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1. INTRODUCTION

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 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. In the future, some of the area created may be converted to light industrial/ commercial use to support harbour operations. Such future use is not part of the proposed development being considered at present.

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.

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.

DAFM will submit a planning application to Fingal County Council for the proposed dredging of the Howth Fishery Harbour Centre (Howth FHC) and the reuse of dredge material for land reclamation purposes.

Malachy Walsh and Partners (MWP) have been engaged by DAFM to produce an Environmental Impact Assessment Report (EIAR) for the proposed dredging, land reclamation and associated works at Howth Fishery Harbour Centre in support of the planning application to Fingal County Council.

This Non-Technical Summary is the first volume of the Environmental Impact Assessment Report (EIAR) for the proposed dredging, land reclamation and associated works for the Howth FHC dredge project. The other volumes which comprise the EIAR are:

- Volume 2: Main Environmental Impact Assessment Report
- Volume 3: Appendices to the Main Environmental Impact Assessment Report
- Volume 4: Photomontages

The purpose of this Non-Technical Summary is to provide a concise overview, in non-technical terms, of the project, environmental impacts and mitigation measures highlighted by the Environmental Impact Assessment and presented in detail in the main EIAR, Volume 2.

2. DESCRIPTION OF PROPOSED DEVELOPMENT

2.1 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

2.2 The Applicant and Application Area

The applicant is the Department of Agriculture, Food and the Marine (DAFM). 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 planning application area spans the interior of Howth harbour and the 4.8ha sea area west of the West Pier (See **Figure 2**). 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 do not lie within the boundary of any designated site.



Figure 2. Red line boundary of proposed construction works including site layout (excerpt from planning drawing no. 19934 -5002 Site Layout Plan).

2.3 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 south east.

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.

For the purposes of the dredging project the harbour is considered to comprise of five areas (See **Figure 3** 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.

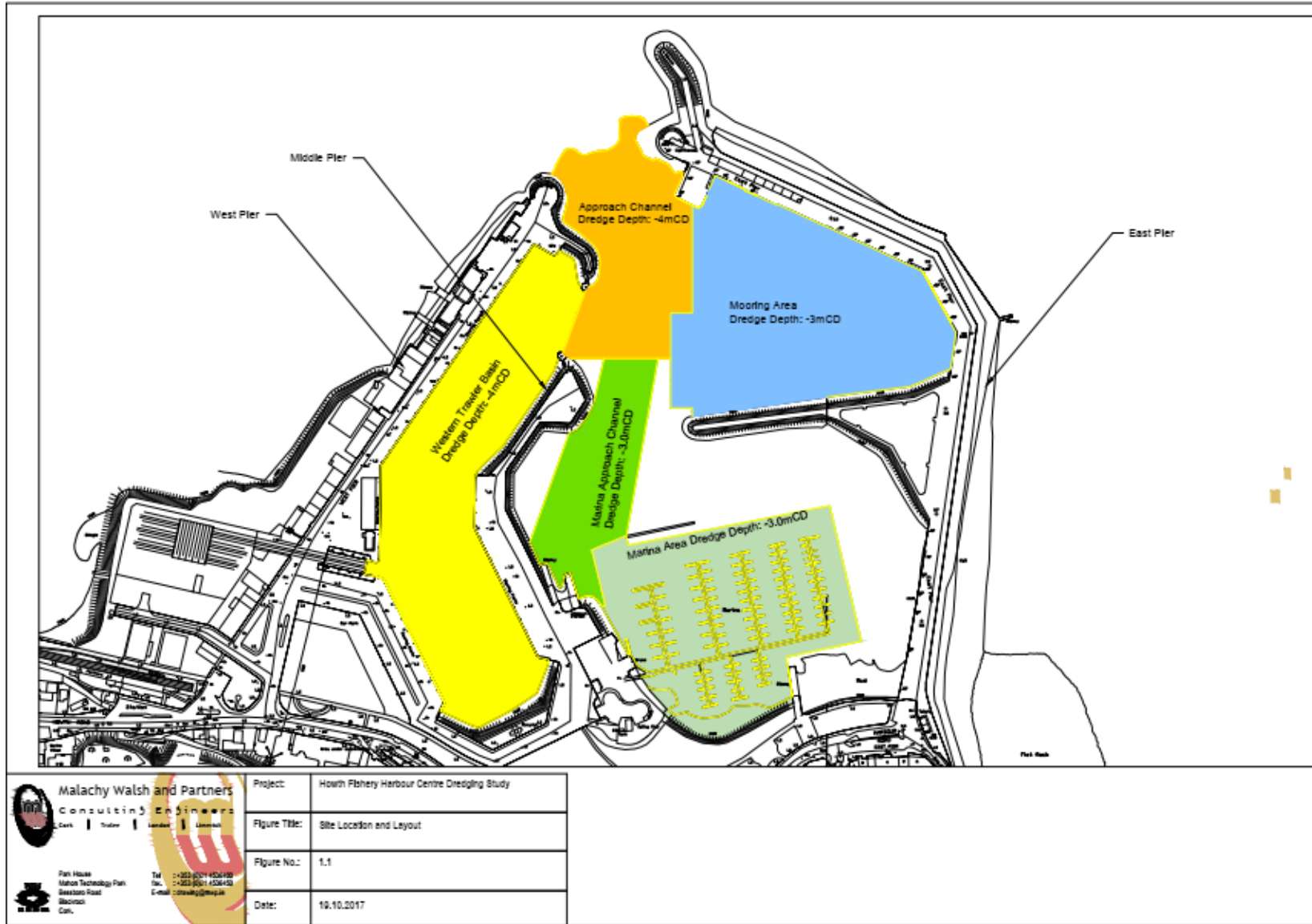


Figure 3 Harbour areas and dredging outline areas

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.

