridge at dawn on 26th February 2021 during Wintering Birds Survey work; one was seen swimming just off the south west corner of the marina in Dingle at 06:10 on 4th May during the Black Guillemot Survey; one was seen swimming close to the shore in the SW corner of Dingle Harbour at 08:20 on 9th June 2021 during the Breeding Birds Survey.

The signs and sightings of otter and location of camera traps are mapped in **Figure 2.16** below.


**Figure 2.16: Signs and sightings of otter and location of camera traps in the inner Dingle Harbour area, January to August 2021.**

### *2.2.2.3. Other Species Recorded*

Over the 217 days of the survey period, the cameras were triggered a total of 792 times, of which 379 were by otter. The triggers were also by eight other species of mammal, 12 species of bird and four by insects (see **Table 2.9**).

The presence of the invasive American Mink was detected at two sites in Dingle Harbour; Burnham Inlet in March 2021 and Milltown Bridge in June 2021. Although some local observations of otter were reported to the author in the Dingle Harbour area, the possibility of misidentification (of American Mink) could not be ruled out, so were excluded from the sightings during the survey period.

**Table 2.9: Species of mammal, bird and insect captured on camera traps deployed during the Otter Survey, Dingle Harbour, January to August 2021.**

| Species | | | Species | | | Species | |
|---|---|---|---|---|---|---|---|
| **Mammals** | **No. of triggers** | **Notes** | **Birds** | **No. of triggers** | **Notes** | **Insects** | **No. of triggers** |
| American Mink | 2 | Stream at Burnham Inlet | Blackbird | 123 | | Butterfly spp. | 1 |
| Badger | 9 | Burnham Inlet | Grey Heron | 10 | | Moth spp. | 3 |
| Bank Vole | 2 | | Great Black-backed Gull | 22 | | | |
| Brown Rat | 98 | | Little Egret | 11 | All diurnal, Burnham Inlet | | |
| Domestic cat | 11 | | Song Thrush | 2 | Including recent fledgling | | |
| Fox | 21 | | Mallard | 24 | Including nestlings | | |
| Human | 14 | | Robin | 12 | Including recent fledgling | | |
| **Otter** | **379** | **All at south shore of Dingle Harbour** | Shag | 3 | | | |
| Wood Mouse | 8 | | Starling | 5 | Including recent fledgling | | |
| Unidentified small mammal | 2 | | Woodcock | 11 | All nocturnal, Burnham Inlet | | |
| | | | Wood Pigeon | 13 | | | |
| | | | Wren | 6 | Including recent fledgling | | |
| | | | | | | | |
| **Total** | **546** | | | **242** | | | **4** |

#### *2.2.2.4. Habitats and Flora*

Three one-day surveys were made of the coastal habitats of the inner Dingle Harbour area, conducted at low to mid tide, on foot and by boat. The surveys included the littoral habitats up to the spring high tide line and each habitat type was assigned and mapped in accordance with *Fosset, 2000*. One visit each was made in March, May and July, to encompass the differing growing rates, appearance and flowering dates of the flora.

**Results:**

Much of the littoral habitat throughout Dingle Harbour is mixed substrate shore, sheltered rocky shore and moderately exposed rocky shore, with small areas of mud and sand shores on the eastern side of Dingle Harbour and at the seaward side of Burnham Inlet. A small area of saltmarsh and tidal river is located at Milltown, just west of the marina and port area. The area of the port and marina are all man-made habitats - sea walls, piers and jetties – apart from a small area of mixed substrate shore on the eastern side around the small breakwater to the southwest of the port entrance.

The man-made boulder sea walls, piers and jetties of the port and marina area support sparse fucoid (seaweed) cover below the highwater mark, while a small area on the eastern side consists of a mixed substrate of stone and gravel shoreline and which also has a cover of fucoids. Much of the remaining shore of the Dingle Harbour area is of rocky shoreline, rather uniform in places (*i.e.* large tracts of the south shore of the Harbour), though there were two areas with a much more varied habitat mosaic – Burnham Inlet and around Milltown Bridge.

In Burnham Inlet there is mixed substrate and mixed sediment habitats, as well as a fringing saltmarsh, mud shore and sheltered rocky shoreline, all showing a much more complex system of habitats in a relatively small area. The area around Milltown Bridge, while also small, shows a variety of habitat types, including sheltered and mixed substrate rocky shores, an area of tidal, lowland depositing river to the north of the bridge and a small patch of saltmarsh on the seaward side of the bridge with associated maritime plants. Of note was the presence on the saltmarsh habitat of a small area of the invasive plant *Spartina anglica* of about 1 $m^2$. The species was not previously recorded at this site (Link: https://invasivespeciesireland.com/species-accounts/established/marine/smooth-cord-grass).

On the second survey visit in May, the invasive Wireweed *Sargassum muticum* was found in Sector 6 and 7 (see **Figure 2.17** and **Figure 2.18** above) on the southern shore just west of Dingle Harbour entrance. The species has been previously recorded in Dingle Harbour (Link: https://invasivespeciesireland.com/species-accounts/established/marine/wire-weed), (Stokes, O'Neill & McDonald, 2004).

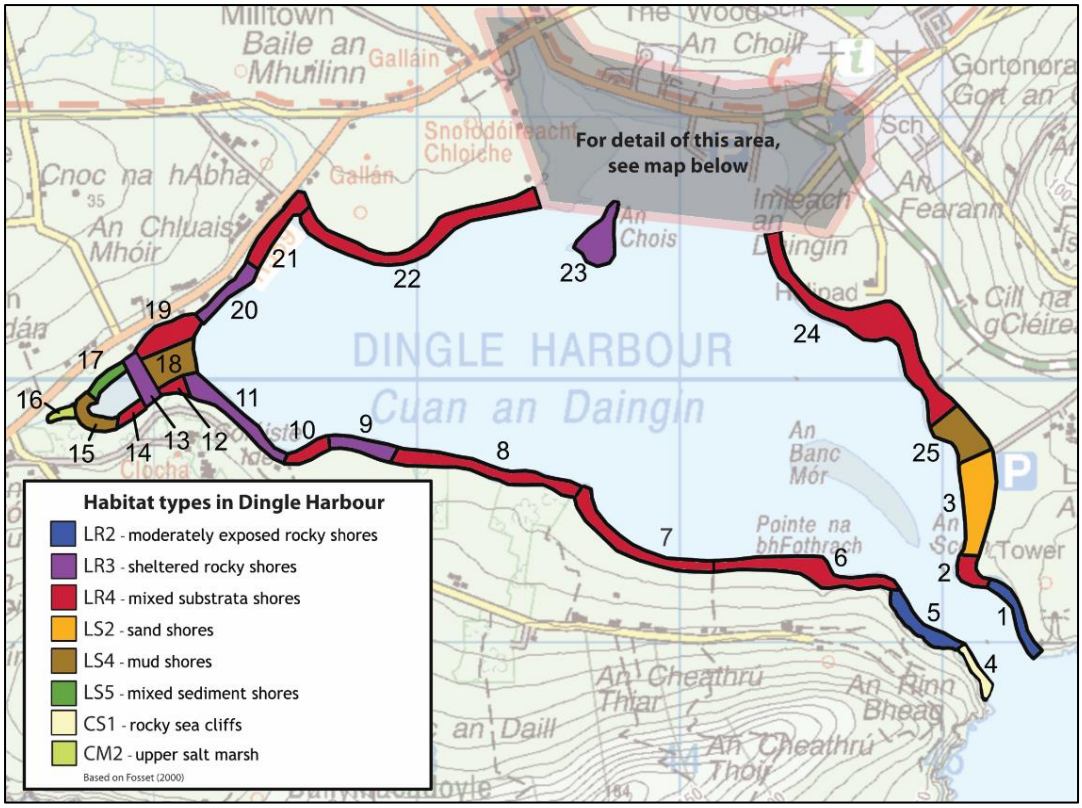


**Figure 2.17: Habitat types in the inner Dingle Harbour area, the area was split into sectors 1-25.**

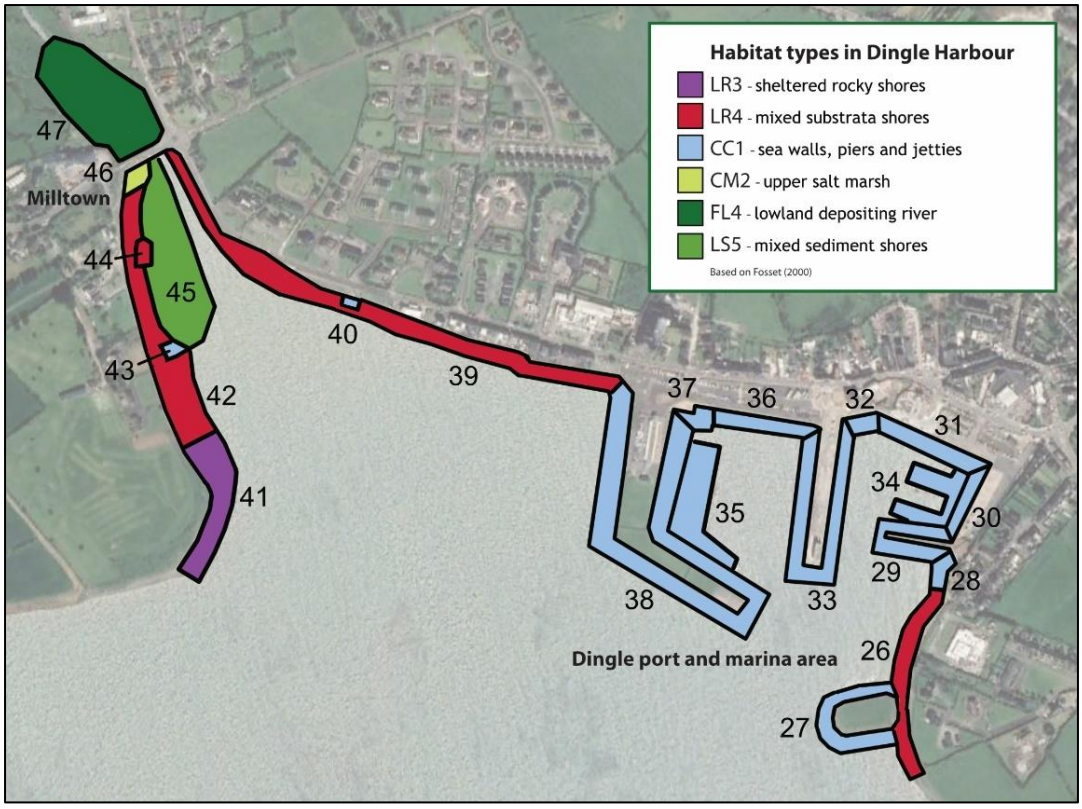


**Figure 2.18: Habitat types in the Dingle port and marina and Milltown River mouth areas. The area was split into sectors continuing on from the previous map. This map shows sectors 26-47.**

### 2.2.3. IWDG Desk Study

The Irish Whale and Dolphin Group carried out a marine mammal risk assessment (see **Section 2.2.3**) of Dingle harbour. The aim of the assessment was to consider risk based on the following three attributes as outlined in NPWS guidance document (NPWS, 2014):

1. **Source -** where the source of anthropogenic noise will come from the dredging and piling activities while in the vicinity.
2. **Species** - based on assessment from various data sources on the species of marine mammals occurring within the proposed dredging and piling location as well as surrounding areas.
3. **Environment** - where the dredging and piling is proposed to take place and marine mammal occurrence within this area will be assessed.

This risk assessment was based on original data collected by the IWDG and a review of the available literature. The IWDG Sightings dataset, which is validated and updated daily, was accessed (on 20 May 2021) and data from 2010 to present was exported and mapped and noted the following species to be present.

**Seal**

***Harbour or Common Seal (Phoca vitulina)***

There were no harbour seal haul-out sites recorded in Dingle Harbour during the NPWS surveys during 2002 or 2003. Cronin *et al.* (2004) reported a small number of harbour seals (22) hauled out in inner Dingle Bay and 14 on the south side of the Bay near Cahirsiveen. Duck and Morris (2013) also reported similar numbers of seals during a thermal imagery survey undertaken in August/September 2012 in the inner part of Dingle Bay. A repeat survey carried out in 2017/18 also recorded the same numbers (Morris and Duck, 2019) (see **Figure 2.19**). This suggests harbour seals regularly and consistently occur in Dingle Bay Harbour. Harbour seals pup in June-July and the moulting period occurs after breeding, starting in June and ending in November, with a peak in mid-September (Cronin *et al*. 2014). Harbour seals generally forage close to their haul out sites but may occur at the dredge spoil disposal site as they are known to make foraging trips of up to 220 km (Sharples *et al.* 2012).

**Figure 2.19: Signs and sightings of Harbour Seal recorded on the south coast of Ireland, August and September 2017/18 (from Morris and Duck 2019).**

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

The Blasket Islands are one of the most important sites for grey seals in Ireland. Annual pup production is estimated at around 648-833 with over 1000 recorded hauled out on Great Blasket during the moult in January to March (O'Cadhla *et al.* 2007). Cronin *et al.* (2004) reported 30 grey seals hauled out in the Blasket Islands in August 2003 during an aerial survey for harbour seals and 1 at Cahersiveen. O'Cadhla and Strong (2007) reported around 1,000 grey seals on the Blasket Islands complex during an aerial survey in the moulting period (the moulting period is from December to April). Duck and Morris (2013) also reported large numbers of grey seals in the Blaskets in August/September 2012 using thermal imagery. A repeat survey carried out in 2017/18 suggested grey seals were increasing at an average annual rate of 9.5% over nine years (Morris and Duck, 2019) (**Figure 2.20**).

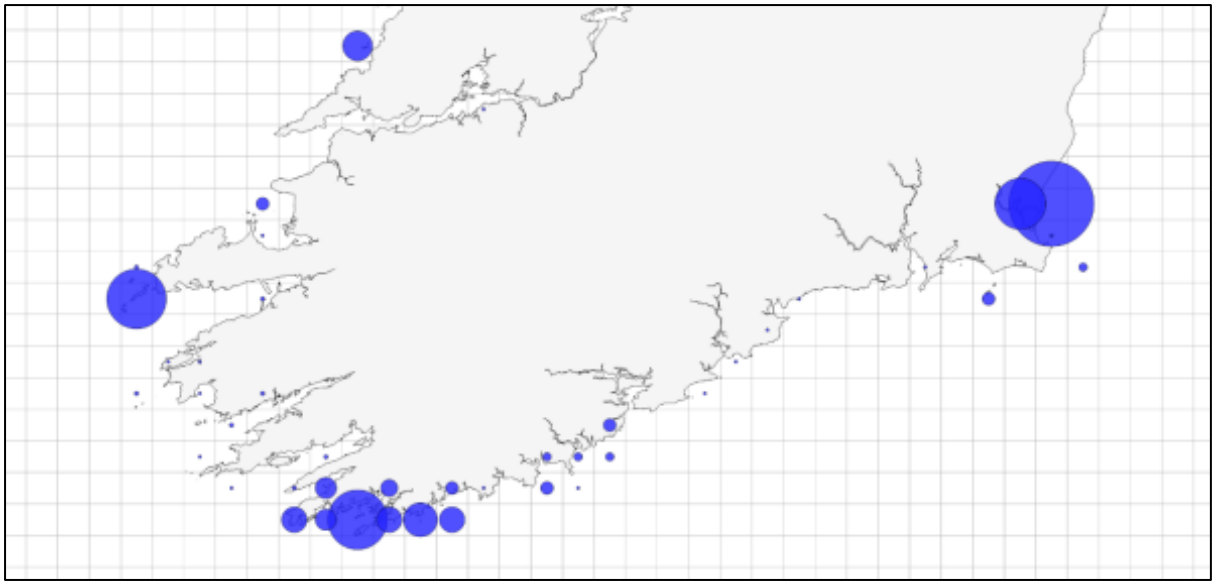

**Figure 2.20**: **Map of the locations of groups of grey seals recorded on the south coast of Ireland, August and September 2017/18 (from Morris and Duck 2019).**

**Cetaceans**

***Bottlenose Dolphin (Tursiops truncatus)***

Bottlenose dolphins occur off the Kerry coast at relatively low densities (see **Figure 2.21**). The majority of bottlenose dolphin sightings in the Dingle Harbour were of the solitary dolphin known as Fungi who was been nearly a full-time resident in the area from 1984 until 2021. The dolphin was generally found in the mouth of the harbour where strong currents occur but does enter the inner harbour. He forages in the harbour and mouth which could be an important foraging ground. He has been observed catching a range of fish including salmon, pollack, dogfish and ray.

Thirteen of the 67 sightings (19%) reported to the IWDG were of single individuals. Of these 6 (46%) were in Dingle Harbour and were most likely the dolphin Fungi. Fungi has not been seen in Dingle Harbour since September 2021 and is likely to have moved or died. Of the remaining bottlenose dolphin sightings, group sizes of up to 25 have been reported and photo ID has shown these to be part of the coastal population which is wide ranging around the Irish coast (O'Brien *et al.* 2009; Ijseeldik *et al.* 2012). Recently (April 2021) individuals from the Shannon Estuary population have been recorded off the Blasket Islands (IWDG unpubl. data) suggesting this population does range as far as west Kerry.

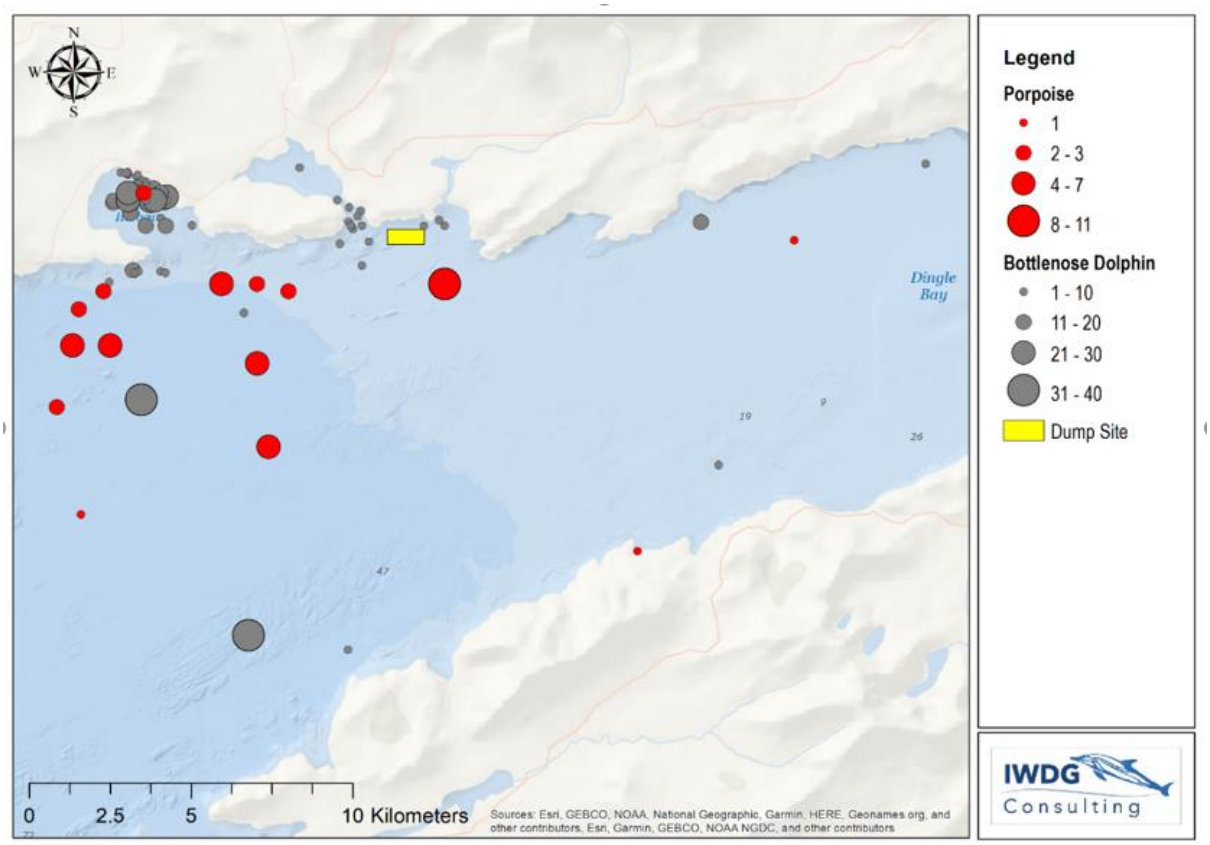


**Figure 2.21: Distribution of harbour porpoise and bottlenose dolphin sightings in Dingle Bay (2000 - 2020) (IWDG, 2021).**

***Common Dolphin (Delphinus delphis)***

Common dolphins occur frequently and at high densities off the Kerry coast (Wall *et al.* 2013). They are encountered year-round but densities fall to a minimum during April and May and peak in summer and autumn. Common dolphins are frequently recorded in Dingle Bay but occasionally recorded outside the entrance to Dingle Harbour especially during late summer and autumn.

***Minke Whale (Balaenoptera acutorostrata)***

Minke whales occur frequently and at high densities off the Kerry coast (Wall *et al.*, 2013). They occur from late spring to early winter but are largely absent during late winter and early spring. Minke whale abundance around the Blasket Islands peaks in late summer and autumn. They are less frequently recorded in the inner Dingle Bay with only one record of one individual at the mouth of Dingle Harbour recorded by a yacht on 31 May 2008.

***Harbour porpoise Phocoena phocoena***

Harbour porpoises occur frequently and at high densities off the Kerry coast (Berrow *et al.* 2010; Wall *et al.* 2013) (see **Figure 2.21**). They are recorded year-round, however inshore densities fall to a minimum from April to early June, when females are thought to move offshore to calve (Berrow *et al.* 2010). Harbour porpoise densities in the Blasket Islands SAC range was from 0.64 porpoises to 1.65 per $km^2$ which gave abundance estimates of 146±53 to 372±105 (Berrow *et al.* 2008; 2009; O'Brien and Berrow 2014). O'Brien and Berrow (2018) reported densities of 0.28 harbour porpoises per $km^2$ which was half that reported in 2014 suggesting harbour porpoise distribution locally might have changed. Abundance of harbour porpoise generally increases in the autumn which coincides with the presence of pelagic schooling fish in the area. There are no sightings of porpoises within Dingle Harbour, but the species has been frequently recorded at the harbour entrance with up to 10-12 individuals recorded off Bull Head in January 2010.

***Risso's Dolphin (Grampus griseus)***

Risso's dolphins occur occasionally off the Kerry coast especially off the Blasket and Skellig Islands (Wall *et al.* 2013) and were once recorded outside the entrance to Dingle Harbour.

***Humpback Whale (Megaptera novaeangliae)***

Humpback whales occur with increasing frequency off the Kerry coast. Photo ID studies conducted by IWDG have identified up to 60 individuals off the south coast with around 30 recorded in west Kerry with a high re-sighting rate for some animals, indicating a significant degree of site fidelity by humpback whales using these foraging grounds (Ryan *et al.* 2015). An unprecedented number were recorded from June to October 2015 off the Blasket and Skellig Islands. They are frequently recorded in Dingle Bay but not in the vicinity of Dingle Harbour.

***Sei and Fin Whale (Balaenoptera borealis and physalus)***

Fin whales are rarely recorded off the Kerry coast though there was an increase in sightings in 2015. Fin whales were recorded off the Skellig islands and on occasion within Dingle Bay.

**Fish**

***Basking Sharks (Cetorhinus maximus)***

Basking sharks are seasonally abundant off the Kerry coast, with most sightings recorded during late spring and early summer. They are frequently sighted within Dingle Bay and occasionally in the vicinity of the entrance to Dingle Harbour but not within the harbour.

### 2.2.4. ASU Survey

Aquatic Services Unit were commissioned to undertake a marine benthic assessment of the subtidal communities within the area of a proposed marina development in Dingle Harbour and the site located approximately 2 km from the mouth of Dingle Harbour where the dredge spoil from the proposed marina site will be disposed (see **Section 2.2.4**).

#### *2.2.4.1. Sub-tidal Soft Benthos Survey*

**Subtidal Grab Sampling**

Sub-tidal grab samples were collected at 15 stations during the survey. The stations sampled are displayed on a map (see **Figure 2.22**). A total of 5 stations were located within the footprint of the proposed marina development (G_31–G_35), with 10 stations located from within and adjacent to the disposal site (G_01–G_10). All samples were collected on 17th June 2021 and were sampled using a 0.1 $m^2$ stainless steel Van-Veen grab. The pre-determined sampling stations were navigated to using the vessels own GPS system. Once on site, the precise location of each sampling station was collected using a Garmin eTrex 32x GPS.

A single 0.1 $m^2$ Van-Veen grab was taken for benthic faunal analysis from which a small sub-sample was removed for Particle Size and Loss on Ignition analyses (15 Stations).
All grab samples were processed within 24 hours of collection. Samples were sieved through a 1 mm mesh sieve and preserved in 4% formalin (buffered with sea water). All fauna were identified to the lowest taxonomic level possible using standard keys to north-west European fauna by specialist taxonomists from Thomson Environmental Consultants.

A number of biotic indices were calculated from the species /abundance matrix from the grab samples. These indices included Simpson's Dominance Index (where values range from low dominance [0] to high dominance [1]), Shannon-Wiener Diversity Index (values ranging from low diversity [0] to high diversity [4]) and Pielou's Evenness Index (values ranging from low *i.e.* dominated by a few species [0] to high evenness *i.e*. a more even spread of species [1]).

**Granulometric Analysis**

Grain size analysis was carried out on oven dried sediment from each station using the protocols described by Holme & McIntyre (1984). After the specified chemical pre-treatments, the dried sediment was passed through a series of nested brass test sieves with the aid of a mechanical shaker. The brass sieves chosen were 4 mm, 2 mm, 1 mm, 500 µm, 250 µm, 125 µm and 63 µm. The sediments were then divided into three fractions: % Gravel (>2 mm), % Sand (<2.0 mm->63 µm) and % Silt-Clay (<63 µm). Further analysis of the sediment data was undertaken using the Gradistat package (Blott & Pye, 2001).

**Organic Matter Analysis**

Organic matter was estimated using the Loss on Ignition (LOI) method. One gram of untreated dried sediment was ashed at 450 ˚C for 6 hours and organic matter was calculated as % sediment weight loss.


**Figure 2.22: Map showing the positions of sub-tidal grab samples (Red Circles); Proposed SCH area (top) and Dredge Disposal Area (bottom).**

**Subtidal Video Survey**

Fieldwork was carried out on the 17th & 18th June 2021. Pre-determined sampling positions were navigated to using the vessels own GPS system. Once on site, the precise location of each sampling station was collected using a Garmin eTrex 32x GPS. A list of stations sampled displayed on the map in **Figure 2.23.**

A total of 33 stations were surveyed using a drop-down video camera system; 5 video drops were collected within and adjacent to the proposed marina area and 28 video drops were collected from within and adjacent to the disposal area. Data was recorded as MPEG4 format files directly to a portable DV recorder. At each station a single recording was taken of sufficient duration to enable a representative record of the seabed character at each location. The video camera was lowered to above the sediment surface and video imagery was recorded. Technical issues at drop V-20 resulted in no video being recorded, although field notes indicated the presence of mixed ground in this area (cobble and gravelly sands).


**Figure 2.23: Map showing locations of sub-tidal video sampling positions – June 2021; (top) Proposed SCH Area, (bottom) Dredge Disposal Area.**

### *2.2.4.2. Results*

**Particle Size and Loss on Ignition Assessment**

Sediment located within and adjacent to the proposed marina in Dingle Harbour consists of muddy sands and sandy muds. The video survey of the disposal site indicates a mosaic of seabed types, ranging from bedrock and cobble to muddy sands. Results from the granulometric assessment indicates the presence of muddy sands across large parts of the soft sediment sections of the survey area. Results from the video survey indicate the presence of occasional mixed sediments (gravels and large cobble areas) in addition to bedrock and boulders across large parts of the survey area in and around the disposal site. Loss on Ignition values reflect the nature of the soft sediment areas of the site with higher values present at the muddier sites (**Table 2.10**).

**Table 2.10: Granulometric and Loss on Ignition results from samples taken within Dingle Harbour and Dingle Bay.**

| | G_01 | G_02 | G_03 | G_04 | G_05 |
|---|---|---|---|---|---|
| **% Gravel** | 0.2% | 0% | 0% | 0.1% | 0% |
| **% Sand** | 82.6% | 78.9% | 61.3% | 50.0% | 87.7% |
| **% Mud** | 17.2% | 21.1% | 38.7% | 49.9% | 12.3% |
| **% LOI** | 0.86% | 1.21% | 3.12% | 2.41% | 1.25% |
| **Textural Group** | Slightly gravelly muddy sand | Muddy sand | Muddy sand | Slightly gravelly muddy sand | Muddy sand |
| | **G_06** | **G_07** | **G_08** | **G_09** | **G_10** |
| **% Gravel** | 0% | 0% | 0% | 0.1% | 0.4% |
| **% Sand** | 48.3% | 57.0% | 86.2% | 81.7% | 96.4% |
| **% Mud** | 51.7% | 43.0% | 13.8% | 18.2% | 3.2% |
| **% LOI** | 2.99% | 1.60% | 1.06% | 2.06% | 0.7% |
| **Textural Group** | Sandy mud | Muddy sand | Muddy sand | Slightly gravelly muddy sand | Slightly gravelly sand |
| | **G_31** | **G_32** | **G_33** | **G_34** | **G_35** |
| **% Gravel** | 0.1% | 0% | 0.1% | 0.4% | 0.2% |
| **% Sand** | 79.2% | 26.4% | 91.3% | 88.1% | 43.2% |
| **% Mud** | 20.7% | 73.6% | 8.6% | 11.5% | 56.6% |
| **% LOI** | 1.71% | 3.85% | 0.93% | 0.76% | 3.89% |
| **Textural Group** | Slightly gravelly muddy sand | Sandy mud | Slightly gravelly sand | Slightly gravelly muddy sand | Slightly gravelly sandy mud |

**Infaunal Assessment**

A total of 38 countable taxa were recorded from the proposed marina in Dingle Harbour, with sites G_31 and G_32 recording the highest number of taxa (18 and 19 respectively) and G_35 recording the lowest (with only 5 taxa recorded). The polychaetes *Exogone naidina*, *Nephtys hombergii*, *Pygospio elegans* and *Leitoscoloplos mammosus* as well as the amphipod *Ampelisca brevicornis* were recorded at 4 of the 5 sites collected at the site of the proposed marina.

A total of 73 countable taxa were recorded in Dingle Bay within and adjacent to the disposal site, with sites G_07 and G_09 recording the highest number of taxa (26 & 27 respectively). Several taxa were encountered in 7 or more stations; polychaetes *Spiophanes bombyx* (9 stations) and *Glycera tridactyla* (8 stations), molluscs *Abra alba* (7 stations) and *Fabulina fabula* (7 stations), the echinoderm *Amphiura filiformis* (8 stations) and Nemerteans (7 stations) (see **Table 2.11**).

**Table 2.11: Diversity indices derived from the infaunal grab data from the disposal site in Dingle Bay (G_01–G_10) and the proposed marina development in Dingle Harbour (G_31–G_35).**

| | G_01 | G_02 | G_03 | G_04 | G_05 | G_06 | G_07 | G_08 | G_09 | G_10 |
|---|---|---|---|---|---|---|---|---|---|---|
| **No. of Species** | 19 | 18 | 8 | 13 | 19 | 16 | 26 | 12 | 27 | 18 |
| **No. of Individuals** | 28 | 36 | 18 | 66 | 67 | 43 | 57 | 25 | 63 | 38 |
| **Shannon-Wiener** | 2.82 | 2.61 | 1.71 | 1.33 | 1.99 | 2.39 | 2.79 | 2.28 | 2.71 | 2.72 |
| **Pielou's Evenness** | 0.957 | 0.902 | 0.82 | 0.519 | 0.676 | 0.864 | 0.856 | 0.917 | 0.824 | 0.941 |
| **Simpson's Dominance** | 0.0689 | 0.0972 | 0.253 | 0.495 | 0.271 | 0.129 | 0.0988 | 0.12 | 0.124 | 0.0776 |

| | G_31 | G_32 | G_33 | G_34 | G_35 |
|---|---|---|---|---|---|
| **No. of Species** | 18 | 8 | 12 | 19 | 5 |
| **No. of Individuals** | 49 | 34 | 36 | 70 | 18 |
| **Shannon-Wiener** | 2.32 | 1.63 | 1.87 | 2.32 | 1.12 |
| **Pielou's Evenness** | 0.801 | 0.782 | 0.753 | 0.79 | 0.694 |
| **Simpson's Dominance** | 0.18 | 0.244 | 0.258 | 0.147 | 0.432 |

**Video Assessment**

***Drop V_01:***

The site consisted of muddy sands with large amounts of drift green and brown algae (including *Chorda filum*, *Ulva intestinalis* and occasional *Fucus serratus*, possibly drift) on the sediment surface. *Arenicola marina* casts were present in large numbers, with occasional *Lanice* tubes visible in parts of the transect. Occasional *Carcinus maenas* and *Liocarcinus* sp. were also identified (**Figure 2.24**).


**Figure 2.24: *Arenciola* casts in muddy sands with *Carcinus maenas* and drift algae present on the sediment surface.**

***Drop V_02:***

The site consisted of muddy sands with large numbers of *Arenicola* casts and occasional *Sabella* tubes present with diatoms and green/brown algae present on the sediment surface (including *C. filum*, *U. intestinalis* and occasional *Saccharina latissima*). Swimming crabs *Liocarcinus* sp. and common green crabs *C. maenas* were present, in addition to a single Butterfish (*Pholis gunnellus*) (**Figure 2.25**).


**Figure 2.25: *Arenicola* casts with drift green algae and *Chorda filum* present on the sediment surface.**

***Drop V_03:***

The site consisted of muddy sands with large amounts of lugworm (*Arenicola marina*) casts on the sediment surface. Large amounts of green and brown algae (similar to that identified in V_02) were present on the sediment surface, with *Sabella* fans evident from tubes in the sediment (**Figure 2.26**).


