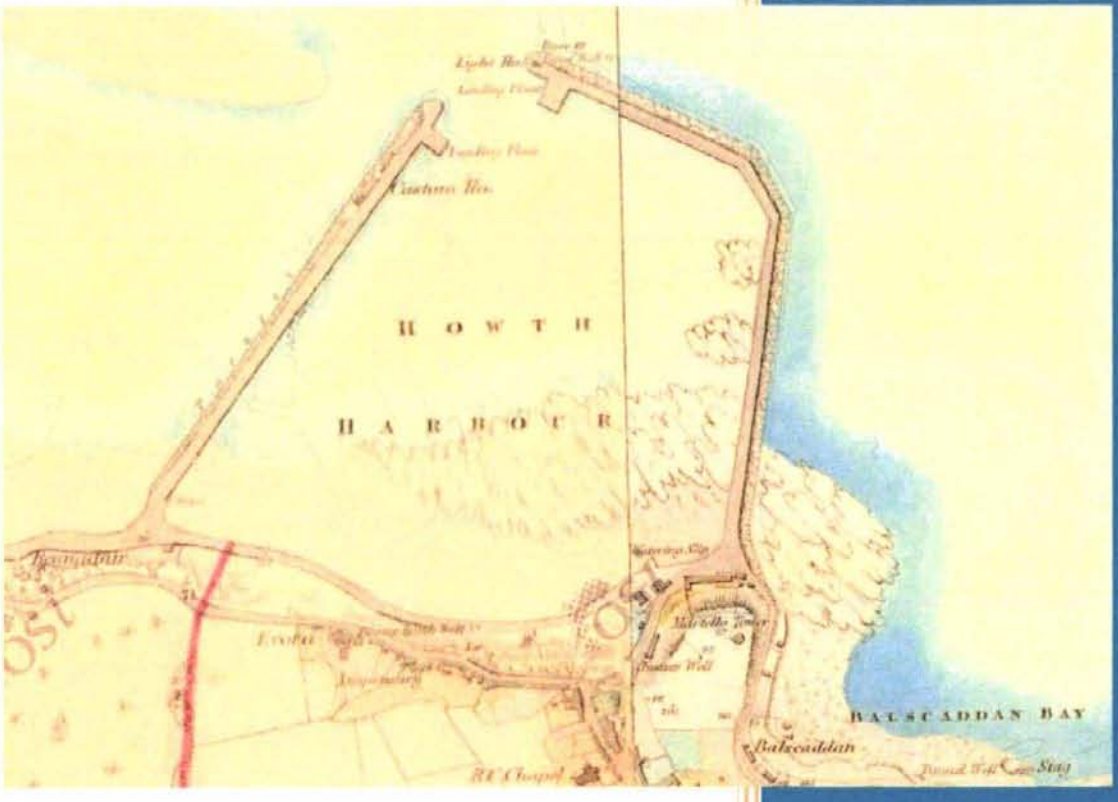
Appendix 11

Architectural Heritage Impact Assessment

Howth Fishery Harbour Dredge & Reclamation Project



APRIL 2021

ARCHITECTURAL HERITAGE IMPACT ASSESSMENT

JCA Architects

Architects & Conservation Consultants

Courthouse Chambers, 27/29 Washington Street,
Cork, Ireland, T12 WN8F

CONTENTS

1 ARCHITECTURAL HERITAGE

1.1 INTRODUCTION

JCA Architects carried out an architectural heritage impact assessment on behalf of the Department of Agriculture, Food and the Marine (DAFM) on the proposed Howth Fishery Harbour Dredge and Reclamation Project. A full description of the project is contained in **Chapter 2 Project Description** of the EIAR for the project.

Howth Fishery Harbour Centre (FHC) was last dredged in the 1980s, and due to build-up of siltation, it is necessary to dredge the existing basins & approach channels in Howth Harbour in order to provide safe access, navigation and berthing to the vessels currently using the harbour.

It is proposed to dredge circa 240,000m3 of material from the seabed within Howth FHC, process and re-use this material to the West of the West pier in order to create an additional circa 4.8Ha of land area. The infill area will incorporate a mixture of green space, recreational area, parking and road infrastructure and a hardcore area for future recreational and/or commercial development.

The aim of the overall project is to increase the depth of water in the harbour in order to provide safe access for the largest range of vessel sizes and types on the widest range of tides, within the structural parameters of the existing harbour quay structures; and, where possible to process and re-use or dispose of dredge material in an environmentally sensitive and cost effective manner.

