

Appendix 5B

Aquafact 2017 AA Screening Report



**Appropriate Assessment Stage 1
Screening Report
For the Rossaveal Harbour Development,
Rossaveal, Co. Galway**

Produced by

AQUAFAC International Services Ltd

On behalf of

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1. Introduction

1.1. *Requirement for an Article 6 Assessment*

The Birds Directive (2009/147/EC) and the Habitats Directive (92/42/EEC) put an obligation on EU Member States to establish the Natura 2000 network of sites of highest biodiversity importance for rare and threatened habitats and species across the EU. In Ireland, the Natura 2000 network of European sites comprises Special Areas of Conservation (SACs, including candidate SACs) and Special Protection Areas (SPAs, including proposed SPAs). SACs are selected for the conservation of Annex I habitats (including priority types which are in danger of disappearance) and Annex II species (other than birds). SPAs are selected for the conservation of Annex I birds and other regularly occurring migratory birds and their habitats. The annexed habitats and species for which each site is selected correspond to the qualifying interests of the sites and from these the conservation objectives of the site are derived.

The Birds and Habitats Directives set out various procedures and obligations in relation to nature conservation management in Member States in general, and of the Natura 2000 sites and their habitats and species in particular. A key protection mechanism is the requirement to consider the possible nature conservation implications of any plan or project on the Natura 2000 site network before any decision is made to allow that plan or project to proceed. Not only is every new plan or project captured by this requirement but each plan or project, when being considered for approval at any stage, must take into consideration the possible effects it may have in combination with other plans and projects when going through the process known as Appropriate Assessment (AA).

The obligation to undertake Appropriate Assessment (AA) derives from Article 6(3) and 6(4) of the Habitats Directive, and both involve a number of steps and tests that need to be applied in sequential order. Article 6(3) is concerned with the strict protection of sites, while Article 6(4) is the procedure for allowing derogation from this strict protection in certain restricted circumstances. Each step in the assessment process precedes and provides a basis for other steps. The results at each step must be documented and recorded carefully so there is full traceability and transparency of the decisions made.

Rossaveal Harbour is not located within a Natura 2000 site however the Connemara Bog Complex cSAC and SPA (Site Code IE002034 and IE004181) are located c. 2.5 northeast, the Kilkieran Bay and Islands cSAC (Site Code: IE002111) is located c. 4.5km to the west, the Inishmore Island cSAC (Site Code: IE000213) is located c. 12.5km to the southwest and the Inishmore SPA (Site Code: IE004152) is located c. 15km to the southwest and For this reason, it is regarded as necessary that the proposal should be subject to the AA process.

1.2. The Aim of this Report

The purpose of this report is to inform the AA process as required under the Habitats Directive (92/43/EEC) in instances where a plan or project may give rise to significant impacts on a Natura 2000 site. This screening report aims to inform the Appropriate Assessment process in determining whether the proposed works, both alone and in combination with other plans or projects, are likely to have a significant impact on the Natura 2000 sites in the study area in the context of their conservation objectives and specifically on the habitats and species for which the sites have been designated. The Screening Assessment provides a description of the proposed activity, a description of the receiving environment, it identifies the Natura 2000 sites within and close to the potential impact zone and it considers the potential for adverse effects on the conservation objectives and qualifying interests within the affected Natura 2000 site(s). If the effects are deemed to be significant, potentially significant or uncertain or where the screening process becomes overly complicated, then the preparation of an NIS to inform the AA process (Stage 2) is required under the requirements of Article 6(3) of the Habitats Directive.

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

- Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities (DEHLG 2009, Revised February 2010);
- Marine Natura Impact Statements in Irish Special Areas of Conservation – A Working Document. April 2012 (DAHG, 2012)
- EU Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC (EC, 2007);
- Assessment of plans and projects significantly affecting Natura 2000 sites. Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC (EC, 2002); and
- Managing Natura 2000 Sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (EC, 2000).

The report is laid out as follows:

Section 2 outlines the Appropriate Assessment procedure. Section 3 provides a description of the proposal, Section 4 provides a description of the receiving environment, Section 5 identifies the relevant Natura 2000 sites and their Qualifying Interests (QIs)/Special Conservation Interests (SCIs), Section 6 details the potential

impacts of the proposal and Section 7 contains the Screening Assessment and Screening Statement. Section 8 is a summary.

2. Appropriate Assessment Process

There are four separate stages to undertaking an AA as outlined in current EU and DEHLG guidance:

1. Appropriate Assessment Screening
2. Appropriate Assessment – Natura Impact Statement
3. Assessment of Alternatives in cases where significant impact cannot be prevented
4. Where no alternatives exist, an assessment of compensatory issues in the case of projects or plans which can be considered to be necessary for imperative reasons of overriding public interest (IROPI)

This document serves as Stage 1 Appropriate Assessment Screening.

3. Description of Proposed Plan

The proposed deep water quay will comprise a vertical faced concrete structure constructed using box caissons, most likely 13 concrete caissons. The quay will provide 200m of outside berthing frontage, with a minimum alongside depth of 12m provided by a 30m wide x 200m long pocket directly adjacent to the quay, dredged to a depth of -12m Chart Datum (mCD). The vessel approach channel and the marine area forward of the -12mCD dredged pocket will be dredged to a depth of -8mCD, with a turning circle of 200m diameter provided. Figure 3.1 shows the layout of the proposed deep water quay.

These spatial dimensions of the proposed quay are considered appropriate for facilitating modern day fishing vessels, such as deep sea trawlers and reefer vessels, up to the following size:

- Length Overall (LOA) : 118m;
- Beam: 17.5m; and
- Draught: 6.5m.

The berthing frontage is planned to be suitable for vessels berthing directly alongside, though double banking of vessels may also occur. It is envisaged that fendering on the outside berth would be arch fenders at an

appropriate spacing (e.g. approx. 4.5m). If necessary, fendering could be supplemented with removable floating fenders for occasional calls by larger vessels. The surface of deep water quay will be a 36m wide x 200m long open area with a concrete slab finish as is typical for quays of this nature.

Low concrete sea walls will be constructed along the northern and southern boundaries of the development to mitigate wave overtopping of the quay surface. It is estimated that the height of the sea walls will be in the range 0.5m to 1.5m above the finished surface level of the quay.

The proposed dredging works to the approach channel and area forward of the quay will generate loose granite rock and other material (mainly sands and gravels) that will be suitable for re-use in the construction of the approach causeway and reclaimed land area behind the quay, which will link it to the shore.