**Figure 2.26: *Arenicola* casts and algae on muddy sands at site V_03.**

***Drop V_04:***

As previous sites, with *Arenicola marina* casts, brown and green algae as well as *C. maenas*. *Sabella* fans were present on the sediment surface (**Figure 2.27**).


**Figure 2.27: *Sabella sp.* and *Arenicola* casts on muddy sands with green algae at Drop V_04.**

***Drop V_05:***

Sandy muds with reduced amounts of *Arenicola* casts. Occasional green weed (*Ulva intestinalis* and filamentous brown algae) present on the sediment surface at much reduced levels to previous transects (**Figure 2.28**).


**Figure 2.28: *Arenicola* casts on muddy sand at site V_05.**

***Drop V_06:***

The seabed at this transect consisted of a mixed cobble and boulder seabed. The Spiny Starfish *Marthasterias glacialis* was identified on the boulder bed in addition to the common starfish *Asterias rubens.* Keelworms (*Pomatoceros spp.*) were noted on the cobble across the seabed at this transect. A single flatfish, thought to be Lemon Sole *(Microstomus kitt*) was noted along the transect (**Figure 2.29**).


**Figure 2.29: Lemon Sole (*Microstomus kitt*) on cobble and gravel at site V_06.**

***Drop V_07:***

The seabed along the start of this transect consisted of sand with no visible fauna present. Further along the transect, starfish (*A. rubens*) were identified with occasional boulders, highlighting the mixed nature of the seabed along this transect (**Figure 2.30**).


**Figure 2.30: Common Starfish (*A. rubens*) present on sand at site V_07.**

***Drops V_08, V_09, V_10, V_11, V_12, V_13, V_14 & V_15:***

The seabed along these transects consisted of rippled sands, with no obvious fauna visible on the sediment surface (**Figure 2.31**, **Figure 2.32**, and **Figure 2.33**).


**Figure 2.31: Sand at site V_09.**


**Figure 2.32: Rippled sand at siteV_12.**


**Figure 2.33: Rippled sand at site V_15.**

***Drop V_16:***

The seabed in this area consisted of stone/gravel present in compacted sand. No obvious fauna in the seabed (**Figure 2.34**).


**Figure 2.34: Mixed gravels and sands at site V_16.**

***Drop V_17:***

The seabed in this area consisted of a mix of stone and gravel in compacted sand at the start of the transect, giving way to areas of bedrock and large cobble. Notable taxa identified along the site included anemones, sponge and keelworms (*Pomatoceros* sp.) in addition to encrusting red algae (

**Figure 2.35**).


**Figure 2.35: Keelworms and sponge on cobble and boulder at site V-17.**

***Drop V_18:***

This area consisted of mixed seabed with hard benthos interspersed with sandy sediment. Notable fauna included burrowing anemone and Devonshire cup-corals (*Caryophyllia smithii*). The mid to the latter part of the transect consisted primarily of rippled fine and medium sands (**Figure 2.36**).


**Figure 2.36: Burrowing anemone in sand at site V_18.**

***Drop V_19:***

The seabed in this area consisted of bedrock interspersed with cobble and gravels. Starfish (*A. rubens*) were present in large numbers on the cobble across the site. Scattered red algae and encrusting calcareous reds were present on the hard substrate. Several notable fauna were identified during the transect, including the common sea urchin (*Echinus esculentus*) and the sea cucumber (*Aslia lefevrei*). Dead-man's fingers (*Alcyonium digitatum*), hydroids and bryozoa were also present on the hard benthos across the site (**Figure 2.37**).


**Figure 2.37: Red algae with encrusting calcareous reds at site V_19.**

***Drop V_21:***

The seabed in the area consisted of gravelly sands and sandy gravels with no fauna visible (**Figure 2.38**).


**Figure 2.38: Sand and gravel at site V_21.**

***Drop V_22:***

The seabed in this area consisted of firm rippled sands, with scattered, unidentified burrows (**Figure 2.39**).


**Figure 2.39: Faunal burrows present at site V_22.**

***Drop V_23:***

The seabed in this area consisted of rippled gravelly sands. No fauna were visible on the seabed (**Figure 2.40**).


**Figure 2.40: Gravels and coarse sand at site V_23.**

***Drop V_24:***

Firm rippled sands with no fauna visible on the seabed (**Figure 2.41**).


**Figure 2.41: Rippled sands at Site V_24.**

***Drop V_25:***

The seabed along this transect consisted of bedrock interspersed with cobble/boulder with sponges, bryozoa and hydroids present on the hard benthos. In addition, notable mobile fauna identified at the site included the common sea urchin (*E. esculentus*), common starfish (*A. rubens*), the spiny starfish (*M. glacialis*), Devonshire cup-corals (*C. smithii*) and the keelworm (*Pomatoceros* sp.) A single Goldsinny Wrasse (*Ctenolabrus rupestris*) was noted swimming over the bedrock (**Figure 2.42**).


**Figure 2.42: Spiny starfish (*M. glacialis*) and common starfish (*A. rubens*) on boulder with a bryozoan turf Site V_25.**

***Drop V_26:***

The seabed in the area consisted of bedrock interspersed with cobble and boulder. The common sea-urchin, *E. esculentus*, spiny starfish (*M. glacialis*) and common starfish (*A. rubens*) were present (**Figure 2.43**).


**Figure 2.43: *E. esculentus* on boulders at Site V_26.**

***Drop V_27:***

The seabed consisted of firm rippled sands with *Ophiura* sp. noted at the site (**Figure 2.44**).


**Figure 2.44: *Ophiura* sp. on fine sand at site V_27.**

***Drops V_28 & V_29:***

These sites consisted of rippled muddy sands (**Figure 2.45**).


**Figure 2.45: Muddy sand at site V_29.**

***Drop V_30:***

The seabed in the area consisted of stone/gravel in compacted sand with no obvious fauna visible on the seabed (**Figure 2.46**).


**Figure 2.46: Gravels in sand at site V_30.**

***Drop V_31:***

The seabed in the area consisted of rock and cobble with Spiny starfish (*M. glacialis*) and common starfish (*A. rubens*) present across the site (**Figure 2.47**).


**Figure 2.47: Spiny starfish (*M. glacialis*) on cobble sand at Site V_31.**

***Drop V_32:***

Bedrock interspersed with cobble and boulder dominated the seabed in this area. Notable fauna present on the hard benthos include the common sea-urchin (*E. esculentus*), common starfish (*A. rubens*), the Devonshire cup-coral (*C. smithii*) and keelworms (*Pomatoceros* sp.). In addition, sponge (*Cliona* sp.) and encrusting red algae were present on the bedrock (**Figure 2.48**).


**Figure 2.48: Common sea urchin (*E. esculentus*) and Devonshire cup-coral (*C. smithii*) on boulders at Site V_32.**

***Drop V_33:***

The substrate at this site consisted of firm rippled sand with occasional drift algae present (**Figure 2.49**).


**Figure 2.49: Drift algae on rippled sand at Site V_33.**

**Habitat Assessment**

**Proposed Marina Location**

Results from both the video and grab survey in the area of the proposed marina identified the presence of a single biological community. The sediment in the area consists of muddy sands and sandy muds. A distinct faunal group is present in the area, typical of Infralittoral Muddy Sands. The area is dominated by *Arenicola marina* casts and the fauna identified from the grab survey confirm that the site is characterised as *Arenicola marina* in infralittoral fine sand or muddy sand (JNCC Code: SS.SSa.IMuSa.ArelSa). This biotope often appears quite faunally sparse and occurs in shallow fine sands and non-cohesive muddy sands in fully marine conditions (Connor *et al.*, 2004) such as at the location of the proposed marina in Dingle Harbour.

**Dredge Spoil Disposal Site Location**

Sediment distribution, based on the video data, is presented in **Figure 2.50**. This mirrors the findings of the INFOMAR survey in 2010, which classified the area within and adjacent to the dredge spoil disposal site as consisting of a mosaic of soft and hard benthos across the site. The dominant sediment types across the survey area is fine rippled sands and muddy sands, with extensive areas of mixed sediments containing sands and gravels, as well as areas of bedrock and exposed boulder and cobble.

Classification of the hard benthos was made using the video data collected during the survey. Four distinct hard and coarse benthic habitats were identified (**Figure 2.51**). Sites from the survey area which contained bedrock and large boulder were consistent in terms of the fauna that was identified across these sites. They included encrusting algae and echinoderms, in addition to bryozoans and hydroids. These areas have been classified as Echinoderms and crustose communities (JNCC Code: CR.MCR.EcCr). Transition areas which contain cobble and boulder with reduced epifauna were more difficult to classify. A tentative classification of *Pomatoceros triqueter* with barnacles and bryozoan crusts on unstable circalittoral cobbles and pebbles (JNCC Code: SS.SCS.CCS.PomB) has been made at this site on the western edge of the disposal area. Sites which contained gravels in compacted sands have been classified as Circalittoral Coarse Sediment (JNCC Code: SS.SCS.CCS). A number of sites have been classified as transition zones between Circalittoral Muddy Sands (SS.SSa.CMuSa) and Echinoderms and crustose communities (CR.MCR.EcCr).

Analysis of faunal data identified the presence of a single biotope complex in the soft sediment parts of the disposal area and its vicinity (**Figure 2.51**) namely Circalittoral Muddy Sands (JNCC Code: SS.SSa.CMuSa). In addition, three discrete faunal assemblages were identified within this biotope complex, separated on the basis of the relative abundances of certain infauna at the sites. Groups 2B and 2C contain fauna which are typical of the biotope identified as *Abra alba* and *Nucula nitidosa* in

circalittoral muddy sand or slightly mixed sediment (JNCC Code: SS.SSa.CMuSa.AlbNuc), although *Nucula nitidosa* were missing from the samples collected during the present survey. Connor *et al*. (2004) note that the epibiotic biotope CR.MCR.EcCr (Echinoderms and crustose communities) may overlap this community, which is the case at this site.

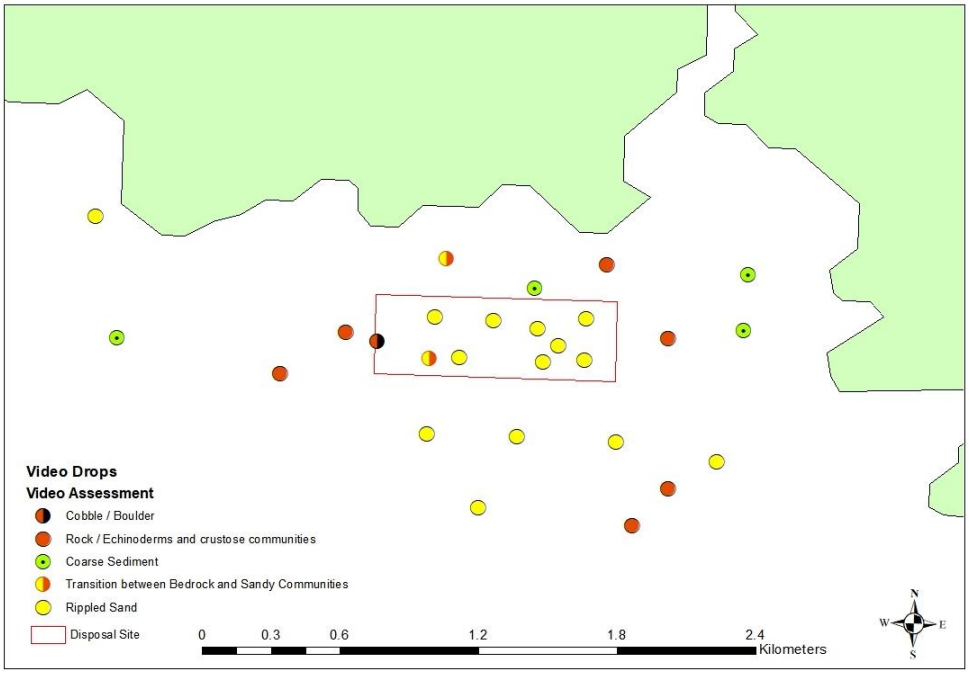


**Figure 2.50: Sediment characterisation from video data across the seabed at the location of the disposal area.**

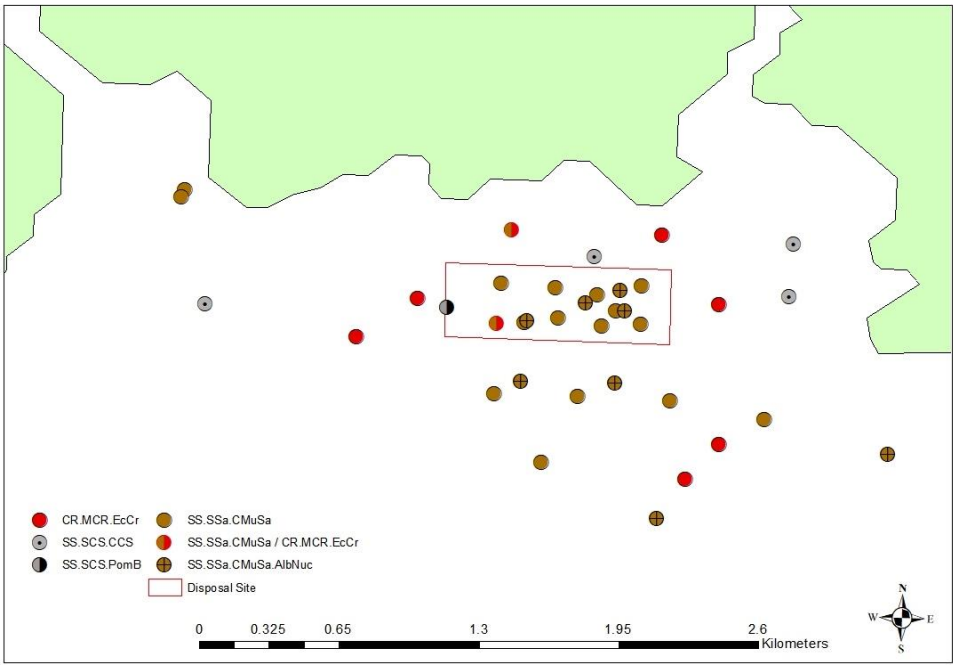


**Figure 2.51: Spatial distribution of the habitats identified within and adjacent to the disposal site from benthic grab and video data.**

## *2.3. Screening Exercise*

A key factor in the consideration as to whether or not a conservation feature of a European site is likely to be affected by a proposed project is the existence of connectivity (or interaction or impact pathway) between the designated feature and the impact mechanisms associated with the project.

National guidance (DEHLG, 2009) states that screening for AA should be carried out for any European site within the likely 'Zone of Impact' (ZoI) of a plan or project. For projects, the guidance outlines that the ZoI must be evaluated on a case-by-case basis.

Here the evaluation of the ZoI considered the potential for effects to conservation features within (*in situ*) and outside (*ex situ*) the Proposed Development area and European sites, with reference to the nature, size and location of the project, its location in relation to individual European sites and the Conservation Objectives defined for their conservation features and with reference to the sensitivities of the receptors and the potential for in-combination effects.

As a starting point, the assessment of potential effects presented here considered potential connectivity to European sites within a 15km[10] radius of the Proposed Development (as measured using the shortest linear distance[11]). The assessment also considered potential effects to highly mobile species and protected conservation features of more distant European sites that may occur in the development area and thereby be affected.

### 2.3.1. Methodology - Source-Pathway-Receptor and Impact Assessment

As outlined in **Section 1.4** above, this report focuses on the potential likely significant effects to conservation features of European sites.

The screening exercise considers potential *in situ* and *ex situ* effects to conservation features (*i.e.* potential effects to conservation features within or away from European sites, respectively). In order to establish the ZoI of the Proposed Development, the assessment of connectivity between impact mechanisms (or source) and a conservation feature (*i.e.* QIs of SACs and SCIs of SPAs) considers the location of the Proposed Development relative to habitats and non-mobile species, species foraging distances and migration routes, the proximity of the Proposed Development to foraging and breeding areas, potential changes in species behaviour, potential hydrological connectivity between the

[10] A distance of 15 km is used as a potential zone of impact, and this distance is derived from UK guidance (Scott Wilson *et al*. 2006 referenced in DEHLG, 2009).

[11] Distances are the shortest straight-line distance (*i.e.* as the 'crow flies').

Proposed Development and conservation features and potential effects on prey species resulting in alteration to interactions and associated impacts.

To inform the assessment of risk to European sites, nationally available data on protected habitats and species was mapped using a Geographic Information System (GIS) and interrogated to identify for source-pathway-receptor connectivity. The assessment was also informed by the findings of baseline field surveys undertaken by Goldcrest Environmental Services (see **Section 2.2.2**), Aquatic Service Unit (UCC) (see **Section 2.2.4**) and a desktop study by the Irish Whale and Dolphin Group (see **Section 2.2.3**)

The source (potential impact mechanisms), pathways (hydrological, physical or ecological connectivity) and receptors (QIs and SCIs of the European sites) were identified using GIS software and through the examination of aerial photography, mapping and review of biological receptors recorded at the Proposed Development site during walkover surveys and in environmental assessment reports prepared for the area. The assessment of project impact sources (or mechanisms) considers all relevant aspects of the Proposed Development that have potential direct or indirect *in situ* and *ex situ* effects on conservation features.

### 2.3.2. Identification of Potential Impact Mechanisms based on the Nature, Size and Location of the Project

A detailed description of the Proposed Development is provided in **Section 2.1**. In summary, it consists of construction of an approximately 150 berth SCH just south of the west breakwater at Dingle inner harbour. The project consists of dredging of an area of seabed, installation of anchoring piles, installation of floating breakwaters, small craft type pontoons, walkways and fingers, a sloped gangway from the west breakwater to the small craft area, trolley bays, toilet facilities, power and water kiosks and other ancillary furniture. The overall above-water area of the SCH is approximately 120 by 220 m (26,400 $m^2$). The impact mechanisms of concern regarding effects to conservation features of SACs and SPAs are associated with the proposed construction and operational phases. The potential impact mechanism associated with the construction and operational phases are presented below.

**Impact Mechanism 1 – Displacement from foraging habitat**

Mammals are very dependent on their hearing systems as they are used for several purposes: communication between other individuals of the same species, orientation, finding prey and echolocation. The behavioural response by marine mammals to noise includes modification of normal behaviour, such as displacement from the noisy area. There may be temporary displacement from foraging areas a result of noise disturbance caused by the drilling and dredge disposal activities. There have been documented examples of marine mammals exhibiting displacement behaviour from

dredging activities. Grey whales were document to have been displaced from breeding lagoons due to dredging activities for 10 years (Bryant *et al*. 1984). Pirotta *et al.* (2013) reported that during periods of high intensities of dredging activities, bottlenose dolphins spent less periods of time inside of the Moray Firth harbour in Scotland which is an important foraging area for the population. Anderwald *et al*. (2013) found that minke whales and grey seals were displaced by an increase in vessels and noise during marine construction activities in Broadhaven Bay, Co. Mayo. Broadhaven Bay was identified as an important area for marine mammals, with 9 cetacean species and both seal species occurring in Ireland (grey *Halichoerus grypus* and harbour seals *Phoca vitulina*) (Anderwald *et al*. (2013).

Drilling and the disposal of dredged material during construction may drive foraging species away from the area and result in complete avoidance of the area. A survey by Goldcrest (2021) observed important feeding events in the dredge spoil disposal area. These events occurred when a fishing vessel entered the area and attracted a number of species including Herring Gulls, Great black-backed Gulls, Gannets, Manx Shearwater and Fulmar. A large bait-balling event was observed occurring in the dredge spoil disposal area illustrating the importance of unpredictable natural ('bait-ball') or man-made (trawler) activities in drawing birds to the area to feed.

**Impact Mechanism 2 – Release of pollutants and sediments**

As with any construction project there is a risk that activities for the Proposed Development may result in the accidental release of chemical pollutants or other waste material pollution to waterbodies.

Potential chemical pollutants associated with construction plant equipment include fuels, oils, greases, hydraulic fluids (hydrocarbons). There is also risk of the accidental release of construction materials including concrete. Given the nature and scale of the proposed works, there is potential that habitats located at and adjacent to the works may be affected.

The Proposed Development will require capital dredging and piles to be installed. These activities will result in the generation and release of spoil (rock particles and sediment) to the water column potentially affecting local water quality (*e.g.* turbidity) and result in the generation of sediment plumes in the water column extending beyond the immediate works area. The increase in turbidity could result in a significant reduction of light in the water column. Spoil generated and released by the piling operation may be deposited on benthic habitats resulting in smothering effects.

Dredge material excavated will be disposed of in accordance with current legislative requirements at a licensed dredge spoil disposal site at sea. Disposal of dredge material on the seabed will cause smothering of benthic communities in the area. Activities will also result in the generation of sediment plumes in the water column that will extend beyond the disposal area. The sediment generated may be deposited on benthic habitats resulting in smothering effects.

**Impact Mechanism 3 - Noise disturbance**

Construction activity, including the construction, capital dredging, pilling operations and the installation of the breakwaters, pontoons, walkways and fingers will result in noise disturbance to fauna in the area.

Additional vessel activity in the area (removal of waste and vessel activity to and from the dredge spoil disposal site) will increase the potential for disturbance. There is potential that mobile conservation feature species (*e.g.* marine mammals, bird species) may occur in the area where the vessels are operating and thereby be affected.

### 2.3.3. Potential Connectivity and Effects

This section presents a Stage 1 screening exercise of the potential effects (direct or indirect) of impact mechanisms associated with the Proposed Development (identified in **Section 2.3.2** above) to conservation features of European sites.

The screening exercise considers the potential for the Proposed Development to have significant *in situ* and *ex situ* effects on European sites (*i.e.* potential effects to conservation features within or away from European sites, respectively). Where 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 conservation features of a European site then it is necessary to carry out a Stage 2 appropriate assessment (see **Section 3 NIS**).

Specifically **Section 2.3.3.1** presents a screening exercise of the interaction and potential impact to Qualifying Features of European sites located within 15 km of the project, while **Section 2.3.3.3** considers interaction and potential impact to wide ranging Qualifying Features of SACs and SPAs located more than 15 km from the project that may be found in the vicinity of the project area.

#### *2.3.3.1. Conservation Features of European sites within a 15 km radius*

#### *2.3.3.2. QIs of SACs*

The European sites within 15 km of the Proposed Development site are shown in **Figure 2.52**. The sites are:

- Mount Brandon SAC (site Code: 000375) (0.9 km from the Proposed Development)
- Tralee Bay and Magharees Peninsula, West to Cloghane SAC (site Code: 002070) (12.3 km from the Proposed Development)
- Blasket Islands SAC (site Code: 002172) (12.5 km from the Proposed Development)
- Castlemaine Harbour SAC (site Code: 001742) (14.9 km from the Proposed Development)

Full Site Synopsis reports for the SAC sites are included in **Appendix 1.**

The QIs of the SACs and the conservation objectives set for the QIs are listed in **Table 2.12** alongside screening assessments of potential significant effects of impact mechanism 1, 2, and 3 to the QIs.

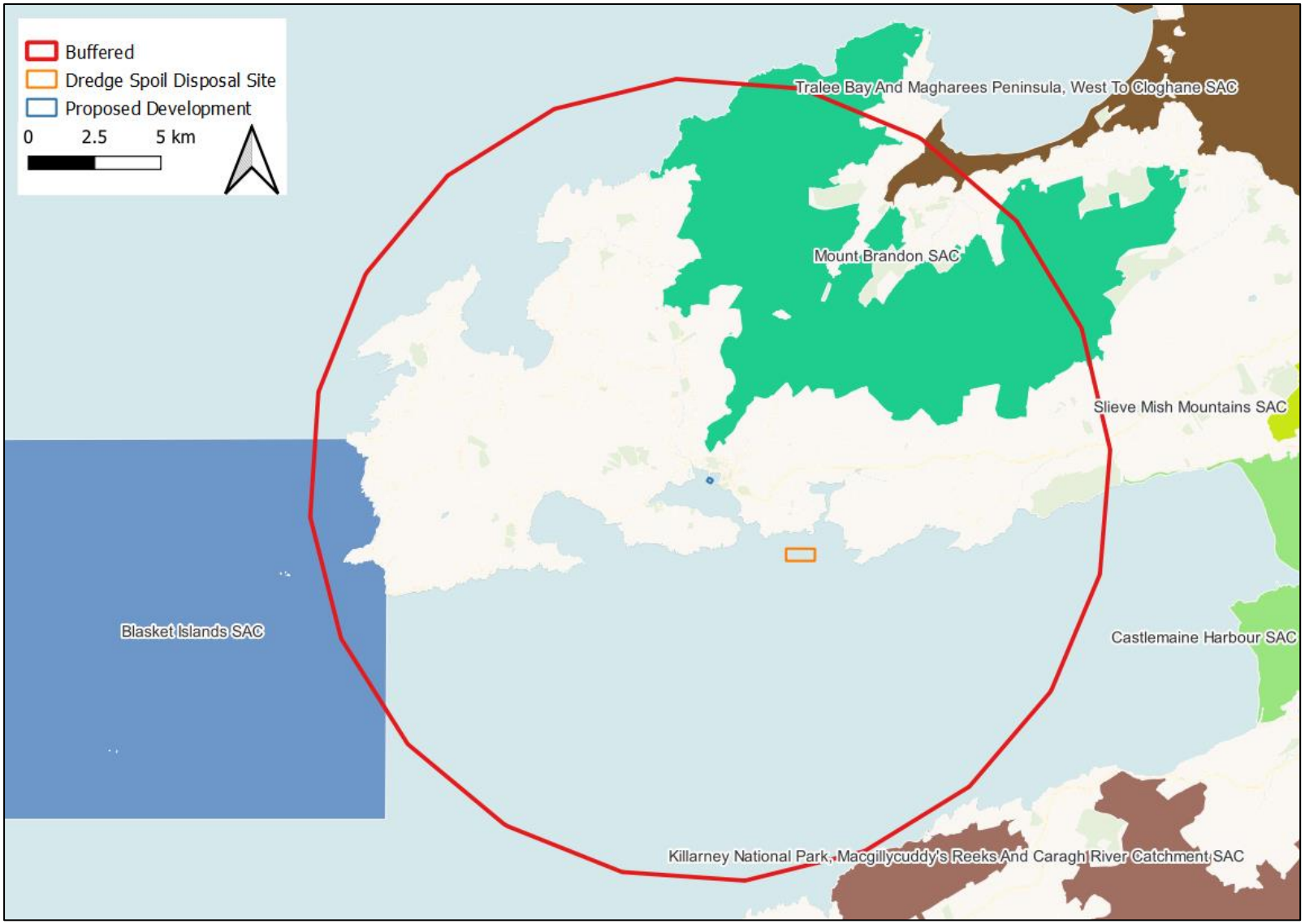


**Figure 2.52: SACs within 15 km of the Proposed Development.**

**Table 2.12: Qualifying Interests of SACs within 15 km of the Proposed Development. Potential significant effects to QIs are highlighted in bold.**

**Mount Brandon SAC (NPWS 2016[12]) (site code: 000375) (0.94 km from the Proposed Development)**

| Qualifying Interest (*=Priority Habitat) | Conservation Objective | Source-Pathway-Receptor Assessment | Is it possible to screen out likely significant effects? |
|---|---|---|---|
| Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] | To maintain the favourable conservation condition | These cliffs are situated at Bandon Bay on north side of Dingle Peninsula. This habitat is located a significant distance from the Proposed Project. The QI is located outside of the ZoI of the project impact mechanisms; consequently it is possible to exclude the potential for significant effects at the Screening for AA stage. The QIs and impact mechanism combinations are screened out of further assessment. | Yes - likely significant effects can be screened out. |
| Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110] | To maintain the favourable conservation condition | The river and lake QIs of the SAC are located in upland areas and/or surrounded by peatland or outcropping rock. There is no hydrological connectivity between the QI and the Proposed Development, as the QI is located upstream of the development. The QIs are located outside of the ZoI of the project impact mechanisms; consequently it is possible to exclude the potential for significant effects at the Screening for AA stage. The QIs and impact mechanism combinations are screened out of further assessment. | Yes - likely significant effects can be screened out. |
| Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea* [3130] | To maintain the favourable conservation condition | The river and lake QIs of the SAC are located in upland areas and/or surrounded by peatland or outcropping rock. There is no hydrological connectivity between the QI and the Proposed Development, as the QI is located upstream of the development. The QIs are located outside of the ZoI of the project impact mechanisms; consequently it is possible to exclude the potential for significant effects at the Screening for AA stage. The QIs and impact mechanism combinations are screened out of further assessment. | Yes - likely significant effects can be screened out. |
| Northern Atlantic wet heaths with *Erica tetralix* [4010] | To restore the favourable conservation condition | Extensive patches of this habitat occur in the east of the site at Cummeen, Stradbally Mountain, along the Owenmore River valley, on the slopes above Brandon village and on the western slopes of Brandon Mountain. These patches are located a significant distance from the Proposed Development and there is no hydrological connectivity. The QIs are located outside of the ZoI of the project impact mechanisms; consequently it is possible to exclude the potential for significant effects at the Screening for AA stage. The QIs and impact mechanism combinations are screened out of further assessment. | Yes - likely significant effects can be screened out. |

[12] NPWS 2016 Conservation Objectives Mount Brandon SAC 000375 https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000375.pdf

| | | | |
|---|---|---|---|
| European dry heaths [4030] | To restore the favourable conservation condition | Dry heath has been recorded throughout the SAC but is most abundant along the coast and on the slopes of Beenoskee. Beenoskee (16.6 km from the Proposed Development). The QI is located a significant distance from the Proposed Development and outside the ZoI of the project impact mechanisms; consequently it is possible to exclude the potential for significant effects at the Screening for AA stage. The QIs and impact mechanism combinations are screened out of further assessment. | Yes - likely significant effects can be screened out. |
| Alpine and Boreal heaths [4060] | To restore the favourable conservation condition | Alpine and Boreal heath has been recorded on the high ground across the SAC but is most abundant on the upper slopes at Masatiompan (15.6 km from the Proposed Development), Stradbally Mountain (17.5 km from the Proposed Development) and Beenoskee (16.6 km from the Proposed Development). The QI is located a significant distance from the Proposed Development and outside the ZoI of the project impact mechanisms; consequently it is possible to exclude the potential for significant effects at the Screening for AA stage. The QIs and impact mechanism combinations are screened out of further assessment. | Yes - likely significant effects can be screened out. |
| Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) [6230] | To restore the favourable conservation condition | Species-rich *Nardus* grassland has been recorded throughout the SAC, with a concentration on the eastern valley side of the Glennahoo River valley. Glennahoo River valley is located 13.86 km from the Proposed Development. The QI is located a significant distance from the Proposed Development and outside the ZoI of the project impact mechanisms; consequently it is possible to exclude the potential for significant effects at the Screening for AA stage. The QIs and impact mechanism combinations are screened out of further assessment. | Yes - likely significant effects can be screened out. |
| Blanket bogs (* if active bog) [7130] | To restore the favourable conservation condition | Blanket bog has been recorded in the SAC with extensive patches occurring on the eastern flank of Masatiompan (15.6 km from the Proposed Development), below Loch Cruite (10.5 km from the Proposed Development) along the Cloghane/Owenmore River valley (11.0 km from the Proposed Development) and in the valley below Slievenagower and Slievenlecha extending to Stradbally (19.0 km from the Proposed Development). The QI is located a significant distance from the Proposed Development and outside the ZoI of the project impact mechanisms; consequently it is possible to exclude the potential for significant effects at the Screening for AA stage. The QIs and impact mechanism combinations are screened out of further assessment. | Yes - likely significant effects can be screened out. |
| Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*) [8110] | To restore the favourable conservation condition | Siliceous scree has been recorded extensively throughout the SAC. Significant patches occur below the peaks of Brandon Mountain, Brandon Peak (11.4 km from the Proposed Development), Beenoskee (16.6 km from the Proposed Development) and above Loch Anscaul (14.8 km from the Proposed Development). The QI is located a significant distance from the Proposed Development and outside the ZoI of the project impact mechanisms; consequently it is possible to exclude the potential for significant effects at the Screening for AA stage. The QIs and impact mechanism combinations are screened out of further assessment. | Yes - likely significant effects can be screened out. |

| | | | |
|---|---|---|---|
| Calcareous rocky slopes with chasmophytic vegetation [8210] | To maintain the favourable conservation condition | Calcareous rocky slopes are of limited extent in the SAC. Patches were found below Brandon Peak (11.4 km from the Proposed Development) and on the cliff face above Loch an Mhonain (12.5 km from the Proposed Development) east of Gearhane. The QI is located a significant distance from the Proposed Development and outside the ZoI of the project impact mechanisms; consequently it is possible to exclude the potential for significant effects at the Screening for AA stage. The QIs and impact mechanism combinations are screened out of further assessment. | Yes - likely significant effects can be screened out. |
| Siliceous rocky slopes with chasmophytic vegetation [8220] | To maintain the favourable conservation condition | Siliceous rocky slopes have been recorded scattered throughout the SAC. Extensive patches occur along the slopes east of Brandon Mountain's summit (11.0 km from the Proposed Development), on the corrie wall below Slievancea (9.3 km from the Proposed Development) and on the slope north of Ballysitteragh (5.4 km from the proposed Development). The QI is located a significant distance from the Proposed Development and outside the ZoI of the project impact mechanisms; consequently it is possible to exclude the potential for significant effects at the Screening for AA stage. The QIs and impact mechanism combinations are screened out of further assessment. | Yes - likely significant effects can be screened out. |
| *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] | To restore the favourable conservation condition | The conservation objective applies to the Owenmore freshwater pearl mussel population. Its distribution was mapped and extends for *c.* 5.8 km in the Owenmore River from the confluence of the stream from Lough Atlea to the outflow to the sea at Boherboy. The Owenmore River is located 9.9 km from the Proposed Development and there is no hydrological connectivity. The QIs are located outside of the ZoI of the project impact mechanisms; consequently it is possible to exclude the potential for significant effects at the Screening for AA stage. The QIs and impact mechanism combinations are screened out of further assessment. | Yes - likely significant effects can be screened out. |
| *Trichomanes speciosum* (Killarney Fern) [1421] | To maintain the favourable conservation condition | The species grows in deeply shaded, humid situations - dripping caves, overhangs and crevices on cliffs, rocky slopes, by waterfalls, in stream ravines and gullies, on rock or soil banks in woodlands and, occasionally, under fallen trees and on the floor of damp woodlands. The Proposed Development does not support the suitable habitat for this species. The QI is located outside of the ZoI of the project impact mechanisms; consequently it is possible to exclude the potential for significant effects at the Screening for AA stage. The QI and impact mechanism combinations are screened out of further assessment. | Yes - likely significant effects can be screened out. |

