

MWP

**Waste Licence Application
For
Howth Harbour Dredging and
Reclamation Project
Non-Technical Summary**

Department of Agriculture, Food and the Marine

22/11/2023

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1 Introduction

This non-technical summary document includes the following information as suggested in the EPA Licence Application Form Guidance:

- Project Description/Nature of the Activity
- The relevant class or classes of activity in the First Schedule of the EPA Act 1992 as amended or Third and Fourth Schedule of the Waste Management Act 1996 as amended.
- Indication of whether EIAR and planning permission documents are included.
- Identification of all environmental impacts of significance associated with the carrying on of the activity/activities and a description of mitigation measures proposed to address these impacts.
- Normal operating hours.
- Indicate relevant BAT guidance documents or BAT Conclusions decisions, where applicable.
- Information on how the emission levels have been determined.
- Indication if EC (Control of Major Accident Hazards involving Dangerous Substances) Regulations 2006 apply.
- A description of:
 - The installation/facility (plant, methods, processes, abatement, recovery and treatment systems & operating procedures for the activity), with emphasis on the main measures to avoid, reduce &, if possible offset the major adverse effects on the environment.
 - The raw and auxiliary materials, substances, preparations, fuels & energy which will be produced by or utilized in the activity.
 - The sources of emissions from the installation.
 - The nature & quantities of existing and proposed emissions from the installation into each medium as well as a summary of the assessment of the effects of the emissions on the environment.
 - Summary of the quantity and nature of wastes which may be produced or accepted at the installation.
 - All the appropriate preventive measures are taken against pollution, through application of the Best Available Techniques (BAT) or BAT Conclusions Decision where applicable.
 - The necessary measures to be taken on and following permanent cessation of activities to avoid any risk of environmental pollution & return the site of the activity to a satisfactory state or the state established in the baseline report if required.
 - Measures planned to monitor emissions into the environment.
 - Measures to comply with an environmental quality standard.

2 Project Description/Nature of the Activity

2.1 General

The Department of Agriculture, Food and the Marine (DAFM), the harbour authority for Howth Harbour Fishery Centre, are proposing to dredge seabed material from within the harbour to provide better water access to the fishing, marine commercial, leisure, and RNLI craft using the harbour. It is proposed to treat and reuse the dredge material to create a reclaimed area on the west side of the West Pier.

The volume of material to be removed from the seabed is approximately 240,000m³, and the reclaimed area to be created is approximately 4.8ha.

The reclaimed area will be used for public realm, water access for leisure users, car parking and hard standing areas that will be used for storage areas for existing harbour leisure users and the harbour authority.

The harbour was upgraded in the 1980s when the syncrolift, the berthage face along the West Pier, the present Middle Pier, the internal breakwater, and the marina area were constructed. Middle Pier upgrade works were also undertaken from 2020 to 2022.

Enhancement of water depths within the harbour area is now required to maintain safe access to the harbour during any tide state. This is necessary because of increased fishing vessel sizes, siltation, and a desire to improve the usable water area. Lack of sufficient water depths due to siltation in the vicinity of the public and RNLI slipways is resulting in restricted access to the water for the public and RNLI rescue craft at low tide.

Malachy Walsh and Partners (MWP) have been engaged by DAFM to submit a Waste Licence Application to the Environmental Protection Agency (the EPA) for the proposed land reclamation at Howth Fishery Harbour Centre.

An Environmental Impact Assessment Report (EIAR), which outlines the project description, the potential impact and proposed mitigation measures for the site has been prepared in support of this application. An Appropriate Assessment Screening and Natura Impact Statement (NIS), as well as a quantitative risk assessment (QRA) have been prepared and these documents submitted as part of application. Planning permission documents are also included.

2.2 Project Need

While minor dredging was recently carried out at the Middle Pier, the last major dredge in Howth harbour happened in the early 1980s. Since then, the seabed levels have in places gradually risen as a result of sediment deposition onto the seabed and there has been an increase in draft size of the fishing and other vessels. To maintain vessel safety and the commercial viability of the harbour into the future, increased depths are required beyond previous designed harbour depths. Together with increasing vessel drafts, the bed levels are becoming an increasing hazard to vessels using the harbour. Continued deposition of sediments in the harbour will further raise the bed level and decrease the available water depth navigation in/out and around the harbour. The shallow water depths in the vicinity of the RNLI slipway constrains access to the water for rescue craft and the public towards low tide.

It is necessary therefore to dredge the existing basins and approach channels in Howth Harbour to provide safe access, navigation and berthing to the vessels currently using the harbour. The proposed project is also necessary, as without action, the harbour will suffer reduced functionality which will worsen over time.

The proposal to dredge the harbour and to reuse the treated material to provide a reclaimed area just west of the West Pier was selected following an examination of dredging and disposal options.

2.3 Site Location

Howth Harbour is situated on the north side of Howth Peninsula, to the north of Dublin Bay (See Figure 1). It is situated 15km east of central Dublin City and approximately 2.4km east of Sutton and 1km south of Ireland’s eye.



Figure 1 Site Location

2.4 The Applicant and Application Area

The applicant is the Department of Agriculture, Food and the Marine (DAFM). The DAFM is the government agency responsible for the management, operation and maintenance of the harbour. The proposed development area is under the control of DAFM.

The application area relates to a 4.8ha sea area west of the West Pier. To the east of the harbour are Howth Head and the Irish Sea; to the west a large sandy intertidal area towards Baldoyle/Portmarnock. Ireland’s Eye, an uninhabited island, lies approximately 1km north of the harbour within the Irish Sea. Howth village lies adjacent to the harbour on its south side.

The proposed site is situated in proximity to several Special Protection Areas (SPA) and Special Areas of Conservation (SAC), the closest of which are Howth Head SAC, Baldoyle SAC, Ireland’s Eye SPA and Howth Head Coast SPA. Howth Harbour and the proposed reclamation area did not lie within the boundary of any designated site at the time of lodging the proposal for planning approval to Fingal County Council in July 2021.

2.5 Description of the Existing Site

Howth Harbour itself comprises of three main areas; a trawler basin to the west, a boat mooring area to the northeast and the yacht club marina to the southeast.

The current harbour layout was developed in the early 1980s with the construction of the Middle Pier and East Pier breakwater. These works provided segregated areas for fisheries and leisure users, i.e. western trawler basin, boat mooring area and marina area. Upgrading works to the Middle Pier during 2020 to 2022 included the construction of 134m of berthage on the west side of the pier, the dredging of seabed material from in front of this berthage area and its treatment and reuse to reclaim 0.2ha on the east side of the pier to provide hard standing for fishery use.

For the purposes of the dredging project the harbour is considered to comprise of five areas (See **Figure 2** below):

1. Trawler Basin.
2. Harbour Approach Channel.
3. Mooring area.
4. Marina Approach Channel.
5. Marina Area.

Howth Harbour operates as a Fishery Harbour Centre under the DAFM. The core fishing fleet is in the order of 50 vessels, and there is significant marine leisure activity including the Howth Yacht Club and the Howth Sailing and Boating Club. There are also a number of restaurants and shops along the West Pier. Fish processing and boat repair works are also undertaken on the harbour.

Existing activities at the harbour include:

Fisheries

BIM statistics from 2015 (BIM “The Business of Food”, 2015) valued the landings of fish at Howth at €12 million/annum. Howth FHC was joint 6th in terms of fishery landings at Fishery Harbour Centres in 2015. The harbour has 650m of berthing quay face available and an ice plant.

Shipyard

There is a functioning shipyard, with electric power supply and fresh water, for use to all types of vessels. Engine repairs can be undertaken locally. Electronic and radio repairs are carried out by agents for all gear. The Harbour offers a service to lift and transfer of vessels out of the harbour to the shipyard.

Commerce

Howth Harbour is active commercially, with a range of retail and leisure outlets, including multiple restaurants. Commerce is concentrated on the West Pier.

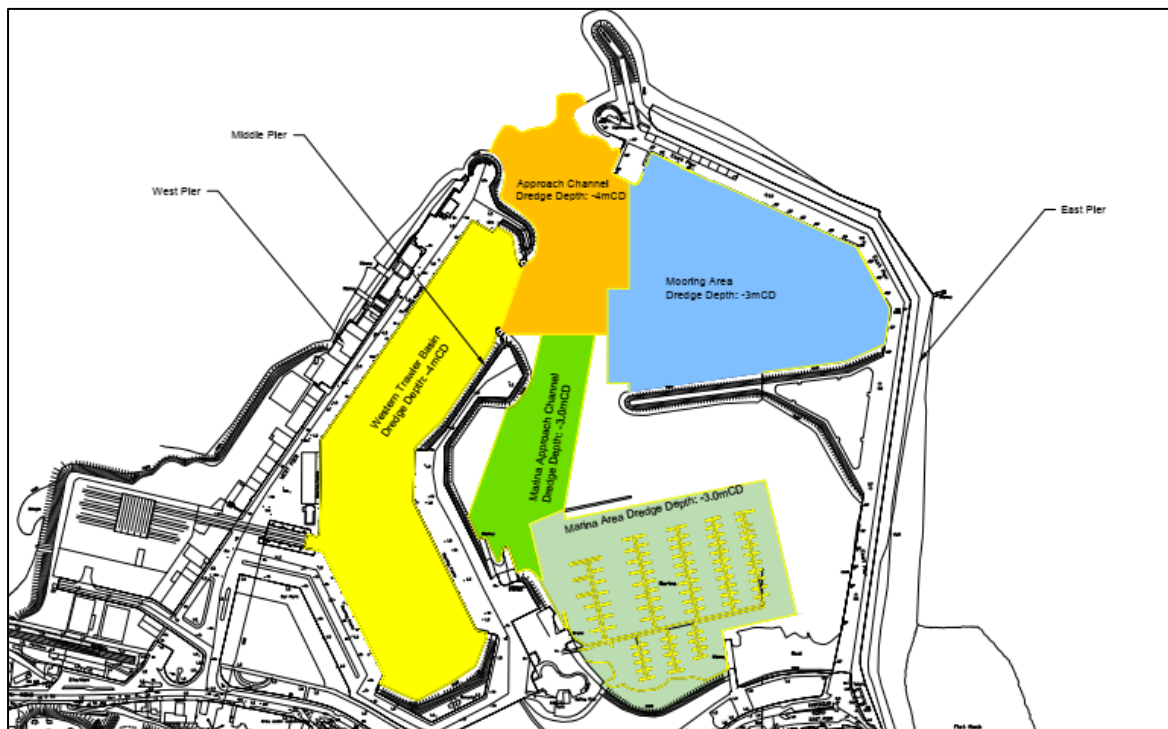


Figure 2 Harbour areas and dredging outline areas

Tourism

Howth is a popular tourist destination with easy access via the DART. Tourists come to Howth to sight see at the harbour, to walk on the piers, Howth hill and also to take boat trips from the harbour. A passenger ferry pontoon is located on the West Pier. Howth Yacht Club marina is a private members sailing club with a 250 berth marina. There are also swing moorings available within the harbour for leisure users.