Given the granite bedrock in the proposed dredged area, drilling and blasting will be required to break up the rock prior to removal by the dredger. The most appropriate type of blasting pontoon for the Rossaveal site conditions is the jack-up pontoon, with mounted hydraulic marine drilling towers. It is envisaged that two or three drilling rigs will be employed on the jack-up pontoon to achieve greater efficiency. A backhoe dredger is proposed to remove the broken up rock and soft sediments at the site.

The dredged material will be loaded by the backhoe dredger onto a self-propelled barge. Once loaded, the barge will then sail to the adjacent shoreline where it will either 1) bottom dump the dredged material directly on the reclamation location (if water depths permit) or 2) will be unloaded by land based plant which will then place the material within the reclamation location.

The approach causeway along the southern side of the onshore reclamation will be a rock fill structure constructed using the rock generated by the dredging works. The causeway will be hard surfaced and will connect the deep water quay to the existing harbour road and provide access to the quay for fisheries vehicles. A rock armour revetment will be provided along the southern side of the approach causeway to protect it from erosion and wave action. A vehicle safety barrier will be installed along the southern side of the access road.

Access to the deep water quay will be via the existing access arrangements within Rossaveal Harbour.

The dredging works are estimated to take 9 months in total and the deep water quay construction is expected to take just 14 months. Both phases will occur consecutive. In total, all works should be complete in 25 months.

Due to environmental sensitivities (salmon migration periods), blasting and drilling activities should be confined to the months of August to March (inclusive). Dredging can occur outside of these months as it is a far less destructive activity.

A detailed description of the project including the construction and operational phases can be found in Appendix 1.

4. Description of Receiving Environment

4.1. Benthic Habitat & Species

Figure 4.1 shows the locations of the sites that were surveyed as part of an historical Environmental Impact Statement (RPS, 2002) for Rossaveel Harbour and Figure 4.2 shows the distribution of biotopes in the area of the proposed deep water quay. The littoral zone in the area of the proposed deep water quay comprises of boulders and is relatively sheltered to wave action. The upper shore consists of a narrow band of *Pelvetia canaliculata* (SLR.Pel), with the spiral wrack *Fucus spiralis* (SLR.Fspi) below it. In parts, barren rock or yellow and grey lichens dominate the upper shore. The midshore is dominated by dense knotted wrack *Ascophyllum nodosum* (SLR.AscAsc), which supports the epiphytic algae *Vertebrata lanosa*. The green algae *Cladophora rupestris* is present on the rocks below the *A. nodosum* zone. Within the *A. nodosum* zone, raised areas of bedrock are colonised by barnacles and limpets (ELR.BPat). A narrow band of the serrated wrack *Fucus serratus* is present below the *A. nodosum* zone and below that kelp *Laminaria digitata* (MIR.Ldig) is present in the sublittoral fringe. Intertidal surveys carried out by AQUAFAC in 2013 provided very similar results (AQUAFAC, 2015a).

Beyond the *L. digitata* zone, a band of sheltered infralittoral rock (SIR) is present which is dominated by sugar kelp *L. saccharina*. The main channel is predominantly coarse gravel and sand with decaying red and green seaweeds with tunicates on them and anemones buried in the sand (IMX.An) and the starfish *Asterias rubens* on the substrata. The pinnate sea pen *Virgularia mirabilis* was also recorded from the area. *V. mirabilis* is a characteristic species of the sea pen and burrowing megafauna communities habitat which is listed on the OSPAR List of threatened and/or declining species and habitats (OSPAR 2008). There is also a patch of circalittoral muds in the centre of the channel. The western margin of the channel is mainly dominated by a mixed substratum with *L. saccharina* and mixed filamentous algae (IMX.KSwMx). There are also patches of sandy gravel dominated by seagrass *Zostera marina* along this western margin (IMS.Zmar). The *Zostera* beds in the southern part of the western margin are extensive where as the beds in the northern part are quite sparse.

AQUAFAC re-surveyed the area in October 2016 (grab survey) and February 2017 (drop-down video) to reconfirm the habitats and communities present (see Figure 4.1 for station locations). Sediment type varied between gravelly muddy sand and gravelly sand within the dredge footprint. North of the footprint, muddier sediments dominated. The faunal results revealed a highly diverse and species rich community characterised by the crustaceans *Metaphoxus simplex*, *Euphilomedes sinister*, *Microdeutopus versiculatus*, *Cheirocratus* sp.,

Macrochaeta clavicornis and *Tanaopsis graciloides*, the polychaetes *Mediomastus fragilis*, *Euclymene lombricoides*, *Pholoe inornata*, *Aponuphis bilineata*, *Galathowenia oculata*, *Melinna palmata* and the bivalves *Thyasira flexuosa* and *Kurtiella bidentata*.

V. mirabilis was not recorded at any of the sites in 2016 or 2017. All species recorded are common and typical of gravelly sand and muddy sand communities.

Zostera beds are recognised as a characteristic component of five Annex I habitats in the EU Habitats Directive (92/43/EEC). In addition, *Zostera* bed habitats are included on the OSPAR List of threatened and/or declining species and habitats (OSPAR agreement 2008-6).