**Tralee Bay and Magharees Peninsula, West to Cloghane SAC (NPWS 2014[13]) (site code: 002070) (12.31km from the Proposed Development)**

| Qualifying Interest (*=Priority Habitat) | Conservation Objective | Source-Pathway-Receptor Assessment | Is it possible to screen out likely significant effects? |
|---|---|---|---|
| Estuaries [1130] | To maintain the favourable conservation condition | Estuaries cover 306 ha of this SAC. The inner part of Tralee Bay is designated for 1,130 habitats. The habitat is located 37.4 km by water from the Proposed Development. The QI Is located a significant distance from the Proposed Development. The QI is located outside of the ZoI of the project impact mechanisms; consequently it is possible to exclude the potential for significant effects at the Screening for AA stage. The QI and impact mechanism combinations are screened out of further assessment | Yes - likely significant effects can be screened out. |
| Mudflats and sandflats not covered by seawater at low tide [1140] | To maintain the favourable conservation condition | The SAC includes extensive mudflats at the eastern end, the beaches of Derrymore Island (33.3 km from the Proposed Development by water), the sand dunes and lagoons of the Magharees Peninsula (24.4 km from the Proposed Development) as well as the rocky headlands at its end. The QI Is located a significant distance from the Proposed Development. The QI is located outside of the ZoI of the project impact mechanisms; consequently it is possible to exclude the potential for significant effects at the Screening for AA stage. The QI and impact mechanism combinations are screened out of further assessment | Yes - likely significant effects can be screened out. |
| Coastal lagoons [1150] | To restore the favourable conservation condition | Lough Gill, a natural sedimentary lagoon, is located at the base of the Magherees Peninsula. Lough Gill is located a significant distance (20.0 km) from the Proposed Development. The QI is located outside of the ZoI of the project impact mechanisms; consequently it is possible to exclude the potential for significant effects at the Screening for AA stage. The QI and impact mechanism combinations are screened out of further assessment | Yes - likely significant effects can be screened out. |
| Large shallow inlets and bays [1160] | To maintain the favourable conservation condition | The habitat area was estimated as 10,130 ha in the SAC and stretched from Brandon Bay to Inner Tralee Bay. This QI is located a significant distance (16.4 km) from the Proposed Development. The QI is located outside of the ZoI of the project impact mechanisms; consequently it is possible to exclude the potential for significant effects at the Screening for AA stage. The QI and impact mechanism combinations are screened out of further assessment | Yes - likely significant effects can be screened out. |
| Reefs [1170] | To maintain the | The intertidal reefs of the SAC are located between Tralee Bay and the Magharees peninsula with extensive patched found at the Magharees peninsula. The Magharees peninsula is located a significant distance (24.4 | Yes - likely significant |

[13] NPWS 2014 Conservation Objectives Tralee Bay and Magharees Peninsula, West to Cloghane SAC 002070 https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002070.pdf

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| | favourable conservation condition | km) from the Proposed Development. The QI is located outside of the ZoI of the project impact mechanisms; consequently it is possible to exclude the potential for significant effects at the Screening for AA stage. The QI and impact mechanism combinations are screened out of further assessment | effects can be screened out. |
| Annual vegetation of drift lines [1210] | To restore the favourable conservation condition | Annual vegetation of drift lines are situated at Derrymore Island and to the east of the island. The habitat is located a significant distance (33.3 km) from the Proposed Development. The QI is located outside of the ZoI of the project impact mechanisms; consequently it is possible to exclude the potential for significant effects at the Screening for AA stage. The QI and impact mechanism combinations are screened out of further assessment. | Yes - likely significant effects can be screened out. |
| Perennial vegetation of stony banks [1220] | To maintain the favourable conservation condition | This habitat is situated at Magherabeg (23.5 km from the Proposed Development), Derrymore Island (33.3 km from the Proposed Development) and Castlegregory (21.9 km from the Proposed Development). The QI is located outside of the ZoI of the project impact mechanisms; consequently it is possible to exclude the potential for significant effects at the Screening for AA stage. The QI and impact mechanism combinations are screened out of further assessment. | Yes - likely significant effects can be screened out. |
| *Salicornia* and other annuals colonising mud and sand [1310] | To maintain the favourable conservation condition | This habitat is situated on the leeward side of Derrymore Island. This habitat is located a significant distance (33.3 km) from the Proposed Development. The QI is located outside of the ZoI of the project impact mechanisms; consequently it is possible to exclude the potential for significant effects at the Screening for AA stage. The QI and impact mechanism combinations are screened out of further assessment. | Yes - likely significant effects can be screened out. |
| Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] | To maintain the favourable conservation condition | Saltmarsh vegetation frequently fringes the mudflats, with the most extensive areas being found at Blennerville (39.2 km from the Proposed Development), Derrymore Island (33.3 km from the Proposed Development) and Formoyle (15.4 km from the Proposed Development) in Brandon Bay. This habitat is located a significant distance from the Proposed Development. The QI is located outside of the ZoI of the project impact mechanisms; consequently it is possible to exclude the potential for significant effects at the Screening for AA stage. The QI and impact mechanism combinations are screened out of further assessment | Yes - likely significant effects can be screened out. |
| Mediterranean salt meadows (*Juncetalia maritimi*) [1410] | To maintain the favourable conservation condition | Saltmarsh vegetation frequently fringes the mudflats, with the most extensive areas being found at Blennerville (39.2 km from the Proposed Development), Derrymore Island (33.3 km from the Proposed Development) and Formoyle (15.4 km from the Proposed Development) in Brandon Bay. This habitat is located a significant distance from the Proposed Development. The QI is located outside of the ZoI of the project impact mechanisms; consequently it is possible to exclude the potential for significant effects at the Screening for AA stage. The QI and impact mechanism combinations are screened out of further assessment | Yes - likely significant effects can be screened out. |
| Shifting dunes along the shoreline with | To restore the favourable | This habitat occurs at three sub sites in the SAC; Fermoyle (15.4 km from the Proposed Development), Derrymore Island (33.3 km) from the Proposed Development) and Castlegregory (21.9 km from the Proposed Development). These sites are located a significant distance from the Proposed Development. The | Yes - likely significant |

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| *Ammophila arenaria* (white dunes) [2120] | conservation condition | QI is located outside of the ZoI of the project impact mechanisms; consequently it is possible to exclude the potential for significant effects at the Screening for AA stage. The QI and impact mechanism combinations are screened out of further assessment | effects can be screened out. |
| Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] | To restore the favourable conservation condition | This habitat occurs at three sub sites in the SAC: Fermoyle (15.4 km from the Proposed Development), Derrymore Island (33.3 km) from the Proposed Development) and Castlegregory (21.9 km from the Proposed Development). These sites are located a significant distance from the Proposed Development. The QI is located outside of the ZoI of the project impact mechanisms; consequently it is possible to exclude the potential for significant effects at the Screening for AA stage. The QI and impact mechanism combinations are screened out of further assessment | Yes - likely significant effects can be screened out. |
| Dunes with *Salix repens ssp. argentea* (*Salicion arenariae*) [2170] | To maintain the favourable conservation condition | This habitat occurs at one sub site in the SAC: Castlegregory (21.9 km from the Proposed Development). This site is located a significant distance from the Proposed Development. The QI is located outside of the ZoI of the project impact mechanisms; consequently it is possible to exclude the potential for significant effects at the Screening for AA stage. The QI and impact mechanism combinations are screened out of further assessment | Yes - likely significant effects can be screened out. |
| Humid dune slacks [2190] | To restore the favourable conservation condition | This habitat occurs at two sub sites in the SAC: Castlegregory (21.9 km from the Proposed Development and Fermoyle (15.4 km from the Proposed Development). Both sites are located a significant distance from the Proposed Development. The QI is located outside of the ZoI of the project impact mechanisms; consequently it is possible to exclude the potential for significant effects at the Screening for AA stage. The QI and impact mechanism combinations are screened out of further assessment | Yes - likely significant effects can be screened out. |
| *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410] | To maintain the favourable conservation condition | Good examples of this habitat have been recorded at Cappaclough East on the southern margins of the SAC between Camp and Castlegregory (25.5 km from the Proposed Development). Both sites are located a significant distance from the Proposed Development. The QI is located outside of the ZoI of the project impact mechanisms; consequently it is possible to exclude the potential for significant effects at the Screening for AA stage. The QI and impact mechanism combinations are screened out of further assessment. | Yes - likely significant effects can be screened out. |
| Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) [91E0] | To restore the favourable conservation condition | This habitat is located at two sites within the SAC: Farrandalouge (15.4 km from the Proposed Development) and Derrymore East (50.4 km from the Proposed Development). Both sites are located a significant distance from the Proposed Development. The QI is located outside of the ZoI of the project impact mechanisms; consequently it is possible to exclude the potential for significant effects at the Screening for AA stage.<br>The QI and impact mechanism combinations are screened out of further assessment. | Yes - likely significant effects can be screened out. |
| *Lutra lutra* (Otter) [1355] | To restore the favourable | The territories of otters can stretch for several kilometres. The total length of the home range depends on the availability of food. The smallest territories are thought to occur at coastal sites, where territories may | Yes - likely significant |

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| | conservation condition | be as small as 2 km. The longest territories occur in upland streams where an individual may have to range more than 20 km to find sufficient food.<br>Otter have been known to forage and commute throughout the SAC.<br>The otter survey undertaken in Dingle Bay in 2021 identified two otter spraints, one on raised platform of rock on the upper shoreline of Dingle Harbour and the other on a flat, grassy patch *c.* 6 m from the high tide line, on the southern shore of Dingle Harbour. There were also four sightings of otter within Dingle Harbour during the survey. One of an adult swimming close to the south shore of Dingle Harbour, another was swimming close to shore near Milltown Bridge at dawn, one was seen swimming just off the south-west corner of the marina in Dingle and one was seen swimming close to the shore in the south west corner of Dingle Harbour.<br>The NBDC included 5 live sighting records of the species: Kilshanig, Maherees, Aughacasla sand dunes and Cockleshell By, 2 at Blennerville and one at Tralee Canal. There was one otter spraint recorded at Castlegregory and three other tracks: one at Castlegregory, one at Derryquay and one at Bunnahow. The NBDC also included 4 records of dead otter, one washed up at Cappclogh Beach, Camp, one female found dead in a baited lobster pot in the mid intertidal zone on low tide at Fenit, one at Tralee Canal and one due to roadkill found at Cappananne.<br>Given the location of the SAC and the relatively wide-ranging habits of otter, there is potential that the individuals from the SAC may occur at the project area Dingle harbour. The proposed construction activities are likely to be carried out in daylight hours. Otter is primarily active in the very early morning and/or late evening. Consequently, given this behaviour it is unlikely that the species will be active in the project area during operations and the interaction with the otter is likely to be minimal and it is unlikely that activities pose a risk to otter populations of the SAC. In addition, otters are also quite tolerant of human disturbance and are often recorded in urban areas, so this impact is unlikely to be significant. No *in situ* or *ex situ* effects are expected to arise.<br>Otter forage and feed within 80-100 m of the coastline (Kruuk & Moorhouse, 1991; De Jongh & O'Neill, 2010) and while they can travel distances up to 500 m across estuaries or between islands (De Jongh & O'Neill, 2010), the species will not be found in the dredge spoil disposal site which is located almost 500 m offshore.<br>The QIs and impact mechanism combinations are screened out of further assessment | effects can be screened out. |
| *Petalophyllum ralfsii* (Petalwort) [1395] | To restore the favourable conservation condition | There are currently three known sub-populations: SW of Lough Naparka (24.6 km from the Proposed Development); Magherabeg (23.5 km from the Proposed Development); Kilshannig (26.3 km from the Proposed Development) in the SAC. The QI is located outside of the ZoI of the project impact mechanisms; consequently it is possible to exclude the potential for significant effects at the Screening for AA stage. The QI and impact mechanism combinations are screened out of further assessment. | Yes - likely significant effects can be screened out. |

**Blasket Islands SAC (NPWS 2014[14]) (site code: 002172) (12.46 km from the Proposed Development)**

| Qualifying Interest (*=Priority Habitat) | Conservation Objective | Source-Pathway-Receptor Assessment | Is it possible to screen out likely significant effects? |
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| Reefs [1170] | To maintain the favourable conservation condition | The seas surrounding the islands have well-developed reef communities. These communities are located a significant distance from the Proposed Development. The QI is located outside of the ZoI of the project impact mechanisms; consequently it is possible to exclude the potential for significant effects at the Screening for AA stage. The QI and impact mechanism combinations are screened out of further assessment. | Yes - likely significant effects can be screened out. |
| Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] | To restore the favourable conservation condition | This habitat is located at two sub sites in the SAC: Great Blasket (18.6 km from the Proposed Development) and Clogher Head to Slea Head (12.8 km from the Proposed Development). These sites are located a significant distance from the Proposed Development. The QI is located outside of the ZoI of the project impact mechanisms; consequently it is possible to exclude the potential for significant effects at the Screening for AA stage. The QI and impact mechanism combinations are screened out of further assessment. | Yes - likely significant effects can be screened out. |
| European dry heaths [4030] | To restore the favourable conservation condition | Great Blasket (18.6 km from the Proposed Development) and Inistooskert (20.4km from the Proposed Development) have the largest proportion of dry heath within the SAC. These habitats are located a significant distance from the Proposed Development. The QI is located outside of the ZoI of the project impact mechanisms; consequently it is possible to exclude the potential for significant effects at the Screening for AA stage. The QI and impact mechanism combinations are screened out of further assessment. | Yes - likely significant effects can be screened out. |
| Submerged or partially submerged sea caves [8330] | To restore the favourable conservation condition | This habitat is located at two sub sites in the SAC: Great Blasket (18.6 km from the Proposed Development) and Clogher Head to Slea Head (12.8 km from the Proposed Development). These sites are located a significant distance from the Proposed Development. The QI is located outside of the ZoI of the project impact mechanisms; consequently it is possible to exclude the potential for significant effects at the Screening for AA stage. The QI and impact mechanism combinations are screened out of further assessment. | Yes - likely significant effects can be screened out. |

[14] NPWS 2014 Conservation Objectives Blasket Islands SAC 002172 https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002070.pdf

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| ***Phocoena phocoena* (Harbour Porpoise) [1351]** | To maintain the favourable conservation condition | Harbour Porpoise occur frequently and at high densities off the Kerry coast (Berrow *et al.* 2010; Wall *et al.* 2013). They are recorded year-round, however inshore densities fall to a minimum from April to early June, when females are thought to move offshore to calve (Berrow *et al.* 2010). Harbour porpoise densities in the Blasket Islands SAC range was from 0.64 porpoises to 1.65 per $km^2$ which gave abundance estimates of 146±53 to 372±105 (Berrow *et al.* 2008; 2009; O'Brien and Berrow 2014). O'Brien and Berrow (2018) reported densities of 0.28 harbour porpoises per $km^2$ which was half that reported in 2014 suggesting harbour porpoise distribution locally might have changed. Abundance of harbour porpoise generally increases in the autumn which coincides with the presence of pelagic schooling fish in the area. There are no sightings of porpoises within Dingle Harbour, but the species has been frequently recorded at the harbour entrance with up to 10-12 individuals recorded off Bull Head in January 2010. **Consequently, there is potential that porpoise may occur within or adjacent to the Proposed Development. Given the close location of the SAC to the project areas and the relatively wide-ranging habits of Harbour Porpoise, there is potential that the individuals from the SAC may occur at the project areas. Of relevance to the species with respect potential effects are Impact Mechanism 1 - Displacement from foraging habitat, Impact Mechanism 2 - Discharged pollutants and sediment and Impact Mechanism 3 Noise disturbance.** | **No - likely significant effects cannot be excluded.**<br>**Qualifying Feature brought forward to Stage 2 AA NIS.** |
| ***Halichoerus grypus* (Grey Seal) [1364]** | To maintain the favourable conservation condition | The Blasket Islands are one of the most important sites for grey seals in Ireland. Annual pup production is estimated at around 648-833 with over 1,000 recorded hauled out on Great Blasket during the moult in January to March (O'Cadhla *et al*. 2007). Cronin *et al.* (2004) reported 30 grey seals hauled out in the Blasket Islands in August 2003 during an aerial survey for harbour seals and 1 at Cahersiveen. O'Cadhla and Strong (2007) reported around 1,000 grey seals on the Blasket Islands complex during an aerial survey in the moulting period (the moulting period is from December to April). Duck and Morris (2013) also reported large numbers of grey seals in the Blaskets in August/September 2012 using thermal imagery. A repeat survey carried out in 2017/18 suggested grey seals were increasing at an average annual rate of 9.5% over nine years (Morris and Duck, 2019). **Consequently, there is potential that Grey Seal may occur within or adjacent to the Proposed Development. Given the close location of the SAC to the project areas and the relatively wide-ranging habits of Grey Seal, there is potential that the individuals from the SAC may occur at the project areas. Of relevance to the species with respect potential effects are Impact Mechanism 1 - Displacement from foraging habitat, Impact Mechanism 2 - Discharged pollutants and sediment and Impact Mechanism 3 Noise disturbance.** | **No - likely significant effects cannot be excluded.**<br>**Qualifying Feature brought forward to Stage 2 AA NIS.** |

**Castlemaine Harbour SAC (NPWS 2011[15]) (site code: 001742) (14.90 km from the Proposed Development)**

| Qualifying Interest (*=Priority Habitat) | Conservation Objective | Source-Pathway-Receptor Assessment | Is it possible to screen out likely significant effects? |
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| Estuaries [1130] | To maintain the favourable conservation condition | The 1130 habitats inner boundary in the northern channel occurs between Laghtacallow Point and Tincally Point and in the southern channel it occurs at the quay to the east of Reen Point. The seaward boundary occurs due west of Rosbehy Point to Inch Point. The habitat is located a significant distance (22.2 km) from the Proposed Development. The QI is located outside of the ZoI of the project impact mechanisms; consequently it is possible to exclude the potential for significant effects at the Screening for AA stage. The QI and impact mechanism combinations are screened out of further assessment. | Yes - likely significant effects can be screened out. |
| Mudflats and sandflats not covered by seawater at low tide [1140] | To maintain the favourable conservation condition | A large expansive mudflat is present in inner Castlemaine Harbour, with smaller mudflats present in Rossbehy Creek. Sandflats occur along the length of Inch Beach and on both sides of the Rossbehy Pennisula. The habitat is located a significant distance (22.0 km) from the Proposed Development. The QI is located outside of the ZoI of the project impact mechanisms; consequently it is possible to exclude the potential for significant effects at the Screening for AA stage. The QI and impact mechanism combinations are screened out of further assessment. | Yes - likely significant effects can be screened out. |
| Annual vegetation of drift lines [1210] | To maintain the favourable conservation condition | There are two sub-sites where this habitat occurs within the SAC: Inch (20.2 km from the Proposed Development) and Rosbehy (22.0 km from the Proposed Development). These sites are located a significant distance from the Proposed Development. The QI is located outside of the ZoI of the project impact mechanisms; consequently it is possible to exclude the potential for significant effects at the Screening for AA stage. The QI and impact mechanism combinations are screened out of further assessment. | Yes - likely significant effects can be screened out. |
| Perennial vegetation of stony banks [1220] | To maintain the favourable conservation condition | This habitat occurs from Rosbehy (22.0 km from the Proposed Development) and Cromane (25.7 km from the Proposed Development). These sites are located a significant distance from the Proposed Development. The QI is located outside of the ZoI of the project impact mechanisms; consequently it is possible to exclude the potential for significant effects at the Screening for AA stage. The QI and impact mechanism combinations are screened out of further assessment. | Yes - likely significant effects can be screened out. |

[15] NPWS 2011 Conservation Objectives Castlemaine Harbour SAC 000343 https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000343.pdf

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| *Salicornia* and other annuals colonising mud and sand [1310] | To maintain the favourable conservation condition | There are two sub-sites where this habitat occurs within the SAC: Inch (20.2 km from the Proposed Development) and Rosbehy (22.0 km from the Proposed Development). These sites are located a significant distance from the Proposed Development. The QI is located outside of the ZoI of the project impact mechanisms; consequently it is possible to exclude the potential for significant effects at the Screening for AA stage. The QI and impact mechanism combinations are screened out of further assessment. | Yes - likely significant effects can be screened out. |
| Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] | To maintain the favourable conservation condition | There are five sub-sites where this habitat occurs within the SAC: Inch (20.2 km from the Proposed Development), Rosbehy (22.0 km from the Proposed Development), Whitegate (34.3 km from the Proposed Development), Fybagh (31.0 km from the Proposed Development) and Cromane (25.7 km from the Proposed Development). These sites are located a significant distance from the Proposed Development. The QI is located outside of the ZoI of the project impact mechanisms; consequently it is possible to exclude the potential for significant effects at the Screening for AA stage. The QI and impact mechanism combinations are screened out of further assessment. | Yes - likely significant effects can be screened out. |
| Mediterranean salt meadows (*Juncetalia maritimi)* [1410] | To maintain the favourable conservation condition | There are five sub-sites where this habitat occurs within the SAC: Inch (20.2 km from the Proposed Development), Rosbehy (22.0 km from the Proposed Development), Whitegate (34.3 km from the Proposed Development), Fybagh (31.0 km from the Proposed Development) and Cromane (25.7 km from the Proposed Development). These sites are located a significant distance from the Proposed Development. The QI is located outside of the ZoI of the project impact mechanisms; consequently it is possible to exclude the potential for significant effects at the Screening for AA stage. The QI and impact mechanism combinations are screened out of further assessment. | Yes - likely significant effects can be screened out. |
| Embryonic shifting dunes [2110] | To maintain the favourable conservation condition | There are two sub-sites where this habitat occurs within the SAC: Inch (20.2 km from the Proposed Development) and Rosbehy (22.0 km from the Proposed Development). These sites are located a significant distance from the Proposed Development. The QI is located outside of the ZoI of the project impact mechanisms; consequently it is possible to exclude the potential for significant effects at the Screening for AA stage. The QI and impact mechanism combinations are screened out of further assessment. | Yes - likely significant effects can be screened out. |
| Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] | To maintain the favourable conservation condition | There are two sub-sites where this habitat occurs within the SAC: Inch (20.2 km from the Proposed Development) and Rosbehy (22.0 km from the Proposed Development). These sites are located a significant distance from the Proposed Development. The QI is located outside of the ZoI of the project impact mechanisms; consequently it is possible to exclude the potential for significant effects at the Screening for AA stage. The QI and impact mechanism combinations are screened out of further assessment. | Yes - likely significant effects can be screened out. |

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| Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] | To restore the favourable conservation condition | There are two sub-sites where this habitat occurs within the SAC: Inch (20.2 km from the Proposed Development) and Rosbehy (22.0 km from the Proposed Development). These sites are located a significant distance from the Proposed Development. The QI is located outside of the ZoI of the project impact mechanisms; consequently it is possible to exclude the potential for significant effects at the Screening for AA stage. The QI and impact mechanism combinations are screened out of further assessment. | Yes - likely significant effects can be screened out. |
| Dunes with *Salix repens ssp. argentea* (*Salicion arenariae*) [2170] | To maintain the favourable conservation condition | There is one sub-site where this habitat occurs within the SAC: Inch (20.2 km from the Proposed Development). This site is located a significant distance from the Proposed Development. The QI is located outside of the ZoI of the project impact mechanisms; consequently it is possible to exclude the potential for significant effects at the Screening for AA stage. The QI and impact mechanism combinations are screened out of further assessment. | Yes - likely significant effects can be screened out. |
| Humid dune slacks [2190] | To restore the favourable conservation condition | There are two sub-sites where this habitat occurs within the SAC: Inch (20.2 km from the Proposed Development) and Rosbehy (22.0 km from the Proposed Development). These sites are located a significant distance from the Proposed Development. The QI is located outside of the ZoI of the project impact mechanisms; consequently it is possible to exclude the potential for significant effects at the Screening for AA stage. The QI and impact mechanism combinations are screened out of further assessment. | Yes - likely significant effects can be screened out. |
| Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) [91E0] | To restore the favourable conservation condition | There are five sub-sites where this habitat occurs within the SAC: Whitefield (39.3 km from the Proposed Development), Ardagh wood (50.8 km from the Proposed Development), Brennan's Glen (73.5 km from the Proposed Development), Farrantooreen (33.1 km from the Proposed Development) and Ballymalis (39.9 km from the Proposed Development). These sites are located a significant distance from the Proposed Development. The QI is located outside of the ZoI of the project impact mechanisms; consequently it is possible to exclude the potential for significant effects at the Screening for AA stage. The QI and impact mechanism combinations are screened out of further assessment. | Yes - likely significant effects can be screened out. |
| *Salmo salar* (Salmon) [1106] | To maintain the favourable conservation condition | Salmon spend their juvenile phase in rivers before migrating to sea to grow and mature. To complete their life cycle they return to their river of origin (natal river) to spawn.<br>The Laune catchment (including tributary headwaters) of the Castlemaine SAC is used by salmon for nurseries, riffles pools and glides (NPWS 2015). Given the migratory behaviour of the species, salmon from the Castlemaine SAC will not occur in the Dingle Bay area in significant numbers. Consequently, it is possible to exclude the potential for significant effects of construction activities in Dingle Bay (including noise and discharges of sediment and pollutants) to salmon at the Screening for AA stage.<br>There is potential the species may pass in close proximity to the dredge spoil disposal site during migration runs. Sound is perceived by fish through the ears and the lateral line (the acoustico-lateralis system) which is sensitive to vibration. Some species of fish such as salmon have a structure linking the | Yes - likely significant effects can be screened out. |

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| | | gas filled swim bladder to the ear. The swim bladder is sensitive to the pressure component of a sound wave, which resonates as a signal that stimulates the ears. Therefore, these species usually have increased hearing sensitivity. Such species are considered to be more sensitive to anthropogenic underwater noise sources than species, such as lamprey, that do not possess a structure linking the swim bladder and inner ear. It should be noted that the potential impact of noise on juvenile and adult fish in open water is considered to be minimal as they can readily move away from the noise source. Experiments on fry demonstrated balance problems resulting from exposure to an energy source, however the effects were temporary with full recovery observed after a few minutes upon cessation of the noise (Kostyuchenko, 1971). Some studies of high energy seismic noise sources have also demonstrated fish's ability to acclimatise to noise associated with an energy source over time (*e.g.* Chapman and Hawkins, 1969). Hearing in salmon is poor, responding only to low frequency tones (below 0.38 kHz). Consequently it is possible to exclude the potential of significant noise disturbance effects at the Screening for AA stage**.** The QI and impact mechanism combinations are screened out of further assessment. | |

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| *Petromyzon marinus* (Sea Lamprey) [1095]<br>*Lampetra fluviatilis* (River Lamprey) [1099] | To maintain the favourable conservation condition | Unlike salmon, spawning sea lamprey and river lamprey do not home to predetermined natal rivers (philopatric behaviour) (Tuunainen *et al*., 1980; Bergstedt and Seelye, 1995, Waldman *et al*., 2008; Meckley *et al*., 2020).<br>As adults in the marine environment, sea lamprey and river lamprey parasitise various species of marine and anadromous fish (Kelly and King, 2001). After the parasitic phase, which lasts between 2–3 years, river lamprey and sea lamprey migrate upstream to spawn, selecting rivers and streams through positive rheotaxis (swimming into an oncoming current) and attraction to pheromonal cues (bile acids) from larval conspecifics located upstream (Tuunainen *et al*., 1980; Bergstedt and Seelye, 1995; Waldman *et al*., 2008; Meckley *et al*., 2020). Lamprey spawning habitat requires a gravel bottom with swift-running water and nearby sheltered areas with muddy bottoms for the larvae (Wheeler 1969). Once in the vicinity of spawning gravels, they hide under stones or among vegetation (Hardisty and Potter 1971), with sea lamprey congregating at spawning gravels to spawn in May and June and river lamprey spawning in March and April (Kelly and King, 2001). Hatching occurs two weeks after egg deposition and within a further one to three weeks the ammocoete larvae emerge from the spawning substrate and pass downstream, where they burrow into muddy beds in sheltered areas. Ammocoetes (larvae) are relatively immobile and remain in the muddy beds for between 3–8 years (Kelly and King, 2001; Dawson *et al*., 2015). The population of larvae present in the muddy beds, which comprise multiple age classes, filter feed on organic matter until the onset of metamorphosis (Dawson *et al*., 2015). Larvae metamorphose into non-feeding adults that migrate downstream to the marine environment.<br>Given the non-philopatric behaviour of sea lamprey and river lamprey, there is potential that adults originating from any river system including the Castlemaine SAC may migrate into the inner Dingle Harbour and Milltown River and move upstream to spawn.<br>It is noted however, that it is unlikely that lamprey migrating through the Project Area will be significantly affected by sediments released during the construction phase activities (*i.e.* excavation work, capital dredging operations, dredge spoil disposal) as the species have evolved to migrate through estuaries which are naturally high in turbidity and have evolved mechanisms to deal with high suspended sediment loads.<br>It should be further noted that if effects to lamprey from discharges are realised, given the timing and duration of excavation and dredging activities, the effects will be limited to a single year cohort of adults migrating downstream through the development area to recruit to the marine population and a single year cohort of adults migrating upstream through the development area to spawn.<br>Noise is readily transmitted underwater and there is potential that that lamprey fish species moving/migrating through the project areas may be present during activities. Sound is perceived by fish through the ears and the lateral line (the acoustico-lateralis system) which is sensitive to vibration. Some | Yes - likely significant effects can be screened out. |

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| | | species of fish have a structure linking the gas filled swim bladder to the ear however, lamprey do not possess a structure linking the swim bladder and inner ear.<br>While there are no data available for hearing in lamprey, it is highly unlikely that they detect sound close to 10 kHz (Popper, 2005). The lamprey ear is relatively simple and there is nothing within the structure of the ear or associated structures to suggest any specialisations that would make them into anything but a hearing generalist, with maximum hearing to no more than several hundred Hz. Noise disturbance can result in auditory injury and behaviour changes.<br>Exposure to high energy noise emissions (piling, drilling, seismic noise) can result in recoverable auditory injury (termed Temporary Threshold Shift [TTS]) and non-recoverable auditory injury (termed Permanent Threshold Shift [PTS]). Behavioural reactions to acoustic exposure are generally more variable, context-dependent and less predictable than the effects of noise exposure on hearing or physiology. This is because behavioural responses to anthropogenic sound are dependent upon operational and environmental variables and on the physiological, sensory and psychological characteristics of exposed animals.<br>It should be noted that the potential impact of noise on fish in open water are considered to be minimal as they can readily move away from the noise source (Popper 2005). Experiments on fry demonstrated balance problems resulting from exposure to an energy source, however the effects were temporary with full recovery observed after a few minutes upon cessation of the noise (Kostyuchenko, 1971 (cited in McCauley 1994). Some studies of high energy seismic noise sources have also demonstrated fish's ability to acclimatise to noise associated with an energy source over time (*e.g.* Chapman and Hawkins, 1969).<br>Prolonged exposure of individual fish to injurious noise from construction noise and vibration is unlikely occur as fish are unlikely to stay in the vicinity noise sources; consequently, the risk of a significant effect to the QIs can be excluded at the Screening for AA stage.<br>Based on the above, significant effects to lamprey populations of the Castlemaine SAC can be screened out at the Screening for AA stage. The QI and impact mechanism combinations are screened out of further assessment. | |
| *Lutra lutra* (Otter) [1355] | To restore the favourable conservation condition | The Laune catchment in the SAC is used by otter. This catchment is located a significant distance (39.9 km) from the Proposed Development. For the same reason as described for Tralee Bay and Magharees Peninsula, West to Cloghane SAC potential significant effects to otter of Castlemaine SAC can be screened out. The QIs and impact mechanism combinations are screened out of further assessment | Yes - likely significant effects can be screened out |

| | | | |
|---|---|---|---|
| *Petalophyllum ralfsii* (Petalwort) [1395] | To maintain the favourable conservation condition | This QI occurs at two sub-sites within the SAC: Inch (20.2 km from the Proposed Development) and Rosbehy (22.0 km from the Proposed Development). These sites are located a significant distance from the Proposed Development. The QI is located outside of the ZoI of the project impact mechanisms; consequently it is possible to exclude the potential for significant effects at the Screening for AA stage. | Yes - likely significant effects can be screened out |

#### *2.3.3.3. SCIs of SPAs*

The European sites within 15 km of the Proposed Development are shown in **Figure 2.52**. The sites are:

- Dingle Peninsula SPA (site code: 004153) (1.95 km from the Proposed Development)
- Blasket Islands SPA (site code: 004008) (12.31 km from the Proposed Development)

Full Site Synopsis reports for the SPA sites are included in **Appendix 1**. Generic conservation objectives have been set for the SCI species of the SPAs, *i.e.* to maintain or restore the favourable conservation condition. The seabird SCI species of the Dingle Peninsula and the Blasket Islands SPAs can be assigned to two[16] broad feeding guilds after Weller (1999[17]). The feeding guilds and SCI species are:

1. Water column diver (deeper) Surface swimmer/Water column diver (shallow)
    - [A009] Fulmar (*Fulmarus glacialis*)
    - [A013] Manx Shearwater (*Puffinus puffinus*)
    - [A014] Storm Petrel (*Hydrobates pelagicus*)
    - [A018] Shag (*Phalacrocorax aristotelis*)
    - [A188] Kittiwake (*Rissa tridactyla*)
    - [A194] Arctic Tern (*Sterna paradisaea*)
    - [A200] Razorbill (*Alca torda*)
    - [A204] Puffin (*Fratercula arctica*)
2. Surface swimmer/Water column diver (shallow)/Intertidal walker (out of and in water)/Terrestrial walker
    - [A183] Lesser Black-backed Gull (*Larus fuscus*)
    - [A184] Herring Gull (*Larus argentatus*)
    - [A346] Chough (*Pyrrhocorax pyrrhocorax*)

The Dingle Peninsula SPA is also designated for the raptor species Peregrine (*Falco peregrinus*) [A0103].