RNLI

The RNLI operate an inshore lifeboat from a station situated within the Marina Area, just west of the Yacht Club Marina.

2.6 Overview of the Proposed Development

The proposed development consists of the following main elements:

- Construction of an embankment with rock armour revetment protection around the perimeter of the reclaimed area.
- Construction of a 150m long channel between the reclamation area and the northern section of the West Pier.
- Dredging the harbour (as per above **Figure 2**).
- Treatment by stabilisation/solidification of the dredged marine material.
- Reclaiming land (4.8 Ha) on the west side of the west pier using treated dredge material.
- Landscaping of the reclaimed area and provision of pavements, including footways, roadways and parking areas.
- Construction of a slipway access to the water.
- Provision of storage areas for harbour activities; and

- Provision of services, including surface water drainage, mains water supply, lighting, and associated underground ducting.

The project construction is anticipated to start in the summer of 2025. The construction phase of the project will take place over an estimated 24 month period. Dredging and processing activities will be carried out over approximately 18 months of this period. Working hours are expected to be from 7am to 9pm (Monday to Friday) and 7am to 5pm (Saturday) with no work on Sundays. All other activities such as construction of the perimeter embankment, rock armour protection, landscaping and drainage will be undertaken during normal working hours i.e. 7am to 7pm (Monday to Friday) and 7am to 5pm (Saturday) with no work on Sundays. Given the timing of low spring tides at Howth (6am/6pm) there may be a requirement to work outside these hours in some instances. Such will only take place with the approval of Fingal County Council.

The proposed works will be divided into 4 overlapping elements as follows:

- Element 1: Construction of a perimeter embankment and rock armour protection to the seawards edge of the reclaimed land area, and the channel quay wall. (6 to 9 month duration).
- Element 2: Dredging and treatment of Howth Harbour sediments (12-15 month duration).
- Element 3: Reclamation of land using treatment dredge material up to ground level (12-15 month duration).
- Element 4: Finishings (6 month duration).

There will be a degree of overlap in programming between the various elements.

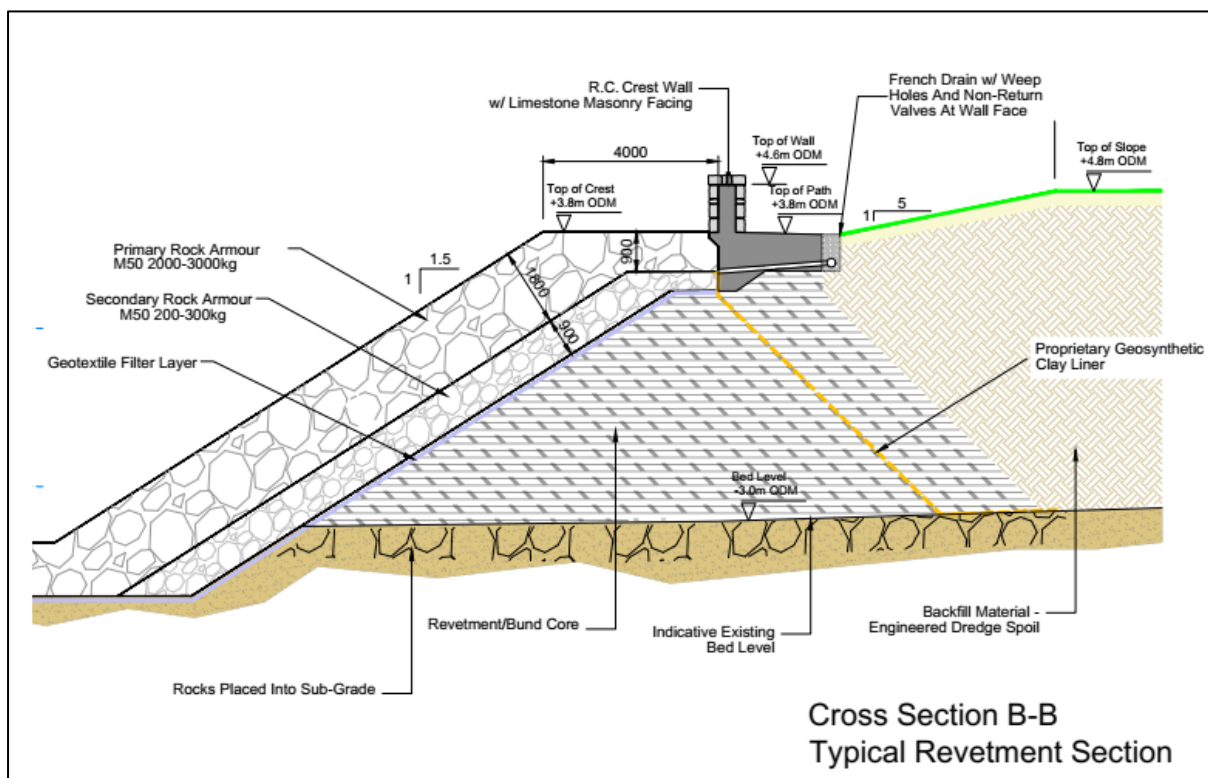


Figure 3 Perimeter embankment and rock armour protection.

Element 1: Construction of a perimeter embankment and rock armour protection

The perimeter embankment will be constructed with imported stone and dredged rock. Refer to **Figure 4** above for embankment details. The perimeter embankment will surround the reclaimed land area on the seaward side and contain the treated sediments that will form the reclaimed land. The perimeter embankment could be built

in phases with temporary cross bunds constructed within the reclamation area to allow the phased infill of the full reclamation area. This phased infilling can happen in conjunction with the building of the perimeter embankment so that reclamation of the land can happen at the same time as the perimeter embankment is being built and extending into the sea. It is anticipated that once the perimeter embankment is partly built that dredging, treatment and placement in the reclamation area can start. In addition, it is anticipated that the seawall will be constructed when the reclamation area is being filled with processed dredge material.

Element 2: Dredging and treatment of the dredge sediment

It is proposed to dredge approximately 240,000m³ of material from the seabed within Howth FHC, treat and re-use this material to the west of the West Pier.

The sediments within the harbour contain contaminants that have built up over the years. The stabilisation and solidification process hardens the dredged material and entraps the contaminants within it. It also improves the physical properties and strength of the material making it suitable for use in reclamation.

The sediments will be dredged using a dredging barge and pontoon mounted excavator. When full, the barge will be brought to an unloading point either on the West Pier or on the Middle Pier within the trawler basin of the harbour. The dredge material will be extracted from the barge via pump and pipeline and be processed at a mixing plant on the Middle or West Pier. Dredge spoil will be comprised predominantly of silt, with some sand, gravel and rock.

Rock spoil and coarser (>20mm) material will be screened out from the dredge spoil and temporarily stockpiled on the Middle Pier/ West Pier. This coarse material will then be transferred to the reclamation area by truck where it will be directly placed into the infill area or used in temporary bunds or in the perimeter embankment.

Element 3: Reclamation of land up to ground level

Fine material such as the silty sand, will undergo engineering stabilisation and solidification treatment prior to placement into the reclaimed infill area. Such finer material will be pumped via pipeline into a mixing plant. A binder will be added to this dredge spoil within the mixing plant. The binder will consist of a combination of Portland Cement (OPC) and Ground Granulated Blast Furnace Slag (GGBS) or equivalent. The treated dredge material will then be pumped as a wet mix from the treatment plant to its placement location within the reclamation area.

Element 4: Finishings

The finished reclamation area (approx. 4.8 Ha footprint on seabed) will include landscaping, access road, a bridge, pathways, parking, surface water drainage, mains water supply, electricity supply, viewing areas and water access points. Landscaping works will involve importing and depositing topsoil and planting/grass seeding. Hardstanding areas will be fenced and used as storage areas for harbour activities. The hardstand areas may be developed in the future under a separate planning application for recreational and/or commercial purposes. These future possible developments are not included in this project. The main purpose of this project is to dredge Howth harbour and create the reclamation area.

2.7 Consideration of Alternatives

The following alternatives were considered:

1. Do Nothing Scenario

As discussed in section 2.5 above, the do-nothing scenario is not considered feasible for the DAFM as the harbour would lose its functionality in time.

2. Disposal at Sea

The conventional route to dispose of dredged material is to dispose of it at sea. The dredge material in Howth Harbour has been found to contain levels of contamination such that most of the material cannot be disposed of at sea directly. It is therefore considered that direct disposal at sea is not a feasible disposal option. In addition, dumping at sea is not considered a beneficial re-use of dredge material.