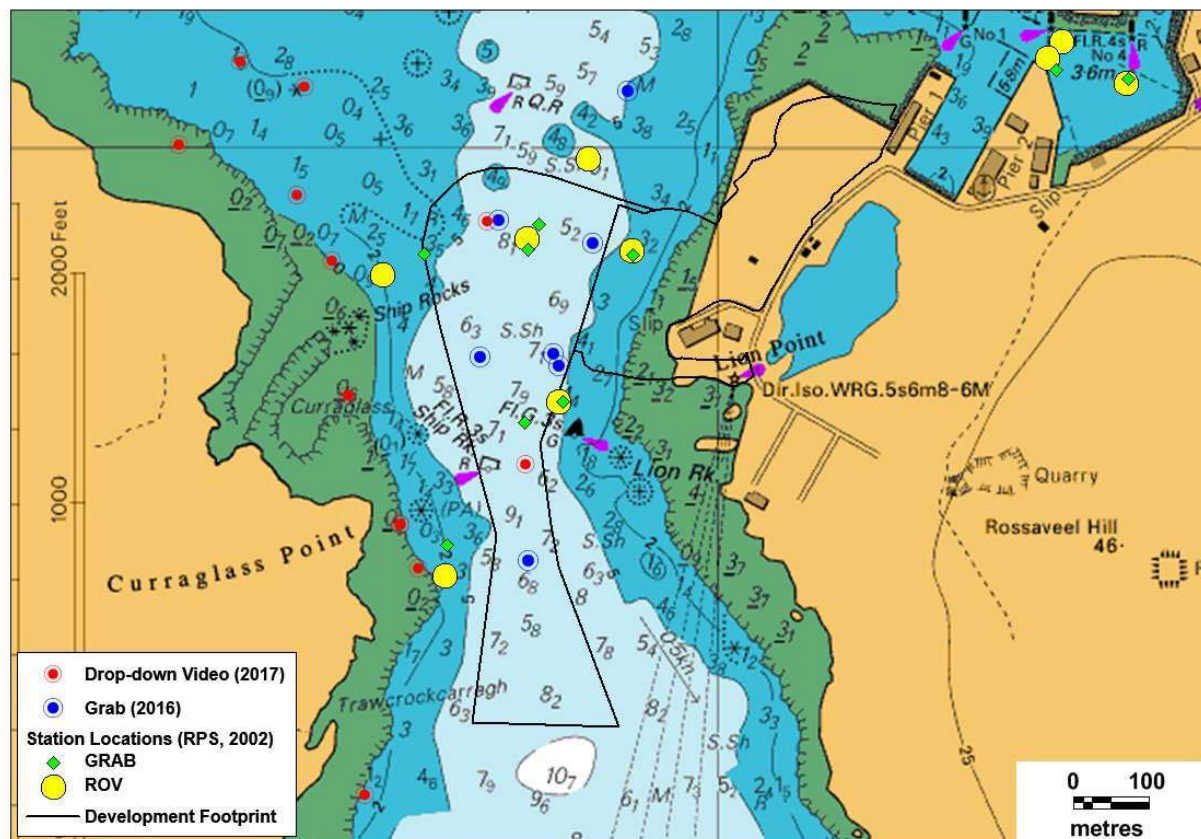


Figure 4.1: Location of 2002, 2016 and 2017 sampling sites.

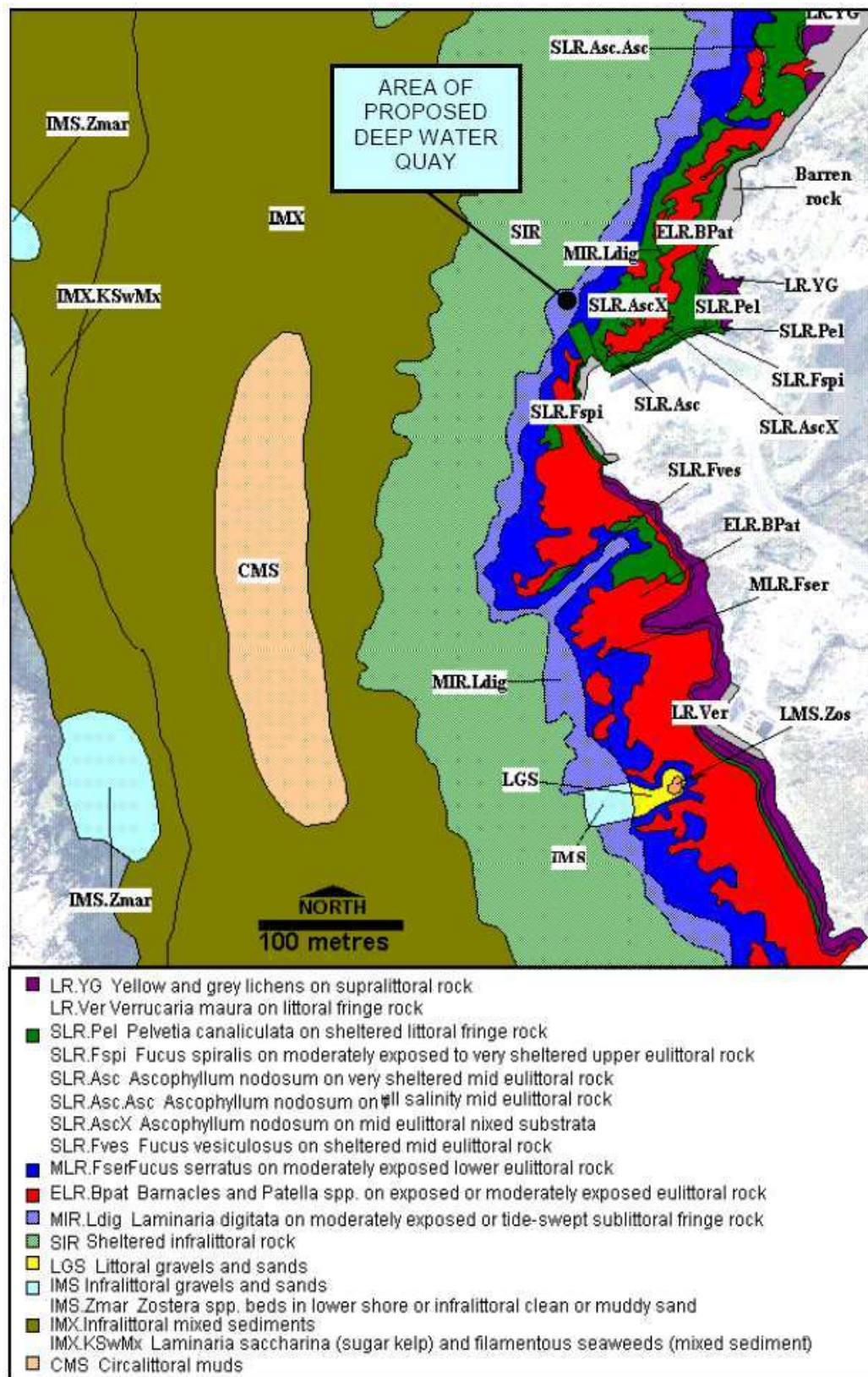


Figure 4.2: Biotopes recorded from the littoral and sublittoral surveys in the vicinity of the proposed deep water quay at Rossaveal (RPS, 2002).

4.2. Marine Mammals

Harbour seals *Phoca vitulina* are known to haul out in Cashla Bay (Cronin *et al.*, 2004) and these haul out locations can be seen in Figure 4.4. Numbers ranged from 1 to 12 in 2003 (Cronin *et al.*, 2004). More recent monitoring surveys recorded maximum counts in inner Cashla Bay of 108, 77 and 77 in 2009, 2010 and 2011 respectively (NPWS, 2012). Harbour seals haul out and moult between August and September. Harbour seals are a qualifying interest of the nearby Kilkieran Bay & Islands cSAC. Grey seals *Halichoerus grypus* have the potential to occur within Cashla Bay; however, this species prefers offshore islands as haul out and breeding sites and there are no known haul out or breeding sites in Cashla Bay (O’Cadhla *et al.*, 2005; O’Cadhla & Strong, 2007).