The SCIs of the SPAs and the conservation objectives set for the SCIs are listed in **Table 2.13** alongside screening assessments of potential significant effects of Impact Mechanisms 1, 2, and 3 to the conservation features of the European sites.

[16] Birds of prey is not included in Weller (1999)

[17] Weller MW. 1999. Wetland birds. Habitat resources and conservation implications. Cambridge, UK: Cambridge Univ. Press.

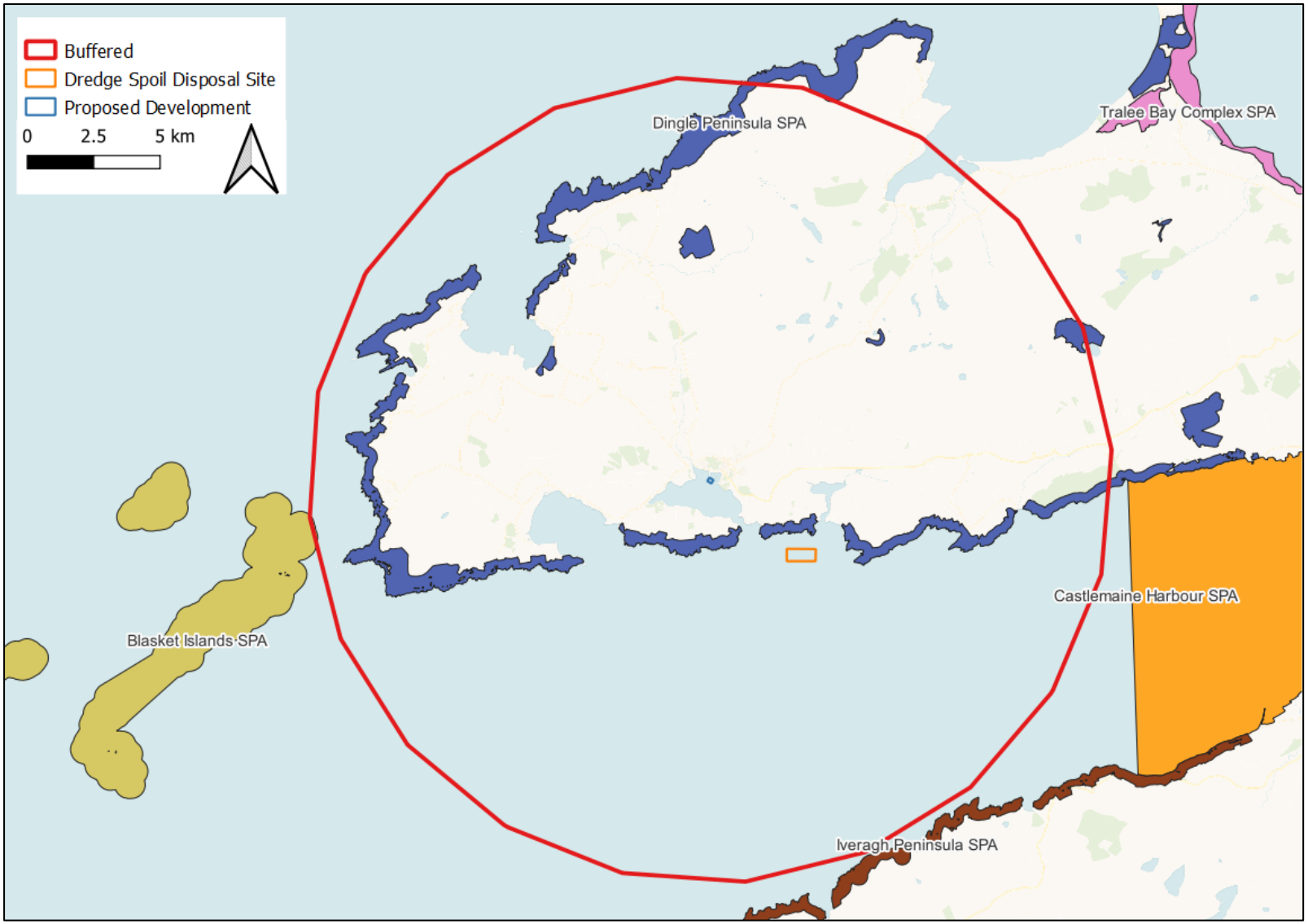


**Figure 2.53: SPAs with 15 km of the Proposed Development.**

**Table 2.13: Qualifying Interests of SPAs within 15 km of the Proposed Development. Potential significant effects to SCIs are highlighted in bold.**

**Dingle Peninsula SPA (NPWS 2021[18]) (site code: 004153)**

| Qualifying Features [Feature code] | Ecological Group and Foraging / Feeding Guild | Source-Pathway-Receptor Assessment | Is it possible to screen out likely significant effects? |
|---|---|---|---|
| Peregrine (*Falco peregrinus*) [A103] | This raptor (bird of prey) inhabits an extreme variety of habitats, tolerating wet and dry, hot and cool climates, from sea level up to *c.* 4,000 m. Birds make up most of its diet, principally pigeons and doves | The Proposed Development and dredge spoil disposal site do not represent significant foraging habitats for this species. Consequently, the species will not occur in significant numbers (if at all) in the project area, therefore it can be concluded that there are no pathways for significant interactions. The SCI is located outside of the ZoI of the project impact mechanisms; consequently it is possible to exclude the potential for significant effects at the Screening for AA stage. The SCIs and impact mechanism combinations are screened out of further assessment. | Yes - likely significant effects can be screened out |
| **Fulmar (*Fulmarus glacialis*) [A009]** | Water column diver (deeper) Surface swimmer/ Water column diver (shallow)<br>This species typically breeds on cliffs and rock faces, but also occasionally on flatter ground sometimes up to 1 km inland. It will also breed near human habitation, sometimes even on occupied houses along the seafront of towns. Its diet comprises of variable quantities of fish, squid and zooplankton (especially amphipods), and it will also feed on fish offal and carrion (*e.g.* whale blubber) (IUCN, 2021). | The species was recorded in a survey of the area by Goldcrest (2021) within a 500 m buffer and 100 m buffer of the proposed SCH and was noted to be flying over and foraging at the dredge spoil disposal area. Consequently, there is potential that Fulmar may occur within or adjacent to the project. **Given the close location of the SPA to the project areas and the relatively wide-ranging habits of Fulmar, there is potential that the individuals from the SPA may occur at the project areas and thereby be affected. Of relevance to the species with respect potential effects Impact Mechanism 1 - Displacement from foraging habitat, Impact Mechanism 2 - Discharged pollutants and sediment and Impact Mechanism 3 Noise disturbance.** | **No - likely significant effects cannot be excluded.**<br>**Qualifying Feature brought forward to Stage 2 AA NIS.** |
| Chough (*Pyrrhocorax* | Surface swimmer/Water column diver (shallow)/Intertidal walker (out of and in water)/Terrestrial walker | The species was recorded in a survey of the area by Goldcrest (2021) along coastal areas in Dingle Harbour and the outer sea cliffs and 2 km from the proposed dredge spoil disposal area. The species tends to avoid human- | Yes - likely significant effects |

[18] NPWS 2021 Conservation Objectives Dingle Peninsula SPA 004153 https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004153.pdf

| | | | |
|---|---|---|---|
| *pyrrhocorax*) [A346] | The topography of the Dingle Peninsula, with its mosaic of grazed semi-improved and improved pastures, extensive well-drained uplands and sand dune systems in close proximity to breeding cliffs, favours Chough. | occupied areas and given that the species was found over 2 km from the dredge spoil disposal area, it can be concluded that there are no pathways for significant interactions. The SCI is located outside of the ZoI of the project impact mechanisms; consequently it is possible to exclude the potential for significant effects at the Screening for AA stage. The SCIs and impact mechanism combinations are screened out of further assessment. | can be screened out |

**Blasket Islands SPA (NPWS 2021[19]) (site code: 004008)**

| Qualifying Features [Feature code] | Ecological Group and Foraging/Feeding Guild | Source-Pathway-Receptor Assessment | Is it possible to screen out likely significant effects? |
|---|---|---|---|
| **Fulmar (*Fulmarus glacialis*) [A009]** | Water column diver (deeper) Surface swimmer/Water column diver (shallow)<br>This species typically breeds on cliffs and rock faces, but also occasionally on flatter ground sometimes up to 1 km inland. It will also breed near human habitation, sometimes even on occupied houses along the seafront of towns. Its diet comprises of variable quantities of fish, squid and zooplankton (especially amphipods) and it will also feed on fish offal and carrion (*e.g.* whale blubber) (IUCN, 2021). | This species was recorded in a survey of the area by Goldcrest (2021) within a 500 m buffer and 100 m buffer of the proposed new marina and was noted to be flying over and foraging at the dredge spoil disposal area. Consequently, there is potential that Fulmar may occur within or adjacent to the project. **Given the close location of the SPA to the project areas and the relatively wide-ranging habits of Fulmar, there is potential that the individuals from the SPA may occur at the project areas and thereby be affected. Of relevance to the species with respect potential effects are Impact Mechanism 1 - Displacement from foraging habitat, Impact Mechanism 2 - Discharged pollutants and sediment and Impact Mechanism 3 Noise disturbance.** | **No - likely significant effects cannot be excluded.**<br>**Qualifying Feature brought forward to Stage 2 AA NIS.** |
| **Manx Shearwater (*Puffinus puffinus*) [A013]** | Water column diver (deeper) Surface swimmer/ Water column diver (shallow)<br>This marine species is mainly found on waters over the continental shelf, feeding mainly on small shoaling fish but also on some squid, crustaceans and offal. Prey is | This species was recorded in a survey of an area adjacent to the dredge spoil disposal site by Goldcrest (2021). There is pathway for interaction based on the presence of the species. Consequently, there is potential that Manx Shearwater may occur within or adjacent to the project. **Given the close proximity of the SPA to the project areas and the relatively wide ranging habits of Manx Shearwater, there is potential** | **No - likely significant effects cannot be excluded.** |

[19] NPWS 2021 Conservation Objectives Blasket Islands SPA 004008 https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004008.pdf

| | | | |
|---|---|---|---|
| | caught mainly by pursuit-plunging and pursuit-diving, either alone or in small flocks (IUCN, 2022). | **that the individuals from the SPA may occur at the project areas and thereby be affected. Of relevance to the species with respect potential effects are Impact Mechanism 1 - Displacement from foraging habitat, Impact Mechanism 2 - Discharged pollutants and sediment and Impact Mechanism 3 Noise disturbance.** | **Qualifying Feature brought forward to Stage 2 AA NIS.** |
| **Storm Petrel (*Hydrobates pelagicus*) [A014]** | Water column diver (deeper) Surface swimmer/Water column diver (shallow)<br>The species is associated with Marine Neritic, Marine Oceanic, Marine Intertidal, Marine Coastal/Supratidal habitats (IUCN, 2022). | This species was recorded in a survey of an area adjacent to the dredge spoil disposal site by Goldcrest (2021) and within a 500 m buffer and 100 m buffer of the proposed new marina. Consequently, there is potential Storm Petrel may occur within or adjacent to the project. **Given the close proximity of the SPA to the project areas and the relatively wide-ranging habits of Storm Petrel, there is potential that the individuals from the SPA may occur at the project areas and thereby be affected. Of relevance to the species with respect to potential effects are Impact Mechanism 1 - Displacement from foraging habitat, Impact Mechanism 2 - Discharged pollutants and sediment and Impact Mechanism 3 Noise disturbance.** | **No - likely significant effects cannot be excluded.**<br>**Qualifying Feature brought forward to Stage 2 AA NIS.** |
| **Shag (*Phalacrocorax aristotelis*) [A018]** | Water column diver (deeper) Surface swimmer/ Water column diver (shallow)<br>This species occupies marine habitats but does not usually occur far from land. It shows a strong preference for rocky coasts and islands with adjacent deep, clear water and forages over sandy and rocky seabed. The species feeds on a wide range of benthic, demersal and schooling, pelagic fish and sandeels (IUCN, 2022). | This species was recorded in a survey of an area adjacent to the dredge spoil disposal site by Goldcrest (2021) and along coastal areas in Dingle Harbour. Consequently, there is potential Shag may occur within or adjacent to the project. **Given the close proximity of the SPA to the project areas and the relatively wide-ranging habits of Shag, there is potential that the individuals from the SPA may occur at the project areas and thereby be affected. Of relevance to the species with respect potential effects are Impact Mechanism 1 - Displacement from foraging habitat, Impact mechanism 2 - Discharged pollutants and sediment and Impact Mechanism 3 Noise disturbance.** | **No - likely significant effects cannot be excluded.**<br>**Qualifying Feature brought forward to Stage 2 AA NIS.** |
| **Lesser Black-backed Gull (*Larus fuscus*) [A183]** | Surface swimmer/Water column diver (shallow)/ Intertidal walker (out of and in water) / Terrestrial walker<br>This species chiefly inhabits inshore and offshore seas, as well as lagoons, estuaries, harbours and seashores in the tropics. This species is an omnivorous, opportunistic feeder that forages extensively at sea. Its diet consists of small fish (especially Baltic herring *Clupea harengus*), aquatic and terrestrial invertebrates (*e.g.* beetles, flies | This species was recorded in a survey of an area adjacent to the dredge spoil disposal site by Goldcrest (2021) and along coastal areas in Dingle Harbour. There is a pathway for interaction based on the presence of the species. Consequently, there is potential Lesser Black-backed Gull may occur within or adjacent to the project. **Given the close location of the SPA to the project areas and the relatively wide-ranging habits of Lesser Black-backed Gull, there is potential that the individuals from the SPA may occur at the project areas and thereby be affected. Of relevance to the species with respect to potential effects are Impact** | **No - likely significant effects cannot be excluded.**<br>**Qualifying Feature brought forward to Stage 2 AA NIS** |

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| | and larvae, ants, moths, grasshoppers, crustaceans, molluscs, segmented worms and starfish), bird eggs and nestlings, carrion, offal, rodents, berries and grain (IUCN, 2022). | **Mechanism 1 - Displacement from foraging habitat, Impact Mechanism 2 - Discharged pollutants and sediment and Impact Mechanism 3 - Noise disturbance.** | |
| **Herring Gull (*Larus argentatus*) [A184]** | Surface swimmer/Water column diver (shallow)/Intertidal walker (out of and in water) /Terrestrial walker<br>This species is associated with Wetlands (inland), Marine Neritic, Marine Oceanic, Marine Intertidal, Marine Coastal/Supratidal, Artificial/Terrestrial, Artificial/Aquatic & Marine habitats (IUCN, 2022). | This species was recorded in a survey by Goldsrest (2021). Colonies were identified at Shirrag an Searreach/Máthair an tSearraigh and the Doonsheane area. These sites are within 2 km of the proposed dredge spoil disposal site area. Consequently, there is potential that Herring Gull may occur within or adjacent to the Proposed Development. **Given the close proximity of the SPA to the project areas and the relatively wide-ranging habits of Herring Gull, there is potential that the individuals from the SPA may occur at the project areas and thereby be affected. Of relevance to the species with respect to potential effects are Impact Mechanism 1 - Displacement from foraging habitat, Impact Mechanism 2 - Discharged pollutants and sediment and Impact Mechanism 3 - Noise disturbance.** | **No - likely significant effects cannot be excluded.**<br>**Qualifying Feature brought forward to Stage 2 AA NIS** |
| **Kittiwake (*Rissa tridactyla*) [A188]** | Water column diver (deeper) Surface swimmer/Water column diver (shallow)<br>The species moults on sandy beaches. On passage, it may concentrate at sea on continental shelves, areas of upwelling and at rich fish banks. During the winter the species is highly pelagic, usually remaining on the wing out of sight of land. Its diet consists predominantly of marine invertebrates (*e.g*. squid and shrimps) and fish, although during the breeding season it may also take intertidal molluscs, crustaceans (*e.g*. crayfish), earthworms, small mammals and plant matter (*e.g*. aquatic plants, potato tubers and grain) (IUCN, 2022). | This species was recorded in a survey of an area adjacent to the dredge spoil disposal site by Goldcrest (2021) and along coastal areas in Dingle Harbour. There is a pathway for interaction based on the presence of the species. Consequently, there is potential that Kittiwake may occur within or adjacent to the Proposed Development. **Given the close proximity of the SPA to the project areas and the relatively wide-ranging habits of Kittiwake, there is potential that the individuals from the SPA may occur at the project areas and thereby be affected. Of relevance to the species with respect potential effects are Impact Mechanism 1 - Displacement from foraging habitat, Impact Mechanism 2 - Discharged pollutants and sediment and Impact Mechanism 3 - Noise disturbance.** | **No - likely significant effects cannot be excluded.**<br>**Qualifying Feature brought forward to Stage 2 AA NIS** |
| **Arctic Tern (*Sterna paradisaea*) [A194** | Water column diver (deeper) Surface swimmer/Water column diver (shallow)<br>On passage, it largely flies over open ocean, resting at sea on kelp, logs or flotsam, but may occur inland or along coastlines on beaches, reefs and spits. Its diet consists predominantly of fish as well as crustaceans (especially | This species was recorded in a survey of an area adjacent to the dredge spoil disposal site by Goldcrest (2021). There is a pathway for interaction based on the presence of the species. Consequently, there is potential that Artic Tern may occur within or adjacent to the project. **Given the close proximity of the SPA to the project areas and the relatively wide-ranging habits of Artic Tern, there is potential that the** | **No - likely significant effects cannot be excluded.**<br>**Qualifying Feature brought** |

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| | planktonic species), molluscs, insects and earthworms (IUCN, 2022). | **individuals from the SPA may occur at the project areas. Of relevance to the species with respect potential effects are Impact Mechanism 1 - Displacement from foraging habitat, Impact Mechanism 2 - Discharged pollutants and sediment and Impact Mechanism 3 - Noise disturbance.** | **forward to Stage 2 AA NIS** |
| **Razorbill (*Alca torda*) [A200]** | Water column diver (deeper) Surface swimmer/Water column diver (shallow)<br>The species lives on rocky coasts, breeding on cliff ledges and under boulders in boreal or low Arctic waters where sea-surface temperatures <15°C. They are known to consume Krill, Sprat (*Sprattus sprattus*), Sandeels (*Ammondytes spp*.) and Capelin amongst other prey (IUCN, 2022). | This species was recorded in a survey of an area adjacent to the dredge spoil disposal site by Goldcrest (2021) and along coastal areas in Dingle Harbour. There is a pathway for interaction based on the presence of the species. Consequently, there is potential that Razorbill may occur within or adjacent to the project. **Given the close proximity of the SPA to the project areas and the relatively wide-ranging habits of Razorbill, there is potential that the individuals from the SPA may occur at the project areas and thereby be affected. Of relevance to the species with respect potential effects are Impact Mechanism 1 - Displacement from foraging habitat, Impact Mechanism 2 - Discharged pollutants and sediment and Impact Mechanism 3 - Noise disturbance.** | **No - likely significant effects cannot be excluded.**<br>**Qualifying Feature brought forward to Stage 2 AA NIS** |
| **Puffin (*Fratercula arctica*) [A204]** | Water column diver (deeper) Surface swimmer/Water column diver (shallow)<br>The species is exclusively marine, found on rocky coasts and offshore. It nests on grassy maritime slopes, sea cliffs and rocky slopes. During the winter it is wide-ranging, found in offshore and pelagic habitats. | This species was recorded in a survey of an area adjacent to the dredge spoil disposal site by Goldcrest (2021) and along coastal areas in Dingle Harbour. There is a pathway for interaction based on the presence of the species. Consequently, there is potential that Puffin may occur within or adjacent to the project. **Given the close proximity of the SPA to the project areas and the relatively wide-ranging habits of Puffin, there is potential that the individuals from the SPA may occur at the project areas and thereby be affected. Of relevance to the species with respect potential effects are Impact Mechanism 1 - Displacement from foraging habitat, Impact Mechanism 2 - Discharged pollutants and sediment and Impact Mechanism 3 - Noise disturbance.** | **No - likely significant effects cannot be excluded.**<br>**Qualifying Feature brought forward to Stage 2 AA NIS** |
| Chough (*Pyrrhocorax pyrrhocorax*) [A346] | Surface swimmer/Water column diver (shallow)/ Intertidal walker (out of and in water)/Terrestrial walker<br>This species is found on coastal cliffs in western Europe and in high mountain pastures with rocky crags elsewhere. Coastal populations such as those found in Ireland, Britain, Brittany, Canaries and north-west Spain, favour sea cliffs with rocky crags, interspersed with closely grazed grassland. It is chiefly insectivorous, | This species was recorded in a survey of the area by Goldcrest (2021) along coastal areas in Dingle Harbour and the outer sea cliffs and over 2 km from the proposed dredge spoil disposal area. The species tends to avoid human areas and given that the species was found 2 km from the dredge spoil disposal area, it can be concluded that there are no pathways for significant interactions. | Yes - likely significant effects can be screened out |

| | | | |
|---|---|---|---|
| | particularly in spring and summer, but also feeds on a wide variety of other invertebrates and rarely on small vertebrates such as lizards (*Lacertidae*) and small mammals (IUCN, 2022). | | |

#### *2.3.3.4. Conservation Features of Distant European Sites*

As described in **Section 2.2**, the baseline environment includes a range of protected wide ranging mobile species designated for distant SPAs and SACs. Consequently, there is potential that these protected species may occur in the project area and be affected by the Proposed Development.

#### *2.3.3.5. QIs of Distant SACs*

As outlined in **Section 2.2** the desktop study undertaken indicates 4 protected QI marine mammal species designated for SACs have been recorded in the An Daingean SCH development area consequently, there is potential for *ex situ* effects to the species. The QI species are:

- [1365] *Phoca vitulina* (Harbour Seal)
- [1364] *Halichoerus grypus* (Grey Seal)
- [1349] *Tursiops truncatus* (Bottlenose Dolphin)
- [1351] *Phocoena phocoena* (Harbour Porpoise)

The Irish SACs for which the QI species are designated are listed in **Table 2.14** along with the distance of the sites to the development area. **Table 2.14** presents the screening exercises of the potential direct and indirect effects of the project. The screening exercises consider the likelihood of the QI species from the SACs to occur in the An Daingean SCH development area and thereby be affected by the project. The project impact mechanisms of concern are:

**(1) Impact Mechanism 1 - Displacement**

**(2) Discharged pollutants and sediment**

**(3) Noise disturbance**

Potential direct project effects to QIs include the loss of foraging habitats, while project discharges (including sediment laden water and runoff chemicals or other waste material pollution) may indirectly impact the species along with underwater noise generated from piling and dredging and noise generated from the movement of vessels to and from the dredge spoil disposal site may impact the QI species.

For convenience, the QI species and their SAC sites that are screened in for further detailed consideration of the potential for effects are summarised in **Table 2.25**.

**Table 2.14: Marine Mammals – Harbour Seal (*Phoca vitulina*), Grey Seal (*Halichoerus grypus*), Bottlenose Dolphin (*Tursiops truncates*) and Harbour Porpoise (*Phocoena phocoena*)**

| **Harbour Seal (*Phoca vitulina*)** | | |
|---|---|---|
| **Site name (Site code)** | **Distance to development (km)** | **Source-Pathway-Receptor Assessment** |
| **Kenmare River SAC (002158)** | **55.91** | Activities associated with the construction and operation of the SCH (*e.g.* dredging and vessel noise) have the potential to impact marine mammals by introducing sound into the marine environment.<br>The furthest foraging trip for harbour seal reported by Sharples *et al*. (2012) was 220 km. Consequently, there is potential that Harbour Seal may occur within or adjacent to the Proposed Development. **Given the wide-ranging habits of Harbour Seal, there is potential that the individuals from the SAC may occur at the project areas. Of relevance to the species with respect to potential effects are Impact Mechanism 1 - Displacement from foraging habitat, Impact mechanism 2 - Discharged pollutants and sediment and Impact Mechanism 3 - Noise disturbance. A total of 5 SACs in Irish waters designated for harbour seal located within 220 km of the project are brought forward to the Stage 2 AA (see Section 3 Stage 2 AA NIS). The SACs brought forward to Section 3 are highlighted in bold in column 1 opposite.** |
| **Glengarriff Harbour and Woodland SAC (000090)** | **61.27** | |
| **Kilkieran Bay and Islands SAC (002111)** | **125.05** | |
| **Galway Bay Complex SAC (000268)** | **133.84** | |
| **Clew Bay Complex SAC (001482)** | **188.38** | |
| Killala Bay/Moy Estuary SAC (000458) | 240.48 | |
| Slaney River Valley SAC (000781) | 253.96 | |
| Ballysadare Bay SAC (000622) | 257.34 | |
| Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC (000627) | 264.13 | |
| Donegal Bay (Murvagh) SAC (000133) | 307.62 | |
| West of Ardara/Maas Road SAC (000197) | 317.66 | |
| Lambay Island SAC (000204) | 323.43 | |
| Rutland Island and Sound SAC (002283) | 333.46 | |

| Grey Seal (*Halichoerus grypus*) | | |
|---|---|---|
| **Site name (Site code)** | **Distance to development (km)** | **Source-Pathway-Receptor Assessment** |
| **Roaringwater Bay and Islands SAC (000101)** | **85.18** | Activities associated with the construction and operation of the SCH (*e.g.* dredging and vessel noise) have the potential to impact marine mammals by introducing sound into the marine environment.<br>Cronin *et al*. (2011) investigated grey seal movement on Irelands' continental shelf. Of the total 529 foraging trips recorded, the furthest foraging trip was 511 km. **Given the relatively wide-ranging habits of Grey Seal, there is potential that the individuals from the SAC may occur at the project areas. Of relevance to the species with respect to potential effects are Impact Mechanism 1 - Displacement from foraging habitat, Impact Mechanism 2 - Discharged pollutants and sediment and Impact Mechanism 3 - Noise disturbance.**<br>**A total of 9 SACs are brought forward to the Stage 2 AA (see Section 3 Stage 2 AA NIS). The SACs brought forward to Section 3 are highlighted in bold in column 1 opposite.** |
| **Slyne Head Islands SAC (000328)** | **146.22** | |
| **Inishbofin and Inishshark SAC (000278)** | **166.13** | |
| **Duvillaun Islands SAC (000495)** | **215.16** | |
| **Inishkea Islands SAC (000507)** | **219.84** | |
| **Saltee Islands SAC (000707)** | **245.48** | |
| **Slieve Tooey/Tormore Island/Loughros Beg Bay SAC (000190)** | **309.14** | |
| **Lambay Island SAC (000204)** | **323.43** | |
| **Horn Head and Rinclevan SAC (000147)** | **374.01** | |

| Bottlenose Dolphin (*Tursiops truncates)* | | |
|---|---|---|
| **Site name (Site code)** | **Distance to development (km)** | **Source-Pathway-Receptor Assessment** |
| **Lower River Shannon SAC (002165)** | **41.52** | Activities associated with the construction of the harbour *e.g.* dredging and vessel noise) have the potential to impact marine mammals by introducing sound into the marine environment.<br>**Given the relatively wide-ranging habits of Bottlenose Dolphin, there is potential that the individuals from the SAC may occur at the project areas. Of relevance to the species with respect to potential effects are Impact Mechanism 1 - Displacement from foraging habitat, Impact Mechanism 2 - Discharged pollutants and sediment and Impact Mechanism 3 - Noise disturbance. A total of 5 SACs in Irish waters designated for Bottlenose Dolphin and are brought forward to the Stage 2 AA (see Section 3 Stage 2 AA NIS). The SACs brought forward to Section 3 are highlighted in bold in column 1 opposite.** |
| **Slyne Head Peninsula SAC (002074)** | **141.85** | |
| **Slyne Head Islands SAC (000328)** | **146.22** | |
| **West Connacht Coast SAC (002998)** | **164.17** | |
| **Duvillaun Islands SAC (000495)** | **215.16** | |

| **Harbour Porpoise (*Phocoena phocoena*)** | | |
|---|---|---|
| **Site name (Site code)** | **Distance to development (km)** | **Source-Pathway-Receptor Assessment** |
| **Roaringwater Bay and Islands SAC (000101)** | **85.18** | Activities associated with the construction of the harbour *e.g.* dredging and vessel noise) have the potential to impact marine mammals by introducing sound into the marine environment.<br>**Given the relatively wide-ranging habits of Harbour Porpoise, there is potential that the individuals from the SAC may occur at the project areas. Of relevance to the species with respect potential effects are Impact Mechanism 1 - Displacement from foraging habitat, Impact Mechanism 2 - Discharged pollutants and sediment and Impact Mechanism 3 - Noise disturbance. A total of 2 SACs are brought forward to the Stage 2 AA (see Section 3 Stage 2 AA NIS). The SACs brought forward to Section 3 are highlighted in bold in column 1 opposite.** |
| **Rockabill to Dalkey Island SAC (003000)** | **309.55** | |

#### *2.3.3.6. SCIs of Distant SPAs*

As outlined in **Section 2.2** ecological surveys undertaken indicated 29 protected bird species designated for SPAs have been recorded in the An Daingean SCH development area, consequently there is potential for *ex situ* effects to the species. The SCI species can be assigned to ten broad feeding guilds according to Weller (1999). The feeding guilds and SCI species are:

1. Surface swimmer/Water column diver (shallow)
    - A004 Little Grebe (*Tachybaptus ruficollis*)
2. Surface swimmer/Water column diver (shallow)/Intertidal walker (out of and in water)/Terrestrial walker
    - A179 Black-headed Gull (*Larus ridibundus)*
    - A182 Mew/Common Gull (*Larus canus*)
3. Surface swimmer/Intertidal walker (out of water)
    - A050 Wigeon (*Anas penelope*)
    - A046 Light-bellied Brent Goose (*Branta bernicla hrota*)
4. Intertidal walker (out of water)/Terrestrial walker
    - A144 Sanderling (*Calidris alba*)
5. Intertidal walker (in water)
    - A164 Greenshank (*Tringa nebularia*)
6. Water column diver (deeper)
    - A017 Cormorant (*Phalacrocorax carbo*)
    - A001 Red-throated Diver (*Gavia stellata*)
    - A003 Great Northern Diver (*Gavia immer*)
    - A016 Gannet (*Morus bassanus*)
    - A199 Guillemot (*Uria aalge*)
7. Water column diver (shallow)
    - A229 Kingfisher (*Alcedo atthis*)
    - A069 Red-breasted Merganser (*Mergus serrator*)
8. Intertidal walker (in and out of water)
    - A160 Curlew (*Numenius arquata*)
    - A130 Oystercatcher (*Haematopus ostralegus*)
    - A141 Grey Plover (*Pluvialis squatarola*)
    - A137 Ringed Plover (*Charadrius hiaticula*)
    - A156 Black-tailed Godwit (*Limosa limosa*)

- A157 Bar-tailed Godwit (*Limosa lapponica*)
- A149 Dunlin (*Calidris alpina*)
- A162 Redshank (*Tringa totanus*)
- A142 Lapwing (*Vanellus vanellus*)
- A028 Grey Heron (*Ardea cinerea*)
- A169 Turnstone (*Arenaria interpres*)

**9.** Surface swimmer – dabbling ducks

- A053 Mallard (*Anas platyrhynchos*)
- A052 Teal (*Anas crecca*)

**10.** Water column diver (deeper) Surface swimmer/Water column diver (shallow)

- A191 Sandwich Tern (*Sterna sandvicensis*)

The Irish SPAs for which the SCI species are designated, listed in **Table 2.15** through to **Table 2.24,** present screening exercises of the potential direct and indirect effects of the project. The screening exercises consider the likelihood of the SCI species from the SPAs to occur in the An Daingean SCH development area and thereby be affected by the project. The project impact mechanisms of concern are:

**(1) Displacement from foraging habitat**

**(2) Discharged pollutants and sediment**

**(3) Noise disturbance**

For convenience, the SCI species and their SPA sites that are screened in for further detailed consideration of the potential for effects are summarised in **Table 2.26.**

**Table 2.15: Surface swimmer/Water column diver (shallow).**

**A004 Little Grebe (*Tachybaptus ruficollis*)**

| Site name (Site code) | Distance to development (km) | Source-Pathway-Receptor Assessment |
|---|---|---|
| Corofin Wetlands SPA (004220) | 121.96 | Little Grebe inhabit a wide range of small and shallow wetlands usually less than 1 m deep with rich vegetation and high densities of aquatic invertebrates, generally avoiding waters with large predatory fish. Suitable habitats include small lakes, ponds, the sheltered bays and vegetated shores of larger freshwater, alkaline or saline lakes and reservoirs, slow-flowing rivers, canals, flood-plains, oxbows, coastal brackish lagoons, seasonally inundated areas and swamps. Outside of breeding season it is common on more open waters and is occasionally observed along the coast in estuaries or sheltered bays protected from strong wave action. Diet consists predominantly of adult and larval insects, especially mayflies, stoneflies, water bugs, beetles, flies, caddisflies and dragonflies, as well as molluscs, crustaceans, adult and juvenile amphibians and occasionally small fish during the winter. They are typically observed along the coast in estuaries or sheltered bays protected from strong wave action.<br>This species does not undergo extensive foraging journeys and given the significant distances of the SPAs from the project areas (minimum distance of 121.51 km), the potential for large numbers of individuals from the SPAs occurring in the development area is low; consequently the risk of significant effects to the SCI populations of the SPAs can be excluded.<br>Potential significant *ex situ* effects to the SCI species of the SPAs from Impact Mechanisms 1, 2, and 3 can be excluded at the Screening for AA stage (the SCI and SPAs are excluded from further assessment). |
| Cork Harbour SPA (004030) | 129.51 | |
| Lough Ree SPA (004064) | 216.44 | |
| Lough Arrow SPA (001673) | 248.21 | |
| Tacumshin Lake SPA (004092) | 259.42 | |
| Wexford Harbour and Slobs SPA (004076) | 259.65 | |