3. Burial of Dredge Material at Sea

Dumping at sea could be permitted if the contaminants can be contained. Out of the two possible options for burial of dredge material at sea, the option of Contained Aquatic Disposal (CAD) is considered potentially feasible. The alternative option, Level-Bottom Capping (LBC), is considered to have limitations due to the extent of environmentally designated areas around the Irish coast. There are considerable uncertainties regarding the feasibility and costs and potential environmental impacts of these two methods and such alternatives were not considered to be the most cost effective or sustainable use of resources.

4. Disposal at a licensed landfill facility in Ireland

The options and permitting requirements for disposal of dredge spoil to landfill or other land based options depend on the material classification under prescribed Waste Acceptance Criteria of Inert, non-hazardous and hazardous for disposal. Sediment analysis indicated that the sediment is within the non-hazardous range. The non-hazardous nature of the dredge spoil means that the materials can potentially be disposed of to a landfill that is licenced to accept non-hazardous material. The possibility of disposing the material to a landfill that is licenced to accept non-hazardous material was considered, however based on the estimated costs and the potential impact of the large number of traffic movements required, this is not considered a cost effective option. Disposal to landfill is also not considered beneficial/sustainable re-use of dredge material.

5. Disposal of the Dredge Spoil at a Contaminated Dredge Spoil Facility Abroad

Disposal abroad at a specialist facility known as a Confined Disposal Facilities (CDFs) in Germany or the Netherlands was considered as an option for the disposal of the dredge material. Concerns were raised regarding this option, including the overall carbon footprint associated with the export, the cost, and the licensing requirement for transborder shipment of contaminated material. Based on the estimated cost and environmental considerations, this is not considered a cost-effective option. Disposal abroad is also not considered beneficial/sustainable re-use of dredge material.

6. Reuse of the dredge spoil locally through land reclamation.

The re-use of dredge spoil for the purpose of land reclamation is one of the most common beneficial uses of dredge material. Several potential areas of reclamation were considered including reclamation to the west of the West Pier, east of the East Pier, and the east section inside the Marina Area. The East Pier would require more costly sea defences due to its exposure to the Irish Sea, reclaiming inside the Marina Area would not provide enough area for the dredged sediment and would also lower the usable area within the harbour. The reclamation off the West Pier provides sufficient volume to deposit the full dredge quantities. This and the potential of the West Pier for further commercial and fisheries use resulted in the West Pier being the preferred option for reuse of the dredge spoil. Based on the cost estimate and the sustainable re-use of dredge material this option of reusing the dredge spoil is considered the preferred option.

7. Summary of Assessment of Alternatives.

Alternative layouts were considered based on cost, planning policies, natural heritage context, built heritage context, preliminary photomontages and harbour character and existing uses of the various harbour areas.. Reclamation to the west of the West Pier was selected as the preferred method of disposal of dredge spoil for the following reasons:

- Disposal at sea is not feasible.
- Disposal to land/landfill is not considered to be feasible, cost effective or sustainable.

- It is of greater benefit in terms of future development of the harbour.
- It is less exposed than the East Pier and therefore less costly to reclaim and to protect.
- Reclamation of areas within the harbour would reduce the water area potentially reducing the value of the harbour. There is also limited potential storage volume within the harbour.

2.8 Public Consultation

There have been several meetings with Fingal County Council personnel during which the proposed development has been discussed. In addition, DAFM have informally spoken with the stakeholders within the harbour i.e. the fishermen, yacht clubs and ferry operators with regard to the proposed development on a number of occasions.

DAFM held a harbour users forum meeting on the 2nd May 2019 when the harbour stakeholders were updated on various works around the harbour including the proposed development.

On the 30th May 2019, a specific presentation was made in relation to the dredging project to Fingal County Council planners. Subsequently, there was a meeting on the 3rd December 2019 with the Fingal County Council Biodiversity Officer during which the project was outlined.

It had been intended to hold public information meetings to discuss the project information with interested members of the public. In accordance with Government led restrictions on public gatherings in response to the Covid-19 outbreak this was not possible at the time. In place of a public meeting, a project presentation was made available on-line (12th March 2021 at <https://www.gov.ie/en/consultation/8dad4-howth-harbour-dredging/>) to inform people of the proposed development and the planning application. A press notice informing the public of the on-line information was published in the local newspaper and email notifications sent to local Councillors and community groups. The public had the opportunity to submit comments on the proposed application to the project representatives. All public consultation feedback was taken account of and any relevant feedback was incorporated into the various chapters of the EIAR.

All consultation responses and meeting outputs informed the final design of this project, as appropriate.

3 Classes of Waste Activity

1. R05 - Recycling/reclamation of other inorganic materials, which includes soil cleaning resulting in recovery of the soil and recycling of inorganic construction materials:
 - o R05 - Recovery of inorganic materials in the form of backfilling
2. R11 - Use of waste obtained from any of the operations numbered R 1 to R 10.
3. R13 - Storage of waste pending any of the operations numbered R 1 to R 12 (excluding temporary storage (being preliminary storage according to the definition of ‘collection’ in section 5(1)), pending collection, on the site where the waste is produced”).

4 Indicate Relevant BAT Guidance Documents

The relevant BAT guidance document is Final Draft BAT Guidance Note on Best Available Techniques for the Waste Sector: Waste Transfer and Materials Recovery December 2011

5 Planning Permission Status

Fingal County Council issued a Notification of Decision to Grant Permission to the DAFM on the 5th of August 2022. Decision Order No. PF/1693/22. Register Ref.: F21A/0368.

An Appeal was made to An Bord Pleanála (ABP) Ref: ABP-314487-22. A decision is expected from ABP in 2023.

6 Calculation of Emissions Levels

6.1 Water

Malachy Walsh & Partners, (MWP) on behalf of the Department of Agriculture, Food and the Marine (DAFM) undertook a Generic Quantitative Risk Assessment (GQRA) relating to the quality of sediments intended to be dredged from inside the Howth Fishery Harbour Centre (Howth FHC) and subsequently solidified/stabilised and the potential impact of using the treated material as engineering backfill as part of the development.

Certain heavy metals, tributyl tin and to a lesser degree, PCBs and PAHs have been identified in the shallow sediments at sample locations within the proposed dredge area. Conservative modelling of the potential mobilisation of these potential pollutants during the dredge phase indicates that the relevant EQSs may be exceeded for two parameters at Claremont Beach outside of the harbour. Considering the factor of safety built into the assessment and the proposed mitigation measures to be employed, the risk to water quality, marine life and human health from the dredging will be low.

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Predicted calculations of leachate concentrations from the treated sediments entering the sea indicate that no concentrations of potentially polluting parameters will be above the relevant Surface Water EQS and no potential receptors are at risk from the post treatment phase of works.

The impact of the dredging works is considered to be a low short term risk to water quality and marine life. The impact of the S/S sediment is considered to be a low permanent risk to water quality and marine life.

6.2 Air

Air is not considered to be a potential pathway as no vapours or gases will occur and the potential for dust is very limited as the process is completed in a wet environment.

7 EC (Control of Major Accident Hazards involving Dangerous Substances) Regulations 2006.

The EC (Control of Major Accident Hazards involving Dangerous Substances) Regulations 2006 does not apply.

8 Environmental conditions of the site of the installation

An Environmental Impact Assessment Report, Natura Impact Statement and Quantitative Risk Assessment have been prepared and are included in the application.

9 Environmental Impact Assessment Report

9.1 General

An Environmental Impact Assessment Report (EIAR) was prepared for the project. It is included with this Application.

The following sections are taken from the EIAR Non-Technical Summary. They identify environmental impacts of significance associated with the carrying on of the activities and a description of mitigation measures proposed to address these impacts.

9.2 Population and Human Health

An assessment of the potential impacts to population and human health arising from the proposed development was conducted. One of the principal concerns in the development process is that people, as individuals or communities, should not experience any reduction in their quality of life from direct or indirect effects arising from the construction and operation of a development. The key issues examined in this section of the EIAR include population and settlement patterns, economic activities, land-uses, human health, tourism and amenity resources.

Howth Harbour is a multi-purpose harbour facilitating both commercial fishing and recreational activities, providing mooring facilities and pontoons for private enterprises such as Howth Yacht Club and Howth Sailing and Boating Club. Howth Harbour operates as a Fishery Harbour Centre under the Department of Agriculture, Food and the Marine. The West and Middle Piers are primarily used by fishing trawlers for commercial purposes, while the East Pier is used primarily for recreational purposes, including boaters and walkers.

Land use surrounding the site is varied, however the primary use is regarded as residential. The second biggest primary land-use on the Howth peninsula is the sport and leisure/ recreational facilities which consist predominantly of golf facilities. These are located in the centre of the peninsula. Following on from this, there is mixed land use in the form of commercial premises such as shops and restaurants, the harbour itself, agricultural and areas of natural vegetation, broad- leaved and mixed forest, moors and heath, and intertidal flats which are located to the north-west and south-west of the peninsula.

The construction phase of the proposed development is estimated to take approximately 24 months and is anticipated to commence in the summer of 2022. The main impacts identified in this assessment were construction phase impacts on access for users of the Harbour, including the commercial fishermen, Howth Yacht Club, the RNLi and tourists. The users of the Harbour will have to accommodate the short-term construction works. The areas of temporary reduced access are a 100m section of walkway on top of the pier wall near the end of the East Pier, a small section of West Pier for a compound and potentially the whole of Middle Pier (needed for a treatment plant and stockpiling dredged coarse material). The potential need for the whole of Middle Pier is a worst-case scenario within this assessment that depends on the amount of stockpiling required during the dredge. The mitigation to reduce this impact is communication and co-operation before and during the construction phase between DAFM and the stakeholders. Once mitigation measures are implemented, there will be a short term slight negative effect on access for all users.