2.4 Overview of the Proposed Development

The proposed development consists of the following main elements (See **Figure 2 Layout** above):

- Dredging the harbour (as per above **Figure 3**);
- Treatment of the dredged marine material;
- Reclaiming land (4.8 Ha) on the west side of the west pier using treated dredge material;
- Construction of an embankment and rock armour revetment around the perimeter of the reclaimed area;
- 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 aiming to start in the summer of 2022. The construction phase of the project will take place over an estimated 24 month period. Dredging and processing activities will be carried out 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.

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 (6 month duration);
- Element 2: Dredging and treatment of Howth Harbour sediments (12-15 month duration);
- Element 3: Reclamation of land up to ground level (12-15 month duration);
- Element 4: Finishings (6 month duration)

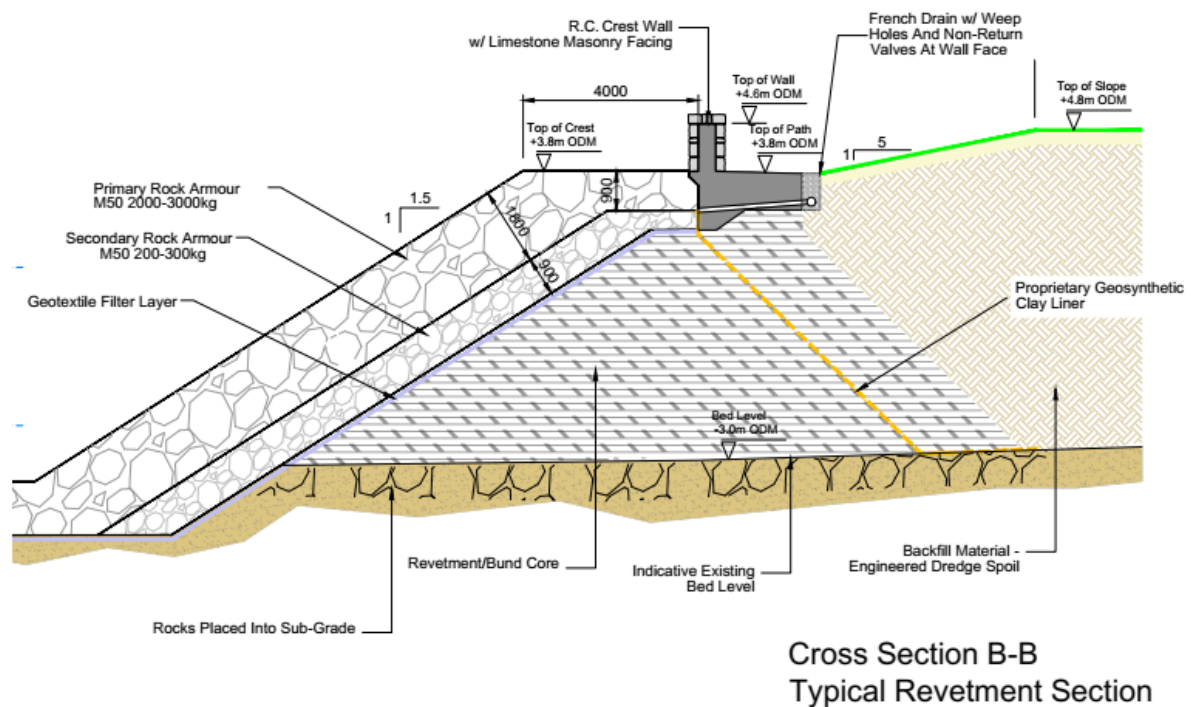


Figure 4 Perimeter embankment and rock armour protection.

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 is likely to 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.

Element 2: Dredging and treatment of Howth Harbour sediments

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. It is estimated up to 10% of the overall dredge volume will consist of rock.

The sediments within the harbour contain contaminants that have built up over the years. The main contaminant of concern comes from the anti fouling paint used in the past to stop marine growth on the hulls of boats. This stabilisation and solidification treatment 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 excavator. For areas that will require rock to be broken out, a rock breaker will be attached to the excavator. Working under water the rock breaker will not be as loud as one operating on land. The rock will then be dug out by the excavator. When full, the barge will be brought to an unloading point on the Middle Pier within the trawler basin of the harbour. The dredge material will be treated at a mixing plant on the Middle 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. 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 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 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 on the Middle Pier via an underwater pipeline to the West Pier. On the West Pier, an intermediate pump station will pump the mix via pipeline to the reclamation area, where it will be deposited and solidify.

Element 4: Finishings

The finished reclamation area (approx. 4.8 Ha) will include landscaping, access road, 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.

2.5 Project Need

While minor dredging is currently taking place for some works on Middle Pier, the last major dredge happened in the early 1980s. Since then, the sea bed levels have in places gradually risen up as a result of sediment deposition onto the sea bed. Due to increased draft size in fishing vessels, in order 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 in order 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.

2.6 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 the vast majority 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. Most of the 2015 sediment samples tested were found to be 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 the most 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. A number of 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.