**Table 2.16: Surface swimmer/Water column diver (shallow)/Intertidal walker (out of and in water)/Terrestrial walker.**

**A179 Black-headed Gull (*Larus ridibundus)***

| Site name (Site code) | Distance to development (km) | Source-Pathway-Receptor Assessment |
|---|---|---|
| **Tralee Bay Complex SPA (004188)** | **34.74** | Black-headed Gull diet consists predominantly of aquatic and terrestrial insects, earthworms and marine invertebrates (*e.g.* molluscs, crustaceans and marine worms) although it may also take fish (usually dead or sick), rodents (*e.g.* voles) and agricultural grain. During the non-breeding season the species may rely heavily on artificial food sources provided by man and often scavenges from refuse tips during this period.<br>**This species has a foraging distance of up to 40 km (Thaxter *et al.*, 2012). The Tralee Bay Complex SPA (004188) is located within the foraging range of the species and there is potential that individuals from the SPA may occur in the development area; consequently, likely significant *ex situ* effects from development cannot be excluded at the Screening for AA stage. Of relevance to the species with respect to potential effects are Impact Mechanism 1 - Displacement from foraging habitat, Impact Mechanism 2 - Discharged pollutants and sediment and Impact Mechanism 3 - Noise disturbance. The SCI and SPA is screened in as requiring further detailed consideration of the potential for effects (see Section 3 Stage 2 AA NIS).** |
| River Shannon and River Fergus Estuaries SPA (004077) | 114.29 | |
| Courtmacsherry Bay SPA (004219) | 121.98 | |
| Cork Harbour SPA (004030) | 129.51 | |
| Inner Galway Bay SPA (004031) | 133.83 | |
| Lough Corrib SPA (004042) | 152.71 | |
| Ballymacoda Bay SPA (004023) | 164.56 | |
| Lough Mask SPA (004062) | 172.32 | |
| River Little Brosna Callows SPA (004086) | 190.67 | |
| Middle Shannon Callows SPA (004096) | 192.38 | |
| Wexford Harbour and Slobs SPA (004076) | 259.65 | |
| Lady's Island Lake SPA (004009) | 268.67 | |
| The Murrough SPA (004186) | 301.55 | |
| South Dublin Bay and River Tolka Estuary SPA (004024) | 306.25 | |
| North Bull Island SPA (004006) | 312.38 | |
| Dundalk Bay SPA (004026) | 330.30 | |
| Lough Swilly SPA (004075) | 358.99 | |
| Greers Isle SPA (004082) | 381.80 | |
| Lough Foyle SPA (004087) | 383.01 | |
| Greers Isle SPA (004082) | 381.80 | |

**A182 Mew/Common Gull (*Larus canus*)**

| Site name (Site code) | Distance to development (km) | Source-Pathway-Receptor Assessment |
|---|---|---|
| **Magharee Islands SPA (004125)** | **27.07** | Common (or Mew) Gull species diet consists of earthworms, insects, aquatic and terrestrial invertebrates, crayfish, molluscs and small fish. On the coast it nests on grassy and rocky cliff-ledges, grassy slopes, inshore rocky islets, islands and stacks, and on sand and shingle beaches, banks and dunes amongst tide-wrack or flood debris. Inland the species nests on small islands in freshwater and saline lakes, shingle bars or small islets in streams or rivers islets, artificial structures and shores of artificial waterbodies with short, sparse vegetation.<br>**Common gull is reported to have a foraging distance of 50 km (Thaxter *et al.*, 2012). The Magharee Islands SPA (004125) and the Tralee Bay Complex SPA (004188) are located within the foraging range of the species and there is potential that individuals from the SPA may occur in the development area; consequently, likely significant *ex situ* effects from development cannot be excluded at the Screening for AA stage. Of relevance to the species with respect to potential effects are Impact Mechanism 1 - Displacement from foraging habitat, Impact Mechanism 2 - Discharged pollutants and sediment and Impact Mechanism 3 - Noise disturbance. The SCI and SPA is screened in as requiring further detailed consideration of the potential for effects (see Section 3 Stage 2 AA NIS). The SPAs brought forward to Section 3 are highlighted in bold in column 1 opposite.** |
| **Tralee Bay Complex SPA (004188)** | **34.74** | |
| Courtmacsherry Bay SPA (004219) | 121.98 | |
| Cork Harbour SPA (004030) | 129.51 | |
| Inner Galway Bay SPA (004031) | 133.83 | |
| Connemara Bog Complex SPA (004181) | 145.29 | |
| Lough Corrib SPA (004042) | 152.71 | |
| Ballycotton Bay SPA (004022) | 158.63 | |
| Lough Mask SPA (004062) | 172.32 | |
| Lough Carra SPA (004051) | 183.45 | |
| Clare Island SPA (004136) | 184.82 | |
| Lough Conn and Lough Cullin SPA (004228) | 215.25 | |
| Inishkea Islands SPA (004004) | 220.56 | |
| West Donegal Islands SPA (004230) | 351.09 | |
| Lough Swilly SPA (004075) | 358.99 | |
| Inishbofin, Inishdooey and Inishbeg SPA (004083) | 365.44 | |
| Greers Isle SPA (004082) | 381.80 | |
| Lough Foyle SPA (004087) | 383.01 | |
| Inishtrahull SPA (004100) | `417.30 | |

## Table 2.17: Surface swimmer/Intertidal walker (out of water)

**A050 Wigeon (*Anas penelope*)**

| Site name (Site code) | Distance to development (km) | Source-Pathway-Receptor Assessment |
|---|---|---|
| **Castlemaine Harbour SPA (004029)** | **15.96** | Wigeon is vegetarian and consumes the leaves, seeds, stems and root bulbs of pond weeds and fine grasses. Mainly uses grassland, wetlands (inland), marine neritic, marine intertidal and marine coastal/supratidal environments.<br>The development area supports areas of habitat that can be used by the species for foraging. **This species which is a gregarious flock forming species undertakes limited foraging journeys and there is potential that individuals from four SPAs (highlighted in bold in column 1 opposite) may occur in relatively large numbers in the development area; consequently, likely significant *ex situ* effects from the development cannot be excluded at the Screening for AA stage. Of relevance to the species with respect potential effects are Impact Mechanism 1 - Displacement from foraging habitat, Impact Mechanism 2 - Discharged pollutants and sediment and Impact Mechanism 3 - Noise disturbance. The SCI and SPA is screened in as requiring further detailed consideration of the potential for effects (see Section 3 Stage 2 AA NIS). The SPAs brought forward to Section 3 are highlighted in bold in column 1 opposite.** |
| **Tralee Bay Complex SPA (004188)** | **34.74** | |
| **The Gearagh SPA (004109)** | **90.97** | |
| **River Shannon and River Fergus Estuaries SPA (004077)** | **114.29** | |
| Corofin Wetlands SPA (004220) | 121.96 | |
| Courtmacsherry Bay SPA (004219) | 121.98 | |
| Cork Harbour SPA (004030) | 129.51 | |
| Inner Galway Bay SPA (004031) | 133.83 | |
| Blackwater Callows SPA (004094) | 153.02 | |
| Rahasane Turlough SPA (004089) | 155.76 | |
| Ballymacoda Bay SPA (004023) | 164.56 | |
| Blackwater Estuary SPA (004028) | 166.51 | |
| River Little Brosna Callows SPA (004086) | 190.67 | |
| Middle Shannon Callows SPA (004096) | 192.38 | |
| River Suck Callows SPA (004097) | 192.73 | |
| Ballyallia Lough SPA (004041) | 199.51 | |
| Lough Ree SPA (004064) | 216.44 | |
| Lough Iron SPA (004046) | 218.45 | |
| Tacumshin Lake SPA (004092) | 259.42 | |
| Wexford Harbour and Slobs SPA (004076) | 259.65 | |
| Lough Oughter Complex SPA (004049) | 277.85 | |
| Cahore Marshes SPA (004143) | 279.83 | |
| The Murrough SPA (004186) | 301.55 | |
| Lough Swilly SPA (004075) | 358.99 | |

| Site name (Site code) | Distance to development (km) | Source-Pathway-Receptor Assessment |
|---|---|---|
| Lough Foyle SPA (004087) | 383.01 | |

**A046 Light-bellied Brent Goose (*Branta bernicla hrota*)**

| Site name (Site code) | Distance to development (km) | Source-Pathway-Receptor Assessment |
|---|---|---|
| Castlemaine Harbour SPA (004029) | 15.96 | This species is predominantly coastal, inhabiting estuaries, tidal mudflats, sandy shores, coastal saltmarshes (especially in the spring) and shallow muddy bays. In recent years, the species has taken to grazing on coastal cultivated grasslands and winter cereal fields, but rarely occurs on freshwater wetlands except on passage. The species is mainly herbivorous although it may take animal matter (*e.g*. fish eggs, worms, snails and amphipods).<br>This species does not undergo significant foraging journeys and will remain largely faithful to the SPA sites, feeding within the sites and immediate surrounding hinterland. Given this behaviour and the fact that the project areas do not support habitats used by the species, it can be concluded that this species will not occur in large numbers (if at all) in the development area; consequently, there is no risk of significant effects to the SPA populations. Potential significant *ex situ* effects to the SCI species of the SPAs from Impact Mechanisms 1, 2 and 3 can be excluded at the Screening for AA stage (the SCI and SPAs are excluded from further assessment). |
| Tralee Bay Complex SPA (004188) | 34.74 | |
| River Shannon and River Fergus Estuaries SPA (004077) | 114.29 | |
| Inner Galway Bay SPA (004031) | 133.83 | |
| Dungarvan Harbour SPA (004032) | 182.16 | |
| Tramore Back Strand SPA (004027) | 215.84 | |
| Bannow Bay SPA (004033) | 236.17 | |
| Blacksod Bay/Broad Haven SPA (004037) | 240.73 | |
| Ballyteige Burrow SPA (004020) | 244.14 | |
| Wexford Harbour and Slobs SPA (004076) | 259.65 | |
| Ballysadare Bay SPA (004129) | 260.81 | |
| Cummeen Strand SPA (004035) | 263.93 | |
| Donegal Bay SPA (004151) | 291.78 | |
| The Murrough SPA (004186) | 301.55 | |
| South Dublin Bay and River Tolka Estuary SPA (004024) | 306.25 | |
| Malahide Estuary SPA (004025) | 312.34 | |
| North Bull Island SPA (004006) | 312.38 | |
| Baldoyle Bay SPA (004016) | 313.50 | |
| Rogerstown Estuary SPA (004015) | 319.34 | |
| Skerries Islands SPA (004122) | 324.36 | |

| | | |
|---|---|---|
| Dundalk Bay SPA (004026) | 330.30 | |
| Carlingford Lough SPA (004078) | 346.83 | |
| Lough Foyle SPA (004087) | 383.01 | |
| Trawbreaga Bay SPA (004034) | 401.48 | |

### Table 2.18: Intertidal walker (out of water)/Terrestrial walker

**A144 Sanderling (*Calidris alba*)**

| Site name (Site code) | Distance to development (km) | Source-Pathway-Receptor Assessment |
|---|---|---|
| Castlemaine Harbour SPA (004029) | 15.96 | This species may occur on inland freshwater or saline lakes but it is largely coastal during the winter, inhabiting open sandy beaches exposed to the sea, the outer reaches of estuaries, rocky and muddy shores, mudflats and coral reefs.<br>During the winter its diet consists of small molluscs, crustaceans, polychaete worms and adult, larval and pupal insects (e.g. *Diptera*, *Coleoptera*, *Lepidoptera*, *Hemiptera* and *Hymenoptera*), as well as occasional fish and carrion.<br>This species does not undergo significant foraging journeys and will remain largely faithful to the SPA sites, feeding within the sites and immediate surrounding hinterland. Given this behaviour and that the project area does not support foraging habitat for the species, it can be concluded that the species from the SPAs will not occur in large numbers (if at all) in the development area; consequently, there is no risk of significant effects to the SPA populations. Potential significant *ex situ* effects to the SCI species of the SPAs from Impact Mechanisms 1, 2 and 3 can be excluded at the Screening for AA stage (the SCI and SPAs are excluded from further assessment). |
| Tralee Bay Complex SPA (004188) | 34.74 | |
| Mid-Clare Coast SPA (004182) | 85.27 | |
| Ballymacoda Bay SPA (004023) | 164.56 | |
| Inishkea Islands SPA (004004) | 220.56 | |
| Blacksod Bay/Broad Haven SPA (004037) | 240.73 | |
| Killala Bay/Moy Estuary SPA (004036) | 244.29 | |
| Wexford Harbour and Slobs SPA (004076) | 259.65 | |
| The Raven SPA (004019) | 268.71 | |
| Drumcliff Bay SPA (004013) | 269.05 | |
| Donegal Bay SPA (004151) | 291.78 | |
| South Dublin Bay and River Tolka Estuary SPA (004024) | 306.25 | |
| North Bull Island SPA (004006) | 312.38 | |
| River Nanny Estuary and Shore SPA (004158) | 319.64 | |
| Boyne Estuary SPA (004080) | 321.63 | |

## Table 2.19: Intertidal walker (in water)

### A164 Greenshank (*Tringa nebularia*)

| Site name (Site code) | Distance to development (km) | Source-Pathway-Receptor Assessment |
|---|---|---|
| Castlemaine Harbour SPA (004029) | 15.96 | In its wintering grounds Greenshank frequents a variety of freshwater, marine and artificial wetlands, including swamps, open muddy or rocky shores of lakes and large rivers, sewage farms, saltworks, inundated rice-field ponds, reservoirs, flooded grasslands, saltmarshes, sandy or muddy coastal flats, mangroves, estuaries, lagoons and pools on tidal reefs. Greenshank is chiefly carnivorous, its diet consists of insects and their larvae (especially beetles), crustaceans, annelids, molluscs, amphibians, small fish (mullet *Liza spp*., C*linids clinus spp*. and *tilapia Oreochromis spp.)* and occasionally rodents.<br>The species does not undergo extensive foraging journeys and given the significant distances of the SPAs from the development area (minimum distance of 15.96 km) and that the project area does not support foraging habitat for the species, the potential for large numbers of individuals from the SPAs occurring in the development area is low; consequently the risk of significant effects to the SCI populations of the SPAs can be excluded.<br>Potential significant *ex situ* effects to the SCI species of the SPAs from Impact Mechanisms 1, 2, 3 and 3 can be excluded at the Screening for AA stage (the SCI and SPAs are excluded from further assessment). |
| River Shannon and River Fergus Estuaries SPA (004077) | 114.29 | |
| Lough Swilly SPA (004075) | 358.99 | |

## Table 2.20 Water column diver (deeper)

**A017 Cormorant (*Phalacrocorax carbo*)**

| Site name (Site code) | Distance to development (km) | Source-Pathway-Receptor Assessment |
|---|---|---|
| **Castlemaine Harbour SPA (004029)** | **15.96** | Typically found in coastal/marine waters. Diet consists predominantly of fish as well as crustaceans, amphibians, molluscs and nestlings. At sea, the species preys mostly on bottom-dwelling fish, occasionally also taking shoaling fish in deeper waters. It is a generalist, known to feed on at least 22 different fish species. **Cormorants have a foraging distance of 35 km (Thaxter *et al*., 2012). Castlemaine Harbour SPA (004029) is located within the foraging range of the species and there is potential that individuals from the SPA may occur in the development area. Cormorant was also recorded flying over the dredge spoil disposal site area and may be affected by the movement of vessels carrying dredged material to the dredge spoil disposal site. Of relevance to the species with respect to potential effects are Impact Mechanism 1 - Displacement from foraging habitat, Impact Mechanism 2 - Discharged pollutants and sediment and Impact Mechanism 3 - Noise disturbance.** **The SCI and SPA is screened in as requiring further detailed consideration of the potential for effects (see Section 3 Stage 2 AA NIS). The SPA brought forward to Section 3 are highlighted in bold in column 1 opposite.** |
| Mid-Clare Coast SPA (004182) | 85.27 | |
| River Shannon and River Fergus Estuaries SPA (004077) | 114.29 | |
| Cork Harbour SPA (004030) | 129.51 | |
| Inner Galway Bay SPA (004031) | 133.83 | |
| Sovereign Islands SPA (004124) | 136.05 | |
| Lough Cutra SPA (004056) | 142.79 | |
| Connemara Bog Complex SPA (004181) | 145.29 | |
| Lough Derg (Shannon) SPA (004058) | 149.27 | |
| Helvick Head to Ballyquin SPA (004192) | 180.98 | |
| Mid-Waterford Coast SPA (004193) | 204.52 | |
| Inishglora and Inishkeeragh SPA (004084) | 230.57 | |
| Keeragh Islands SPA (004118) | 241.84 | |
| Saltee Islands SPA (004002) | 249.93 | |
| Wexford Harbour and Slobs SPA (004076) | 259.65 | |
| Ardboline Island and Horse Island SPA (004135) | 268.09 | |
| The Raven SPA (004019) | 268.71 | |
| West Donegal Coast SPA (004150) | 299.28 | |
| Ireland's Eye SPA (004117) | 317.68 | |
| Lambay Island SPA (004069) | 323.98 | |
| Skerries Islands SPA (004122) | 324.36 | |
| Horn Head to Fanad Head SPA (004194) | 386.22 | |

**A001 Red-throated Diver (*Gavia stellata*)**

| Site name (Site code) | Distance to development (km) | Source-Pathway-Receptor Assessment |
|---|---|---|
| **Castlemaine Harbour SPA (004029)** | **15.96** | This species breeds on freshwater pools or lakes in open moorland, blanket bogs or open and wet peatland habitats. It will nest on pools as small as 10-20 m long or on lakes up to 5 ha in area, showing a preference for those in treeless areas that have well-vegetated margins and low islets or promontories on which to nest. It generally avoids waters with dense floating or emergent vegetation and steep rocks above the water. Outside of the breeding season, the species frequents inshore waters along sheltered coasts, occasionally occurring inland on lakes, pools, reservoirs and rivers. Its diet consists predominantly of fish as well as crustaceans, molluscs, frogs, fish spawn, aquatic insects, annelid worms and plant matter.<br>**Red-throated diver has a foraging distance of 9 km (Thaxter *et al*., 2012). Red-throated diver was recorded flying over the dredge spoil disposal site area and may be affected by the movement of vessels carrying dredged material to the dredge spoil disposal site. Of relevance to the species with respect to potential effects are Impact Mechanism 1 - Displacement from foraging habitat, Impact Mechanism 2 - Discharged pollutants and sediment and Impact Mechanism 3 - Noise disturbance. Adopting a precautionary approach, the closest SPA to the development is brought forward to Section 3 Stage 2 AA NIS for a more detailed consideration of the potential for effects. The SPA designated for Red-throated diver brought forward is highlighted in bold in column 1 opposite.** |
| Blacksod Bay/Broad Haven SPA (004037) | 240.73 | |
| The Raven SPA (004019) | 268.71 | |
| The Murrough SPA (004186) | 301.55 | |
| Derryveagh and Glendowan Mountains SPA (004039) | 338.21 | |
| Lough Foyle SPA (004087) | 383.01 | |

**A003 Great Northern Diver (*Gavia immer*)**

| Site name (Site code) | Distance to development (km) | Source-Pathway-Receptor Assessment |
|---|---|---|
| **Courtmacsherry Bay SPA (004219)** | **121.98** | This species winters along the coast on exposed rocky shores, sheltered bays, channels and sheltered inlets, preferring shallow inshore waters. It may also be found inland on lakes and reservoirs during this season, although this is largely influenced by the weather. Its diet consists predominantly of fish as well as crustaceans, molluscs, aquatic insects, annelid worms, frogs, other amphibians |
| **Inner Galway Bay SPA (004031)** | **133.83** | |

| | | |
|---|---|---|
| **Blacksod Bay/Broad Haven SPA (004037)** | **240.73** | and plant matter (*e.g*. *Potamogeton spp.*, willow *Salix spp*. shoots, roots, seeds, moss and algae).<br>**Great Northern diver was recorded flying over the dredge spoil disposal site area and may be affected by the movement of vessels and dredged material to the dredge spoil disposal site. Of relevance to the species with respect to potential effects are Impact Mechanism 1 - Displacement from foraging habitat, Impact Mechanism 2 - Discharged pollutants and sediment and Impact Mechanism 3 - Noise disturbance. The SCI and SPAs screened in as requiring further detailed consideration of the potential for effects (see Section 3 Stage 2 AA NIS). The SPAs brought forward to Section 3 are highlighted in bold in column 1 opposite.** |
| **Donegal Bay SPA (004151)** | **291.78** | |
| | | |

**A016 Gannet (*Morus bassanus*)**

| Site name (Site code) | Distance to development (km) | Source-Pathway-Receptor Assessment |
|---|---|---|
| **Skelligs SPA (004007)** | **42.42** | This strictly marine species wanders mostly over continental selves, feeding on shoaling pelagic fish which are mostly caught by plunge-diving from large heights. It also attends trawlers and will form large congregations where food is plentiful. Breeding is highly seasonal starting between March and April, usually in large colonies on cliffs and offshore islands, but also sometimes on the mainland. Young birds will migrate to the extreme south of its range, whereas adults range less extensively but still regularly winter in the Mediterranean and Gulf of Mexico. **Gannets have a foraging distance of 590 km (Thaxter *et al*., 2012). Gannet was recorded flying over and foraging at the dredge spoil disposal site area and may be affected by the movement of vessels carrying dredged material to the dredge spoil disposal site. Of relevance to the species with respect to potential effects are Impact Mechanism 1 - Displacement from foraging habitat, Impact Mechanism 2 - Discharged pollutants and sediment and Impact Mechanism 3 - Noise disturbance. The SCI and SPAs screened in as requiring further detailed consideration of the potential for effects (see Section 3 Stage 2 AA NIS). The SPAs brought forward to Section 3 are highlighted in bold in column 1 opposite.** |
| **The Bull and The Cow Rocks SPA (004066)** | **60.65** | |
| **Saltee Islands SPA (004002)** | **249.93** | |

**A199 Guillemot (*Uria aalge*)**

| Site name (Site code) | Distance to development (km) | Source-Pathway-Receptor Assessment |
|---|---|---|
| **Iveragh Peninsula SPA (004154)** | **16.31** | This species dives to maximum depths of 170-230 m. During the breeding season, surveys recorded the highest densities of birds in the 51-100 m depth zone, although birds were still abundant in water less than 50 m and 101-200 m deep. Very few were seen in deeper areas. During the breeding season, schooling pelagic fish species are the most important prey for adults, though benthic species can also be important. **Guillemots have a foraging distance of 340 km (Jovani *et al.*, 2016). Guillemot was recorded flying over and foraging at the dredge spoil disposal site area and may be affected by the movement of vessels carrying dredged material to the dredge spoil disposal site. Of relevance to the species with respect to potential effects are Impact Mechanism 1 - Displacement from foraging habitat, Impact Mechanism 2 - Discharged pollutants and sediment and Impact Mechanism 3 - Noise disturbance.**<br>**The SCI and SPA is screened in as requiring further detailed consideration of the potential for effects (see Section 3 Stage 2 AA NIS). The SPAs brought forward to Section 3 are highlighted in bold in column 1 opposite.** |
| **Skelligs SPA (004007)** | **42.42** | |
| **Loop Head SPA (004119)** | **53.01** | |
| **Cliffs of Moher SPA (004005)** | **104.07** | |
| **Inishmore SPA (004152)** | **113.86** | |
| **Old Head of Kinsale SPA (004021)** | **132.26** | |
| **Clare Island SPA (004136)** | **184.82** | |
| **Saltee Islands SPA (004002)** | **249.93** | |
| **Ireland's Eye SPA (004117)** | **317.68** | |
| **Lambay Island SPA (004069)** | **323.98** | |
| Horn Head to Fanad Head SPA (004194) | 386.22 | |

**Table 2.21: Water column diver (shallow).**

**A229 Kingfisher (*Alcedo atthis*)**

| Site name (Site code) | Distance to development (km) | Source-Pathway-Receptor Assessment |
|---|---|---|
| River Nore SPA (004233) | 207.37 | Suitable habitats for the species include freshwater lakes, pools, rivers and deep marshes surrounded by coniferous forest found by still or slow flowing water such as lakes, canals and rivers. Typically observed on branches beside streams or rivers, this species lays eggs in nests at the end of riverbank burrows. Their main prey is fish but they will also consume aquatic insects, flies (*Diptera*), butterflies and moths (*Lepidoptera*), amphibians (*Rana*), crayfish (*Astacus*), prawns (*Palaemon*), amphipods (*Gammarus*) and isopods in winter. Very occasionally this species feeds on berries (*Rubus, Sambucus*) and stems of reed (*Phragmites*).<br>This species does not undergo extensive foraging journeys and will remain largely faithful to the SPA sites. Given the significant distances of the SPAs from the development (over 200 km) and that the project area does not support suitable foraging habitats for the species, it is highly unlikely that large numbers of individuals from the SPAs will occur in the development area; consequently there is no risk of significant effects to the SCI populations of the SPAs. Potential significant *ex situ* effects to the SCI species of the SPAs from Impact Mechanisms 1, 2 and 3 can be excluded at the Screening for AA stage (the SCI and SPAs are excluded from further assessment). |
| River Boyne and River Blackwater SPA (004232) | 307.39 | |

**A069 Red-breasted Merganser (*Mergus serrator*)**

| Site name (Site code) | Distance to development (km) | Source-Pathway-Receptor Assessment |
|---|---|---|
| Courtmacsherry Bay SPA (004219) | 121.98 | The majority of the species winters at sea, frequenting both inshore and offshore waters, estuaries, bays and brackish lagoons, but showing a preference for clear, shallow waters not affected by heavy wave action. Its diet consists predominantly of small, shoaling marine or freshwater fish, as well as small amounts of plant material aquatic invertebrates, such as crustaceans (*e.g*. shrimps and crayfish), worms and insects. |
| Cork Harbour SPA (004030) | 129.51 | |
| Inner Galway Bay SPA (004031) | 133.83 | |
| Dungarvan Harbour SPA (004032) | 182.16 | |
| Blacksod Bay/Broad Haven SPA (004037) | 240.73 | |

| | | |
|---|---|---|
| Wexford Harbour and Slobs SPA (004076) | 259.65 | Given the significant distances of the SPAs from the development (over 120 km) and that the project area does not support foraging habitats for the species, it is highly unlikely that large numbers of individuals from individuals from the SPAs will occur in the development area; consequently there is no risk of significant effects to the SCI populations of the SPAs. Potential significant *ex situ* effects to the SCI species of the SPAs from Impact Mechanisms 1, 2 and 3 can be excluded at the Screening for AA stage (the SCI and SPAs are excluded from further assessment). |
| Malahide Estuary SPA (004025) | 312.34 | |
| Dundalk Bay SPA (004026) | 330.30 | |
| Lough Swilly SPA (004075) | 358.99 | |
| Lough Foyle SPA (004087) | 383.01 | |

**Table 2.22: Intertidal walker (in and out of water)**

**A160 Curlew *(Numenius arquata)***

| Site name (Site code) | Distance to development (km) | Source-Pathway-Receptor Assessment |
|---|---|---|
| Tralee Bay Complex SPA (004188) | 34.74 | This species frequents muddy coasts, bays and estuaries with tidal mudflats and sandflats, rocky and sandy beaches with many pools, saltmarshes, coastal meadows and pasture and muddy shores of coastal lagoons. It also utilises wet grassland and arable fields during migration. Its diet consists chiefly of annelid worms and terrestrial insects especially during the summer although it will also take crustaceans, molluscs and polychaete worms.<br>The project area does not support suitable habitats for this species and it is highly unlikely that large numbers of individuals from SPAs will be in the project areas; consequently there is no risk of significant effects to the SCI populations of the SPAs. Potential significant *ex situ* effects to the SCI species of the SPAs from impact mechanisms 1, 2 and 3 can be excluded at the Screening for AA stage (the SCI and SPAs are excluded from further assessment). |
| Clonakilty Bay SPA (004081) | 112.99 | |
| River Shannon and River Fergus Estuaries SPA (004077) | 114.29 | |
| Courtmacsherry Bay SPA (004219) | 121.98 | |
| Cork Harbour SPA (004030) | 129.51 | |
| Inner Galway Bay SPA (004031) | 133.83 | |
| Ballycotton Bay SPA (004022) | 158.63 | |
| Ballymacoda Bay SPA (004023) | 164.56 | |
| Blackwater Estuary SPA (004028) | 166.51 | |
| Dungarvan Harbour SPA (004032) | 182.16 | |
| Tramore Back Strand SPA (004027) | 215.84 | |
| Bannow Bay SPA (004033) | 236.17 | |
| Blacksod Bay/Broad Haven SPA (004037) | 240.73 | |
| Killala Bay/Moy Estuary SPA (004036) | 244.29` | |
| Wexford Harbour and Slobs SPA (004076) | 259.65 | |
| North Bull Island SPA (004006) | 312.38 | |
| Dundalk Bay SPA (004026) | 330.30 | |
| Lough Swilly SPA (004075) | 358.99 | |
| Lough Foyle SPA (004087) | 383.01 | |

**130 Oystercatcher *(Haematopus ostralegus)***

| Site name (Site code)/ | Distance to development (km) | Source-Pathway-Receptor Assessment |
|---|---|---|
| Castlemaine Harbour SPA (004029) | 15.96 | Forages on intertidal soft substrates on bivalves and gastropods. Polychaetes and crustaceans are more important in estuaries however, and molluscs are most important on rocky shores. When inland, prey such as earthworms and insect larvae (*e.g.* caterpillars and cranefly larvae) are also taken.<br>Like Curlew (*Numenius arquata*) the foraging behaviour of Oystercatcher indicates that there is low potential for species from the SPAs to occur in the development area consequently there is no risk of significant effects to the SCI populations of the SPA. Potential significant *ex situ* effects to the SCI species of the SPAs from Impact Mechanisms 1, 2 and 3 can be excluded at the Screening for AA stage (the SCI and SPAs are excluded from further assessment). |
| Tralee Bay Complex SPA (004188) | 34.74 | |
| Cork Harbour SPA (004030) | 129.51 | |
| Dungarvan Harbour SPA (004032) | 182.16 | |
| Bannow Bay SPA (004033) | 236.17 | |
| Wexford Harbour and Slobs SPA (004076) | 259.65 | |
| Cummeen Strand SPA (004035) | 263.93 | |
| South Dublin Bay and River Tolka Estuary SPA (004024) | 306.25 | |
| Malahide Estuary SPA (004025) | 312.34 | |
| North Bull Island SPA (004006) | 312.38 | |
| Rogerstown Estuary SPA (004015) | 319.34 | |
| River Nanny Estuary and Shore SPA (004158) | 319.64 | |
| Boyne Estuary SPA (004080) | 321.63 | |
| Dundalk Bay SPA (004026) | 330.30 | |
| Lough Swilly SPA (004075) | 358.99 | |
| Lough Foyle SPA (004087) | 383.01 | |

**A141 Grey Plover *(Pluvialis squatarola)***

| Site name (Site code) | Distance to development (km) | Source-Pathway-Receptor Assessment |
|---|---|---|
| Tralee Bay Complex SPA (004188) | 34.74 | This species frequents intertidal mudflats, saltmarshes, sandflats and beaches of oceanic coastlines, bays and estuaries. During migration it may also be found inland on lakes, pools or grasslands. Grey Plover takes marine polychaete worms, molluscs and crustaceans (*e.g*. crabs, sand shrimps), occasionally also taking insects (*e.g.* grasshoppers and beetles) or earthworms when in inland habitats on passage. |
| River Shannon and River Fergus Estuaries SPA (004077) | 114.29 | |
| Cork Harbour SPA (004030) | 129.51 | |
| Ballycotton Bay SPA (004022) | 158.63 | |
| Ballymacoda Bay SPA (004023) | 164.56 | |

| | | |
|---|---|---|
| Dungarvan Harbour SPA (004032) | 182.16 | This species does not exhibit extensive foraging journeys and individuals from the SPAs will not occur in the development area; consequently there is no risk of significant effects to the SCI populations of the SPAs. Potential significant *ex situ* effects to the SCI species of the SPAs from Impact Mechanisms 1, 2 and 3 can be excluded at the Screening for AA stage (the SCI and SPAs are excluded from further assessment). |
| Tramore Back Strand SPA (004027) | 215.84 | |
| Bannow Bay SPA (004033) | 236.17 | |
| Ballyteige Burrow SPA (004020) | 244.14 | |
| Killala Bay/Moy Estuary SPA (004036) | 244.29 | |
| Tacumshin Lake SPA (004092) | 259.42 | |
| Wexford Harbour and Slobs SPA (004076) | 259.65 | |
| Ballysadare Bay SPA (004129) | 260.81 | |
| The Raven SPA (004019) | 268.71 | |
| South Dublin Bay and River Tolka Estuary SPA (004024) | 306.25 | |
| Malahide Estuary SPA (004025) | 312.34 | |
| North Bull Island SPA (004006) | 312.38 | |
| Baldoyle Bay SPA (004016) | 313.50 | |
| Rogerstown Estuary SPA (004015) | 319.34 | |
| Boyne Estuary SPA (004080) | 321.63 | |
| Dundalk Bay SPA (004026) | 330.30 | |