In terms of health and safety during construction, there is the potential for construction related hazards or injuries, as with any project during the construction phase. Serious risks to human health and safety are not envisaged as the site will be managed in accordance with all applicable legislation and guidelines. Similarly during

operation, appropriate safeguards will be in place. The proposed improvements represent a positive impact as the proposed plan intends to improve on existing safety conditions.

During the operational phase, the proposed development will create a land use where there currently is none and improve the useability of the harbour. The development will add to the potential area for development by DAFM within the harbour as well as creating an amenity area on the west pier that would be on a par with the current high value amenity area on the east pier. The likely impact of this will be a permanent significant positive impact on land use and amenity resources in the harbour area.

9.3 Biodiversity

Potential impacts on biodiversity have been assessed as part of the EIAR. The biodiversity chapter describes the ecology of the proposed development site and the surrounding environment in terms of designated sites, habitats, flora, fauna and biological water quality. It also specifies mitigation measures to ensure that significant impacts on these features do not occur. The information on the existing environment was obtained using publicly available information sources and by field surveys.

Designated Sites

Howth Harbour and the proposed reclamation area do not lie within the boundary of any designated site. Thus, the site of the proposed development does not form part of any Natural Heritage Area (NHA), Special Protection Area (SPA), Special Area of Conservation (SAC) or candidate Special Area of Conservation (cSAC), Nature Reserve, or National Park.

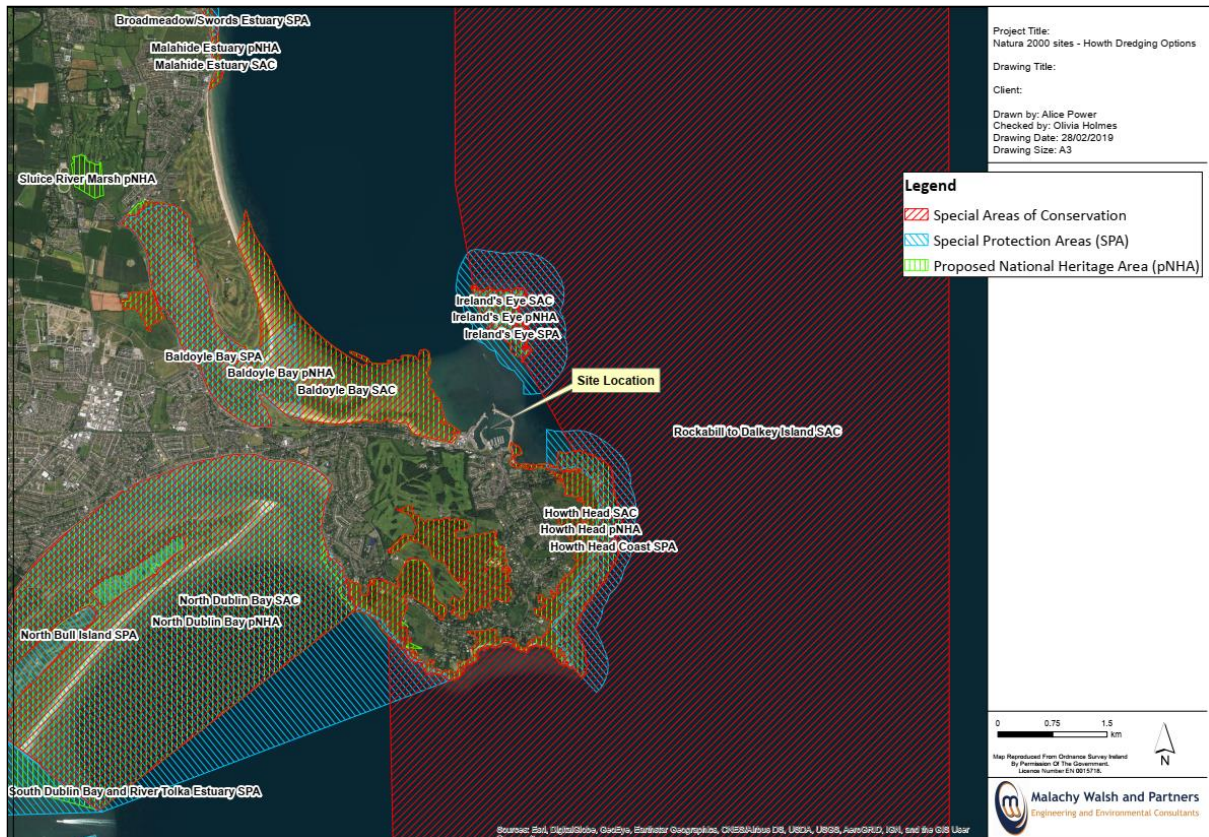


Figure 4 Site location map showing proposed project location and surrounding designated sites

The development is surrounded by a number of designated sites as referenced in the above Figure 4. The development lies adjacent to the Baldoyle Bay SAC (which includes Claremont Beach) with the project design going around its border. Impacts from the project on relevant habitats within the Baldoyle SAC were assessed and are described below in the different habitat and wildlife sections. The Baldoyle Bay SAC is also a Natura 2000 site.

Potential impacts on designated Natura 2000 sites (SAC / SPA) are specifically addressed in a Natura Impact Statement which has also been submitted as part of this application. The Natura Impact Statement notes that following a comprehensive evaluation of the potential direct, indirect and cumulative impacts on the qualifying interests and conservation objectives for Natura 2000 sites, it has been concluded that the proposed development will not have an adverse effect on the integrity of Natura 2000 sites.

Terrestrial & Marine Habitats

Field surveys identified thirteen terrestrial habitat types across Howth Harbour and the surrounding environs. The vast majority of the application site is comprised of built structures, hardstanding, and amenity grassland and parkland habitats which have low species diversity in general and are of a low to no intrinsic ecological value. On the outskirts of the survey area, there are areas of coastal habitat which support a more diverse flora.

Three shoreline habitats were noted within or in close proximity to Howth Harbour, namely; Exposed Rocky Shores (LR1), Shingle and Gravel Shores (LS1) and Sand Shores (LS2).

Of the habitats recorded, five correspond to or have links to Annex 1 Habitats (Annex 1 is a list of EU natural habitat types) of the EU Habitats Directive, three of which occur adjacent to the Western Pier. All three are shoreline habitats that occur on the dunes and gravel banks at Claremont Beach southwest of the proposed development.

During construction, the principal concern relates to direct impacts on shoreline habitats and potential impacts on coastal processes due to sediment plumes during dredging. A hydrodynamic model was developed for the project which predicted the amount of sediment leaving the harbour and where it would disperse. It predicted the area at the east of Claremont Beach to be the most sensitive receptor potentially impacted by sediment. The model predicted annual sediment deposition of 0.4mm resulting from the proposed dredging. A risk assessment concluded that this would undergo re-suspension under wave and tidal action. This will result in the sediment spreading further and under dilution reducing the risk to the habitats. There will be a low risk to habitats from the deposition of the dredge sediments. There was also a level of suspended solids in the water at Claremont Beach predicted by the hydrodynamic model. The risk assessment found that the levels would be above environmental quality standards for two contaminants of concern within the sediment. Mitigation measure to reduce the potential impact are as follows:

- Environmental buckets to be fitted to the dredge excavator.
- Silt curtains to be placed around the dredge as it is working.
- Monitoring of the waters outside the harbour in line with agreed parameters and limits from the licencing authority; and
- Should monitoring indicate exceedances of agreed limits, further management of the dredging methods will be undertaken to bring concentrations below the exceedance limits.

Once mitigations are in place the risk assessment found that the risk to water quality will be low. The impact from dredging will have a short term not significant negative effect on habitats (including Claremont Beach).

The area of permanent marine habitat loss (Muddy Sands (SS2)) will be approximately 4.8Ha under the footprint of the proposed reclamation area. The loss of the habitat at the proposed reclamation area is considered to be of local significance. However, there will only be a small number of foraging birds permanently displaced and the

habitat only has common benthic or seabed species. The loss of the 4.8Ha of the habitat would be permanent, however taken into the broader context that the Muddy Sands habitat is common in the adjacent area and with better quality of the habitat within the Baldoyle Bay SAC, the effect on the habitat from the proposed development is considered negative, permanent and not significant.

Potential impacts on terrestrial habitats i.e. buildings and artificial surfaces (BL3) or amenity grassland (GA2) is damage and disturbance arising from vehicular activities and storage of overburden and materials. The proposed development is situated adjacent to the Baldoyle SAC and there is a potential impact from construction works on this habitat through construction machinery egressing onto the SAC. Mitigations will include exclusion zones to prevent accidental movement of machinery onto the SAC. Once mitigations are in place the impact from the proposed development will have a short term not significant negative effect on habitats.

During the operational phase, the principal concern relates to the project having any potential indirect habitat alteration impacts on coastal habitats through sediment transport processes. The hydrodynamic model predicted little impact on the tidal currents except to a slight degree in the area just off Claremont Beach to the west of the proposed works, where the currents appear to be reduced slightly. The proposed development would appear to slightly reduce wave heights in this area. This would result in a slight increase in any tendency for sand to settle in this area. However, given that the impacts on waves and currents are minimal, the general nature of the beach materials will not change in a significant way. Wave action at Claremont Beach will still be sufficient to move sand sized material and there will be minimal change in deposition and erosion patterns due to the proposed development. Impacts on other areas of coastline are considered imperceptible.

During the operational phase, there will be leaching of minor amounts of contaminants from the stabilised and solidified sediments in the reclamation area. The levels of leaching have been determined to be within the environmental quality standards. The low levels of leaching will happen principally because of the extremely low permeability of the stabilised and solidified dredge spoil. The impact from this leaching will be a permanent imperceptible negative effect on the water quality.

Marine Benthic Fauna

Two groups of seabed (benthic) marine life were identified in surveys within the proposed site. The distribution of these two groups is relative to their positions within or outside the Howth Harbour basin.