Alternative layouts were considered based on planning policies, natural heritage context, built heritage context, preliminary photomontages and harbour character. 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 considered to be 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.

3. ENVIRONMENTAL ASSESSMENT

The main objective of the EIA process is to ensure that all direct, indirect and cumulative environmental effects of the project are anticipated. Where effects are identified as unacceptable, these will be avoided or reduced during the design process through the implementation of practical mitigation measures. The main chronological stages of the EIA process include:

- Screening, scoping and consultation in order to help identify impacts;
- Carrying out baseline studies and collecting data on the existing receiving environment;
- Identifying and assessing potential for significant environmental effects (impact assessment); and
- Prescribing or designing mitigation measures to avoid or minimize environmental effects.

The EIAR has been carried out in accordance with the relevant legislative requirements and guidelines, including the Environmental Protection Agency (EPA) - 'Guidelines on Information to be contained in an Environmental Impact Statement, 2002 and draft 2017'. Specialist input as required for each of the environmental topics has also been used where appropriate.

3.1 Screening and Scoping

As part of the scoping process, informal consultation was carried out with a number of relevant parties. Consultation through meetings, letters, email and telephone calls with various statutory and non-statutory consultees was undertaken during the EIA process. Discussions have been held with representatives of Fingal County Council at a number of levels, including planners, heritage officer, biodiversity officer and the Howth area manager. Formal preplanning meetings (06.03.19, 30.05.19 and 03.12.19) were held with Fingal County Council. The aim of these initial meetings was to present the project and to receive initial feedback on any potential issues of relevance that should be addressed through the EIA process. The meetings were held with:

1. FCC Chief Executive Officer, Chief Scientist, Howth Area Manager, Head of Water Services and Environment; and a Senior Executive Planner.
2. FCC Planning and Traffic representatives
3. FCC local area councillors.

Written notifications were circulated to a number of identified stakeholders (both statutory and non-statutory consultees), which set out an overview of the project proposal. The notifications invited feedback from the consultees on any key issues and concerns which they consider should be addressed. The issues raised were subsequently taken into account in the EIA process.

3.2 Public Consultation

There have been a number of 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.

As part of the EIA consultation process, letters, including a summary of the project were circulated to a number of identified government and non-government stakeholder organisations who may be affected or wish to input into the proposed project. Written feedback was received from Failte Ireland, the Department of Culture, Heritage and the Gaeltacht, the Geological Society of Ireland and Transport Infrastructure Ireland (TII).

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.

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 has been taken account of and any relevant feedback has been incorporated into the various chapters of the EIAR.

The feedback obtained from the consultation process and responses received from stakeholders were taken on board and addressed in the relevant assessments during the preparation of this EIAR. All consultation responses and meeting outputs informed the final design of this project, as appropriate.

3.3 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.

3.4 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.

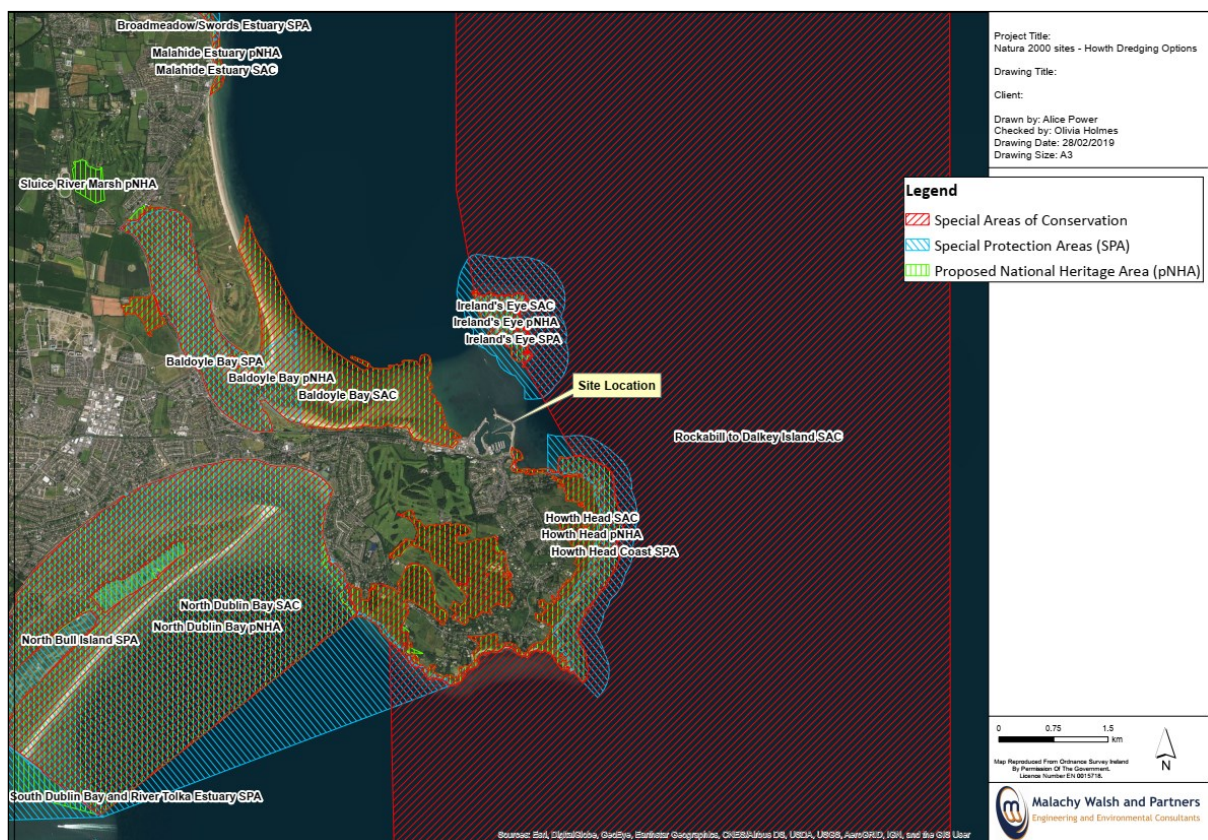


Figure 5 Site location map showing proposed project location and surrounding designated sites