Scope of Architectural Heritage Report

This report comprises an architectural heritage impact assessment which includes a historical context for the development of the pier structure and the buildings located on it, a brief written and photographic record of the existing structures, and an assessment of the likely physical and visual impacts of the proposed Protection works on the special character of the protected structures.

This report was undertaken with due regard to: (1) the 1992 Valetta Treaty (2) the conservation principles as produced by ICOMOS in the Venice and Burra Charters. (3) the publication in 2004 of the Architectural Heritage Protection-Guidelines for Planners by the DoEHLG, (now DoCHG); (4) the heritage objectives (5) the Original (2002) and Revised Guidelines (2017) on Information to be Contained in EIS's/EIAR/s and the Original (1995) and Revised (2015) Advice Notes for undertaking an environmental impact statement (EIA) issued the Environmental Protection Agency.

Documentary sources:

- Arup, *Future Structural Integrity of the East Pier*, Dec. 2013 (report prepared for the Dept. of Agriculture, Food and the Marine)
- Cox, RC, & Gould, MH, *Civil Engineering Heritage Ireland*, London, 1998.
- 'Howth Mariner's Hall', in *Dublin Builder,* 1 July 1864, p. 134
- Lewis, Samuel, *A Topographical Dictionary of Ireland*, London, 1821.
- Lohan, Rena, *Guide to the Archives of the Office of Public Works*, Dublin, 1994.
- 'The History of Howth Harbour', *Oibre*, Uimhir 14, 1980.
- The Irish Architectural Archive's *Dictionary of Irish Architects*

- 'Improvements at Howth', *Irish Builder*, June 15 1867, p. 147.
- National Inventory of Architectural Heritage (NIAH) entries on the West Pier
- Malachy Walsh & Partners, *Howth FHC East Pier Protection: Pre Planning Report for Fingal County Council* (May 2017)
- Shaffrey Associates, *Dun Laoghaire Harbour Heritage Management Plan*, Nov. 2011.

Fieldwork:

JCA inspected the work area in August 2019, at the request of DAFM. The West pier was inspected and photographed from the pier itself, and from the east and west, along with the existing buildings on the pier (exteriors only).

Cartography:

- John Rocque, Plan of the City & Environs of Dublin, 1757
- BR Davies, The environs of Dublin, 1837
- Ordnance Survey (first edition), 6 in to 1 mile, surveyed 1843 (colour)
- Ordnance Survey (first edition), 6 in to 1 mile, surveyed 1843 (B&W)
- Ordnance Survey, 25in to 1mile, surveyed 1907
- Fingal County Development Plan Maps

Aerial Photography:

OSI Geohive

Historic England, Britain From Above, image XAW044989, 1952

1.2 EXISTING ENVIRONMENT

1.2.1 Site Location and Description

Figure 1: Aerial View of site (Malachy Walsh & Partners)

Howth Harbour is situated on the north side of Howth Peninsula, to the north of Dublin Bay (Figure 2). The harbour itself comprises of three main areas; a trawler basin entered between two bull-noses to the north, swing moorings area to the east and the yacht club marina.

For the purposes of the dredging project the harbour is considered to comprise of five areas:

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 Department of Agriculture, Food and the Marine. The core fishing fleet is in the order of 65 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 in the harbour.

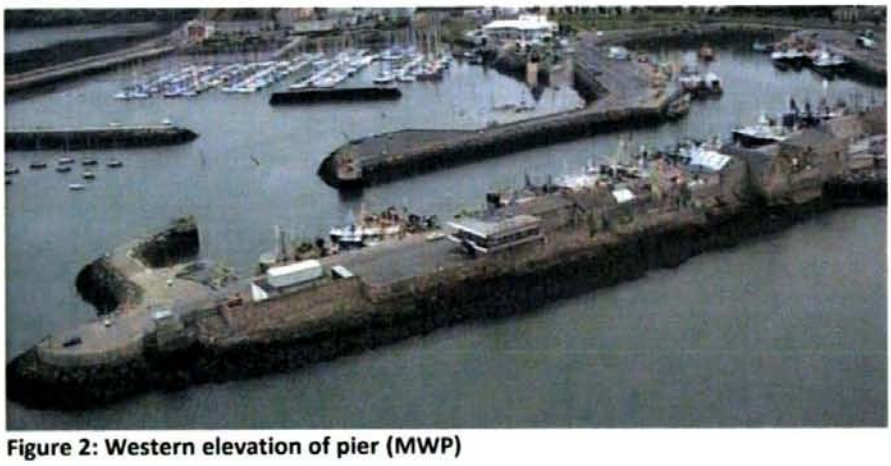


Figure 2: Western elevation of pier (MWP)