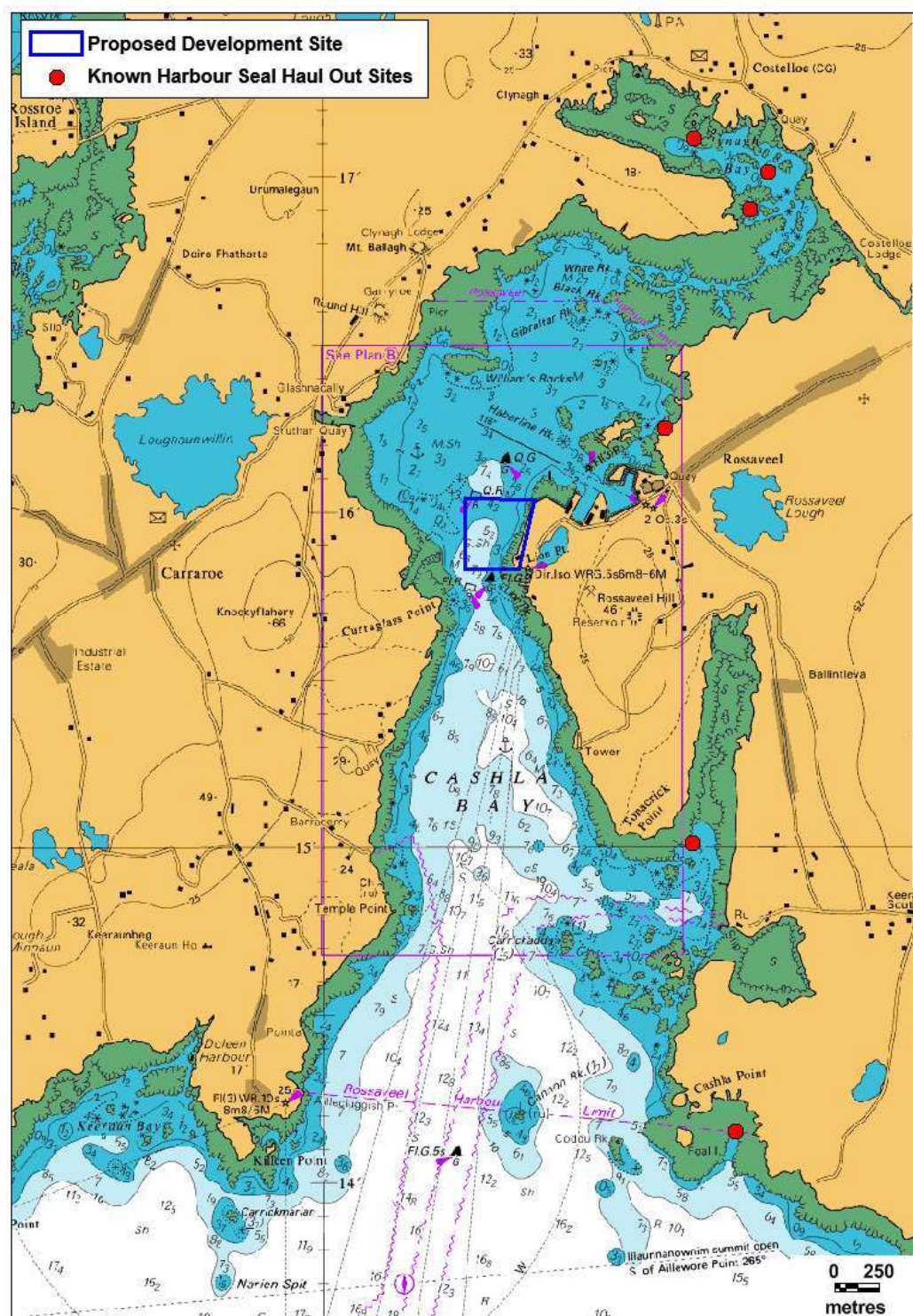


Figure 4.3: Known Harbour seal haul out sites in the vicinity of the proposed development.

A number of small cetaceans have the potential to occur in the vicinity of the proposed development. Berrow *et al.* (2002) reported that Harbour porpoises *Phocoena phocoena* were the most frequently recorded species in Galway Bay, with most records reported between June and August with fewer sightings in the winter and spring. Berrow *et al.* (2002) also reported concentrations of sightings of Bottlenose dolphins *Tursiops truncatus* in Galway Bay, with sightings increasing rapidly from April to June, suggesting an inshore movement, which peaked in August (O'Brien, 2013). However, in more recent years O'Brien (2009) found that this was not the case. Harbour porpoises were the most regularly recorded species with dolphin sightings of any species being very rare. Berrow *et al.* (2008) showed an overall density of porpoises of 0.73 per km² with an abundance of 402 ± 84 . In addition to these more common species, an additional 14 species have been recorded from Galway Bay and these include common dolphin *Delphinus delphis*, killer whale *Orcinus orca*, minke whale *Balaenoptera acutorostrata*, pilot whale *Globicephala macrorhynchus*, Risso's dolphin *Grampus griseus*, sperm whale *Physeter macrocephalus* and false killer whale *Pseudorca crassidens* (O'Brien, 2013). All cetaceans are protected under Annex IV of the EU Habitats Directive while Bottle-nosed dolphin and Harbour Porpoise are also listed under Annex II.

Otter *Lutra lutra*, an Annex II species which is a qualifying interests of the Kilkieran Bay and Islands cSAC and the Connemara Bog Complex cSAC does have the potential to forage within the coastal strip of Cashla Bay and this includes the area of the proposed deep water quay.

4.3. Fish & Shellfish

The Atlantic salmon, a species listed under Annex II of the E.U. Habitats Directive and a qualifying interest of the Connemara Bog Complex cSAC, occurs in many of the rivers within the site. The Cashla and Ballynahinch systems are good examples of western acidic spate rivers which support the species. Good spawning and nursery grounds for the species occur in these systems. Salmon will pass through the proposed development area when migrating to and from the Cashla River. Smolts head out to sea between March and June and adults return to the river between March and August.