The development is surrounded by a number of designated sites as referenced in the above **Figure 5**. The development lies adjacent to the Baldoye Bay SAC (which includes Clarendon Beach) with the project design going around its border. Impacts from the project on relevant habitats within the Baldoye SAC were assessed and are described below in the different habitat and wildlife sections. The Baldoye 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 been submitted as part of this planning 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 (including rock breaking) 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.

3.5 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 antifoul 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. Approximately 10% of the dredge material will be bedrock. The project may require some rock-breaking to be carried out which once broken, will be excavated from the bed by a long reach excavator with a bucket attachment.

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.

3.6 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 a number of potential impacts on receiving waters from stockpile runoff and waste water 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. The majority 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, the majority 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.

3.7 Air and Climate

An assessment on the effects to Air and Climate that may occur as a result 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 in close proximity to 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.

3.8 Landscape and Visual

The potential impacts of the proposed harbour dredging and land reclamation works on the landscape and seascape of the receiving environment have been identified and assessed.

The coastal setting of Howth peninsula consists of a series of cliffs, deep inlets, stony coves and rocky caves and outcrops. The shoreline generally rises in high and steep cliffs and coastal spurs. The coastline along the northeast of the peninsula is defined by four long, sandy beaches (Burrow, Claremont, Quarry and Hole-in-the-wall beaches) that run in a line from Howth harbour's West Pier for approx. 2.5km until reaching Sutton.

The visual baseline is solely about the proposed West Pier Reclamation Area, which will be located along the western edge and northern tip of the West Pier. There are several views of recognised scenic value within both the site and the study area. There is the designated need to preserve views along the following areas:

- Northern & north-western tip of the West Pier;
- All of the East Pier;
- Within and south of Howth village;
- Within the grounds of Howth Castle and Deerpark Golf Course;
- Between Howth village and the Nose of Howth (i.e. ≥ 1 km east of the village).
- Owing to the proximity and openness of view, combined with their frequency of use, the most prescient of these protected views are those from the northern and north-western tip of the West Pier, as well as those from the most northern sections of the East Pier.

The most important visual receptors in relation to this project are those people visiting or working along the popular West Pier. Aside from walkers and sightseers, these include the numerous people visiting or working in the variety of seafood wholesale processors/retail shops, cafes/restaurants along the West Pier, along with those servicing or working on fishing vessels docked along that pier. However, other important visual receptors are those numerous people who regularly frequent Claremont Beach, particularly when it is at or near low tide, which is within 200-600m west/southwest of the proposed development, as well as Quarry Beach a little further west. There are also a number of sailors, recreational fisher folk, kayakers and paddle boarders who enjoy the waters directly west and north of the West Pier.

The assessment found that:

- There is a healthy interdependence between the coastal landscape and the vibrant community it supports through the marine industry, tourism and water-based recreation.
- The scenic quality of the harbour, including the mix of recreational and small or moderate sized fishing boats, creating a more localised aesthetic to the peninsula is a further reason why people chose to visit it or live close-by.
- Howth's seascape of high, dramatic cliffs and spurs is geologically and scenically less tame and consistent than Dublin's coastline to the north. The overall landscape of Howth peninsula represents somewhat of an anomaly along Leinster's east-facing coastline. Howth's vivid quality is both enriched and compounded by its proximity to the nation's capital.
- The surrounding coastline has a high recreation value as a result of its popularity among residents, Dublin day-trippers and international tourists.
- There is a long-established perception of the peninsula as a much-cherished and picturesque antidote to the urban clutter and pace of the city's heart.
- It is considered that whilst the landscape / seascape contained within the study area has a relatively high degree of uniqueness and sensitivity, Howth harbour and its immediate environs are much more robust. The landscape sensitivity is judged to be **High-medium**.

The proposed project will have a conspicuous physical impact on the current, man-made, shoreline and this impact will be permanent and irreversible. The proposed development helps to solidify and

blend the broader multi-functional identity and appeal of the harbour, introducing a large and more tangible sense of recreation and seaward aesthetics to the West Pier. A harbour facility can be an important hub for coastal communities such as this one, providing direct and indirect employment; a recreational nucleus for the coastline and a seasonal terminal attracting additional visitors and tourists to the village. A certain degree of local pride is often felt towards bustling harbours, which makes the intensification of development and associated activities more acceptable, or even welcomed.

In terms of landscape/seascape character, the proposed development represents an extension that will serve to strengthen the popularity, functionality and future of the harbour itself. On balance of these reasons, the magnitude of landscape/seascape impact is deemed to be **Medium-low**. When the magnitude judgement of Low is coupled with the earlier sensitivity judgement of 'High-medium,' the overall significance of landscape / seascape impact is deemed to be **Moderate-slight**.