**A137 Ringed Plover *(Charadrius hiaticula)***

| Site name (Site code) | Distance to development (km) | Source-Pathway-Receptor Assessment |
|---|---|---|
| Castlemaine Harbour SPA (004029) | 15.96 | This species inhabits muddy, sandy or pebbly coasts in the tropics and subtropics including estuaries, tidal mudflats, sandflats and exposed coral reefs. It also frequents mudbanks or sandbanks along rivers and lakes, lagoons, saltmarshes, short grassland, farmland, flooded fields, gravel pits, reservoirs sewage works and saltpans.<br>Its diet consists of small crustaceans, molluscs, polycheate worms, isopods, amphipods, insects (*e.g*. ants, beetles, flies and fly larvae) and millipedes.<br>This species does not exhibit extensive foraging journeys and individuals from the SPAs will not occur in the development area; consequently there is no risk of significant effects to the SCI populations of the SPAs. Potential significant *ex situ* |
| Mid-Clare Coast SPA (004182) | 85.27 | |
| River Shannon and River Fergus Estuaries SPA (004077) | 114.29 | |
| Inner Galway Bay SPA (004031) | 133.83 | |
| Ballycotton Bay SPA (004022) | 158.63 | |
| Ballymacoda Bay SPA (004023) | 164.56 | |
| Inishkea Islands SPA (004004) | 220.56 | |

| | | |
|---|---|---|
| Blacksod Bay/Broad Haven SPA (004037) | 240.73 | effects to the SCI species of the SPAs from Impact Mechanisms 1, 2 and 3 can be excluded at the Screening for AA stage (the SCI and SPAs are excluded from further assessment). |
| Killala Bay/Moy Estuary SPA (004036) | 244.29 | |
| South Dublin Bay and River Tolka Estuary SPA (004024) | 306.25 | |
| Baldoyle Bay SPA (004016) | 313.50 | |
| Rogerstown Estuary SPA (004015) | 319.34 | |
| River Nanny Estuary and Shore SPA (004158) | 319.64 | |
| Dundalk Bay SPA (004026) | 319.64 | |

***A156 Black-tailed Godwit (Limosa limosa)***

| Site name (Site code) | Distance to development (km) | Source-Pathway-Receptor Assessment |
|---|---|---|
| Tralee Bay Complex SPA (004188) | 34.74 | This species tends to winter in freshwater habitats, including swampy lake shores, pools, flooded grassland and irrigated rice fields. Its diet consists of adult and larval insects (especially beetles), annelid and polychaete worms, molluscs, ragworms, crustaceans, spiders, fish eggs and the spawn and tadpoles of frogs.<br>The project area does not support suitable foraging habitat for the species and large numbers of individuals from SPAs will not occur in the development area; consequently there is no risk of significant effects to the SCI populations of the SPAs. Potential significant *ex situ* effects to the SCI species of the SPAs from Impact Mechanisms 1, 2 and 3 can be excluded at the Screening for AA stage (the SCI and SPAs are excluded from further assessment). |
| Clonakilty Bay SPA (004081) | 112.99 | |
| River Shannon and River Fergus Estuaries SPA (004077) | 114.29 | |
| Corofin Wetlands SPA (004220) | 121.96 | |
| Courtmacsherry Bay SPA (004219) | 121.98 | |
| Cork Harbour SPA (004030) | 129.51 | |
| Blackwater Callows SPA (004094) | 153.02 | |
| Rahasane Turlough SPA (004089) | 155.76 | |
| Ballycotton Bay SPA (004022) | 158.63 | |
| Ballymacoda Bay SPA (004023) | 164.56 | |
| Blackwater Estuary SPA (004028) | 166.51 | |
| Dungarvan Harbour SPA (004032) | 182.16 | |
| River Little Brosna Callows SPA (004086) | 190.67 | |
| Middle Shannon Callows SPA (004096) | 192.38 | |
| Ballyallia Lough SPA (004041) | 192.73 | |

| | | |
|---|---|---|
| Tramore Back Strand SPA (004027) | 215.84 | |
| Bannow Bay SPA (004033) | 236.17 | |
| Ballyteige Burrow SPA (004020) | 244.14 | |
| Tacumshin Lake SPA (004092) | 259.42 | |
| Wexford Harbour and Slobs SPA (004076) | 259.65 | |
| Malahide Estuary SPA (004025) | 312.34 | |
| North Bull Island SPA (004006) | 312.38 | |
| Rogerstown Estuary SPA (004015) | 319.34 | |
| Boyne Estuary SPA (004080) | 321.63 | |
| Dundalk Bay SPA (004026) | 330.30 | |

**A157 Bar-tailed Godwit (*Limosa lapponica*)**

| Site name (Site code) | Distance to development (km) | Source-Pathway-Receptor Assessment |
|---|---|---|
| Castlemaine Harbour SPA (004029) | 15.96 | This species frequents inland wetlands, sandy beaches with pine *Pinus spp*. stands, swampy lowlands near lakes and short-grass meadows, but during the winter it is more common in intertidal areas along muddy coastlines, estuaries, inlets, mangrove-fringed lagoons and sheltered bays with tidal mudflats or sandbars. When breeding the species feeds on insects, annelid worms, molluscs and occasionally seeds and berries. In intertidal areas the species' diet consists of annelids (*e.g. Nereis spp.* and *Arenicola spp*.), bivalves and crustaceans, although it will also take cranefly larvae and earthworms on grasslands and occasionally larval amphibians (tadpoles) and small fish (IUCN, 2022). The project area does not support suitable foraging habitat for the species and large numbers of individuals from the SPAs will not occur in the development area; consequently there is no risk of significant effects to the SCI populations of the SPAs. Potential significant *ex situ* effects to the SCI species of the SPAs from Impact Mechanisms 1, 2 and 3 can be excluded at the Screening for AA stage (the SCI and SPAs are excluded from further assessment. |
| Tralee Bay Complex SPA (004188) | 34.74 | |
| River Shannon and River Fergus Estuaries SPA (004077) | 114.29 | |
| Courtmacsherry Bay SPA (004219) | 121.98 | |
| Cork Harbour SPA (004030) | 129.51 | |
| Inner Galway Bay SPA (004031) | 133.83 | |
| Ballycotton Bay SPA (004022) | 158.63 | |
| Ballymacoda Bay SPA (004023) | 164.56 | |
| Blackwater Estuary SPA (004028) | 166.51 | |
| Dungarvan Harbour SPA (004032) | 182.16 | |
| Tramore Back Strand SPA (004027) | 215.84 | |
| Bannow Bay SPA (004033) | 236.17 | |

| | | |
|---|---|---|
| Blacksod Bay/Broad Haven SPA (004037) | 240.73 | |
| Ballyteige Burrow SPA (004020) | 244.14 | |
| Killala Bay/Moy Estuary SPA (004036) | 244.29 | |
| Wexford Harbour and Slobs SPA (004076) | 259.65 | |
| Ballysadare Bay SPA (004129) | 260.81 | |
| Drumcliff Bay SPA (004013) | 269.05 | |
| South Dublin Bay and River Tolka Estuary SPA (004024) | 306.25 | |
| Malahide Estuary SPA (004025) | 312.34 | |
| North Bull Island SPA (004006) | 312.38 | |
| Baldoyle Bay SPA (004016) | 313.50 | |
| Dundalk Bay SPA (004026) | 330.30 | |
| Lough Foyle SPA (004087) | 383.01 | |

**A149 Dunlin (*Calidris alpina*)**

| Site name (Site code) | Distance to development (km) | Source-Pathway-Receptor Assessment |
|---|---|---|
| Tralee Bay Complex SPA (004188) | 34.74 | This species mainly prefers estuarine mudflats, but also frequent a wide variety of freshwater and brackish wetlands both coastal and inland, including lagoons, muddy freshwater shores, tidal rivers, flooded fields, sewage farms, salt-works, sandy coastal lakes and dams. This species is omnivorous during the non-breeding season, consuming mostly polychaete worms and small gastropods, as well as insects (dipteran flies and beetles), crustaceans, bivalves, plant matter and occasionally small fish (IUCN, 2022).<br>The project area does not support suitable foraging habitat for the species and it is highly unlikely that large numbers of individuals from SPAs will be in the project areas; consequently there is no risk of significant effects to the SCI populations of the SPAs. Potential significant *ex situ* effects to the SCI species of the SPAs from Impact |
| Mid-Clare Coast SPA (004182) | 85.27 | |
| Clonakilty Bay SPA (004081) | 112.99 | |
| River Shannon and River Fergus Estuaries SPA (004077) | 114.29 | |
| Courtmacsherry Bay SPA (004219) | 121.98 | |
| Cork Harbour SPA (004030) | 129.51 | |
| Inner Galway Bay SPA (004031) | 133.83 | |
| Ballymacoda Bay SPA (004023) | 164.56 | |

| | | |
|---|---|---|
| Blackwater Estuary SPA (004028) | 166.51 | Mechanisms 1, 2 and 3 can be excluded at the Screening for AA stage (the SCI and SPAs are excluded from further assessment. |
| Dungarvan Harbour SPA (004032) | 182.16 | |
| Tramore Back Strand SPA (004027) | 215.84 | |
| Bannow Bay SPA (004033) | 236.17 | |
| Blacksod Bay/Broad Haven SPA (004037) | 240.73 | |
| Killala Bay/Moy Estuary SPA (004036) | 244.29 | |
| Wexford Harbour and Slobs SPA (004076) | 259.65 | |
| Ballysadare Bay SPA (004129) | 260.81 | |
| South Dublin Bay and River Tolka Estuary SPA (004024) | 306.25 | |
| Malahide Estuary SPA (004025) | 312.34 | |
| North Bull Island SPA (004006) | 312.38 | |
| Rogerstown Estuary SPA (004015) | 319.34 | |
| Dundalk Bay SPA (004026) | 330.30 | |
| Lough Swilly SPA (004075) | 358.99 | |
| Lough Foyle SPA (004087) | 383.01 | |

**A162 Redshank (*Tringa totanus*)**

| Site name (Site code) | Distance to development (km) | Source-Pathway-Receptor Assessment |
|---|---|---|
| Castlemaine Harbour SPA (004029) | 15.96 | This species may frequent inland flooded grasslands and the silty shores of rivers and lakes but during the winter it is largely coastal, occupying rocky, muddy and sandy beaches, saltmarshes, tidal mudflats, saline and freshwater coastal lagoons tidal estuaries, saltworks and sewage farms. This species takes insects, spiders and annelid worms, as well as molluscs, crustaceans (especially amphipods *e.g. Corophium spp*.) and occasionally small fish and tadpoles. |
| Tralee Bay Complex SPA (004188) | 34.74 | |
| River Shannon and River Fergus Estuaries SPA (004077) | 114.29 | |
| Cork Harbour SPA (004030) | 129.51 | |
| Inner Galway Bay SPA (004031) | 133.83 | |

| | | |
|---|---|---|
| Ballymacoda Bay SPA (004023) | 164.56 | The project area does not support suitable foraging habitat for the species and it is highly unlikely that large number of individuals from SPAs will occur in the development area; consequently there is no risk of significant effects to the SCI populations of the SPAs. Potential significant *ex situ* effects to the SCI species of the SPAs from Impact Mechanisms 1, 2 and 3 can be excluded at the Screening for AA stage (the SCI and SPAs are excluded from further assessment. |
| Blackwater Estuary SPA (004028) | 166.51 | |
| Dungarvan Harbour SPA (004032) | 182.16 | |
| Bannow Bay SPA (004033) | 236.17 | |
| Killala Bay/Moy Estuary SPA (004036) | 244.29 | |
| Wexford Harbour and Slobs SPA (004076) | 259.65 | |
| Ballysadare Bay SPA (004129) | 260.81 | |
| Cummeen Strand SPA (004035) | 263.93 | |
| South Dublin Bay and River Tolka Estuary SPA (004024) | 306.25 | |
| Malahide Estuary SPA (004025) | 312.34 | |
| North Bull Island SPA (004006) | 312.38 | |
| Rogerstown Estuary SPA (004015) | 319.34 | |
| Boyne Estuary SPA (004080) | 321.63 | |
| Dundalk Bay SPA (004026) | 330.30 | |
| Lough Swilly SPA (004075) | 358.99 | |
| Lough Foyle SPA (004087) | 383.01 | |

**A142 Lapwing (*Vanellus vanellus*)**

| Site name (Site code) | Distance to development (km) | Source-Pathway-Receptor Assessment |
|---|---|---|
| Tralee Bay Complex SPA (004188) | 34.74 | This species' diet consists of adult and larval insects (*e.g.* beetles, ants, *Diptera*, crickets, grasshoppers, dragonflies, mayflies, cicadas and *Lepidoptera*), spiders, snails, earthworms, frogs, small fish and seeds or other plant material. This species shows a preference for breeding on wet natural grasslands meadows and hay meadows with short swards and patches of bare soil at low altitudes.<br>While this species does not undergo extensive foraging journeys and will remain largely faithful to the SPA sites and is highly unlikely that large number of individuals |
| River Shannon and River Fergus Estuaries SPA (004077) | 114.29 | |
| Courtmacsherry Bay SPA (004219) | 121.98 | |
| Cork Harbour SPA (004030) | 129.51 | |
| Inner Galway Bay SPA (004031) | 133.83 | |
| Ballycotton Bay SPA (004022) | 158.63 | |

| | | |
|---|---|---|
| Ballymacoda Bay SPA (004023) | 164.56 | from the SPAs will occur in the development area; consequently there is no risk of significant effects to the SCI populations of the SPAs. Potential significant *ex situ* effects to the SCI species of the SPAs from Impact Mechanisms 1, 2 and 3 can be excluded at the Screening for AA stage (the SCI and SPAs are excluded from further assessment. |
| Blackwater Estuary SPA (004028) | 166.51 | |
| Dungarvan Harbour SPA (004032) | 182.16 | |
| River Little Brosna Callows SPA (004086) | 190.67 | |
| Middle Shannon Callows SPA (004096) | 192.38 | |
| River Suck Callows SPA (004097) | 192.73 | |
| Tramore Back Strand SPA (004027) | 215.84 | |
| Lough Ree SPA (004064) | 216.44 | |
| Termoncarragh Lake and Annagh Machair SPA (004093) | 233.78 | |
| Bannow Bay SPA (004033) | 236.17 | |
| Ballyteige Burrow SPA (004020) | 244.14 | |
| Tacumshin Lake SPA (004092) | 259.42 | |
| Wexford Harbour and Slobs SPA (004076) | 259.65 | |
| Cahore Marshes SPA (004143) | 279.83 | |
| Boyne Estuary SPA (004080) | 321.63 | |
| Dundalk Bay SPA (004026) | 330.30 | |
| Lough Foyle SPA (004087) | 383.01 | |

**A028 Grey Heron (*Ardea cinerea*)**

| Site name (Site code) | Distance to development (km) | Source-Pathway-Receptor Assessment |
|---|---|---|
| Cork Harbour SPA (004030) | 129.51 | Generalist in its habitat use, although shallow water and relatively large prey are among the essential characteristics of its habitat. Mainly feeds on fish and eels 10-25 cm long, as well as amphibians, crabs, molluscs, crustaceans, aquatic insects, snakes, small rodents, small birds and plant matter.<br>While the species has been noted travelling to suitable foraging sites, the species typically does not exhibit extensive foraging journeys when suitable habitats and prey are available locally; given this behaviour very few, if any, individuals from the SPAs will occur in the development area. Consequently, there is no risk of significant effects to the SPA. Potential significant *ex situ* effects to the species from Impact Mechanisms 1, 2 and 3 can be excluded at the Screening for AA stage (the SCI and SPAs are excluded from further assessment). |
| Inner Galway Bay SPA (004031) | 133.83 | |
| Wexford Harbour and Slobs SPA (004076) | 259.65 | |
| Lough Swilly SPA (004075) | 358.99 | |

**A169 Turnstone (*Arenaria interpres*)**

| Site name (Site code) | Distance to development (km) | Source-Pathway-Receptor Assessment |
|---|---|---|
| Castlemaine Harbour SPA (004029) | 15.96 | This species diet consists of insects, crustaceans, molluscs (especially mussels or cockles), annelids, echinoderms, small fish, carrion and birds' eggs. The species favours intertidal stony habitats over sandflats and mudflats.<br>The development area does not support suitable foraging areas for the species and it is highly unlikely that large number of individuals from the SPAs will occur in the project areas; consequently there is no risk of significant effects to the SPA. Potential significant *ex situ* effects to the species from Impact Mechanisms 1, 2 and 3 excluded at the Screening for AA stage (the SCI and SPAs are excluded from further assessment). |
| Mid-Clare Coast SPA (004182) | 85.27 | |
| Tralee Bay Complex SPA (004188) | 34.74 | |
| Inner Galway Bay SPA (004031) | 133.83 | |
| Ballycotton Bay SPA (004022) | 158.63 | |
| Ballymacoda Bay SPA (004023) | 164.56 | |
| Dungarvan Harbour SPA (004032) | 182.16 | |
| Inishkea Islands SPA (004004) | 220.56 | |
| North Bull Island SPA (004006) | 312.38 | |
| Boyne Estuary SPA (004080) | 321.63 | |
| Skerries Islands SPA (004122) | 324.36 | |

## Table 2.23: Surface swimmer – dabbling ducks

**A053 Mallard (*Anas platyrhynchos*)**

| SPA (Site code) | Distance to development (km) | Source-Pathway-Receptor Assessment |
|---|---|---|
| Castlemaine Harbour SPA (004029) | 15.96 | This species occurs in almost every wetland type although it generally avoids fast-flowing, oligotrophic deep, exposed, rough, rockbound waters and hard unvegetated areas such as rocky ground, sand dunes and artificial surfacing. It requires water less than 1 m deep for foraging and shows a preference for freshwater habitats although it may frequent shallow brackish waters as long as they provide the cover of submerged, floating, emergent or riparian vegetation, dense reedbeds or overhanging branches. Its diet consists of seeds and the vegetative parts of aquatic and terrestrial plants (*e.g*. crops) as well as terrestrial and aquatic invertebrates (especially in the spring and summer) such as insects, molluscs, crustaceans, worms |
| Tralee Bay Complex SPA (004188) | 34.74 | |
| The Gearagh SPA (004109) | 90.97 | |
| Ballyallia Lough SPA (004041) | 199.51 | |
| Lough Ree SPA (004064) | 216.44 | |

| SPA (Site code) | Distance to development (km) | Source-Pathway-Receptor Assessment |
|---|---|---|
| Wexford Harbour and Slobs SPA (004076) | 259.65 | and occasionally amphibians and fish. The species does not exhibit travel extensive to suitable foraging sites, particularly in circumstances where suitable habitats are available locally. Consequently, it is unlikely that significant number of individuals from SPAs will occur in the development area and potential significant *ex situ* effects to the species from Impact Mechanisms 1, 2 and 3 can be excluded at the Screening for AA stage (the SCI and SPAs are excluded from further assessment). |
| Dundalk Bay SPA (004026) | 330.30 | |
| Lough Swilly SPA (004075) | 358.99 | |
| Lough Foyle SPA (004087) | 383.01 | |

**A052 Teal (*Anas crecca*)**

| SPA (Site code) | Distance to development (km) | Source-Pathway-Receptor Assessment |
|---|---|---|
| Tralee Bay Complex SPA (004188) | 34.74 | This species usually nest near small freshwater lakes or pools and small upland streams away from the coast and also in thick cover. During winter, this species is widespread on wetlands with good cover, such as reedbeds. This species occurs in a wide variety of habitats: both coastal and inland, and usually below an altitude of 200 m, including coastal lagoons, estuaries, inland marshes, lakes, ponds and turloughs. Its diet predominately consists of small seeds, but *Enteromorpha sp*. and molluscs are also frequently taken. Occasionally, they feed on chironomid larvae where available, though usually during the summer months. They feed by day where they are safe from shooting.<br>As is the case for Mallard above, Teal does not undergo extensive foraging journeys particularly if suitable foraging habitat is available locally. Given this behaviour, potential significant *ex situ* effects to the species from the SPAs from Impact Mechanisms 1, 2 and 3 can be excluded at the Screening for AA (the SCI and SPAs are excluded from further assessment). |
| The Gearagh SPA (004109) | 90.97 | |
| Kilcolman Bog SPA (004095) | 114.23 | |
| River Shannon and River Fergus Estuaries SPA (004077) | 114.29 | |
| Corofin Wetlands SPA (004220) | 121.96 | |
| Cork Harbour SPA (004030) | 129.51 | |
| Inner Galway Bay SPA (004031) | 133.83 | |
| Blackwater Callows SPA (004094) | 153.02 | |
| Ballycotton Bay SPA (004022) | 158.63 | |
| Ballymacoda Bay SPA (004023) | 164.56 | |
| River Little Brosna Callows SPA (004086) | 190.67 | |
| Ballyallia Lough SPA (004041) | 199.51 | |
| Lough Ree SPA (004064) | 216.44 | |
| Lough Iron SPA (004046) | 218.45 | |
| Tacumshin Lake SPA (004092) | 259.42 | |

| SPA (Site code) | Distance to development (km) | Source-Pathway-Receptor Assessment |
|---|---|---|
| Wexford Harbour and Slobs SPA (004076) | 259.65 | |
| The Murrough SPA (004186) | 301.55 | |
| North Bull Island SPA (004006) | 312.38 | |
| Dundalk Bay SPA (004026) | 330.30 | |
| Lough Swilly SPA (004075) | 358.99 | |
| Lough Foyle SPA (004087) | 383.01 | |

**Table 2.24: Water column diver (deeper) Surface swimmer/Water column diver (shallow)**

**A191 Sandwich Tern (*Sterna sandvicensis*)**

| SPA (Site code) | Distance to development (km) | Source-Pathway-Receptor Assessment |
|---|---|---|
| **Inner Galway Bay SPA (004031)** | **139.61** | This species frequents sandy or rocky beaches, mudflats fringed by mangroves, estuaries, harbours and bays, often feeding over inlets and at sea. Its diet consists predominantly of surface-dwelling marine fish 9-15 cm long as well as small shrimps, marine worms and shorebird nestlings.<br>The species was recorded in a survey of an area adjacent to the dredge spoil disposal site by Goldcrest (2021). Consequently, there is potential that Sandwich Tern may occur within or adjacent to the project areas. **Given the presence of Sandwich Tern at the Proposed Development, there is potential that the individuals from the SPA may occur at the project areas. Of relevance to the species with respect to potential effects are Impact Mechanism 1 - Displacement from foraging habitat, Impact Mechanism 2 - Discharged pollutants and sediment and Impact Mechanism 3 - Noise disturbance. The SCI and SPA is screened in as requiring further detailed consideration of the potential for effects (see Section 3 Stage 2 AA NIS). The SPAs brought forward to Section 3 are highlighted in bold in column 1 opposite.** |
| **Slyne Head to Ardmore Point Islands SPA (004159)** | **139.61** | |
| **Illaunnanoon SPA (004221)** | **159.42** | |
| **Cross Lough (Killadoon) SPA (004212)** | **176.65** | |
| **Carrowmore Lake SPA (004052)** | **230.51** | |
| **Blacksod Bay/Broad Haven SPA (004037)** | **240.73** | |
| **Lady's Island Lake SPA (004009)** | **268.67** | |
| **Lough Swilly SPA (004075)** | **358.99** | |
| **Greers Isle SPA (004082)** | **381.80** | |

**Table 2.25: QI species and their SAC sites screened in for consideration in Section 3 Stage 2 AA.**

| Species | Site (Site code) (Distance to development) |
|---|---|
| **Harbour Seal (*Phoca vitulina*)** | Kenmare River SAC (002158) (55.9 km south of the proposed development) |
| | Glengarriff Harbour and Woodland SAC (000090) (61.3 km south) |
| | Kilkieran Bay and Islands SAC (002111) (125.1 km north) |
| | Galway Bay Complex SAC (000268) (133.8 km north) |
| | Clew Bay Complex SAC (001482) (188.4 km north) |
| **Grey Seal (*Halichoerus grypus*)** | Roaringwater Bay and Islands SAC (000101) (85.2 km south) |
| | Slyne Head Islands SAC (000328) (146.2 km north) |
| | Inishbofin and Inishshark SAC (000278) (166.1 km north) |
| | Duvillaun Islands SAC (000495) (215.2 km north) |
| | Inishkea Islands SAC (000507) (219.8 km north) |
| | Saltee Islands SAC (000707) (245.5 km east) |
| | Slieve Tooey/Tormore Island/Loughros Beg Bay SAC (000190) (309.1k m north) |
| | Lambay Island SAC (000204) (323.4 km northeast) |
| | Horn Head and Rinclevan SAC (000147) (374.0 km north) |
| **Bottlenose Dolphin (*Tursiops truncates*)** | Lower River Shannon SAC (002165) (41.5 km north) |
| | Slyne Head Peninsula SAC (002074) (141.9 km north) |
| | Slyne Head Islands SAC (000328) (146.2 km north) |
| | West Connacht Coast SAC (002998) (164.2 km north) |
| | Duvillaun Islands SAC (000495) (215.26 km north) |
| **Harbour Porpoise (*Phocoena phocoena*)** | Roaringwater Bay and Islands SAC (000101) (85.2 km south) |
| | Rockabill to Dalkey Island SAC (003000) (309.6 km northeast) |

**Table 2.26: SCI species and their SPA sites screened in for consideration in Section 3 Stage 2 AA.**

| Species | Site (Site code) (Distance to development) |
|---|---|
| **Black-headed Gull (*Larus ridibundus)*** | Tralee Bay Complex SPA (004188) (34 km northeast of the Proposed Development) |
| **Mew/Common Gull (*Larus canus*)** | Magharee Islands SPA (004125) (27.1 km northeast) |
| | Tralee Bay Complex SPA (004188) (34.4 km northeast) |
| **Wigeon (*Anas penelope*)** | Castlemaine Harbour SPA (004029) (16.0 km east) |
| | Tralee Bay Complex SPA (004188) (34.4 km northeast) |
| | The Gearagh SPA (004109) (91.0 km south) |
| | River Shannon and River Fergus Estuaries SPA (004077) (114.3 km north) |
| **Cormorant (*Phalacrocorax carbo*)** | Castlemaine Harbour SPA (004029) (16.0 km east) |
| **Red-throated Diver (*Gavia stellata*)** | Castlemaine Harbour SPA (004029) (16.0 km east) |
| **Great Northern Diver (*Gavia immer*)** | Courtmacsherry Bay SPA (004219) (122.0 km south) |
| | Inner Galway Bay SPA (004031) (133.8 km north) |
| | Blacksod Bay/Broad Haven SPA (004037) (240.7 km north) |
| | Donegal Bay SPA (004151) (291.8 km north) |
| **Gannet (*Morus bassanus*)** | Skelligs SPA (004007) (42.4 km southwest) |
| | The Bull and The Cow Rocks SPA (004066) (60.7 km southwest) |
| | Saltee Islands SPA (004002) (249.9 km east) |
| **Guillemot (*Uria aalge*)** | Iveragh Peninsula SPA (004154) (16.3 km south) |
| | Skelligs SPA (004007) (42.4 km southwest) |
| | Loop Head SPA (004119) (53.0 km north) |
| | Cliffs of Moher SPA (004005) (104.1 km north) |
| | Inishmore SPA (004152) (113.9 km northeast) |

| | |
|---|---|
| | Old Head of Kinsale SPA (004021) (132.3 kmsouth) |
| | Clare Island SPA (004136) (184.8 km north) |
| | Saltee Islands SPA (004002) (249.9 km east) |
| | Ireland's Eye SPA (004117) (317.7 km northeast) |
| | Lambay Island SPA (004069) (324.0 km northeast) |
| **Sandwich Tern (*Sterna sandvicensis*)** | Inner Galway Bay SPA (004031) (130.0 km north) |
| | Slyne Head to Ardmore Point Islands SPA (004159) (140.0 km north) |
| | Illaunnanoon SPA (004221) (159.4 km north) |
| | Cross Lough (Killadoon) SPA (004212) (176.7 km north) |
| | Carrowmore Lake SPA (004052) (230.5 km north) |
| | Blacksod Bay/Broad Haven SPA (004037) (240.7 km north) |
| | Lady's Island Lake SPA (004009) (268.7 km east) |
| | Lough Swilly SPA (004075) (359 km northeast) |
| | Greers Isle SPA (004082) (381.8 km northeast) |

### 2.3.4. Plans or Projects That Might Act In-Combination

As outlined in **Section 1.2**, the obligation to undertake AA under the Part XAB of the Planning and Development Act 2000 and the 2011 Birds and Natural Habitats Regulations derives from Articles 6(3) and 6(4) of the Habitats Directive. Regulation 42(1) of the 2011 Regulations requires that the Screening *for AA considers whether a project in combination with other plans or projects is likely to have a significant effect on the European site*.

It is therefore required that the potential impacts of the proposed project be considered in combination with other relevant plans or projects.

The assessment of potential in-combination effects considers the potential impact mechanisms associated with the Proposed Development that in combination with other plans and projects may result in significant effects to QIs and SCIs.

To inform the assessment of potential in-combination effects a review was undertaken of consent applications for projects in the vicinity of the proposed project included on the following websites:

- Department of Housing, Local Government and Heritage (DHLGH) – Foreshore Applications
    - https://www.housing.gov.ie/planning/foreshore/applications/
- DHPLG - EIA Portal
    - https://www.housing.gov.ie/planning/environmental-assessment/environmental-impact-assessment-eia/eia-portal
- Kerry Council - Planning System
    - https://www.kerrycoco.ie/planning/online-planning-enquiry/

The assessment of potential in-combination effects also considered *negative impacting threats and pressures* and *positive impacting activities/management* affecting the sites as identified in Natura 2000 Standard Data Forms published for the SPA and SAC sites available through the NPWS website (https://www.npws.ie/protected-sites).

- TechWorks Castlemaine Harbour Deployment of 5 ADCP devices- FS007133 - Deployment of five Acoustic Doppler Current Profiler (ADCP) frames on the seabed in Castlemaine Harbour and Dingle Bay for a duration of 35 days to collect data on current speed and direction at each location. This data will be used to validate a hydrodynamic model being developed for Irish Water. Each ADCP frame will have a surface marker buoy and will be equipped with the following instrumentation: ADCP, acoustic pinger, acoustic release transponder, rigid recovery buoy and a recovery rope attached to the frame base. The ADCP will be mounted to the lid

using a gimbal. The frame lid attaches to the base. There may also be a grapple line and anchor attached to the ADCP frame for its recovery.

It is envisaged that no species or habitats within Castlemaine Harbour SAC or SPA site will be impacted resulting from the deployment, operation and recovery of the ADCP frames given the nature and scale of the ADCP frames and the fact that deployment and recovery of the frames will be carried out to the highest standards, incorporating best practice methods. Therefore, no significant adverse effects will occur on the integrity of the Natura 2000 sites resulting from the temporary placement of the five ADCP frames at Dingle Bay.

It was concluded that **there is no potential likelihood for significant effects from the proposed project in combination with the following plans or projects: TechWorks ADCP devices.**

## *2.4. Screening Exercise Outcome*

The screening exercise investigates the potential for the Proposed Development to have significant *in situ* and/or *ex situ* effects on European sites within the Natura 2000 network.

The screening exercise has determined, considering best available scientific data, that there is potential for significant *ex situ* effects of the An Daingean SCH development on SCI species. The SCI species and their SPA sites that are screened in for further detailed consideration of the potential for effects are summarised in **Table 2.25** and **Table 2.26.** The likelihood of significant *in situ* and *ex situ* effects on all other QIs and SCIs of European sites has been excluded (screened out).

The findings of the screening exercise are summarised in **Table 2.27**.