5. Identification of Relevant Natura 2000 Sites

5.1. Relevant Natura 2000 Sites and Qualifying Interests/Special Conservation Interests

Adopting a precautionary principle, the Natura 2000 sites within 15km of the proposed development site were included in this assessment. All are listed in Table 5.1 and can be seen in Figure 5.2. Of these, the Natura 2000

sites deemed relevant and **screened in** are those which have Conservations Objectives or Qualifying Interests (Qis)/Special Conservation Interests (SCIs) which may be impacted by the proposed development site.

Those sites or individual qualifying interests that are screened out at this stage (primarily as a result of being too great a distance away from the site and having different habitat requirements) are not assessed further. Sites/qualifying interests that are screened in for further assessment are highlighted in Table 5.1.

Table 5.1: Identification of relevant Natura 2000 sites. All those screened in are highlighted.

Natura 2000 Site	Qualifying Interest/	Distance	Potential Impacts	Screened In / Out
Inishmore Island cSAC (IE000213)	Coastal lagoons [1150]	c. 12.7km southwest of proposed development site	None – No pathway for interaction due to distance	Screened Out
	Reefs [1170]		None – No pathway for interaction due to distance	Screened Out
	Perennial vegetation of stony banks [1220]		None – No pathway for interaction due to distance	Screened Out
	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]		None – No pathway for interaction due to distance	Screened Out
	Embryonic shifting dunes [2110]		None – No pathway for interaction due to distance	Screened Out
	Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120]		None – No pathway for interaction due to distance	Screened Out
	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]		None – No pathway for interaction due to distance	Screened Out
	Dunes with <i>Salix repens</i> ssp. <i>Argentea</i> (<i>Salicion arenariae</i>) [2170]		None – No pathway for interaction due to distance	Screened Out
	Humid dune slacks [2190]		None – No pathway for interaction due to distance	Screened Out
	Machairs (* in Ireland) [21A0]		None – No pathway for interaction due to distance	Screened Out
	European dry heaths [4030]		None – non-marine/coastal, no pathway for interaction	Screened Out
	Alpine and Boreal heaths [4060]		None – non-marine/coastal, no pathway for interaction	Screened Out
	Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210]		None – non-marine/coastal, no pathway for interaction	Screened Out
	Lowland hay meadows (<i>Alopecurus pratensis</i> , <i>Sanguisorba officinalis</i>) [6510]		None – non-marine/coastal, no pathway for interaction	Screened Out
	Limestone pavements [8240]		None – non-marine/coastal, no pathway for interaction	Screened Out
	Submerged or partially submerged sea caves [8330]		None – No pathway for interaction due to distance	Screened Out

Natura 2000 Site	Qualifying Interest/	Distance	Potential Impacts	Screened In / Out
Inishmore Island cSAC (IE000213) (cont'd)	<i>Vertigo angustior</i> (Narrow-mouthed Whorl Snail) [1014]		None – non-marine/coastal, no pathway for interaction	Screened Out
Connemara Bog Complex cSAC (IE002034)	Coastal lagoons [1150]	c. 2.2km northeast of proposed development site	None – No pathway for interaction due to distance	Screened Out
	Reefs [1170]		None – No pathway for interaction due to distance	Screened Out
	Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) [3110]		None – non-marine/coastal, no pathway for interaction	Screened Out
	Natural dystrophic lakes and ponds [3160]		None – non-marine/coastal, no pathway for interaction	Screened Out
	Water courses of plain to montane levels with the <i>Ranunculus fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation [3260]		None – non-marine/coastal, no pathway for interaction	Screened Out
	Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010]		None – non-marine/coastal, no pathway for interaction	Screened Out
	European dry heaths [4030]		None – non-marine/coastal, no pathway for interaction	Screened Out
	<i>Molinia</i> meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) [6410]		None – non-marine/coastal, no pathway for interaction	Screened Out
	Blanket bogs (* if active bog) [7130]		None – non-marine/coastal, no pathway for interaction	Screened Out
	Transition mires and quaking bogs [7140]		None – non-marine/coastal, no pathway for interaction	Screened Out
	Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]		None – non-marine/coastal, no pathway for interaction	Screened Out
	Alkaline fens [7230]		None – non-marine/coastal, no pathway for interaction	Screened Out
	Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0]		None – non-marine/coastal, no pathway for interaction	Screened Out
	<i>Euphydryas aurinia</i> (Marsh Fritillary) [1065]		None – non-marine/coastal, no pathway for interaction	Screened Out
	<i>Salmo salar</i> (Salmon) [1106]		Potential – migrate through Cashla Bay	Screened In

Natura 2000 Site	Qualifying Interest/	Distance	Potential Impacts	Screened In / Out
Connemara Bog Complex cSAC (IE002034) (cont'd) Kilkieran Bay & Islands cSAC (IE002111)	<i>Lutra lutra</i> (Otter) [1355]		Potential – have the potential to forage in Cashla Bay	Screened In
	<i>Najas flexilis</i> (Slender Naiad) [1833]		None – non-marine/coastal, no pathway for interaction	Screened Out
	Mudflats and sandflats not covered by seawater at low tide [1140]	c. 4.6km southwest of proposed development site	None – No pathway for interaction due to distance	Screened Out
	Coastal lagoons [1150]		None – No pathway for interaction due to distance	Screened Out
	Large shallow inlets and bays [1160]		None – No pathway for interaction due to distance	Screened Out
	Reefs [1170]		None – No pathway for interaction due to distance	Screened Out
	Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1330]		None – No pathway for interaction due to distance	Screened Out
	Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410]		None – No pathway for interaction due to distance	Screened Out
	Machairs (* in Ireland) [21A0]		None – No pathway for interaction due to distance	Screened Out
	Lowland hay meadows (<i>Alopecurus pratensis</i> , <i>Sanguisorba officinalis</i>) [6510]		None – non-marine/coastal, no pathway for interaction	Screened Out
	<i>Lutra lutra</i> (Otter) [1355]		None – No pathway for interaction due to distance	Screened Out
	<i>Phoca vitulina</i> (Harbour Seal) [1365]		Has the potential to forage/moult in Cashla Bay	Screened In
	<i>Najas flexilis</i> (Slender Naiad) [1833]		None – non-marine/coastal, no pathway for interaction	
	Barnacle Goose (<i>Branta leucopsis</i>) [A045]	c. 14km west of proposed development site	None – no potential for interaction with wintering or breeding sites	Screened Out
Slyne Head to Ardmore Point SPA (IE004159)	Sandwich Tern (<i>Thalasseus (Sterna) sandvicensis</i>) [A191]			
	Arctic Tern (<i>Sterna paradisaea</i>) [A194]			
Connemara Bog Complex SPA (IE004181)	Little Tern (<i>Sterna albifrons</i>) [A195]	c. 6km northeast of proposed development site	None - no potential for interaction with breeding sites	Screened Out
	Cormorant (<i>Phalacrocorax carbo</i>) [A017]			
	Merlin (<i>Falco columbarius</i>) [A098]			
	Golden Plover (<i>Pluvialis apricaria</i>) [A140]			
	Common Gull (<i>Larus canus</i>) [A182]			