Mitigation Measures

Specific landscape and visual mitigation measures are not considered necessary.

Residual Impacts

It is not considered that the proposed development will contribute significant cumulative impacts in this landscape / seascape and visual context.

Overall, it is not considered that the proposed development will give rise to any significant landscape / seascape or visual impacts.

3.9 Cultural Heritage

The potential effects on the archaeological, underwater archaeology, cultural heritage and architectural heritage of the proposed development at Howth Harbour have been assessed.

Howth Harbour is not a registered archaeological monument, although the harbour and its nineteenth-century structures are registered in the National Inventory of Architectural Heritage (NIAH) and are protected structures. The registered terrestrial archaeological sites that exist in Howth all lie to the south of the harbour and outside the proposed development area for the Howth FHC project.

Previous archaeological excavations in the wider study area indicate that the area appears to have been beach or foreshore up until the period when the harbour was developed.

There are a total of nine sites of architectural heritage interest directly associated with the Harbour and these are protected structures. The nineteenth-century pier walls are protected structures, as are the nineteenth-century buildings that survive on the West Pier.

The marine geophysical survey and a side-scan sonar survey carried out, in conjunction with the magnetometer survey recorded a series of targets in the area west of the West Pier and these were subsequently inspected by diving. Underwater archaeological survey took place on 18th June 2020 and focused on the proposed reclamation area off the West Pier and included the inspection of the

targets identified in the marine geophysical survey report. No features of archaeological interest were observed on the seabed.

Likely Potential Impacts

The dredging of the harbour basin represents a direct and permanent impact on the harbour silts. However, this area was substantially dredged in the 1980s after the harbour was dewatered in 1979 to facilitate those works. It is unlikely that archaeologically significant material will be present in those areas that were dredged previously. It remains possible that archaeological material is *in situ* in areas and depths that were not dredged previously, and archaeological monitoring will be conducted of such areas to ensure that any cultural heritage material that may be retained in those deposits are recovered.

The exposed length of sloping rock face on the west side of the West Pier poses an archaeological constraint. As the face of the rock embankment will be permanently buried, it is necessary to ensure that suitable archaeological record of the rock face is made prior to construction commencing. It is also necessary to ensure that there is a suitable barrier membrane laid down to separate the *in situ* remains from the reclaimed deposits to be laid above.

No impacts on archaeological assets are anticipated during the operational phase.

A section of wall will be removed near the end of the West Pier in order to provide access to the new reclamation area from the end of the West Pier. The wall is not original to the West Pier so its removal will only have a permanent moderate negative effect on the historic character of the pier.

Mitigation

Pre-construction phase mitigation measures will include a detailed archaeological survey of the face of the rock facing of the West Pier that will extend from the structure toe to the rear of the buildings that populate the West Pier.

Archaeological monitoring licensed by the National Monuments Service will be conducted of all terrestrial, inter-tidal/foreshore and seabed disturbances associated with the development, with the proviso to resolve fully any archaeological material observed at that point.

Residual Impacts

Residual impacts on archaeological assets will have a neutral effect.

3.10 Material Assets

Material assets are defined as 'resources that are valued and that are intrinsic to specific places. They may be either human or of natural origin and the value may arise for either economic or cultural reasons'. The consideration of the projects impact on material assets is discussed in the context of built services and waste management, e.g.:

- Electricity;
- Water Supply, Wastewater and Gas Infrastructure

- Resource Use and Waste Management

The proposed development is mostly over water and there are no existing utilities within the area of the land reclamation or the dredge footprint within the harbour. The two proposed construction compound areas will be located on the Middle Pier and the West Pier. Both the Middle Pier and the West Pier have electricity which is supplied by the local ESB network. The West Pier has a gas line for use by the existing premises if required. There is a water main line on both the middle and West Pier and a foul water line on the West Pier.

Electricity

A new electrical network will be created for the land reclamation area and will be supplied by connection to the mains. The proposal will not require any modification to the overall local ESB infrastructure. During the construction phase of the proposed project, connections will be made to the mains and generators may also be used where required. Electrical ducting will be installed to facilitate low level lighting along footpaths, lighting along the road and to enable future electrical connections. There will be no impact on electrical resources from the proposed works.

Water Supply

There is a water requirement for the treatment process, welfare facilities and cleaning. During the construction phase, approximately 500m³/day of water will be used for mixing during the dredge spoil treatment process. The majority of this water will be sea water, however there will be a need for circa 10% freshwater supplied by the mains water system at a rate sufficient to create a homogeneous and pumpable slurry. Up to 100 m³/day of mains water may be required for welfare facilities and other uses during the construction phase. During the operational phase, outdoor showers and taps will be provided which will be connected to the mains water on the West Pier. Water connection and usage during the construction and operational phases will be in accordance with necessary permissions obtained from Irish Water.

Wastewater

During construction, the wastewater from the welfare facilities within the construction compounds will be collected and disposed of off site at a suitably licensed waste facility.

During reclamation works, excess water will rise to the surface of the stabilised mass. This water will be contained within the impermeable perimeter bund of the reclaimed land area. The excess water will be re-circulated by pump back into the processing plant for re-use in mixing the dredge material and binder. Disposal or discharge of excess water that is not needed for re-circulation purposes may be required. The excess water will be treated onsite and discharged to the sewer/stormwater system as a treated trade effluent. All discharge of the treated excess water or trade effluent will be carried out under applicable consents from Irish Water, Fingal County Council and/or the EPA.