- The area within the existing harbour is species poor, containing a low number of benthic species and individuals.
- Outside the harbour, there was higher biodiversity than inside the harbour. All species found were common. Individual benthic species occurring within the reclamation area will likely be lost.

Within the harbour the benthic fauna from the adjacent dredge area will recolonise the dredged area in about two years and the existing communities, will be re-established. Areas located outside the harbour consist of sands and muddy sands, with no differences in habitat noted between the proposed reclamation area and the adjacent areas. All species and habitats identified in the survey area are common in Irish coastal waters. The presence of these species in the surrounding areas means that any loss of the overall biomass of benthic fauna will be imperceptible taking into account the similar habitats and colonies in the surrounding environment. The proposed project will have a permanent imperceptible negative effect on the marine benthic fauna.

Marine Mammals

A Marine Mammal Risk Assessment (MMRA) in relation to the proposed works at Howth Harbour was carried out. Without mitigation the assessment noted the following in relation to the proposed project;

- The project will not cause injury or death to marine mammals but could lead to very local disturbance, from noise associated with the project.

- The dredging activities proposed during this project will occur through a long reach excavator on a barge with some increased marine traffic associated with sea-going barges. It is very unlikely any noise generated will be capable of causing permanent or temporary hearing injury to a marine mammal.
- While grey seals frequently and regularly occur inside Howth Harbour in small numbers there may be local disturbance to these but they are accommodated to human activities and are likely to not be affected. Outside Howth Harbour, it is unlikely there will be any disturbance to cetaceans or seals.

A number of mitigation measures in relation to marine mammals have been prescribed in order to reduce any possible impacts. These mitigations include the presence of a trained and experienced Marine Observer (MMO) during the dredging and the use of “ramp up” procedures for noise and vibration emitting operations.

Once mitigations are in place there will be a short term not significant effect on the marine mammal life in the construction phase and a likely neutral effect in the operational phase.

Terrestrial Fauna

It is noted that the proposed development site is largely marine in nature and thus generally lacks the ecological requirements for terrestrial species. A single Irish Stoat was noted on West Pier. No signs of other terrestrial mammals including otter, amphibians or lizard were recorded during the site surveys conducted in 2019.

Bat activity, recorded in the vicinity of the harbour, was low. No bats were recorded foraging or commuting during the bat survey. No bat roost was found on the West Pier during the bat survey, the existing buildings and structures within and in the immediate vicinity of Howth Harbour were deemed to be of low bat roost potential. Overall, the proposal will not result in a net loss of linear foraging habitat for bats. Mitigations are not required. It is concluded that as a result of the proposed development there will be a permanent imperceptible negative effect on foraging/commuting/roosting of any bat species.

Birds

A total of three bird species were confirmed as breeding within Howth Harbour, including 3 to 4 pairs of Black Guillemot breeding within the harbour walls and 1 to 2 pairs in buildings facing onto the proposed reclamation area. The other species were pied wagtail (1 pair) and rock pipit (1 pair). The dredging and construction of the reclamation area is predicted to result in the direct loss of currently used nesting sites in the buildings on West Pier. Mitigations to reduce the impact on the Black Guillemot will include the installation of nest boxes in appropriate locations on the pier walls before construction starts so that the Black Guillemot will have alternative nesting sites. The nest sites in the buildings on West Pier will be removed to prevent them being used and then abandoned through disturbance. Once mitigations are in place, the proposed development will have a short term not significant effect on the Black Guillemots.

Several seabird species were recorded breeding in the environs of Howth Harbour and were largely confined to both Ireland’s Eye (SPA) and Howth Head Cliffs. The impact of the proposed development will have a permanent imperceptible negative effect on these species.

Numerous species were recorded foraging and roosting within Howth Harbour and / or in proximity to the harbour and proposed reclamation area during high and low tide cycles during the winter period of 2019/2020. Ringed plover was the most numerous species of wader recorded. There is the potential for disturbance to roosting birds arising from disturbance from workers, plant and machinery and from noise emissions from machinery on site, particularly within or adjacent to the harbour. There will also be the short-term loss of a winter roost location at the end of west pier for the duration of the construction works. The environs surrounding Howth Harbour contain numerous alternative roosting sites and as such offer alternative roosting locations during the construction phase of the project. Additionally, certain bird species may habituate to noise and activities associated with the construction work. Mitigations will be carried out involving construction site exclusion zones and

screening/fencing off the remaining two winter roosts to reduce disturbance during the construction period. A project ecologist will oversee all mitigations. During construction, once mitigations are in place there will be a short term not significant effect on the wintering birds from the proposed development.

During the operational phase of the proposed development, a permanent winter roost area will be established on the newly constructed revetment pier. This will provide a continuation of the existing winter roost area on the West Pier. The roost area will be fenced or screened off to reduce disturbance as agreed with the project ecologist. Once mitigations are in place, there will be a permanent not significant negative effect on the wintering birds from the proposed development.

The disturbance of sediments during construction also has the potential to indirectly impact on fishing bird foraging activity through elevated suspended solid concentrations in the water column which could lead to a reduction in visibility and/or avoidance of turbid waters by the species. However, the impact on foraging birds, particularly fishing birds such as plunge and pursuit divers e.g. Razorbill and Common Guillemot, is predicted to have a short-term not-significant effect.

Bird species in general are expected to continue utilising habitats within the development area once construction is completed. It is expected that any bird species that are displaced as a result of the construction phase will use the alternative habitats readily available to these species in the area surrounding the site.

Overall, both breeding and wintering birds in Howth harbour have habituated to disturbance associated with the daily activity of a busy harbour. This habituation and implementation of the required mitigations will ensure significant negative effects on key ecological bird species will not occur.

9.4 Lands and Soils

The potential impacts to the land and soil have been assessed and any direct or indirect effects on these resources arising from the proposed dredging and reclamation works at Howth Harbour have been considered. The proposed development is on an active marine site with ongoing industrial, commercial and leisure activity throughout.

A 2019 geotechnical survey found the soil in the reclamation area comprised fine to medium brown sand. Underneath the sand strata, material described as grey, slightly gravelly clay with some cobble and shell content was encountered. Bedrock encountered is predominantly described as strong grey limestone.

The soil within the dredge footprint was found to consist of very soft to soft, black, slightly sandy slightly gravelly silt. The black silt had an organic odour to it. 23 samples were taken from sediments within the harbour and sent for laboratory analysis. The analysis confirmed that the sediment was not suitable for dumping at sea due to elevated concentrations of some heavy metals and organotins (from the now disused organotin antifouling paints on boat hulls).

The rock underneath the sediments consists of limestone with some locations of mudstone.

Importation of Materials

The construction of the perimeter embankment and rock armour revetment will require the importation of granular stone fill which will be used to fill the core of the bund. The outer layers will require the importation of large rock material for use as outer-layer primary rock armour and smaller rock material for use as under-layer below the primary rock armour. Relevant materials imported for surface finishing following reclamation of land will comprise of stone fill, concrete, paving setts and/or bituminous flexible pavement for the construction of pedestrian, road and parking paving and a slipway.

The minimum amount of materials required will be stored on-site and will be managed to minimise waste generation. All materials will be stored within the on-site construction compound.

Dredging

The project will require the excavation of approximately 240,000m³ dredge spoil from the harbour. A bathymetric survey will be undertaken to confirm the correct dredge depths are achieved.

Reclaimed Land

Dredged material will be treated by stabilisation and solidification prior to re-use as fill material in the reclamation area. The treatment eliminates the potential for release of contaminants into the surrounding areas. Testing of treated samples has shown that the material has very low permeability which confirms that the contaminants will be contained within the treated material.

The perimeter embankment and rock armour revetment will have a geosynthetic clay liner on the inside to ensure that any potential contaminants are not released through the perimeter embankment beyond the proposed reclamation area.

The area of reclaimed land will be suitably covered by hardstanding material and landscaped areas will be grassed.

Likely Potential Impacts

There will be some loss of contaminated dredged sediments outside of the dredging area, this material will deposit onto the seabed over a wide area. A minute amount will deposit over a wide area with the material dissipating as it gets further away from the dredge. As the material disperses it reduces in risk and its effect on the environment is reduced. The impact from the sediments will have a short term imperceptible negative effect on the soils. The mitigations outlined earlier, including the use of an environmental bucket and silt curtains to reduce the loss of sediment from the dredge area will also reduce the impact of the deposited sediment on the surrounding seabed.

Within the reclamation area, mitigation by design has been incorporated into the proposed project whereby the contaminated sediments are treated through stabilisation and solidification in order to contain the contaminants. Once treated, the sediment will be a solid material of low permeability that will contain the contaminants within them. The treatment process will prevent any potential impact on the underlying seabed at the land reclamation area from the contaminants within the sediments. The removal of the contaminated sediments from the harbour which currently have the potential to become mobile and impact on surrounding sediment will have a positive effect on the seabed. The impact of the treatment of the sediments and their use in the land reclamation area will be a permanent not significant positive effect on the soils in the area.

There is a potential impact on the imported soils placed on top of the reclamation area from contaminants potentially leaching from the treated sediments. The treated dredge sediment samples for Howth FHC dredge have a permeability similar to a clay liner. This permeability is enough to protect the soils above from cross contamination. There will be an imperceptible effect on the above soils.

The proposed works will require the use of long reach excavators, barges and other vessels and machinery associated with the project. The presence of such machinery increases the risk of fuels/oils being released due to accidental spillage. A Construction Environmental Management Plan will be followed to reduce this risk. There will be a short term not significant effect on the soil and geological environment as a result of the use of machinery associated with the proposed works.

Residual Impacts

During the construction phase, once the mitigation measures are implemented, there will be a short term not significant negative effect on the land and soil environment from the proposed development.

During the operational phase, once the mitigations are implemented, the impacts on the land and soils from the proposed development range from a permanent not significant negative effect to a permanent not significant positive effect on the land and soils.