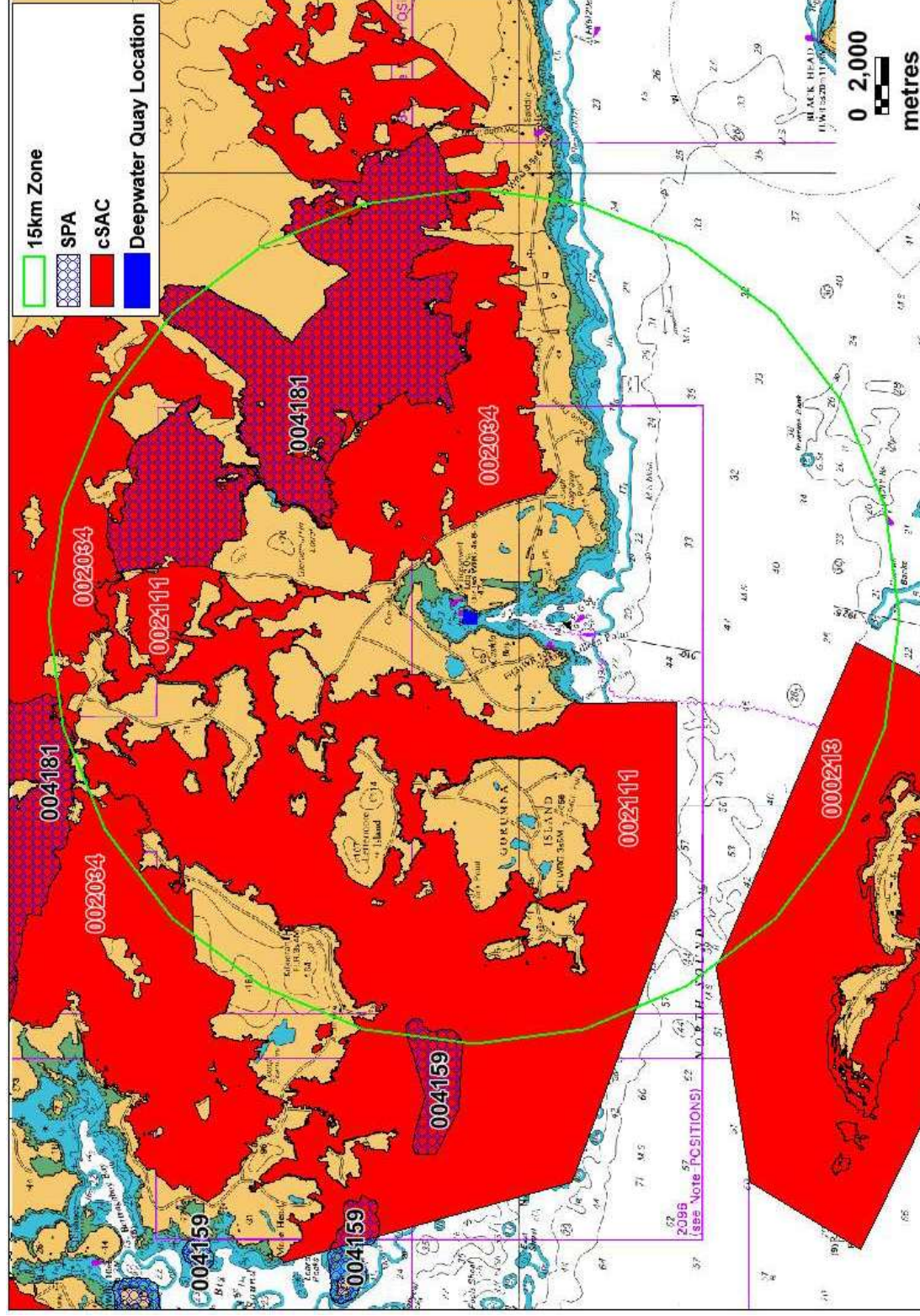


Figure 5.1: Location of all cSACs and SPAs within 15km of the proposed deep water quay location.

5.2. Designated Sites of Relevance

Two Natura 2000 sites from Table 5.1 above have been screened in for further assessment. These Natura 2000 site and their QIs/SCIs which have the potential to be impacted are listed below:

- Connemara Bog Complex cSAC (IE002034): Salmon *Salmo salar* (1106) and otter *Lutra lutra* (1355)
- Kilkieran Bay & Islands cSAC (IE002111): Harbour seal *Phoca vitulina* (1365)

After an initial review of Natura 2000 sites, it was considered that “no pathway” exists by which the proposed deep water quay could impact upon any other designated site and therefore only these Natura 2000 sites and the QIs listed above were brought forward for further assessment.

5.3. Characteristics of Relevant Sites

The characteristics of the relevant sites are described below. The Conservation Objectives of the sites are discussed in Section 7 Screening Assessment in the context of the potential impacts on them.

5.3.1. Connemara Bog Complex cSAC (IE002034)

The Connemara Bog Complex SAC is a large site encompassing the majority of the south Connemara lowlands in Co. Galway. The site is bounded to the north by the Galway-Clifden road and stretches as far east as the Moycullen-Spiddal road. The site supports a wide range of habitats, including extensive tracts of western blanket bog, which form the core interest, as well as areas of heath, fen, woodlands, lakes, rivers and coastal habitats.

The coastal features of relevance to the proposed development is the Atlantic salmon *Salmo salar* and the otter *Lutra lutra*. The Atlantic salmon, a species listed under Annex II of the E.U. Habitats Directive, occurs in many of the rivers within the site. The Cashla and Ballynahinch systems are good examples of western acidic spate rivers which support the species. Good spawning and nursery grounds for the species occur in these systems. Salmon migrate through Cashla Bay en-route to and from the Cashla River. Otter have been recorded as occurring in the Connemara Bog Complex and have the potential to extend their range into the coastal parts of Cashla Bay.