The current wastewater system will have an increase in load due to this trade effluent. The increase in load on the waste water system will be short term as it will only last for the duration of the dredging works. Any discharge of trade effluent will be within the capacity limits and permission of

Irish Water. As the discharge will only taking place if Irish Water can accommodate it, the impact on the waste water system is have a short term not significant effect.

There will be no operational phase generated waste water from the project.

Resource Use and Waste Management

All excavated dredged material will be re-used in the development of the reclaimed area. The avoidance of waste production by the beneficial reuse of circa 240,000m³ of dredged material for the benefit of land reclamation is considered a significant positive impact in terms of resource use and waste management.

It is envisaged that the waste generated will be minimal and will also be strictly controlled. Any waste generated on site will be segregated at source and will be taken off site to an appropriate facility by an authorised contractor.

Mitigation

Good site practice and careful management on site will ensure efficient resource management and a reduction in waste. Any waste generated on site will be segregated at source and will be taken off site to an appropriate facility by an authorised contractor. All waste streams will be identified within the contractors' waste management plan at the outset.

The waste treatment activity and placement of the treated material will be undertaken in accordance with the conditions of a waste or IE licence from the EPA.

Controls as part of the contractors Construction and Environmental Management Plan will ensure minimal waste being generated and minimise the risk of pollution. Fully registered waste management companies will only be used for waste coming from the site. Standard good practice of only ordering the required amount of materials will be implemented.

The small quantities of solid waste (packaging, surplus construction materials, etc) generated during the construction stage of the project will be sorted on site prior to disposal/recycling as appropriate off site by a licensed waste contractor.

Residual impacts

The impact of the proposed project on resource use is a permanent significant positive effect. The impact of the proposed project on other material assets will be a short term not significant effect.

3.11 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 also 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.

In order 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 Night time 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, L_{AeqT} 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 6** 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 6 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 7** 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