**Table 2.27: Screening matrix of the proposed project.**

| **Screening Matrix** | |
|---|---|
| Brief description of the project or plan | The Proposed Development at An Daingean SCH consists of an approximately 150 berth small craft harbour just south of the west breakwater at Dingle inner harbour. In summary, the project consists of:<br>• Dredging of an area of seabed and the disposal of that material to sea<br>• Installation of anchoring piles for the marina units<br>• Installation of floating breakwaters, small craft type pontoons, walkways and fingers<br>• A gangway from the west breakwater to the small craft area<br>• Trolley bays, toilet facilities, power and water kiosks and other ancillary furniture<br>The overall above-water area of the SCH is approximately 120x220 m (26,400 $m^2$). A detailed description of the Proposed Development is presented in **Section 2.1.** |

| **European Site(s)** | |
|---|---|
| Brief description of the relevant European site(s) | Following the source-pathway-receptor assessment, the screening exercise in **Section 2.3.3** determined that there is potential for significant effects for the following conservation features:<br>Blasket Islands SAC (site code 002172):<br>• Harbour Porpoise *(Phocoena phocoena)* [1351]<br>• Grey Seal *(Halichoerus grypus)* [1364]<br>Dingle Peninsula SPA (site code 004153):<br>• Fulmar (*Fulmarus glacialis*) [A009]<br>Blasket Islands SPA (site code 004008):<br>• Fulmar (*Fulmarus glacialis*) [A009]<br>• Manx Shearwater (*Puffinus puffinus*) [A013]<br>• Shag (*Phalacrocorax aristotelis*) [A018<br>• Storm Petrel (*Hydrobates pelagicus*) [A014]<br>• Lesser Black-backed Gull (*Larus fuscus*) [A183]<br>• Herring Gull (*Larus argentatus*) [A184]<br>• Kittiwake (*Rissa tridactyla*) [A188]<br>• Arctic Tern (*Sterna paradisaea*) [A194]<br>• Puffin (*Fratercula arctica*) [A204]<br>• Razorbill (*Alca torda*) [A200]<br>The screening exercise in **Section 2.3.3** also determined that there is potential for significant effects for the following conservation features of distant SACs and SPAs:<br>SAC QIs:<br>• Harbour Seal (*Phoca vitulina*) [1365]<br>• Grey Seal (*Halichoerus grypus*) [1364]<br>• Bottlenose Dolphin (*Tursiops truncatus*) [1349]<br>• Harbour Porpoise (*Phocoena phocoena*) [1351]<br>SPA SCIs:<br>• Black-headed Gull (*Larus ridibundus*) [A179]<br>• Mew/Common Gull (*Larus canus*) [A182]<br>• Wigeon (*Anas penelope*) [A050]<br>• Cormorant (*Phalacrocorax carbo*) [A017]<br>• Red-throated Diver (*Gavia stellata*) [A001]<br>• Great Northern Diver (*Gavia immer*) [A003]<br>• Gannet (*Morus bassanus*) [A016]<br>• Guillemot (*Uria aalge*) [A199]<br>• Sandwich Tern (*Sterna sandvicensis*) [A191] |
| **Assessment Criteria and European Site(s)** | |
| Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the European site. Describe any likely direct, indirect or secondary impacts of the project (either | Given the nature of the proposed activities and the biological receptors, the potential project impact mechanisms (or sources of potential impact to the environment) are:<br>**1- Displacement from foraging habitat** - Drilling and the disposal of dredged material during construction may drive foraging species away from the area and result in complete avoidance from the area.<br>**2 - Discharge of pollutants and sediments** - risk that activities proposed for the construction may result in the accidental release of chemical pollutants or other waste material pollution to nearby habitats and waterbodies.<br>**3 - Noise disturbance** - Construction activity, including the construction, pilling operations, capital dredging and the installation of floating breakwaters, small craft type pontoons, walkways, fingers and gangway will result in noise emissions. There is also potential that mobile conservation feature species (*e.g*. marine mammals, bird species) may occur in the area where the vessels are operating and thereby be affected. |

| | |
|---|---|
| alone or in combination with other plans or projects) on the Natura 2000 site by virtue of<br>Size, scale and land-take. | There is no spatial overlap of the Proposed Development with any European site, therefore there will be no land-take within any European site. |
| Distance from the Natura 2000 site or key interests of the site; | See entry above |
| Resource requirements (water abstraction *etc.*): | The equipment and resources required for the works will include:<br>• A dredger comprising a large pontoon with an excavator mounted on the pontoon. The excavator will have a backhoe or grab arrangement. It will also have a rock breaker head for use if required<br>• A dumb barge with a tug or a self-propelled hopper barge for transporting dredge spoil to the disposal site<br>• A jack up barge for installing the anchor piles<br>• A drilling rig and lifting crane on the jack up barge<br>• A mobile crane to put materials onto the jack up barge and to lift breakwaters and pontoons into the water<br>• Trucks: these vehicles would be used to bring construction materials to site<br>• Piles, 100 no.; trucks 30<br>• Breakwater units 23, trucks equal units (boat transport potentially required for larger (5 m wide) units)<br>• Walkways; 350 m, trucks 35<br>• Fingers; 13no. 16 m units, 36no. 12 m units, 28no. 9 m units; trucks 40<br>• 25 m gangway, trucks 3<br>• Ancillary items: trucks 5<br>• Excess and offcuts 10 trucks; 7 for removal of drilled soil/rock, 3 for others<br>• Concrete, trucks 35, for supply of materials<br>• 5 to 7 personnel at any one time additional to those operating the above equipment<br>Additional specialist personnel likely to be required includes:<br>• Dive team |
| Emissions (disposal to land, water or air); | Atmospheric and noise emissions from construction equipment, dumper trucks, plant *etc.*<br>Potential release of sediment, chemicals or other waste material pollution from construction and dredging activities.<br>Noise emissions associated with the construction works. |
| Excavation requirements;<br>Transportation requirements; | Construction and dredging activities will generate material requiring transportation. Material not used will be taken from site using dumper trucks for disposal at licenced site. Material to be used will be delivered using trucks. |
| Duration of construction, operation,<br>other. | Dredging will take approximately 2.5 months, based on 1600 $m^3$ per day approximately. There will be approximately 350 trips to the disposal site, based on 300 $m^3$ capacity of disposal barge. If a larger barge is used there will be fewer trips. Piling works will be undertaken following completion of the dredging. There may be some element of overlap between the two operations. Piling will take some 5-6 months to complete, based on 70 piles at one pile every 1-2 days. Breakwaters, |

| | |
|---|---|
| | walkway pontoons, fingers, *etc* will be manufactured off site and installed once the piles are in place. There can be some overlap between these operations and the piling, perhaps one month. The ancillary items will take 2-3 months to install. Including allowance for mobilisation of the various operations, the construction works could take 9 -12 months to complete. A potential start date is summer/autumn 2022. This would give a completion date of summer/autumn 2023. However, it should be noted that it could be later than this and that the different elements of the works could be undertaken anytime during the year. |
| Describe any likely changes to the site arising as a result of:<br>Reduction in habitat area;<br>Disturbance to key species;<br>Habitat or species fragmentation;<br>Reduction in species density;<br>Changes in key indicators of conservation value (water quality *etc*.);<br>Climate change | • Reduction in habitat area and Habitat or species fragmentation<br>*Loss of habitat*<br>Elements that will result in loss of habitat include the dredging and piling activities.<br>• Disturbance to key species and Reduction in species density<br>*Discharges*<br>As with any construction project there is a risk that activities proposed for the construction of the Proposed Development may result in the accidental release of chemical pollutants or other waste material pollution to nearby habitats, watercourses and waterbodies.<br>Potential chemical pollutants associated with construction plant equipment include fuels, oils, greases, hydraulic fluids (hydrocarbons).<br>There is also a risk of the accidental release of construction materials including concrete. Runoff from construction excavated material may result in the release of sediment, potentially impacting habitat and water quality.<br>*Noise*<br>Construction activity, including the construction, pilling operations, capital dredging and the installation of floating breakwaters, small craft type pontoons, walkways, fingers and gangway, will result in the generation of noise.<br>*Displacement*<br>There may be temporary displacement from foraging areas a result of noise disturbance caused by the drilling and dredge disposal activities.<br>There have been documented examples of marine mammals exhibiting displacement behaviour from dredging activities. Gray whales, grey seals, minke whales and bottlenose dolphins have exhibited displacement behaviour from important habitat areas. A survey by Goldcrest (2021) observed important feeding events in the dredge spoil disposal area. These events occurred when a fishing vessel entered the area and attracted a number of species including Herring Gulls, Great black-backed Gulls, Gannets, Manx Shearwater and Fulmar. A large bait-balling event was observed occurring in the dredge spoil disposal area illustrating the importance of unpredictable natural ('bait-ball') or man-made (trawler) activities in drawing birds to the area to feed. |
| Describe any likely impacts on the Natura 2000 site as a whole in terms of:<br>Interference with the key relationships that define the structure of the site;<br>Interference with key relationships that | Behavioural changes and/or injury to SCIs and loss of habitat could have knock on effects to the wider ecological functioning of the area in particular predator/prey relationships and foraging opportunities. |

| | |
|---|---|
| define the function of the site. | |
| Provide indicators of significance resulting from the identification of effects set out above in terms of:<br>Loss; Fragmentation; Disruption;<br>Disturbance; Change to key elements of the site. | Indicators of loss:<br>• decreases in species abundance and diversity within the Proposed Development area and adjacent habitats<br>• decreases in distribution/extent of habitats<br>Indicators of fragmentation:<br>• removal of habitat area<br>• there is potential that mobile conservation feature species (*e.g*. marine mammals, bird species) may occur in the area where the vessels are operating and thereby be affected<br>Indicators of disturbance:<br>• changing species abundance and diversity within the Proposed Development area<br>• displacement of marine mammal and bird species |
| Describe from the above those elements of the project or plan, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known. | The screening exercise has determined, considering best available scientific data, that there is potential for significant effects of the An Daingean SCH development from 1- Displacement from foraging habitat, 2 - Discharge of pollutants and sediments and 3 - Noise disturbance. |

# 3. Stage 2 Appropriate Assessment - Natura Impact Statement

## *3.1. Overview*

This Natura Impact Statement (NIS) has been produced to inform the Appropriate Assessment (AA) of the Proposed Development to be undertaken by the competent authority.

The screening exercise presented in **Section 2.3** has determined that the proposed project has the potential to result in significant *ex situ* effects on 4 QI marine mammal species and 19 SCI species of SACs and SPAs. This NIS considers in greater detail the aspects of the proposed project with potential for significant effects to the QI and SCI species.

The NIS also examines the impact of the proposed project on the integrity of European sites with respect to Conservation Objectives set for the conservation features of the sites. Where potential significant adverse effects are realised, mitigation measures are identified to prevent adverse effects on the integrity of the SPAs.

## *3.2. Description of the Proposed Development*

The Proposed Development at Dingle FHC consists of an approximately 150 berth small craft harbour just south of the west breakwater at Dingle inner harbour. In summary, the project consists of:

- Dredging of an area of seabed and the disposal of that material to sea
- Installation of anchoring piles for the SCH units
- Installation of floating breakwaters, small craft type pontoons, walkways and fingers
- A gangway from the west breakwater to the small craft area
- Trolley bays, toilet facilities, power and water kiosks and other ancillary furniture

The overall above-water area of the SCH is approximately 120 by 220 m (26,400 m²). A detailed description of the Proposed Development is presented in **Section 2.1.**

The project also includes operations required for the disposal of dredge material to sea in an area east of the mouth of Dingle Harbour.

Given the nature of the proposed activities, the project impact mechanisms of concern with respect to potential effects to the QI marine mammal and SCI bird species are:

1. **Displacement from foraging habitat -** There may be temporary displacement from foraging areas a result of noise disturbance caused by the drilling and dredge disposal activities. There

have been documented examples of marine mammals exhibiting displacement behaviour from dredging activities. Dingle Bay is an important site for marine mammals and birds, there is potential that animals utilising the area may be displaced to other areas because of noise (*i.e.* drilling, dredging and the disposal of dredged material).

2. **Discharged pollutants and sediment** - There is a risk that activities proposed for the construction of the Proposed Development may result in the accidental release of chemical pollutants or other waste material pollution to nearby habitats and waterbodies.

   The Proposed Development will require capital dredging and piles to be installed. These activities will result in the generation and release of spoil (rock particles and sediment) to the water column potentially affecting local water quality and resulting in the generation of sediment plumes in the water column extending beyond the immediate works area. The increase in turbidity could result in a significant reduction of light in the water column while sediment plumes generated and released by piling operations and dredge spoil disposal may be deposited on benthic habitats resulting in smothering effects.

3. **Noise disturbance** - Construction activity, including the construction, pilling operations, capital dredging and the installation of floating breakwaters, small craft type pontoons, walkways, fingers and gangway will result in noise emissions. Additional vessel activity in the area (removal of waste and vessel activity to and from the dredge spoil disposal site) will increase the potential for disturbance.

### *3.3. Description of Receiving Environment*

A detailed description of the receiving environment is presented in **Section 2.2** based on baseline field surveys, desk studies and environmental documents commissioned for the An Daingean SCH and a review of relevant mapping and reports by the National Biodiversity Data Centre (NBDC). Specifically, the description covered bird communities, mammals (*i.e.* otter and marine mammals) and habitats of the coastal area around Dingle Harbour, Co. Kerry

The screening for AA exercise presented in **Section 2** determined that the Proposed Development has the potential to result in significant effects to 4 QI marine mammal species and 19 SCI species of European sites. The QI marine mammal species are presented in **Table 3.1** while SCI birds species are presented in **Table 3.2** and **Table 3.3**. Conservation Objectives set for the QI and SCI species are also listed in the tables

**Table 3.1: Specific Conservation Objectives for QI marine mammal species**

| SAC | QI | Conservation Objective |
|---|---|---|
| Blasket Islands SAC (NPWS, 2014[20]) | Grey Seal (*Halichoerus grypus*) | To maintain the favourable conservation condition |
| | Harbour Porpoise (*Phocoena phocoena)* | To maintain the favourable conservation condition |
| Kenmare River SAC (NPWS, 2013[21]) | Harbour seal (*Phoca vitulina)* | To maintain the favourable conservation condition |
| Glengarriff Harbour and Woodland SAC (NPWS, 2015[22]) | Harbour seal (*Phoca vitulina*) | To maintain the favourable conservation condition |
| Kilkieran Bay and Islands SAC (NPWS, 2014[23]) | Harbour seal (*Phoca vitulina*) | To maintain the favourable conservation condition |
| Galway Bay Complex SAC (NPWS 2013[24]) | Harbour seal (*Phoca vitulina*) | To maintain the favourable conservation condition |
| Clew Bay Complex SAC (NPWS 2011[25]) | Harbour seal (*Phoca vitulina*) | To maintain the favourable conservation condition |
| Roaringwater Bay and Islands SAC (NPWS, 2011[26]) | Grey Seal (*Halichoerus grypus*) | To maintain the favourable conservation condition |
| | Harbour Porpoise (*Phocoena phocoena)* | To maintain the favourable conservation condition |
| Slyne Head Islands SAC (2012[27]) | Grey Seal (*Halichoerus grypus*) | To maintain the favourable conservation condition |
| | Bottlenose Dolphin (*Tursiops truncates*) | To maintain the favourable conservation condition |
| Inishbofin and Inishshark SAC (NPWS, 2015[28]) | Grey Seal (*Halichoerus grypus*) | To maintain the favourable conservation condition |
| Duvillaun Islands SAC (NPWS, 2013[29]) | Grey Seal (*Halichoerus grypus*) | To maintain the favourable conservation condition |
| | Bottlenose Dolphin (*Tursiops truncates*) | To maintain the favourable conservation condition |

[20] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002172.pdf

[21] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002158.pdf

[22] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000090.pdf

[23] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002111.pdf

[24] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000268.pdf

[25] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO001482.pdf

[26] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000101.pdf

[27] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000328.pdf

[28] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000278.pdf

[29] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000495.pdf

| SAC | QI | Conservation Objective |
|---|---|---|
| Inishkea Islands SAC (NPWS, 2015[30]) | Grey Seal (*Halichoerus grypus*) | To maintain the favourable conservation condition |
| Saltee Islands SAC (NPWS, 2011[31]) | Grey Seal (*Halichoerus grypus*) | To maintain the favourable conservation condition |
| Slieve Tooey/Tormore Island/Loughros Beg Bay SAC (NPWS, 2015[32]) | Grey Seal (*Halichoerus grypus*) | To maintain the favourable conservation condition |
| Lambay Island SAC (NPWS, 2013[33]) | Grey Seal (*Halichoerus grypus*) | To maintain the favourable conservation condition |
| Horn Head and Rinclevan SAC (NPWS, 2014[34]) | Grey Seal (*Halichoerus grypus*) | To maintain the favourable conservation condition |
| Lower River Shannon SAC (NPWS, 2014[35]) | Bottlenose Dolphin (*Tursiops truncates*) | To maintain the favourable conservation condition |
| Slyne Head Peninsula SAC (NPWS, 2015[36]) | Bottlenose Dolphin (*Tursiops truncates*) | None listed |
| West Connacht Coast SAC (NPWS, 2015[37]) | Bottlenose Dolphin (*Tursiops truncates*) | To maintain the favourable conservation condition |
| Rockabill to Dalkey Island SAC (NPWS, 2013[38]) | Harbour Porpoise (*Phocoena phocoena)* | To maintain the favourable conservation condition |

**Table 3.2: Generic Conservation Objectives for SCI species**

| SPA | SCI | Conservation Objective |
|---|---|---|
| Dingle Peninsula SPA (NPWS 2021[39]) | Fulmar (*Fulmarus glacialis*) | To maintain or restore the favourable conservation condition |
| Blasket Islands SPA (NPWS, 2021[40]) | Fulmar (*Fulmarus glacialis*) | |
| | Manx Shearwater (*Puffinus puffinus)* | |
| | Shag (*Phalacrocorax aristotelis*) | |
| | Storm Petrel (*Hydrobates pelagicus*) | |

[30] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000507.pdf

[31] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000707.pdf

[32] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000190.pdf

[33] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000204.pdf

[34] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000147.pdf

[35] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002165.pdf

[36] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002074.pdf

[37] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002998.pdf

[38] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002998.pdf

[39] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004153.pdf

[40] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004143.pdf

| SPA | SCI | Conservation Objective |
|---|---|---|
| | Lesser Black-backed Gull (*Larus fuscus*) | |
| | Herring Gull (*Larus argentatus*) | |
| | Kittiwake (*Rissa tridactyla*) | |
| | Arctic Tern (*Sterna paradisaea)* | |
| | Razorbill (*Alca torda*) | |
| | Puffin (Fratercula arctica) | |
| Magharee Islands SPA (NPWS 2021[41]), | Mew/Common Gull (*Larus canus*) | |
| The Gearagh SPA (NPWS 2021[42]) | Wigeon (*Anas penelope*) | |
| Skelligs SPA (NPWS 2021[43]) | Gannet (*Morus bassanus*) | |
| | Guillemot (*Uria aalge*) | |
| The Bull and The Cow Rocks SPA (NPWS 2021[44]) | Gannet (*Morus bassanus*) | |
| Iveragh Peninsula SPA (NPWS 2021[45]) | Guillemot (*Uria aalge*) | |
| Loop Head SPA (NPWS 2021[46]) | Guillemot *(Uria aalge)* | |
| Cliffs of Moher SPA (NPWS 2021[47]) | Guillemot (*Uria aalge*) | |
| Inishmore SPA (NPWS 2021[48]) | Guillemot (*Uria aalge*) | |
| Old Head of Kinsale SPA (NPWS 2021[49]) | Guillemot (*Uria aalge*) | |
| Clare Island SPA (NPWS 2021[50]) | Guillemot *(Uria aalge)* | |
| Ireland's Eye SPA (NPWS 2021[51]) | Guillemot (*Uria aalge*) | |
| Lambay Island SPA (NPWS 2021[52]) | Guillemot (*Uria aalge*) | |
| Slyne Head to Ardmore Point Islands SPA (NPWS 2021[53]) | Sandwich Tern (*Sterna sandvicensis*) | |
| Illaunnanoon SPA (NPWS 2021[54]) | Sandwich Tern (*Sterna sandvicensis*) | |

[41] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004125.pdf

[42] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004117.pdf

[43] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004007.pdf

[44] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004066.pdf

[45] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004154.pdf

[46] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004119.pdf

[47] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004005.pdf

[48] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004152.pdf

[49] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004021.pdf

[50] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004136.pdf

[51] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004117.pdf

[52] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004069.pdf

[53] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004159.pdf

[54] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004221.pdf

| SPA | SCI | Conservation Objective |
|---|---|---|
| Cross Lough (Killadoon) SPA (NPWS 2021[55]) | Sandwich Tern (*Sterna sandvicensis*) | |
| Carrowmore Lake SPA (NPWS 2021[56]) | Sandwich Tern (*Sterna sandvicensis*) | |
| Lady's Island Lake SPA (NPWS 2021[57]) | Sandwich Tern (*Sterna sandvicensis*) | |
| Greers Isle SPA (NPWS 2021[58]) | Sandwich Tern (*Sterna sandvicensis*) | |

**Table 3.3: Site Specific Conservation Objectives for SCI species.**

| SPA | SCI | Conservation Objective |
|---|---|---|
| Tralee Bay Complex SPA (NPWS, 2014[59]) | Black-headed Gull (*Larus ridibundus*) | To maintain the favourable conservation condition |
| | Mew/Common Gull (*Larus canus*) | |
| | Wigeon (*Anas penelope*) | |
| Castlemaine Harbour SPA (NPWS, 2011[60]) | Wigeon (*Anas penelope*) | To maintain the favourable conservation condition |
| | Cormorant (*Phalacrocorax carbo*) | |
| | Red-throated Diver (*Gavia stellata)* | |
| River Shannon and River Fergus Estuaries SPA (NPWS 2012[61]) | Wigeon (*Anas penelope*) | To maintain the favourable conservation condition |
| Courtmacsherry Bay SPA (NPWS 2014[62] | Great Northern Diver (*Gavia immer*) | To maintain the favourable conservation condition |
| Inner Galway Bay SPA (NPWS 2013[63]) | Great Northern Diver (*Gavia immer*) | To maintain the favourable conservation condition |
| | Sandwich Tern (*Sterna sandvicensis*) | |
| Blacksod Bay/Broad Haven SPA (NPWS 2014[64]) | Great Northern Diver (*Gavia immer)* | To maintain the favourable conservation condition |
| | Sandwich Tern (*Sterna sandvicensis*) | |

[55] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004212.pdf

[56] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004052.pdf

[57] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004009.pdf

[58] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004082.pdf

[59] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004188.pdf

[60] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004029.pdf

[61] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004077.pdf

[62] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004219.pdf

[63] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004031.pdf

[64] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004037.pdf

| SPA | SCI | Conservation Objective |
|---|---|---|
| Donegal Bay SPA (NPWS 2014[65]) | Great Northern Diver (*Gavia immer*) | To maintain the favourable conservation condition |
| Saltee Islands SPA (004002) (NPWS 2011[66]) | Gannet (*Morus bassanus*) | To maintain the favourable conservation condition |
| | Guillemot (*Uria aalge*) | |
| Lough Swilly SPA (NPWS 2011[67]) | Sandwich Tern (*Sterna sandvicensis*) | To maintain the favourable conservation condition |

## *3.4. Impact Prediction*

Assessment of potential adverse effects on QI and SCI species is presented in **Section 3.4.1** to **Section 3.4.3** below, while **Section 3.5** considers potential adverse effects on site integrity with respect to the attributes and targets defined for the QIs and SCIs in site specific Conservation Objectives reports prepared for the sites.

Descriptions of the ecology of these species (*i.e.* habitat preference and typical diet *etc.*) are presented in **Section 2.3.3.**

### 3.4.1. Impact Mechanism 1- Displacement

#### *3.4.1.1. Relevant Conservation Features*

**Marine Mammals**

- Harbour Seal (*Phoca vitulina*)
- Grey Seal (*Halichoerus grypus*)
- Bottlenose Dolphin (*Tursiops truncates*)
- Harbour Porpoise (*Phocoena phocoena*)

**Bird Species**

- Fulmar (*Fulmarus glacialis*)
- Manx Shearwater (*Puffinus puffinus*)
- Shag (*Phalacrocorax aristotelis*)
- Storm Petrel (*Hydrobates pelagicus*)
- Lesser Black-backed Gull (*Larus fuscus*)
- Herring Gull (*Larus argentatus*)
- Kittiwake (*Rissa tridactyla*)
- Arctic Tern (*Sterna paradisaea*)
- Razorbill (*Alca torda*)
- Puffin (*Fratercula arctica*)
- Black-headed Gull (*Larus ridibundus)*
- Mew/Common Gull (*Larus canus*)
- Wigeon (*Anas penelope*)
- Cormorant (*Phalacrocorax carbo*)

[65] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004151.pdf

[66] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004002.pdf

[67] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004075.pdf

- Red-throated Diver (*Gavia stellata*)
- Great Northern Diver (Gavia immer)
- Gannet (*Morus bassanus*)
- Guillemot (*Uria aalge*)
- Sandwich Tern (*Sterna sandvicensis*)

#### *3.4.1.2. Impact Assessment*

The proposed dredging will potentially take 2.5 months, based on *c.* 1,600m$^3$ per day. There will be approximately 350 trips to the disposal site, based on 300m$^3$ capacity of disposal barge. If a larger barge is used there will be fewer trips. Piling works will be undertaken following completion of the dredging. Piling will take some 5-6 months to complete, based on 70 piles at one pile every 2 days. There may be temporary displacement from foraging areas a result of noise disturbance caused by the drilling and dredge disposal activities.

As a small number of grey seals regularly occur within Dingle Harbour there may local disturbance and temporary displacement to some individuals within the harbour, especially during piling. However, they are acclimatised to human activities and are likely to not be significantly affected by dredging or increased vessel traffic; indeed there is some evidence dredging may provide foraging opportunities for seals. A range of marine mammal species may occur at the disposal site; however it is extremely unlikely to lead to any significant disturbance.

It is expected that animals would soon habituate to vessels during dredging and dumping and would be unlikely to be disturbed or displaced for long periods. However, given the species diversity and proximity of the Blasket Islands SAC, mitigation measures to reduce and avoid the potential impact of piling, dredging and dumping on grey seals and harbour porpoise (and other marine mammals) are recommended.

Knowledge of preferred prey of cetaceans and seals in Dingle Bay is not known. Pelagic species are known to be important seasonally and those such as sprat, herring and mackerel will move through the waters in the area depending on the season. The disposal site area is very small in relation to available foraging habitats and any impact will be local and not significant.

Dredging activity is of short duration and displacement will be short term. Provision of MMOs will provide opportunities to record sightings of marine mammals during piling, dredging, on transit and while disposing at the spoil ground. While sound exposure levels from such operations are well below that able to cause injury to a marine mammal, noise generated by piling and dredging and the physical presence of the dredger have the potential to cause low level disturbance, masking or behavioural impacts. The presence of an additional vessel and the associated noise produced, is very unlikely to have any significant impact on marine mammals.

The numbers of feeding and foraging birds in the dredge spoil disposal area were influenced by three local events – a trawler (1) and fish shoal activity (2) – which doubled the numbers of birds involved in directly feeding in the spoil area. The dumping of silt in the immediate vicinity of the natural (bait ball) activity could be detrimental to feeding seabirds (and cetaceans) and crew should be advised to avoid dumping any sediment close to any such feeding activities.

It is noted that the proposed works, which involve the dredging of sediments and subsequent disposal within the licensed disposal site in Dingle Bay, would potentially lead to a temporary effect upon the foraging opportunities for marine mammals and birds as they may be displaced from the area. However, it is not considered that such an effect would be long term for the species given the large expanse of suitable foraging habitats for mammals and birds.

#### *3.4.1.3. Conclusion*

Due to the relatively small scale of potential impacts in relation to the large expanse of suitable foraging habitat within Dingle Bay, **this impact will not be significant and will not affect the conservation objectives of these QI and SCI species.**

### 3.4.2. Impact Mechanism 2 - Discharged Pollutants and Sediments

#### *3.4.2.1. Relevant Conservation Features*

- Harbour Seal (*Phoca vitulina*)
- Grey Seal (*Halichoerus grypus*)
- Bottlenose Dolphin (*Tursiops truncates*)
- Harbour Porpoise (*Phocoena phocoena*)
- Fulmar (*Fulmarus glacialis*)
- Puffin (*Fratercula arctica*)
- Manx Shearwater (*Puffinus puffinus*)
- Shag (*Phalacrocorax aristotelis*)
- Storm Petrel (*Hydrobates pelagicus*)
- Lesser Black-backed Gull (*Larus fuscus*)
- Herring Gull (*Larus argentatus*)
- Kittiwake (*Rissa tridactyla*)
- Arctic Tern (*Sterna paradisaea*)
- Razorbill (*Alca torda*)
- Black-headed Gull (*Larus ridibundus)*

- Mew/Common Gull (*Larus canus*)
- Wigeon (*Anas penelope*)
- Cormorant (*Phalacrocorax carbo*)
- Red-throated Diver (*Gavia stellata*)
- Great Northern Diver (*Gavia immer*)
- Gannet (*Morus bassanus*)
- Guillemot (*Uria aalge*)
- Sandwich Tern (*Sterna sandvicensis*)

#### *3.4.2.2. Impact Assessment*

Benthic dredging activity can result in significant short-term and long-term damage to the biological environment. Dredging will alter characteristics of benthic habitats with subsequent effects on prey distribution and abundance and impact on marine predators. Marine mammals and birds may also be affected by the release of sediment by consumption of contaminated prey items resulting from contaminants entering the food chain (where contaminated substrates are disturbed).

There is potential that without the implementation of construction best practice and mitigation measures, activities during the construction of the SCH could result in the uncontrolled release of sediment material to Dingle Bay likely to be used by the SCI and QI species, affecting the availability of food items targeted by foraging marine mammals and birds. The Proposed Development will require capital dredging and piles to be installed. These activities will result in the generation and release of spoil (rock particles and sediment) to the water column potentially affecting local water quality (*e.g.* turbidity) and result in the generation of sediment plumes in the water column extending beyond the immediate works area.

Priority Geotechnical (PGL), was contracted in September 2020 to carry out a ground investigation to provide detailed ground investigation information to inform and assess the geotechnical and environmental characteristics of the soils, sediments and rock at the proposed site.

The Marine Institute have set upper and lower action levels for contaminants for the assessment of suitability of dredged material for disposal at sea. The purpose of the lower action levels is to be able to categorise sediment as essentially “clean” considered not to pose a risk through contamination to the marine environment. The upper action levels identify material likely to cause biological or other effects.

When compared against the Marine Institute criteria two samples were identified as having lead (Pb) levels above the Marine Institute Criteria lower action levels.

The following **Table 3-4** data is extracted from the Sample Results.

**Table 3-4 Sediment Sample Results Extract**

| Bore Hole No. | Sample Depth bgl (m) | Lead - Tested Level (mg/k | Lead - Marine Institute Low Action Level (mg/kg) |
|---|---|---|---|
| BH 2 | 3.5 | 61 | 60 |
| BH 11 | 1.5 | 71.1 | 60 |

Discussions were held with the Marine Institute to determine on a preliminary basis if the proposed dredge spoil is suitable for disposal at sea. The Marine Institute reviewed the sediment samples results and following the discussions, it was determined that the dredge spoil is suitable for disposal at sea. The lead levels are considered likely to be background geological in nature and are only marginally outside the MI lower limit.

#### *3.4.2.2.1. Disposal Site*

Geological surveys undertaken at the location of the dumpsite (INFOMAR, 2010) highlighted the varied nature of the seabed in the area with sediments ranging from bedrock to muddy sands and sandy muds. The sediment within the disposal site contains a mix of coarse sediments and muddy to fine sands, with the coarser sediment identified along the northern extent of the disposal area.

Sedimentation and any increases in turbidity are unlikely to affect marine mammals, which use echolocation. Marine mammals often inhabit turbid environments and many utilise sophisticated sonar systems to sense the environment around them (Au *et al.* 2000). Pinnipeds do not produce sonar for prey detection purposes, however Newby *et al.* (1970) reported apparent blindness in three harbour seals on Gertrude Island, Puget Sound, Washington and found them to appear healthy suggesting their ability to forage was unaffected by blindness. McConnell *et al.* (1999) tracked grey seals in the North Sea and included one blind seal in their study. No significant difference in foraging behaviour was found indicating vision is not essential to pinnipeds' survival or ability to forage.

MaREI of UCC in 2021 carried out numerical modelling of tidal currents, dredging and disposal plumes and waves at the proposed site in 2020 (**Appendix 4**). The models were calibrated using wave and tidal current measurements taken at the proposed dredge site during March 21. The models were run in excess of 70 days to simulate the actual period of disposal at the site and to establish the patterns of sediment dispersal upon completion of dumping at the site. The models determined that an increase in Suspended Sediment Concentration (SSC) only occurs in the immediate vicinity of the disposal site and does not persist beyond the cessation of disposal, with the resulting dredge plume dispersing after each dredging operation.

The maximum seabed thickness change at the end of the dumping period was modelled to be >0.14 m. Considering any change in seabed thickness >0.01 m is significant (Essink, 1999), the projected

increase at the disposal site is likely to cause local smothering of the benthos resulting in loss of benthic fauna. However, benthic fauna typically have high recovery rates (Dernie *et al.* 2003) and so the negative impact of seabed thickness will have relatively short-term consequences.

RPS carried out sediment dispersal modelling at the dump site in 2007 over 6 months (see **Appendix 2**). Preliminary dispersion studies showed that due to the low current velocity at the site the material deposited on the seabed would not be moved by tidal currents alone, however dredged spoil deposited on the sea bed at the proposed disposal site will be subjected to wave action during gales and storms, which may lift some of the material into suspension and move it away from the site. It is unlikely that there will be no waves during the whole of the 6 month dumping period so the critical shear stress for re-suspension was adjusted in the model separately for three of the six months to allow for the impact of waves on the dispersion process.

Even allowing for wave action, deposition of sediment is largely confined to within the dump site itself and there will be no impact to the nearby beaches.

Any sediment plumes associated with this activity will be very local to the site and not extend into the harbor.

Mitigation measures and the general construction practices required to prevent adverse effects are detailed in **Section 3.6.**

#### *3.4.2.3. Conclusion*

**Based on the above and subject to implementation of mitigation, it can be concluded there will be no significant adverse effects to the conservation features from Impact Mechanism 2.**

### 3.4.3. Impact Mechanism 3- Noise Disturbance

#### *3.4.3.1. Impact Assessment*

##### *3.4.3.1.1. Marine Mammals*

Dredging produces continuous, broadband, low frequency sound, below 1 kHz, with sound pressure levels between 168 dB and 186 dB re 1µ Pa at 1 m (Todd *et al.* 2015). In most cases the noise is continuous in nature. Noise levels emanating from a backhoe dredger operating around the Shetland Islands, UK, were recorded by Nedwell *et al.* (2008). Using a scaling of 10 log (R/1 m), the back-calculated source level was 163 dB re 1 mPa at 1 m (bandwidth ¼ 20 Hz–100 kHz). In contrast, Reine *et al.* (2012) calculated source levels of 179 dB re 1 mPa at 1 m (bandwidth ¼ 3 Hz – 20 kHz), but the used scaling was different [15 log (R/1 m)], so results are difficult to compare.

Received levels of dredging noise by marine mammals can exceed ambient levels to considerable distances depending on the type of dredger used (Richardson *et al.* 1995). Hopper dredges produced broadband sound between 20-1000 Hz and the highest levels occurred during loading. Evans (2000) suggested dredging activities produce sounds varying from 172-185 db re 1 µPa at 1 m over the broadband range 45 Hz to 7 kHz but there have been no studies examining the reaction of odontocetes to this activity. Audiograms for bottlenose dolphins show peak sensitivity between 50-60 kHz and no sensitivity below 2 kHz and above around 130 Khz (Richardson *et al.* 1995). Because of rapid attenuation of low frequencies in shallow water, dredge noise normally is undetectable underwater at ranges beyond 20-25 km (Richardson *et al.* 1995). The effects of low frequency (4-8 kHz) noise level and duration in causing threshold shifts in bottlenose dolphins were predicted by Mooney *et al.* (2009). They found that if the Sound Exposure Level was kept constant significant shifts were induced by longer duration exposures but not for shorter exposures.

NPWS (2014) identified increased sound pressure levels above ambient do occur due to dredging which could be detected up to 10 km from shore. These levels are thought to potentially cause masking or behavioural effects but are not thought to cause injury to a marine mammal.

There will be very little increased noise associated with dredging as a long reach excavator and barge is used. Increased noise associated with dredging will be local to the harbour.

*Piling*

Pile driving is classed as a multi pulse source of impulsive sound. The potential impacts on marine mammals from piling activity include Permanent Threshold Shift (PTS), Temporary Threshold Shift (TTS) and behavioural disturbance; each of which have varying degrees of severity for exposed individuals.