5.3.2. Kilkieran Bay & Islands cSAC (IE002111)

Kilkieran Bay and Islands cSAC is located just north of Galway Bay and extends from Keeraun Point, south of Carraroe, westwards to Mace Head, west of Carna, all in Co. Galway. The site contains a large area of open marine water, many islands and rocky islets, and the coastline is much indented with a series of bays (notably the interconnected Kilkieran Bay and Greatman's Bay), channels and inlets. The entrances of the bays face the prevailing south-westerly winds and they are subject to strong tidal streams as the sea funnels between islands and through channels. A number of streams, lakes and lagoons drain into the bays. The bedrock of the site is igneous, composed of granite, felsite and other intrusive rocks rich in silica. Generally, the site has a rocky shoreline which in most places gives way to mud in shallow water. The surrounding land is dominated by lowland blanket bog, with rock outcrops and small hills to the north.

The coastal features of relevance to the proposed development is the harbour seal *Phoca vitulina*. While the breeding, moulting and resting sites with the cSAC are well outside the proposed development area (c. 6km northwest), the species does haul out in parts of Cashla Bay. There are 6 harbour seal haul out sites in Cashla Bay (the nearest of which is c. 1km to the northeast) and they can be seen above in Figure 4.3.

6. Potential Impacts of the Development

As the construction site is not located within a Natura 2000 site, the loss of habitat in the footprint of the quay, dredge area and infilling area will not have any impact on the integrity of a Natura 2000 site. Indirect impacts which have the potential to impact on nearby Natura 2000 sites or their qualifying interest species are discussed below.

6.1.1. Noise

Noise generated during the construction of the proposed development will come from blasting, drilling, dredging and vessel noise. The descriptions of these activities are taken from the NPWS guidance document on the risk of man-made sound to marine mammals (NPWS, 2014a).

6.1.1.1. Blasting

The use of explosives or other blasting methods to blast and break sections of coastal bedrock is relatively common (NPWS, 2014a). Man-made explosions mainly produce pulsed sounds at low frequencies (several Hz to several kHz), which are detectable by a wide range of marine mammal species. Active blasting normally occurs intermittently in a fixed area for a prolonged period of hours, days or weeks depending on the required operation, with intervening periods of preparation, substrate removal, evaluation and often drilling.

Preparation for underwater blasting usually takes place from fixed platforms (*i.e.* rig, platform or barge) which are normally moved a safe distance away for the time of explosion.

Pulsed sounds created by coastal or underwater explosions have been reported to contain significantly high SPLs, high SELs and very rapid rise times (Richardson *et al.*, 1995) and they are acknowledged to be among the highest energy, man-made sounds introduced into the sea. While the duration and extent of underwater sound transmission from an individual explosion is variable depending on the type of plan or project, blast location features and the mass of explosive charges used, source sound pressure levels may be significantly higher than from many other anthropogenic sources, commonly ranging between 250-300 dB re: 1 μ Pa (Hildebrand, 2005; Richardson *et al.*, 1995; OSPAR, 2009a; 2009b). Such plans or projects can incur the highest known level of risk to marine mammals from an anthropogenic sound source, with energy introduced at sufficient magnitude and velocity to cause immediate PTS in a receiving marine mammal. Explosions also produce a physical shock wave at close distances that propagates differently through the environment than does the acoustic energy and can result in direct traumatic or lethal injury to marine mammal (Richardson *et al.*, 1995; Ketten, 1995). Blasting activity in the marine environment therefore has the potential in most, if not all, circumstances to introduce pulsed sounds at levels that may impact very significantly upon marine mammal individuals and/or populations.

6.1.1.2. Drilling

Drilling activity is common in coastal and marine construction and infrastructure works and will be required for the creation of boreholes for explosive blasting. Conventional drilling operations take place from both fixed and moveable platforms (*i.e.* drill rigs, semi-submersible platforms, barges and ships) but the scale of drilling activity and associated acoustic output can be very variable depending on the type of development, drill depth and substrates involved, for example. The use of fixed or dynamically-positioned platforms and associated vessel activity can combine further to make drilling operations a potentially significant source of anthropogenic sound.

Drilling is generally acknowledged to produce moderate levels of continuous omnidirectional sound at low frequency (several tens of Hz to several thousand Hz and up to c.10 kHz). Source sound pressure levels have generally been reported to lie within the 145-190 dB re: 1 μ Pa range (Richardson *et al.*, 1995; OSPAR, 2009a; 2009b). While sound exposure levels from such operations are thought to be below that expected to cause injury to a marine mammal, they have the potential to cause lower level disturbance, masking or behavioural impacts, for example.

Drilling operations comprise a static activity that tends to take place in a fixed area for a prolonged or intermittent period of days, weeks or several months depending on the required operation. This activity therefore has the potential in most circumstances to introduce continuous sounds at levels that may impact upon marine mammal individuals and/or populations, the degree of which will also depend on operational features such as the location, water depth, time-scale, etc. An evaluation of risk to marine mammals from such plans or projects either in coastal situations or further offshore is essential in all cases.

6.1.1.3. Dredging

The excavation of sand, gravel, loose rock and other material from the seabed during dredging operations is common, particularly in coastal waters where harbour works and channel maintenance commonly require such activity. Many different types of dredging device are in operation worldwide ranging from hopper dredges to suction, bucket or grab-type arrangements.

In addition to the sound from attendant vessels, dredging operations have been reported to produce low frequency omnidirectional sound of several tens of Hz to several thousand Hz (and up to approximately 20 kHz) at sound pressure levels of 135-186 dB re: 1 μ Pa (Richardson *et al.*, 1995; OSPAR, 2009a; 2009b). Therefore some coastal dredging operations can be detected at received levels (RL) exceeding ambient sound more than 10km from shore (Richardson *et al.*, 1995). While sound exposure levels from such operations are thought to be below that expected to cause injury to a marine mammal, they have the potential to cause lower level disturbance, masking or behavioural impacts, for example.

Dredging activity tends to occur in a fixed area for a prolonged period of days or weeks. Therefore, it has the potential to introduce continuous anthropogenic sound at levels that may impact upon marine mammal individuals and/or local populations and the risk of acoustic impacts associated with this activity should be considered to ensure good environmental management.