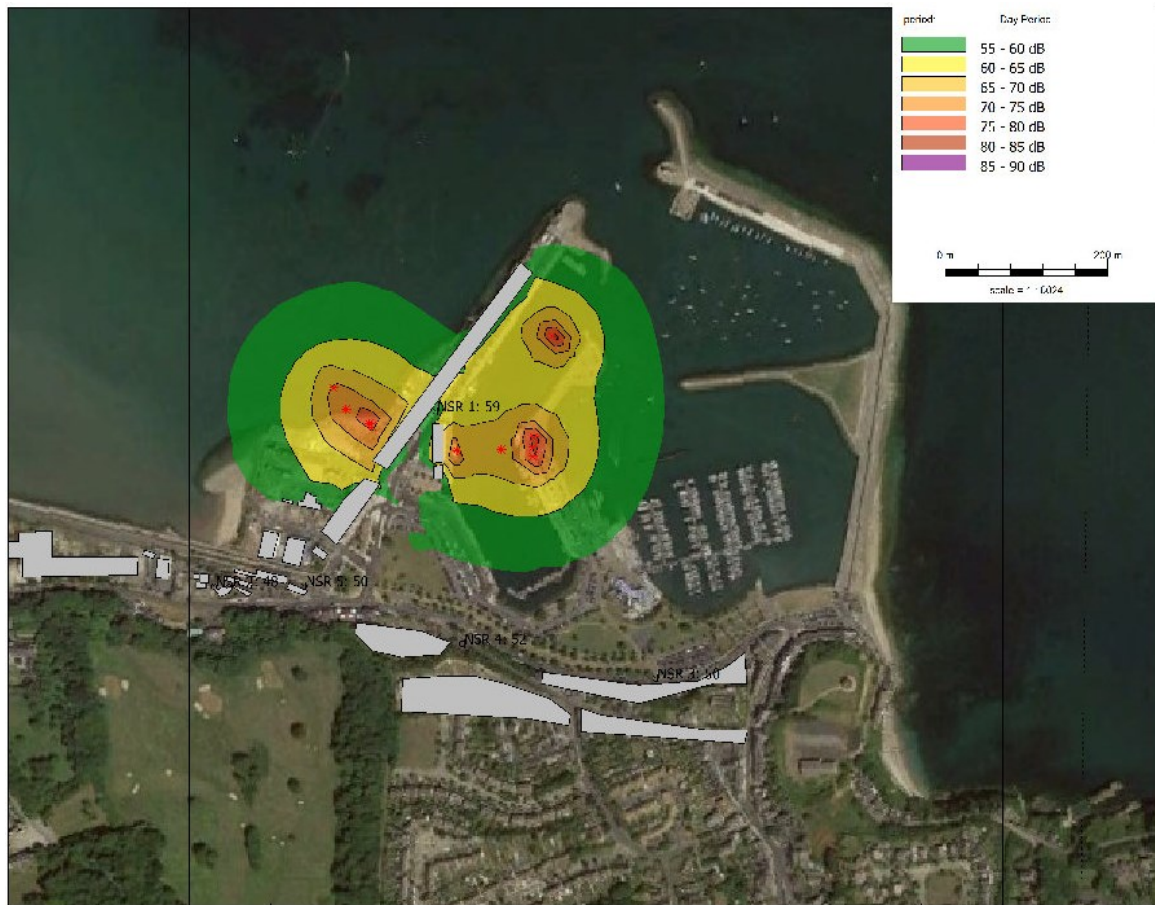


Figure 7 Daytime Noise Prediction Contour Map

The results show (Figure 5 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

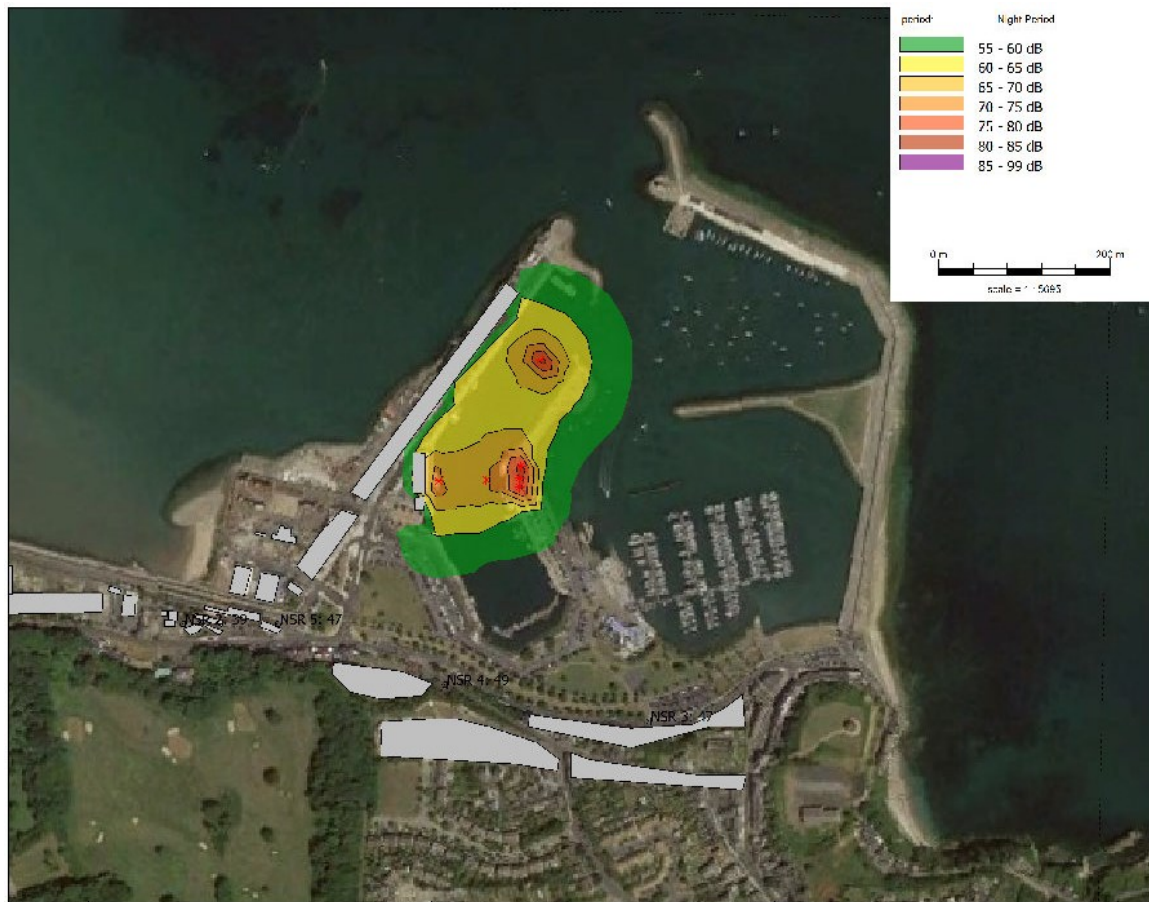


Figure 8 Evening Noise Prediction Contour Map

The predicted results (see **Figure 8** 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.

3.12 Traffic and Transportation

The traffic and transportation study quantifies and assesses the impact of construction and operational traffic generated by the proposed development on the existing local road network, and recommends mitigation measures, as appropriate.

The proposed development lies on the north side of Howth Peninsula, to the north of Dublin Bay. It is accessed via the R105 Howth Road Regional Road, as shown in **Figure 9** below.

Existing environment

Due to Covid-19 restrictions, typical baseline traffic volumes in the Howth area and along haul routes could not be established. Baseline traffic volumes on the surrounding local road network have been established on the basis of previous on-site traffic surveys for planning applications to Fingal County Council and An Bord Pleanála. Annual Average Daily Traffic (AADT) volumes have been estimated on the basis of Transport Infrastructure Ireland (TII) automatic traffic counter data.



Figure 9 Local Road and Transport Network Map

The R105 and R106 are operating well within their estimated suburban road link capacity with the highest volume/capacity ratios during the morning peak hour of 40.19% and 31.15%, respectively.

The R104 and R139/N32 are also operating within their estimated suburban road link capacity with the highest volume/capacity ratios during the morning peak hour of 65.46% and 79.90%.

Likely Potential Impacts

Construction Phase Impacts

A detailed Construction Traffic Management Plan will be prepared by the main contractor prior to works commencing. In terms of access and vehicle routing, it is envisaged most delivery vehicles will return by the same route.

Site personnel will travel to site prior to 7.00am and depart from site from 7.00pm, on weekdays, outside the peak traffic hours. The expected peak staff will be up to 66 personnel, who will generate approximately 53 car and van trips, both to and from site each working day, based on an average worst case vehicle occupancy rate of 1.25 personnel per vehicle.