9.5 Water

The potential impacts of the proposed development on surface water and groundwater have been identified and assessed as part of this EIAR.

The main hydrological feature of Howth Harbour is the Irish Sea within the harbour. There is an ebb and flow of sea water in and out of the tidal basins. The water body is classified as the Irish Sea Dublin (EPA code HA 09). The water quality is given as a good status that is not at risk.

Gray's Brook (or Boggeen Stream) is a stream entering the Harbour at the slipway south of the marina area. The stream originates 1.3km to the south in Thormanby Woods. It is within the EPA water body Howth_010 and has a water quality status that is unassigned.

There are three storm water over flows that flow into the harbour. One enters the harbour at the southern end of the trawler basin while the other two are south of the marina area. A site visit at low tide found another storm water overflow in the south western corner of the Trawler Basin. The site visit also confirmed that the storm water overflow just east of the Howth Yacht Club is the mouth of Gray's Stream.

Existing Site Drainage

The existing site drainage on the west pier and middle pier happens in two ways. There are roadside storm water drains on both the west and middle pier. These lead to the storm water outflows. The other drainage is surface runoff immediately back into the sea from across the surface of the piers.

Flood Risk

There have been no flood reports in the site area within the Harbour. The land reclamation area is designed so that any water that may enter the site during storm conditions will tend to flow back into the sea with no repercussions to flooding in the area. The proposed development will not increase flood risk outside the confines of the site. General ground levels of the reclamation area have been designed to take into account future 200 year estimated water levels.

Likely Potential Impacts

During the construction phase, the principal issues relating to the water environment is the potential reduction of surface water and/or groundwater quality associated with surface water run-off, de-watering, mobilisation of sediments, existing contamination within sediments and accidental spillages / leaks of substances used at construction sites such as lubricants, fuels and oils.

During the dredging, there is potential for sediment to become suspended and spread through the water column. A hydrodynamic model predicted the amount of sediment leaving the harbour and where it would go. It predicted the area at the east of Claremont Beach to be the most sensitive receptor potentially impacted by suspended solids. The model predicted an average of 3mg/l for suspended solids with a max of 18mg/l for suspended solids at Claremont Beach. The risk assessment found that the levels would be above environmental quality standards for two contaminants of concern within the sediment, the risk to water quality was high. Mitigations are as follows:

- Environmental buckets to be fitted to the dredge excavator.
- Silt curtains to be placed around the dredge as it is working.

- Monitoring of the waters outside the harbour in line with agreed parameters and limits from the licencing authority; and
- Should monitoring indicate exceedances of agreed limits, further management of the dredging methods will be undertaken to bring concentrations below the agreed limits.

Once mitigations are in place the risk assessment found that the risk to water quality will be low. The impact from dredging will have a short term not significant negative effect on water quality at Claremont Beach.

The risk assessment also looked at the human health aspect of the suspended solids at Claremont Beach which is a popular swimming location. It compared the predicted levels of contaminants of concern to the drinking water standards and it found that there were no exceedances. The risk assessment calculations were based on unmitigated dredging, so when the above mitigations are in place the risk will be even less. The risk to human health from the water quality was assessed as low.

During the construction phase there are several potential impacts on receiving waters from stockpile runoff and wastewater discharge from construction works. A construction environmental management plan will be implemented. Runoff will be managed, and all discharge of treated wastewater will be via licence from the appropriate authority. Once these measures are in place there will be a short term not significant effect on water quality from the proposed development.

During the operational phase, there is the potential for leaching of minor amounts of contaminants from the stabilised and solidified sediments in the reclamation area. Most of the contaminants will be held within the treated sediments which has a very low permeability, however there will be a minor amount of potential leaching from the outer surface of the treated sediment which will be exposed to water. The levels of leaching have been predicted to be below the relevant environmental quality standards. The impact from this leaching will be a permanent imperceptible negative effect on the water quality.

During the operational phase, most of the contaminated sediments will have been removed from the harbour. This will reduce the potential for suspended solids and contaminants to impact on water quality in the area. The removal of the sediment from the harbour will have a permanent not significant positive effect on water quality.

There will be an impact on current and wave action from the proposed development. The results of the hydrodynamic assessment predict that there will be a minor slowing in the current in the immediate vicinity of the perimeter of the proposed reclamation area. Away from the perimeter of the reclamation area impacts are considered minimal. There will also be a minor reduction in wave height impacting on Claremont strand. The minor changes are considered to impact on Claremont strand by reducing very slightly the erosion potential on embryo dunes on the beach. Impacts on wave driven erosion / deposition patterns on the west of the harbour are considered to be minimal. Impacts on other areas of coastline are considered imperceptible.

Residual Impacts

Once mitigation measures have been employed, the residual impact of the land reclamation and dredging works will have a permanent imperceptible negative impact on the water environment due to the potential limited release of contaminants from the solidified dredge material used in the reclamation area.

9.6 Air and Climate

An assessment on the effects to Air and Climate that may occur because of the proposed development at Howth Harbour was carried out.

A comprehensive desktop review was completed which aimed to assess baseline air quality and determine the likely significant impacts that the proposed development could have on air quality. Environmental Protection

Agency (EPA) air quality data, and relevant assessment criteria and guidelines were considered. The main air quality impacts relating to the proposed development which are likely to occur relate mainly to the use of machinery associated with the dredging and reclamation works during the construction phase.

The air quality at Howth Harbour and its surrounding environs to the west (Dublin) is currently ranked as '3 - Good' by the EPA's Air Quality Index for Health (AQIH).

Sensitive receptors in this case are people or wildlife that could potentially be impacted by the development. The nearest residential receptors are located along the R105 to the south of the proposed site. The nearest ecologically sensitive areas include the nearby Natura 2000 sites located near the site.

Construction Phase

The main potential impacts of the proposed development on air quality in the receiving environment during the construction stage are from escaping dust and vehicle emissions associated with the following activities:

- Generation of airborne dust from construction activities.
- Deposition of material on public roads during off-site transportation.
- Transportation and unloading of materials on, off and around the site.

The movement of machinery, construction vehicles and the use of generators during the construction phase will generate exhaust fumes containing predominantly carbon dioxide (CO₂), sulphur dioxide (SO₂), nitrogen oxides (NO_x), carbon monoxide (CO), and particulate matter (PM₁₀). Best practice guidelines will be followed during operation to minimise fugitive dust emissions.

Operational Phase

Once operational, there will be no direct impact from emissions to the atmosphere from the proposed development.

Mitigation

The following mitigation measures will be employed during the construction phase:

- Dampening of exposed earthwork activities and site access route during dry weather.
- Provision of wheel washes at exit points.
- Covering of stockpiles and/or dampened during dry weather.
- Control of vehicle speeds, speed restrictions and vehicle access; and
- Sweeping of hard surface roads.
- Internal and public roads will be inspected regularly for cleanliness and cleaned as necessary; and
- Daily site inspections should take place to examine dust measures and their effectiveness.

In addition, the following measures will be implemented during the construction phase:

- Stockpiles will be located as far as possible from sensitive receptors and covered and/or dampened during dry weather.
- Monthly dust monitoring will be undertaken at the nearest sensitive receptor during the construction phase.

Once mitigation measures are implemented there will be a short term not significant effect on air quality during the construction phase. Once operational, there will be a neutral impact on air quality from the proposed development.

9.7 Noise and Vibration

The potential noise and vibration impact from the proposed Howth Harbour Dredge Project on the receiving environment has been assessed.

Existing environment

The existing noise environment includes the constant flow of patrons to the piers, restaurants, cafes and retail outlets. Tourists come to Howth to walk on the piers and hill and to take boat trips from the harbour. Car parks facilitate patrons and tourists at the pedestrian entrance to the harbour piers. A passenger ferry pontoon is located on the West Pier. Howth Yacht Club marina is a private member sailing club with a 250 berth marina. Many of these vessels have noise generating inboard and outboard motors louder than the plant and machinery proposed for the works. The DART terminates at the entrance to the harbour. There is a functioning shipyard for use to all types of vessels where noisy work takes place including cutting and welding metal.

Due to the COVID 19 restrictions, typical baseline noise levels were not representative primarily because traffic volumes in the Howth area were significantly reduced. This meant that it was not possible to carry out meaningful baseline noise measurements in the environs of the marina. In the absence of baseline measurements, a review of existing noise data was undertaken.

To determine existing noise levels, previous noise monitoring measurement results were utilised that were taken as part of planning application for a mixed used (200 residential units and 6 commercial units) development at Howth Road (planning ref. F15A/0362), these are considered representative. As part of that project, Day, Evening and Nighttime measurements were undertaken between the 3rd and 6th February 2015 at three residential locations in proximity to the works area.

Threshold levels

The noise threshold or limit levels applied during the construction phase are based on standards applied to construction sites. The existing noise levels are used to help predict the noise levels during the construction works. Based on the above-mentioned monitoring levels and the standard construction thresholds, the following threshold values have been applied to the development.

Table 1: Appropriate Noise Limits for the proposed construction works

Assessment category and threshold value period (T)	Threshold values, LAeqT dB
Night-time (23:00 to 07:00hrs)	50
Evening and Weekends Note A	55
Daytime (07:00 – 19:00hrs) and Saturdays (07:00 -13:00hrs)	65

Note A: 19:00 – 23:00 weekdays, 13:00 – 23:00 Saturdays and 07:00 – 23:00 Sundays.

Likely Potential Impacts

The noise assessment is primarily concerned with the temporary dredging and construction works. The potential noise sources include noise and vibration from the plant and machinery employed to undertake the works. The main items of plant will include a long reach excavator, a smaller excavator, the pumps to transfer material and the process plant.

There are two types of Noise Sensitive Receptors (NSRs) in the immediate area. These are high value amenity (which include the east, middle and West Piers within the harbour) and residential NSRs which are dwellings along the R105 close to the harbour (see Figure 5 below).