6.1.1.4. Vessel Noise

Dredging vessels are typically less than 100m in length. Typical broadband source levels for these mid-size vessels are generally in the 165 - 180 dB (re: 1 μ Pa) range (Richardson *et al.*, 1995; Kipple & Gabriel, 2003; 2004; Heitmeyer *et al.*, 2004). There is considerable variability in the associated frequency spectra, although medium-sized ships tend to be more similar to large vessels in that the vast majority of sound energy is in the low-frequency band (below 1 kHz) (OSPAR Commission, 2009a). Noise generated from vessels during the construction phase will be significantly lower than that generated from blasting.

6.1.2. Suspended Sediments

Blasting and drilling of the rock bedrock and dredging of the softer sediments in the turning circle will result in the release of small amounts of fine material into the water column which will result in very localised increases in suspended sediment concentrations.

It is anticipated that c. 150,000m³ of dredged material will be removed from the site. This will comprise c. 120,000m³ of rock and 30,000m³ other material mostly sand and gravel.

It is assumed that the backhoe dredger will use a large excavator arm fitted with a clamshell closed bucket. The excavator will lift material in the bucket and deliver it to a waiting hopper barge which will transport the material to the quayside for subsequent disposal at the excess dredge spoil storage location. Research and past experience have shown that material is suspended from the seabed due to the initial grab. Further suspension is generated as sediment overflows from the bucket as the bucket is lifted throughout the water column. Overflow also occurs as the bucket breaks free of the water surface and drains freely. Only fine sediment (<63µm) are considered “lost” (*i.e.* suspended into the water column), coarser sediment will fall straight to the bottom and be recovered by subsequent dredge operations. Loss rates from similar operations are known to vary based on such factors as the size and type of bucket (*i.e.* open or closed), nature of the bed material, presence of debris, current speed and depth of water, as well as the care of the operator. Reported rates vary from 0.1% to 10%, with a mean of 2.1%. For this assessment it is assumed that 2% will be lost (c. 600m³).

Localised temporary increases in suspended sediments will not be of the concentrations or duration that would be detrimental to the seagrass beds. Any sediments settling on the plant fronds will fall off due to water movements and will therefore not impact their photosynthetic abilities. Concentrations will not be of a level where blanketing of the seagrass beds will occur. Seagrass populations are likely to survive increased turbidity for a month however prolonged increase in light attenuation will probably result in loss or damage of the population (Tyler-Walters, 2008).

The sea pen *Virgularia mirabilis* is not sensitive to increases in suspended sediments and smothering (Hill & Watson, 2000). This species is insensitive to light (Hoare & Wilson, 1977) and therefore an increase or decrease in light levels caused by changing turbidity levels will have little or no effect on the sea pen population. It should be noted however that sea pens were not recorded in the AQUAFAC 2016 and 2017 surveys.

Water quality monitoring was carried out at three locations during the 2004 dredging and disposal campaign by Mott McDonald (2005). During the dredging works undertaken in 2004, the water quality was monitored at

three monitoring locations and at the offshore dredged material disposal site by Mott McDonald (2005). The monitoring found that dredging and disposal activities could not be correlated to any significant changes in water quality, either in terms of an improvement or deterioration in water quality (EirEco, 2015). Monitoring adjacent to Rossaveal Harbour indicated a turbidity spike during a period when dredging of soft material was taking place but otherwise there was no significant correlation between dredging activities and the fluctuation in water quality.

7. Screening Assessment

7.1. Impact Assessment

7.1.1. Harbour seal (*Phoca vitulina*)

Monitoring as specified in the NPWS *Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters* (NPWS, 2014b) will be implemented during the blasting, drilling and dredging activities. This will ensure minimal impact not only on seals but on all cetaceans that may transit the area.

As a result of the above best practice, the conservation objective (NPWS, 2014b) to maintain the favourable conservation condition of this species in the Kilkieran Bay & Islands cSAC will not be compromised. The Access to suitable habitat for this species will not be restricted, breeding, moulting and resting sites will be conserved and the disturbance caused by the construction activities will not adversely affect the harbour seal population at this site. In addition, the overall integrity of the site will not be compromised. This QI can be screened out and will not require Stage 2 Appropriate Assessment.

7.1.2. Atlantic salmon (*Salmo salar*)

As blasting and drilling will not be carried out during the sensitive migration period for salmon between April 1st and July 31st, any impacts on species during this period will be avoided.

The presence of the dredger and the temporary increases in suspended sediments generated within the dredge areas will not impede the movement of salmon, as this species has evolved for and is adapted to migrating through turbid estuarine waters with high levels of suspended sediments.

As a result of the above the conservation objective for the Connemara Bog Complex cSAC regarding Atlantic salmon is to restore the favourable conservation condition of this species (NPWS, 2015). Given the above, it is concluded that the proposed development will not pose any risk to the Atlantic salmon populations of the Connemara Bog Complex cSAC (IE002034) and as a result the conservation objectives and overall integrity of

the cSAC will not be impacted by the proposal. This QI can be screened out and will not require Stage 2 Appropriate Assessment.

7.1.3. Otter (*Lutra lutra*)

Otters typically forage within 80m of the shoreline and within a 10m terrestrial buffer along the shoreline. Individuals from the Connemara Bog Complex cSAC have the potential to forage within the coastal strip of Cashla Bay and this includes the area of the proposed deep water quay. The most significant threat to foraging otters will be that posed by blasting, where injury or death could occur. Disturbance will be experienced due to noise and vibration from drilling and blasting. However, given the fact that marine mammal monitoring will be carried out in line with NPWS *Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters* (NPWS, 2014b) the impact on otters will be minimal. In addition, the construction phase will be short-term and temporary and once the deep water quay is operational, the area will be available as a foraging ground for otters.

As a result of the above mitigation, the conservation objective (NPWS, 2015) to maintain the favourable conservation condition of this species in the Connemara Bog Complex cSAC will not be compromised. There will be no permanent loss of foraging area for otters. In addition, the overall integrity of the site will not be compromised. This QI can be screened out and will not require Stage 2 Appropriate Assessment.

7.2. Cumulative Impacts

As the proposed development will not have any significant impacts on any of the qualifying interests or special conservation interests of the nearby Natura 2000 sites, it cannot have any cumulative impact with any other proposals planned or on-going in those Natura 2000 sites.

7.3. Screening Statement

The Screening Assessment has shown that there is no potential for significant effects from the proposed development and Stage 2 Appropriate Assessment is not required.

8. Summary

The impacts from the proposed development will not have any significant effects on the nearby Natura 2000 sites, their qualifying interests/special conservation interests, or conservation objectives. The Screening Assessment has concluded that Stage 2 Appropriate Assessment is not required.

9. References

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Appendix 1

Project Description including Construction and Operation