The 24 month construction programme will require the importation of up to 12,527 loads of construction materials. Peak heavy vehicle traffic volumes generated by the delivery of construction vehicles will be up to 55 heavy vehicles per day, both to and from the site. This peak will occur during months 4-9 of the construction programme, where there is an overlap between Elements 1, 2 and 3 of the construction works.

The predicted 2023 TII Urban Road Link Peak Hour Volume indicate that the R105 and R106 will continue to operate within its estimated urban rural road link peak hour capacity.

Heavy vehicle traffic volumes generated by the proposed development construction could result in damage to existing and proposed road pavements on public roads, including at vehicle turning, accelerating and decelerating locations. Road pavements will be regularly monitored and reinstated in accordance with the requirements of Fingal County Council.

It has been assessed that the proposed construction works will have slight to moderate short-term negative effects.

Operational Phase Impacts

It is proposed as part of the development to provide landscaping on the reclaimed area to provide an amenity walking area, a slipway for access to the water, storage areas for harbour activities and additional car parking facilities. The reclaimed area is located west of the existing pier and will be accessed via a proposed road to the rear of the existing facilities. The proposed road is a single carriageway of 6.0m in width, with a footpath on each side of approximately 2.0m wide. The proposed road forms a T-junction with the existing West Pier local road.

The proposed water sports and slipway access is to facilitate an existing activity within Howth Harbour. Access to the proposed slipway is provided from West Pier local road and the new proposed road. An amenity walking area is also proposed as part of the development. This will result in no significant overall change to the generated traffic in the area, as amenity walking is already prevalent. The existing priority T-junction between the West Pier and the R105 will continue to operate within its capacity for the plan years 2024, 2029 and 2039.

It has been assessed that the proposed operation phase will have slight to moderate traffic effects.

Mitigation

The Main contractor will prepare and implement a construction traffic management plan for the duration of the works. The traffic management plan will take into account all health and safety construction traffic guidelines. The plan will include delivery routes for the construction materials. No additional measures are proposed as no significant negative impacts are envisaged.

The operation phase of the proposed development will not have a significant operational traffic impact; therefore, no mitigation measures are proposed.

Residual Impacts

The proposed construction works will have slight to moderate short-term negative effects in the construction phase.

It has been assessed that the proposed development will have slight to moderate long-term negative effects in the operational phase.

3.13 Cumulative Effects

The cumulative impact assessments were specific to each chapter of the EIAR. A search of the Fingal County Council Planning register identified permitted and proposed developments. These along with existing developments in the vicinity of the Howth FHC dredge and reclamation project were considered for identifying potential cumulative impacts.

Potential cumulative impacts mainly relate to water quality with identified existing and permitted sewage outflow pipes. There was also a potential impact with other works planned and ongoing within Howth harbour. There was a potential cumulative traffic impact with the permitted Claremont residential development. The assessments found there will be no overlapping of construction phases with other development within Howth harbour. There are traffic mitigations already required such as traffic management plans. Mitigations were also already required such as those reducing suspended solids leaving the dredge area. No additional mitigations were required. It is summarised here that it is unlikely there will be any significant negative cumulative effects.

3.14 Interaction of Effects

There is potential for interactions between one aspect of the environment and another which can result in direct or indirect impacts, and which may be positive or negative. While all environmental aspects can be inter-related to some extent, the following outlines the key interactions identified between each of the various environmental subject areas considered in the EIAR for both the construction and operational phases of the proposed development. Where relevant, interactions between specific environmental aspects and effects are already addressed within each of the individual assessment topic areas of this EIAR.

Population and Human Health

The additional employment of staff workers during the proposed dredging and site infrastructure works will have a positive impact on the local economy, impacting on material assets and traffic. The impacts associated with each individual aspect are discussed earlier in this Non-Technical Summary.

Land and Soils

The dredging and reclamation works associated with the proposed development have the potential to impact on air quality and climate, surface and ground water, population and human health, landscape and visual, heritage, biodiversity, noise and vibration and traffic and transportation. The associated impacts for each aspect are discussed earlier.

Water

There is potential for the impacts associated with surface and groundwater to interact with population and human health, land and soils and biodiversity. The potential impacts associated with surface and ground waters due to the construction and operational phases of the proposed development are discussed earlier in this Non-Technical Summary.

Air and Climate

There is potential for emissions to air during the construction phase in the forms of temporary fugitive dust and vehicle emissions. This has the potential to impact population and human health and biodiversity in the vicinity of the site. The potential and predicted effects of emissions associated with the project are discussed earlier.

Landscape and Visual Resource

The change in landscape during the construction and operational phase has the potential to impact on population and human health through local residents, tourists and the general public. The impact on biodiversity is via the change in existing wildlife habitats in the West Pier. The heritage interaction is through the change in landscape in the immediate vicinity of protected structures.

Noise and Vibration

Noise impacts will occur during the dredging and construction phases of the project as a result of increased levels of site associated traffic, dredging and process/pump machinery during the works. Noise and Vibration has the potential to impact on population and human health and biodiversity, which are addressed individually and in detail within the EIAR.

Traffic and Transportation

The increase in traffic associated with the proposed dredging and site infrastructure works has the potential to have an impact on air quality and climate, landscape and visual, population and human health, land and soils and biodiversity. The impacts associated with each aspect are addressed individually within the EIAR.