If a marine mammal's received sound exposures, irrespective of the anthropogenic source (pulse or nonpulse), exceed the relevant criterion, auditory injury (PTS) is assumed to be likely. The measured effects on marine mammals are largely based on work by Southall *et al.* (2007), who proposed a dual criterion based on peak sound pressure level (SPL) and sound exposure level (SEL), where the level that is exceeded first is what should be used as the working injury criterion (*i.e*. the precautionary of the two measures).

As all marine mammals do not hear equally across all frequencies, the use of frequency weightings is applied to compensate for differential frequency responses of their sensory systems. The M-weighting (for marine mammals) is similar to the C-weighting for measuring high amplitude sounds in humans. At present there are no data available to represent the onset of PTS in marine mammals, but Southall *et al.* (2007) estimated it as 6 dB above the SPL (unweighted) and 15 dB above the SEL based on the onset of TTS. Therefore, Southall *et al.* (2007) proposed SPL criteria of 230 dB re 1 µPa (peak broadband level) for PTS onset in cetaceans and 218 dB re 1 µPa for pinnipeds. They also recommended TTS can occur at 224 dB re 1 µPa (peak broadband level) for cetaceans and 212 dB re 1 µPa for pinnipeds (Southall *et al.* 2007; Bailey *et al.* 2010). The SEL criteria proposed by Southall *et al.* (2007) include TTS onset at 183 dB re 1 $\mu Pa^2$ -s for cetaceans and 171 dB re 1 µPa2 -s for pinnipeds and PTS onset is expected at 15 dB additional exposure (Bailey *et al.* 2010).

Most concerns of the effects of pile driving on marine mammals has been around the construction of offshore wind farms (Richardson *et al.* 1995). There has been limited work on the effects of piling during coastal and harbour works. Attenuation of sound pressure levels at coastal sites will be more rapid depending on the topography and nature of the bedrock. Recently, Graham *et al.* (2017) modelled the source levels estimated for impact piling from a single-pulse sound exposure level of 198 dB re 1 lPa2 s and, for a 192 dB re 1 lPa source level for vibration piling during harbour construction works. Predicted received broadband SEL values 812 m from the piling site were markedly lower than source level due to high propagation loss (133.4 dB re 1 lPa2 s (impact) and 128.9 dB re 1 lPa2 s (vibration). Simultaneous acoustic monitoring of bottlenose dolphins and harbour porpoises at the site showed they were not excluded from sites in the vicinity of impact or vibration piling; nevertheless, some small effects were detected with bottlenose dolphins spending a reduced period in the vicinity of construction works.

The maximum TTS in harbour seals, measured 1-4 minutes after exposure for 120 minutes to the 148 dB re 1 µPa noise band (187 dB SEL), was around 10 dB (*i.e*. hearing was 10 dB less sensitive than normal). Recovery to the pre-exposure threshold was estimated to be complete within one hour post-exposure. Significant TTSs (in this study of > 3 dB) occurred at SELs of ~170 and 178 dB re 1 µPa2s (Kastelein *et al.* 2011). Kastelein *et al.* (2011) also showed that the two young harbour seals used in

this study were more vulnerable to noise-induced TTS than another older animal using a noise band centered at 2.5 kHz, (with a TTS onset at a higher SEL of 183 dB re 1 µPa2s). To assess the effects of pile driving sounds on TTS, harbour seals were exposed to low-repetition rate pulses (playbacks of pile driving sounds) with an energy peak at 630 Hz (most energy was between 0.4 and 5 kHz) and with 90% of their energy within a 124 ms period. No measurable TTS was induced, probably because the received level was too low. If TTS did occur, it was of such low magnitude that hearing probably recovered during the interval between the pulses. Behavioural observations showed that one of the seals swam away from the sound source during the first two sessions and hauled out at a 2 dB higher level. The other seal did not swim away from the transducer when the pile driving sounds were played back, which demonstrates individual variation between animals in behavioural reactions to sounds. Behavioural response studies should involve as many animals as possible to gain insight into natural variation in responses to sounds (Kastelein *et al*. 2011). Harbour seal auditory threshold is at around 1 kHz and ranges up to around 40 kHz (Richardson *et al.* 1995).

As the likelihood of any cetaceans being in the vicinity of the construction site is extremely low there is an insignificant risk of sound exposure and impact, however the likelihood of seals being in the water close to the site is high.

Monitoring and mitigation measures during project construction would include the use of qualified marine mammal observers to monitor during sub-tidal piling operations and the commencement of piling would be delayed if the observers sight any marine mammals within 1,000 m of the site for 30 minutes prior to the planned start of piling. Since impact piling cannot always be stopped immediately if a marine mammal approaches once piling has commenced, some potential for impacts would remain, including potential for TTS. Nonetheless, the 1,000 m mitigation zone is overly precautionary.

*Vessel Noise*

There is also a possibility that marine mammals may be impacted by vessel noise associated with the movement of dredged material to the disposal site. The disposal site is 4.5 km from the dredging site will take just over 1 hour for a round trip back to the loading area. Shipping produces low broadband and "tonal" narrowband sounds. The primary sources are propeller cavitation and singing and propulsion of other machinery (Richardson *et al.* 1995). For large and medium vessels tones dominate up to around 50 Hz and broadband components may extend to 100 Hz. Many odontocetes show considerable tolerance to vessel traffic. Sini *et al.* (2005) showed bottlenose dolphins resident in the Moray Firth generally exhibited a positive reaction to medium (16-30 m) and large vessels (>30 m) and showed some evidence of habituation. Buckstaff (2004) suggested an exposure level of 110-120 dB from vessel noise solicited no observable effect on bottlenose dolphins. A similar exposure level

solicited minor changes in orientation behaviour and locomotion changes in minke whales (Palka and Hammond 2001). Harbour porpoise are frequently observed near vessels but tend to change behaviour and move away and this avoidance may occur up to 1-1.5 km from a ship but is stronger within 400 m (cited from Richardson *et al.* 1995). Seals show considerable tolerance to vessel activity, but this does not exclude the possibility that it has an effect.

The ambient noise levels in Dingle Harbour are expected to be dominated by shipping noise and to a lesser extent by environmental noise (*e.g*. tidal movement of water and sediment and wind and wave noise), with some noise contributed by shore based port activities and heavy traffic. No ambient noise measurements are available for the site, but it is likely the presence of an operational dredger in the harbour will lead to a small local increase in noise, especially as Dingle Harbour is already a noisy port with berthing capacity of *c.* 500 m, an 80-berth marina and a number of pontoon units for berthing up to 40 smaller fishing vessels and dolphin watching boats.

#### *3.4.3.1.2. Conclusion*

Based on the above and subject to implementation of mitigation measures (see **Section 3.6**) to reduce the risk of noise impacts to marine mammals, it can be concluded **there will be no significant adverse effects to the marine mammal species and bird species from Impact Mechanism 3.**

#### *3.4.3.1.3. Bird Species*

A risk assessment[68] to examine the potential impacts on birds listed in **Section 2.4** has been carried using criteria for the following:

- species risk of disturbance (as detailed in **Table 3.5**)
- species population sensitivity (**Table 3.6**)
- proposed Development Area habitat suitability (**Table 3.7**)
- species habitat flexibility (**Table 3.8**)
- The significance of risk is presented in **Table 3.10**

*Disturbance Risk*

The greatest potential impact from this project will be associated with vessel noise. The sensitivity of various high conservation value species to such impacts will vary. Species that regularly follow fishing trawlers and larger boats (*i.e.* the gulls and Fulmars) are unlikely to be significantly displaced by an increase in vessel presence. A disturbance scale developed by Garthe & Hüppop (2004) and Furness *et al.* (2012, 2013) rated the potential vulnerability of seabirds to disturbance on a scale of 1–5, with 1 representing hardly any avoidance behaviour and/or non/very low fleeing distance and 5 representing strong escape/avoidance behaviour and/or large fleeing distance. Using the disturbance scale, relevant Qualifying Features (presented in **Section 2.4**) are assigned to disturbance categories in **Table 3.5**.

**Table 3.5: Disturbance risk categories of Qualifying Features of SPAs.**

| Qualifying Feature | Disturbance Category |
|---|---|
| Fulmar (*Fulmarus glacialis*) | 1 |
| Manx Shearwater (*Puffinus puffinus*)* | 1 |
| Storm Petrel (*Hydrobates pelagicus*)* | 1 |
| Arctic tern (*Sterna paradisaea*) | 2 |
| Gannet (*Morus bassanus*) | 2 |
| Herring Gull (*Larus argentatus*) | 2 |
| Kittiwake (*Rissa tridactyla*) | 2 |
| Lesser Black-backed Gull (*Larus fuscus*) | 2 |
| Puffin (*Fratercula arctica*) | 2 |
| Guillemot (*Uria aalge*) | 3 |

[68] The methods of impact assessment have been adapted from Atkins (2012)

| Qualifying Feature | Disturbance Category |
|---|---|
| Razorbill (*Alca torda*) | 3 |
| Sandwich Tern (*Sterna sandvicensis*) | 2 |
| Common Gull (*Larus canus*) | 2 |
| Cormorant (*Phalacrocorax carbo)* | 4 |
| Shag (*Phalacrocorax aristotelis*) | 3 |
| Black-headed Gull (*Chroicocephalus ridibundus*) | 2 |
| Red-throated Diver (*Gavia stellata*) | 5 |
| Great Northern Diver (*Gavia immer*) | 5 |
| Wigeon (*Anas penelope*) | 2 |

*Species Population Sensitivity*

The determination of the sensitivity of species population considers the following

- Tolerance to change: the species' ability to accommodate temporary and permanent change
- Recoverability: the ability of the receptor to return to its natural state following cessation of an effect
- Adaptability: the ability of a receptor to avoid or adapt to an effect
- Value: a measure of the receptor's importance, rarity and worth

In general, populations with very poor conservation status including species on the BoCCI red list have little capacity to tolerate change and recover following an impact. In contrast, populations that are not of conservation concern typically exhibit capacity to absorb impacts.

**Table 3.6: Sensitivity criteria**

| Sensitivity | Definition |
|---|---|
| Very High | Receptor population has no tolerance of effect.<br>*e.g.* no capacity to absorb change, a population level effect very likely to occur<br>Likely to be limited to populations with very poor conservation status - BoCCI Red List |
| High | Receptor population has a very limited tolerance of effect.<br>*e.g.* likely to have no capacity to absorb change, so a population level effect likely.<br>Likely to be limited to populations with poor existing conservation status - BoCCI Amber List |
| Medium | Receptor population has limited tolerance of effect.<br>*e.g.* very minor capacity to absorb change, so a population effect possible.<br>Likely to include but not be limited to populations with poor existing conservation status - BoCCI Green List |

| Sensitivity | Definition |
|---|---|
| Low | Receptor population has some tolerance of effect.<br>*e.g.* likely to have minor capacity to absorb additional mortality or reduction in productivity or habitat loss, so a population level effect unlikely. |
| Negligible | Receptor population generally tolerant of effect.<br>*e.g.* likely to have moderate capacity to absorb additional mortality or reduction in productivity or habitat loss, so a population effect very unlikely. |

*Proposed Development Area Habitat Suitability*

The habitat suitability of the licence renewal site is coded as follows:

1. habitat conditions include specific features (substrate type, upwellings, *etc*.) identified as being important for the species
2. habitat conditions generally suitable (*e.g.* within depth range) but lack specific features identified as being important for the species
3. habitat conditions include some features identified as unsuitable in some studies
4. habitat conditions generally unsuitable

Habitat preference follows that identified for the species in Furness *et al.* (2012, 2013).

**Table 3.7**: **Habitat Suitability.**

| Qualifying Feature | Species Habitat Preference | Suitability Score |
|---|---|---|
| Arctic tern (*Sterna paradisaea*) | Coastal marine | 2 |
| Herring Gull (*Larus argentatus*) | Forages around ship in inshore areas, on shoaling fish, in the intertidal, in agricultural areas, on refuse and in streets. | 2 |
| Kittiwake (*Rissa tridactyla*) | Birds forage over continental shelf with the 200 m contour. | 2 |
| Lesser Black-backed Gull (*Larus fuscus*) | Feed in a range of habitats in coastal areas, and in agricultural areas, and extensive use is made of refuse tips and other sources of human waste. | 2 |
| Razorbill (*Alca torda*) | Found in a range of marine habitats but generally in shallow sea | 2 |
| Guillemot (*Uria aalge*) | Typically feeds offshore with inshore and pelagic feeding less common. | 3 |

| Qualifying Feature | Species Habitat Preference | Suitability Score |
|---|---|---|
| Fulmar (*Fulmarus glacialis*) | Oceanic and shelf break although large number can occur near trawler on continental shelf | 4 |
| Gannet (*Morus bassanus*) | Oceanic, pelagic but mainly offshore over continental shelf | 4 |
| Manx Shearwater (*Puffinus puffinus*) | Pelagic although mainly over continental shelf | 4 |
| Storm Petrel (*Hydrobates pelagicus*) | Pelagic, generally found over continental shelf. | 4 |
| Shag (*Phalacrocorax aristotelis*) | Feeds around the rocky coasts of western. European shag is one of the deepest divers among the cormorant family | 3 |
| Black-headed Gull (*Larus ridibundus*) | Terrestrial and coastal marine (mainly feeding on: aquatic and terrestrial insects, earthworms and marine invertebrates and some dead/sick fish) | 2 |
| Common Gull (*Larus canus*) | Coastal marine | 2 |
| Cormorant (*Phalacrocorax carbo*) | Feeds in coastal waters on fish caught through diving. | 2 |
| Sandwich Tern (*Sterna sandvicensis*) | Coastal and near shore species feeds by plunge-diving for fish. Occurs is very dense colonies on coasts and islands | 3 |
| Red-throated Diver (*Gavia stellata*) | Coastal/marine | 2 |
| Great Northern Diver (*Gavia immer*) | Coastal/marine | 2 |
| Wigeon (*Anas penelope*) | this species shows a preference for coastal saltmarshes, freshwater, brackish and saline lagoons, flooded grasslands, estuaries, intertidal mudflats and other sheltered marine habitats. | 3 |
| Puffin (*Fratercula arctica*) | Feed far from the coast and is pelagic in winter. | 4 |

*Species Habitat Flexibility*

The habitat use flexibility scores are based on Garthe & Hüppop (2004) and Furness *et al.* (2012, 2013). The score value ranges from 1-5 with 1 indicating species is very flexible in habitat use and 5 indicating the species is reliant on specific habitat characteristics. Species that are coded low occupy large sea areas with no specific habitat preferences while species that are coded high rely on specific habitat features.

**Table 3.8: Habitat Flexibility Scores.**

| Qualifying Feature | Flexibility Scores |
|---|---|
| Fulmar (*Fulmarus glacialis*) | 1 |
| Herring Gull (*Larus argentatus*) | 1 |
| Manx Shearwater (*Puffinus puffinus*) | 1 |
| Storm Petrel (*Hydrobates pelagicus*) | 1 |
| Gannet (*Morus bassanus*) | 2 |
| Kittiwake (*Rissa tridactyla*) | 2 |
| Lesser Black-backed Gull (*Larus fuscus*) | 2 |
| Arctic tern (*Sterna paradisaea*) | 3 |
| Guillemot (*Uria aalge*) | 3 |
| Puffin (*Fratercula arctica*) | 3 |
| Razorbill (*Alca torda*) | 3 |
| Sandwich Tern (*Sterna sandvicensis*) | 3 |
| Shag (*Phalacrocorax aristotelis*) | 3 |
| Cormorant (*Phalacrocorax carbo*) | 3 |
| Common Gull (*Larus canus*) | 2 |
| Black-backed Gull (*Larus fuscus*) | 2 |
| Red-throated Diver (*Gavia stellata*) | 5 |
| Great Northern Diver (*Gavia immer*) | 5 |
| Wigeon (*Anas penelope*) | 2 |

*Assessment of Impact Significance*

The level of impact is determined by combining assessments of 1) Disturbance, 2) Population Sensitivity, 3) Proposed Development Area Habitat Suitability and 4) Habitat Flexibility Scores. The levels of impact are described in **Table 3.9**, based on the sensitivity/value of the receptor, the

magnitude of effects and the likelihood of occurrence determines the significance of the impact. The level of potential impact and significance to species are detailed in **Table 3.10**.

**Table 3.9: Level of Impact**

| Level of Impact | Impact Significance | Definition |
|---|---|---|
| Negligible | No change (**NOT SIGNIFICANT**) | No discernible change in the ecology of the affected feature |
| Negligible | Imperceptible Impact (**NOT SIGNIFICANT**) | An impact capable of measurement but without noticeable consequences |
| Minor | Slight Impact (**NOT SIGNIFICANT**) | An impact which causes noticeable changes in the character of the environment without affecting its sensitivities |
| Moderate | Moderate Impact (**SIGNIFICANT**) | An impact that alters the character of the environment that is consistent with existing and emerging trends |
| Major | Significant Impact (**SIGNIFICANT**) | An impact which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment |
| Severe | Profound Impact (**SIGNIFICANT**) | An impact which obliterates sensitive characters. |

**Table 3.10: Potential impacts on bird populations.**

| Qualifying Feature | Disturbance | Population Sensitivity BoCCI[69] | Proposed Development Area Habitat Suitability | Habitat Flexibility Scores | Overall Level of Impact | Impact Significance |
|---|---|---|---|---|---|---|
| Herring Gull (*Larus argentatus*) | 2 | **Very High BoCCI Red List** | 2 | 1 | Minor | Potential Slight Impact (NOT SIGNIFICANT) |
| Arctic tern (*Sterna paradisaea*) | 2 | **High – BoCCI Amber List** | 2 | 3 | Negligible | Potential Imperceptible Impact (NOT SIGNIFICANT) |
| Gannet (*Morus bassanus*) | 2 | **High – BoCCI Amber List** | 4 | 2 | Negligible | (NOT SIGNIFICANT) |
| Guillemot (*Uria aalge*) | 3 | **High – BoCCI Amber List** | 3 | 3 | Negligible | Potential Imperceptible Impact |
| Kittiwake (*Rissa tridactyla*) | 2 | **High – BoCCI Amber List** | 2 | 2 | Negligible | (NOT SIGNIFICANT) |
| Lesser Black-backed Gull (*Larus fuscus*) | 2 | **High – BoCCI Amber List** | 2 | 2 | Negligible | Potential Imperceptible Impact |
| Manx Shearwater (*Puffinus puffinus*) | 1 | **High – BoCCI Amber List** | 4 | 1 | Negligible | (NOT SIGNIFICANT) |

[69] BoCCI - Birds of Conservation Concern in Ireland

| Qualifying Feature | Disturbance | Population Sensitivity BoCCI[69] | Proposed Development Area Habitat Suitability | Habitat Flexibility Scores | Overall Level of Impact | Impact Significance |
|---|---|---|---|---|---|---|
| Puffin (*Fratercula arctica*) | 2 | **High – BoCCI Amber List** | 4 | 3 | Negligible | Potential Imperceptible Impact |
| Razorbill (*Alca torda*) | 3 | **High – BoCCI Amber List** | 2 | 3 | Negligible | (NOT SIGNIFICANT) |
| Storm Petrel (*Hydrobates pelagicus*) | 1 | **High – BoCCI Amber List** | 4 | 1 | Negligible | Potential Imperceptible Impact |
| Fulmar (*Fulmarus glacialis*) | 1 | **Medium - BoCCI Green List** | 4 | 1 | Negligible | No change NOT SIGNIFICANT |
| Black-headed Gull (*Larus ridibundus*) [A179] | 2 | **Very High BoCCI Red List** | 2 | 2 | Minor | Potential Slight Impact (NOT SIGNIFICANT) |
| Common Gull (*Larus canus*) [A182] | 2 | **High – BoCCI Amber List** | 2 | 2 | Negligible | No change (NOT SIGNIFICANT) |
| Sandwich Tern (*Sterna sandvicensis*) [A191] | 2 | **High – BoCCI Amber List** | 2 | 2 | Negligible | No change (NOT SIGNIFICANT) |
| Cormorant (*Phalacrocorax carbo*) | 4 | **High – BoCCI Amber List** | 2 | 3 | Negligible | No change (NOT SIGNIICANT) |

| Qualifying Feature | Disturbance | Population Sensitivity BoCCI[69] | Proposed Development Area Habitat Suitability | Habitat Flexibility Scores | Overall Level of Impact | Impact Significance |
|---|---|---|---|---|---|---|
| Red-throated Diver (*Gavia stellata*) [A001] | 5 | **Medium - BoCCI Green List** | 2 | 5 | Negligible | Potential Imperceptible Impact (NOT SIGNIFICANT) |
| Great Northern Diver (*Gavia immer*) | 5 | **High – BoCCI Amber List** | 2 | 5 | Negligible | Potential Slight Impact (NOT SIGNIFICANT) |
| Wigeon (*Anas penelope)* | 2 | **Very High BoCCI Red List** | 3 | 2 | Minor | Potential Slight Impact (NOT SIGNIFICANT) |
| Shag (*Phalacrocorax aristotelis*) | 3 | **High – BoCCI Amber List** | 3 | 3 | Negligible | Potential Slight Impact (NOT SIGNIFICANT |

#### *3.4.3.1.4. Conclusion*

Based on the above and subject to implementation of mitigation measures to reduce noise impacts to marine mammals, it can be concluded **there will be no significant adverse effects to the marine mammal species and bird species from Impact Mechanism 3.**

## *3.5. Potential for Adverse Effects on Site Integrity*

### 3.5.1. SACs

Potential for effects to 1,349 Common Bottlenose Dolphin (*Tursiops truncates*), 1,351 Harbour Porpoise (*Phocoena phocoena*), 1,364 Grey Seal (*Halichoerus grypus*) and 1,365 Harbour Seal (*Phoca vitulina*) were identified in **Section 3.4**. The Conservation Objective for 1,349 Common Bottlenose Dolphin (*Tursiops truncates*), 1,351 Harbour Porpoise (*Phocoena phocoena*), 1,364 Grey Seal (*Halichoerus grypus*) and 1,365 Harbour Seal (*Phoca vitulina*) are to maintain the favourable conservation condition.

For the QI species, favourable conservation condition is defined by a list of attributes and targets. An assessment of the potential impacts on the integrity of the SACs was undertaken in relation to the attributes and targets set for the habitats and species (see **Table 3.11**).

**Table 3.11: Assessment of potential for adverse effects on the integrity of the SACs assigned for the following QI marine mammal species: common bottlenose dolphin, harbour porpoise, grey seal and harbour seal. Attributes, measure and targets identified in NPWS**

| QI | Attribute | Measure | Target | Potential Impact | Potential for Adverse Effects on Site Integrity in the Absence of Mitigation |
|---|---|---|---|---|---|
| **Harbour Porpoise (*Phocoena phocoena)* [1351]**<br><br>Blasket Islands SAC<br>Roaringwater Bay and Islands SAC<br>Rockabill to Dalkey Island SAC | Access to suitable habitat | Number of artificial barriers | Species range within the site should not be restricted by artificial barriers to site use | None | No |
| | Disturbance | Level of Impact | Human activities should occur at levels that do not adversely affect the harbour porpoise population at the site | **Noise disturbance.**<br>**Physical injury including permanent or temporary auditory damage.**<br>**Disruption of natural behaviour.** | **Yes - noise disturbance and associated impacts would constitute a negative effect on site integrity** |
| **Bottlenose dolphin [1349]**<br><br>Lower River Shannon SAC<br>West Connacht Coast SAC | Access to suitable habitat | Number of artificial barriers | Species range within the site should not be restricted by artificial barriers to site use | None | No |
| | Habitat use: critical areas | Location and hectares | Critical areas, representing habitat used preferentially by bottlenose dolphin, should be maintained in a natural condition | None | No |

| QI | Attribute | Measure | Target | Potential Impact | Potential for Adverse Effects on Site Integrity in the Absence of Mitigation |
|---|---|---|---|---|---|
| | Disturbance | Level of impact | Human activities should occur at levels that do not adversely affect the bottlenose dolphin population at the site | **Noise disturbance.**<br>**Physical injury including permanent or temporary auditory damage.**<br>**Disruption of natural behaviour.** | **Yes - noise disturbance and associated impacts would constitute a negative effect on site integrity.** |
| **Grey Seal (*Halichoerus grypus*) [1364]**<br><br>Blasket Islands SAC<br>Duvillaun Islands SAC Horn Head and Rinclevan SAC<br>Inishbofin and Inishshark SAC<br>Inishkea Islands SAC<br>Lambay Island SAC<br>Roaringwater Bay and Islands SAC<br>Saltee Islands SAC<br>Slieve Tooey/Tormore Island/Loughros Beg Bay SAC<br>Slyne Head Islands SAC | Access to suitable habitat | Number of artificial barriers | Species range within the site should not be restricted by artificial barriers to site use | None | No |
| | Population composition | Number of cohorts | The grey seal population occurring within this site should contain adult, juvenile and pup cohorts annually | None | No |
| | Disturbance | Level of impact | Human activities should occur at levels that do not adversely affect the grey seal population at the site | **Noise disturbance.**<br>**Physical injury including permanent or temporary auditory damage.**<br>**Disruption of natural behaviour.** | **Yes - noise disturbance and associated impacts would constitute a negative effect on site integrity.** |
| | Resting behaviour | Resting haul-out sites | Conserve the resting haul out sites in a natural condition | None | No |
| | Breeding behaviour | Breeding sites | Conserve the breeding sites in a natural condition | None | No |

| QI | Attribute | Measure | Target | Potential Impact | Potential for Adverse Effects on Site Integrity in the Absence of Mitigation |
|---|---|---|---|---|---|
| | Moulting behaviour | Moult haul-out sites | Conserve the moult haul out sites in a natural condition | None | No |
| **Harbour Seal (*Phoca vitulina*) [1365]**<br><br>Ballysadare Bay SAC<br>Clew Bay Complex SAC<br>Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC<br>Donegal Bay (Murvagh) SAC<br>Galway Bay Complex SAC<br>Glengarriff Harbour and Woodland SAC<br>Kenmare River SAC<br>Kilkieran Bay and Islands SAC<br>Killala Bay/Moy Estuary SAC<br>Lambay Island SAC<br>Rutland Island and Sound SAC<br>Slaney River Valley SAC<br>West of Ardara/Maas Road SAC | Access to suitable habitat | Number of artificial barriers | Species range within the site should not be restricted by artificial barriers to site use | None | No |
| | Breeding behaviour | Breeding sites | Conserve the breeding sites | None | No |
| | Moulting behaviour | Moult haul-out sites | Conserve the moult haul out sites in a natural condition | None | No |
| | Resting behaviour | Resting haul-out sites | Conserve the resting haul out sites in a natural condition | None | No |
| | Disturbance | Level of Impact | Human activities should occur at levels that do not adversely affect the harbour porpoise population at the site | **Noise disturbance.**<br>**Physical injury including permanent or temporary auditory damage.**<br>**Disruption of natural behaviour.** | **Yes - noise disturbance and associated impacts would constitute a negative effect on site integrity** |

### 3.5.2. SPAs

The assessment of the potential impact of a project or plan on the integrity of SPAs is undertaken in relation to the site-specific Conservation Objective attributes and targets. The provisions of Article 6 define 'integrity' as the 'coherence of the site's ecological structure and function, across its whole area, or the habitats, complex of habitats and/or population of species for which the site is or will be classified'. Conservation Objective attributes and targets broadly relate to:

1. characteristics of the SPA site
2. characteristics of the SCI populations

Attributes and targets related to **1 characteristics of the SPA sites** include the extent of habitats (*e.g.* nesting, roosting, feeding habitats) available at the sites, disturbance levels at the habitats, prey biomass availability, barriers to connectivity *etc*. Given the distance of the SPAs from the development, there is no risk of significant adverse effects with respect to site attributes and targets.

Attributes and targets related to **2 characteristics of SCI populations** include population sizes, population trends, species productivity (*e.g.* density of breeding pairs) *etc.* While the SCI bird species have been recorded during the surveys undertaken for the Proposed Development and dredge spoil disposal site, the project areas do not support significant foraging opportunities for the SCI species and it is highly unlikely that a high number of individuals from the SPAs will occur in the area. There may be potential effect to individual birds, there is no risk of significant adverse population level effects.

## *3.6. Mitigation Measures*

### 3.6.1. Prevention of Release Sediment, Chemical or Other Waste Material

This will consider measures presented in the outline Construction Environmental Management Plan (CEMP) (see **Appendix 3**) regarding dredging activities, installation piles and component part of the SCH. Measures will also include standard construction best practice used to manage the risk of potential for loss of concrete or hydrocarbons such as diesel and hydraulic fluids during the construction phase. Careful supervision of concrete handling, curing times and general construction practice will reduce the risk from concrete-related impacts so that the likelihood of impacts is best described as low. Just like cement, the implementation of general construction practice will ensure that the likelihood of pollution in a well-equipped, maintained and managed construction site is low. Some key measures presented in the CEMP are detail below.

- All machinery fuel on site will be stored in appropriate bunded container during the works

- No on-site concrete batching will be permitted at the proposed works areas. Concrete will instead be transported to the site within a concrete truck. Quick setting concrete mixes will be used to reduce the risk of wash-out. Concrete trucks will be washed down to a mortar bin/skip which has been examined in advance for any defects. The wash down area will not be located within 50 m of any waterbody or drainage
- Oil spill accident response equipment will be held on the jack-up barge, floating platform and dredge spoil barge. At a minimum the response equipment will include the following: absorbent mats, waste bags, oil splash goggles, gloves and vinyl or rubber shoe covers to protect the user from the harmful effects of the spilled material
- A Construction Waste Management Plan (as part of the overall CEMP) which will provide for the segregation of all wastes into recyclable, biodegradable and residual wastes. All operations at the site will be managed and programmed in such a manner to minimise waste production and maximise recycling in order to prevent potential ground pollution. Wastes sent off site for recovery or disposal will only be conveyed by an authorised waste contractor and transported from the proposed development site to an authorised site of recovery/disposal in a manner which will not adversely affect the environment
- Where necessary bunds for the storage of chemicals will be lined or constructed of materials resistant to damage by the materials stored therein. Additionally, the capacity of such bunds will be a minimum of 110% of the volume of the largest container stored therein. Bunds will be designed in accordance with Environmental Protection Agency guidance in relation to the storage of potentially polluting liquids ("IPC Guidance Note on Storage and Transfer of Materials for Scheduled Activities", 2004)
- Where refuelling is to take place, it will where possible be within a designated impermeable, bunded area, away from all drains. Where machinery require refuelling outside of this area, fuel will be transported in a mobile double skinned tank. An adequate supply of spill kits and hydrocarbon adsorbent packs will be stored in this area. All relevant personnel will be fully trained in the use of this equipment
- Drip trays will be used where hydrocarbons are being used for machinery maintenance/refuelling
- Portable chemical toilets will be provided for the duration of the works and all waste material will be removed from site and disposed of to an appropriately licensed facility.

### 3.6.2. Noise Mitigation Measures

To mitigate any potential impact to marine mammal species DAFM and the appointed Contractor will implement relevant impact mitigation and monitoring measures in relation to marine mammals as outlined in DAHG Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters (DAHG, 2014[70]).

The DAHG (2014) guidance on measures required to manage the risk of man-made sound to marine mammals relates to the following human activities that can introduce sound into the marine environments at levels that may harm and/or disturb species that are legally protected:

- geophysical acoustic surveys
- dredging
- drilling activities
- pile driving
- blasting activities

The appointed Contractors will adhere to DAHG (2014) guidance on mitigation measures and monitoring to be implemented for dredging and pile driving. This includes the use of MMOs and operational protocols. The implementation of the relevant mitigation measures outlined for geophysical acoustic surveys will mitigate the risk of potential impacts of trench excavation and cable laying noise to marine mammals from the proposed project. In summary, trench excavation and cable laying operations shall not commence until after the successful completion of pre-start visual monitoring, undertaken by MMOs as per DAHG guidance, with no marine mammals observed over the required monitoring period in the monitored zone. Once pre-start monitoring requirements have been achieved, operation can be commenced.

## *3.7. Outcomes and Conclusions*

A total of 4 QI marine mammal species of 19 SCI bird species for which potential significant impacts could occur has been identified.

With regard QI marine mammal species, mitigation measures have been proposed, with the purpose of avoiding impacts on the QI species. The likely success of these measures was also considered and no difficulties in their effective implementation were identified.

With regard SCI bird species it was concluded that there will be no significant adverse effects (*i.e.* no mitigation measures are required.

[70] DAHG 2014 Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters https://www.npws.ie/sites/default/files/general/Underwater%20sound%20guidance_Jan%202014.pdf

The provisions of Article 6 of the 'Habitats' Directive 92/43/EC (2000) defines 'integrity' as the 'coherence of the site's ecological structure and function, across its whole area, or the habitats, complex of habitats and/or population of species for which the site is or will be classified'. The European Commission publication Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (EC, 2018), states that the integrity of the site can be usefully defined as the coherent sum of the site's ecological structure, function and ecological processes, across its whole area, which enables it to sustain the habitats, complex of habitats and/or populations of species for which the site is designated.

Following a comprehensive evaluation of the potential direct, indirect and cumulative impacts on the QIs and SCIs in light of their Conservation Objectives, it has been concluded that the Proposed Development will not have an adverse effect on the integrity of the site or any other European site.

This NIS has examined and analysed, in light of the best scientific knowledge, with respect to those European sites within the ZoI of the Proposed Development, the potential impact sources and pathways, how these could impact on the QIs and SCIs and whether the predicted impacts would adversely affect the integrity of the European sites.

Mitigation measures are set out within this report and the outline CEMP (see **Appendix 3**)**,** and they ensure that any impacts on the Conservation Objectives of European sites will be avoided during the construction and operation of the Proposed Development such that there will be no risk of adverse effects on these European sites.

It has been objectively concluded by AQUAFACT, following an examination, analysis and evaluation of the relevant information, including in particular the nature of the predicted impacts from the Proposed Development and with the implementation of the mitigation measures proposed, that the Proposed Development does not pose a risk of adversely affecting (either directly or indirectly) the integrity of any European site, either alone or in combination with other plans or projects and there is no reasonable scientific doubt in relation to this conclusion.

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