While the piers and marina are considered as NSRs, their success is largely dependent on a functional harbour with enough depth to allow fishing, pleasure and tourist boats to navigate and berth safely within. These proposed works are likely to be perceived as a benefit and necessity rather than a nuisance by those who use and depend on the harbour.



Figure 5 Noise Sensitive Receptors

The potential noise impact on the harbour area i.e. the piers, is difficult to accurately quantify. This is because the barge with mounted long reach excavator will be continually moving around the harbour as different areas are dredged. Additionally, people on the piers (who are the actual receptors) will generally only be exposed for momentary periods of time. The number of people on any pier will vary considerably from hour to hour and day to day.

The West Pier, with cafes and restaurants is likely to be the most sensitive receptor when dredge works are taking place nearby. However, the works will be of short term duration.

The predicted results show that the daytime construction noise threshold criteria can be achieved at the nearest noise sensitive receptors (See Figure 6 below). The existing buildings on the West Pier will act as a barrier to noise

propagation from the infill construction works. The sediment treatment plant has been located at the middle of the Middle Pier. The dredging barge is modelled in the harbour channel between Middle and West Piers. This represents a relatively worst case scenario. When the dredge barge is elsewhere in the harbour noise levels on the West Pier will be lower.

Daytime Land Reclamation and Dredging Construction Works

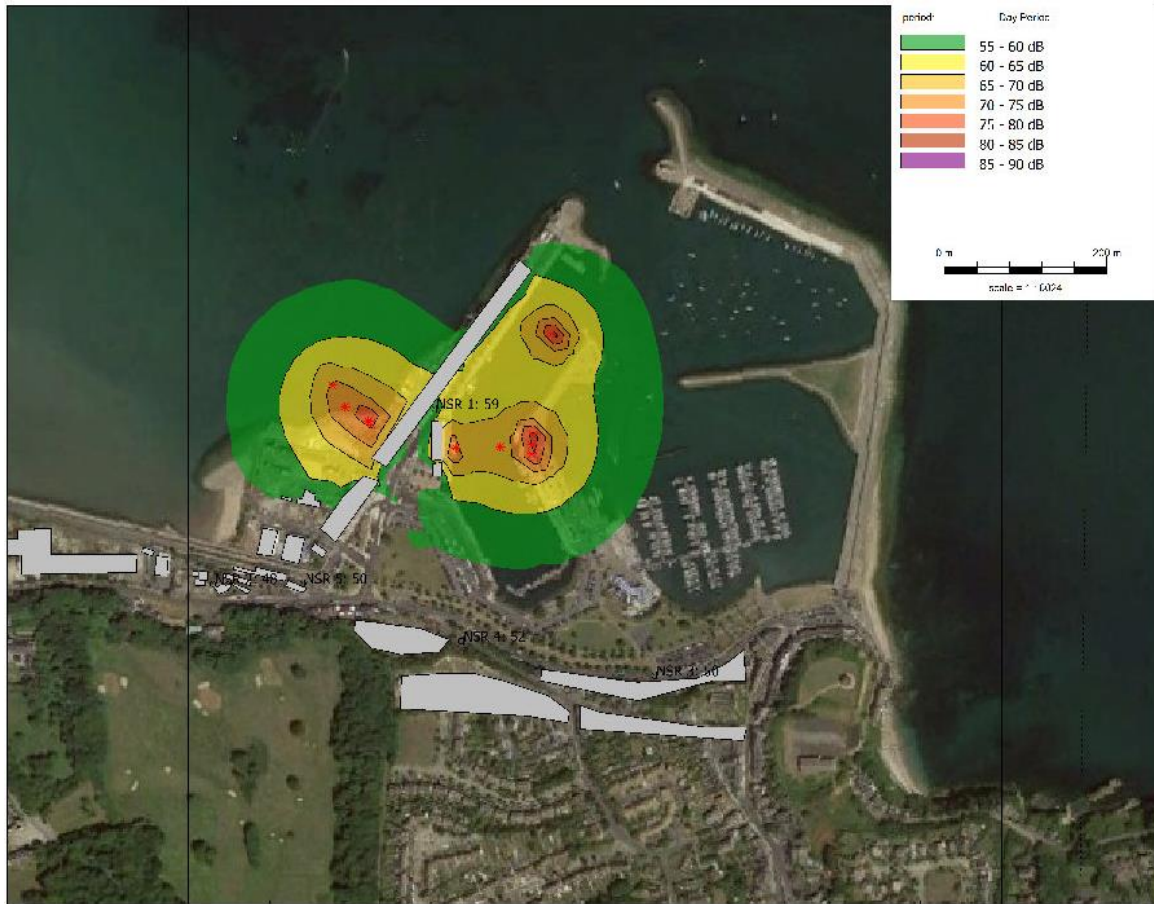


Figure 6 Daytime Noise Prediction Contour Map

The results show (Figure 6 above) that the noise limit criteria will not be exceeded. Noise levels in the order of 59dB(A) are expected along the West Pier. This may vary to some extent depending on the proximity of the barge to the pier, however noise levels are very unlikely to exceed the daytime noise limit criteria.

Evening Time Dredging Works

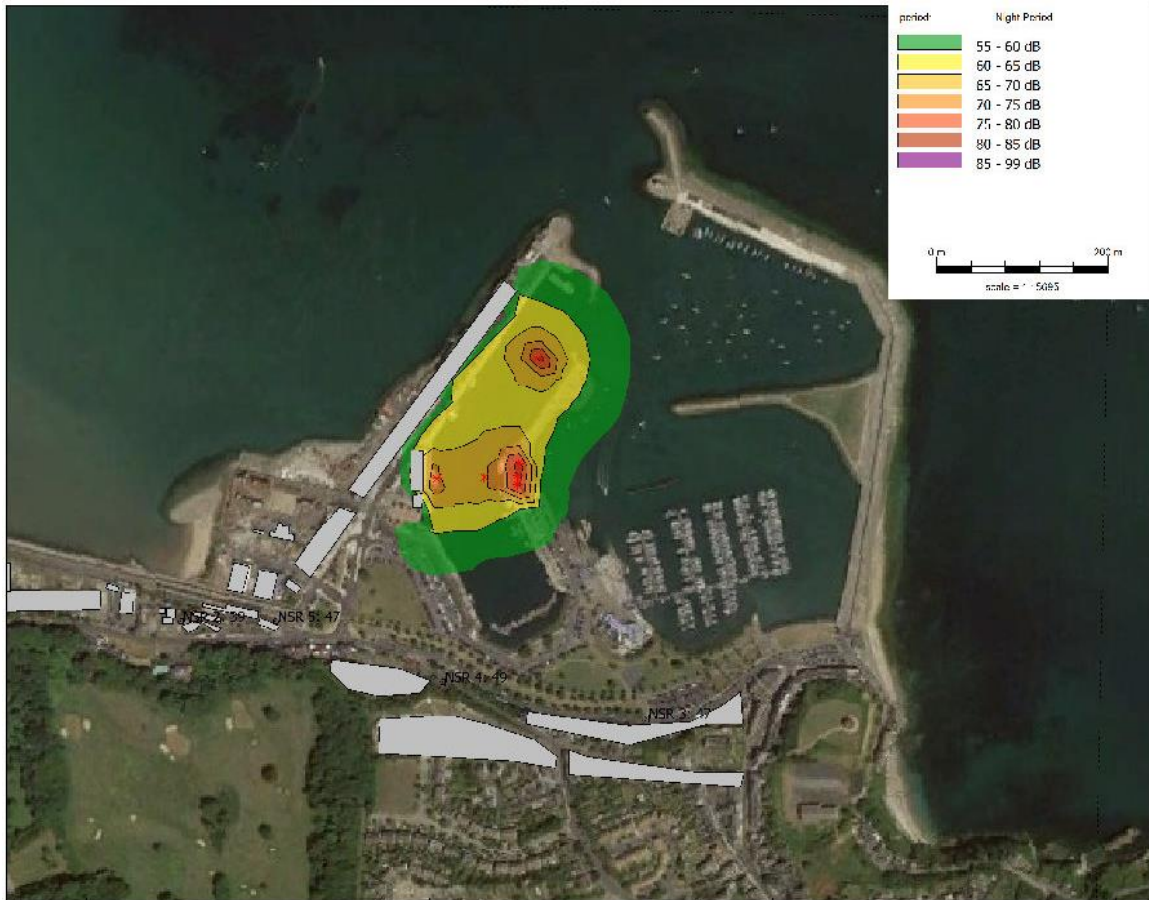


Figure 7 Evening Noise Prediction Contour Map

The predicted results (see Figure 7 above) show that the evening-time construction noise threshold criteria can be complied with at the nearest residential noise sensitive receptors.

There is a predicted exceedance of the evening limit criteria at NSR 1 the West Pier. The exceedance is predicted to be in the evening hours between 7pm and 9pm when dredging and treatment activities will be continuing until 9pm. The potential exceedance depends on what businesses are open after 7pm, where they are located and the location of the dredging barge at that time. It is assumed that there will be an amount of tolerance from the businesses on West Pier to noise, as they will have a beneficial impact from the project. This will have a short term slight effect on businesses the West Pier in the evening. Mitigation measures outlined below will reduce the severity of this impact.

The predicted noise exceedance at NSR 1 will also impact on visitors who are walking the pier. Once they are passed the construction works and reach an area on the pier that is within the noise limit they will no longer be effected. The effect will only last minutes as the person walks on past the construction works. This will have a momentary not significant effect on visitors walking the West Pier in the evening. Mitigation measures outlined below will reduce this impact.

During the finishing phase on the reclamation area, the predicted results show that the construction noise threshold criteria can be achieved at the nearest noise sensitive receptors.

Operational Phase Noise

No significant noise sources are proposed for the finished phase.

Mitigation

To address potential impacts of predicted exceedances of evening time noise limits on West Pier businesses and visitors, the mitigations are as follows;

- Onsite noise monitoring will be undertaken once the works have started. This will assess the level of noise impacting on the West Pier. This will occur at different times depending on the location of the dredging barge. The results of this monitoring will define a working area between the hours of 7pm and 9pm in order to comply with the evening time noise limit.
- Liaison with the businesses on the West Pier to let them know what works are taking place, when and to get feedback.
- Solid hoarding will be put up around the pump compound on West Pier in order to reduce noise impact coming from equipment at that location.

Residual Impacts

Once mitigation measures are implemented there will be a short term not significant effect on businesses and visitors at West Pier.

10 Natura Impact Statement (NIS)

10.1 General

A statement for Appropriate Assessment (AA) or NIS was prepared for the project. It is included as with this Application.

10.2 Conclusion

A statement for Appropriate Assessment (AA) or NIS has been prepared by Malachy Walsh and Partners, to determine the potential impacts, if any, of the plan for the proposed dredging and reclamation of land at Howth Fishery Harbour, Co. Dublin, on nearby sites with European conservation designation i.e. Natura 2000 sites. The proposed development is located adjacent to the Baldoyle Bay SAC and within 15km of a number of other Natura 2000 sites. The screening process objectively screened out eight of these sites on the basis that no significant negative impacts are likely to result from the proposed development. The remaining three Natura 2000 sites were included in Stage 2 of the Appropriate Assessment process.

The Natura 2000 sites that were included in the Stage 2 of the Appropriate Assessment are;

1. Baldoyle Bay SAC (000199)
2. Rockabill to Dalkey Island SAC (003000)
3. Lambay Island SAC (000204)
4. Rogerstown Estuary SPA (004015)
5. Lambay Island SPA (004069)
6. Malahide Estuary SPA (004025)
7. North Bull Island SPA (004006)
8. Baldoyle Bay SPA (004016)
9. Ireland's Eye SPA (004117)
10. South Dublin Bay and River Tolka Estuary SPA (004024)

The main aspects of the proposed development that could possibly impact upon these designated sites were identified. This included habitat loss, habitat alteration (through water quality impairment) and disturbance and/or displacement of species. The main activities from the proposed development that would be responsible for these impacts are dredging and the construction of the reclamation area. Operational levels at the Harbour post construction are expected to increase slightly.

A range of mitigation measures have been incorporated into the project design, and other mitigation measures have been developed with the purpose of avoiding impacts on the qualifying interests and conservation objectives for the ten Natura 2000 sites listed above. Mitigation measures include use of environmental buckets and silt curtains, monitoring of water quality, the employment of a marine mammal observer (MMO) and the implementation of best practice guidelines in relation to managing the risk to marine mammals from man-made sources of underwater noise. The likely success of these measures was also considered and no difficulties in their effective implementation were identified.

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 qualifying interests and conservation objectives for the Baldoyle Bay SAC (000199), Rockabill to Dalkey Island SAC (003000), Lambay Island SAC (000204), Rogerstown Estuary SPA (004015), Lambay Island SPA (004069), Malahide Estuary SPA (004025), North Bull Island SPA (004006), Baldoyle Bay SPA (004016), Ireland’s Eye SPA (004117) and the South Dublin Bay and River Tolka Estuary SPA (004024), provided the mitigation measures are fully and adequately implemented during the construction phase of the proposed development, it has been concluded that the proposed development will not have an adverse effect on the integrity of these sites or any other Natura 2000 sites.

On the basis of objective scientific information, the proposed development will not, either alone or in combination with other plans or projects, adversely affect any of the constitutive interests of these Natura 2000 sites, in light of these site’s conservation objectives. Accordingly, the following has been concluded:

- All aspects of the proposed development project have been identified which, in the light of the best scientific knowledge in the field, can by themselves or in combination with other plans or projects, affect the European site in the light of its conservation objectives.
- There are complete, precise and definitive findings and conclusions regarding the identified potential effects on any relevant European site.
- On the basis of those findings and conclusions, the competent authorities are able to determine that no scientific doubt remains as to the absence of the identified potential effects; and
- Thus, the competent authorities may determine that the proposed development will not adversely affect the integrity of any relevant European site.

11 Quantitative Risk Assessment

Certain heavy metals, tributyl tin and to a lesser degree, PCBs and PAHs have been identified in the shallow sediments at sample locations within the proposed dredge area. Conservative modelling of the potential mobilisation of these potential pollutants during the dredge phase indicates that the relevant EQSs may be exceeded for two parameters at Claremont Beach outside of the harbour.

Considering the factor of safety built into the assessment and the proposed mitigation measures to be employed, the risk to water quality, marine life and human health from the dredging will be low. The solidification and stabilisation of the fine sediment material to be used in the land reclamation will greatly reduce its potential leachability and permeability. Additionally, the perimeter embankment and rock armour revetment will act as a physical barrier between the placed material and the sea water.

Predicted calculations of leachate concentrations from the treated sediments entering the sea indicate that no concentrations of potentially polluting parameters will be above the relevant Surface Water EQS and no potential receptors are at risk from the post treatment phase of works. The impact of the dredging works is considered to be a low short-term risk to water quality and marine life. The impact of the S/S sediment is considered to be a low permanent risk to water quality and marine life.

12 Normal Operating Hours

- For the construction phase i.e. construction the perimeter bund of the proposed waste facility, the normal operating hours will be 7am to 7pm.
- For the operational phase i.e. the processing of dredge material and backfilling, the normal operating hours will be 7am to 9pm.
- For the closure phase i.e. capping, landscaping, paving works, the normal operating hours will be 7am to 7pm.
- On occasion works may need to be carried out earlier or later than these hours.
- 7am to 5pm (Saturday) with no work on Sundays.

13 The Raw and Auxiliary Materials, Substances, Preparations, Fuels and Energy Which Will Be Produced by or Utilized in the Activity.

The main substances to be used at the facility include active raw material/additives process materials and fuels.

All materials have been broken down into the following categories:

- Active raw material - Dredging spoil other than those mentioned in 17 05 06
- Additives (A combination of additives will be used in the S/S process, for example, Ordinary Portland cement (OPC), and granulated ground blast furnace slag (GGBS).
- Fuels

14 Summary of the quantity and nature of wastes which may be produced or accepted at the installation.

The sum of infill material was calculated at 240,000m³. This includes allowances for: bulking up of the dredge material due to the dredging operations and the addition of a binder, bathymetric survey tolerances, re-siltation and dredging tolerances. Prior to these allowances the volume of material in situ above the design dredge depth was estimated to be 190,000m³. It is however, considered prudent to apply for a waste licence for the 240,000m³ volume.

15 Measures To Ensure That Waste Production Is Avoided

Where dredged materials are unsuitable for sea disposal and are brought to land, it becomes subject to the waste management hierarchy. The waste hierarchy ranks waste management options in terms of sustainability and environmental impact. Best practice industry techniques will be used to treat the contaminated material yielded from the dredging. S/S technology produces a high strength monolith-like product that physically reduces the mobility and chemically binds contaminants to the produced matrix. The treated mass can then be recovered/recycled to serve as infill material for beneficial use. Following treatment, the material will be placed into the reclamation area, replacing the need to use virgin materials that would otherwise be required for the development.

For waste whose generation cannot be prevented on site (mixed municipal waste, food waste and waste engine, gear and lubricating oils) the contractor will be required to segregate and reuse, recycling or recover the waste where possible. Wastes will be collected and processed by approved waste collectors/licensed facilities.

16 All the appropriate preventive measures are taken against pollution, in particular through application of the Best Available Techniques (BAT) or BAT Conclusions Decision

Best practice industry techniques will be used to treat the contaminated material yielded from the dredging of the inner harbour. Stabilisation/Solidification (S/S) is a remediation technology that reduces the mobility of contaminants. The method produces a high strength monolith-like product that physically reduces the mobility and chemically binds contaminants to the produced matrix. The treated mass can then be recovered/recycled to serve as infill material or for beneficial use. Following treatment, the material will be placed into the reclamation area, replacing the need to use virgin materials that would otherwise be required for the development.

17 Measures Planned to Monitor Emissions into the Environment

A proposed monitoring programme has been included in the application for emissions to the atmosphere and water. Monitoring will be carried out at the locations and at the frequencies that may be specified in the licence. These will be reported to the EPA in accordance with the licence requirements.

18 The Necessary Measures to be Taken on and Following Permanent Cessation of Activities to Avoid Any Risk of Environmental Pollution and Return the Site of the Activity to a Satisfactory State or the State Established in the Baseline Report if Required.

A Closure Plan for the closure of the facility has been completed and included with the application.

19 The installation/facility (plant, methods, processes, abatement, recovery and treatment systems & operating procedures for the activity), with emphasis on the main measures to avoid, reduce &, if possible offset any potentially significant adverse effects on the environment.

A detailed description of the project construction methodology is included in the application.

The exact type, number, and specification of the plant and equipment to be installed at the proposed treatment area will be determined by the selected contractor for the works.

Dredgers will excavate the bed material and barges will bring the material to a berthing location on one of the piers.

Within the barge the material is agitated and fluidised to allow it to be pumped into the mixing unit. Material could similarly be transferred to bunded areas on land where the material can be agitated and fluidised and screened for larger sized particles.

Silos containing cement/GGBS/ Binder are based within the facility. These components are conveyed to the mixing process plant in liquid form. Mixing is undertaken in an enclosed system. Dust emissions are controlled within an enclosed plant operation, and as all elements are wet. A controlled and consistent end-product is produced with predictable engineering characteristics.

The equipment to be used will be subject to approval by the Engineer.

The S/S treatment plant will be brought to the treatment area by road on low-loaders set up. Plant and equipment will be installed on concrete hardstanding areas.