1.2.2 Site History

At the end of the 18th century, a number of surveys were undertaken of the Port of Dublin in order to make recommendations for its improvement. One of the surveys was produced by Captain Bligh (of 'The Bounty'), who also made a survey of Howth, recommending the construction of a harbour there to provide safety to vessels during inclement weather conditions. A new harbour there would permit packet sailing boats to use Howth as a terminal. An insufficient depth of water at Pigeon House Harbour and a shortage of space at Dublin Port had at that time been the cause of significant delays to the mails from London[1]. Bligh suggested the building of a pier on the outer edge of the ground at low water spring tides and building it round from the point of Balscadden to meet the line of the sands of Baldoyle. His suggested pier was in circular form, some 836 yards long[2].

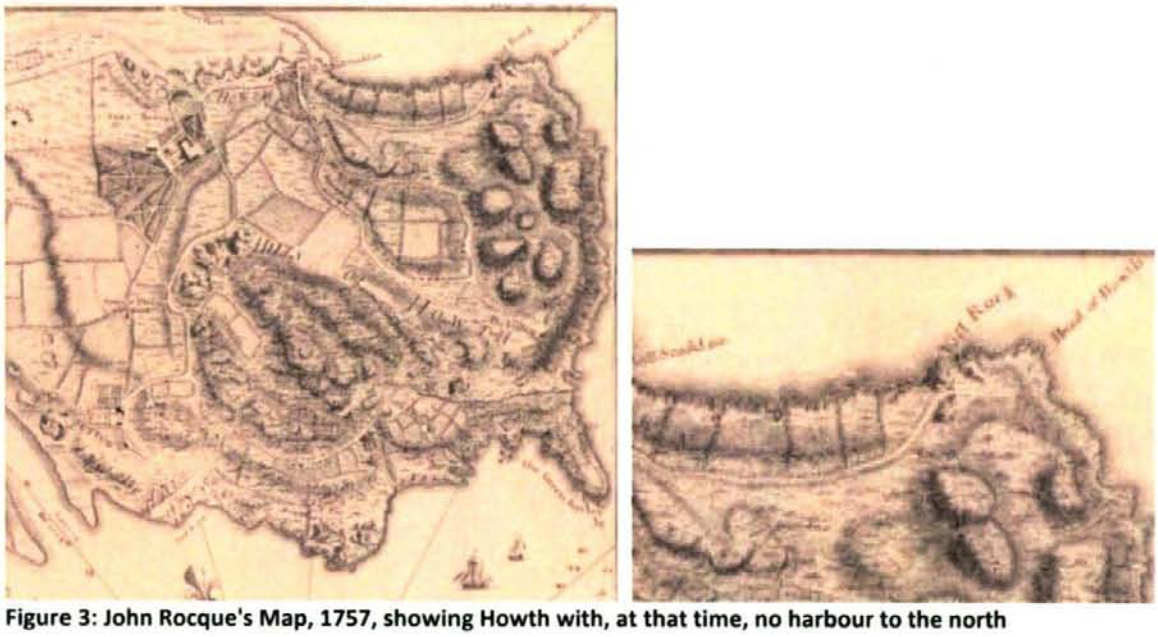


Figure 3: John Rocque's Map, 1757, showing Howth with, at that time, no harbour to the north

In 1807, under the terms of an Act of Parliament[3] construction began on an East Pier at Howth. The original East pier at Howth Harbour was designed by Captain George Taylor, but after the collapse of this pier, Taylor resigned, and the Scottish engineer, John Rennie, assisted by John Aird, took over the building of a new East and West pier. As a leading civil engineer, Rennie was associated, both as a designer and as a consultant with a number of Irish engineering projects, the earliest being the Custom House Dock in Dublin, completed in 1796, in 1802, he was appointed consultant engineer to the Royal Canal Company. He was later involved in the design of the harbours at Howth, Dun Laoghaire and at Donaghadee, Co. Down[4].

The original Howth Harbour Pier, designed by Captain George Taylor, was built as part of a mail packet station. Construction of the East Pier commenced in 1807, and the first leg was completed by 1809, but 240 feet of the structure was destroyed by a north easterly gale, and the subsequent rubble was used as a foundation for the short cant known as the 'elbow' to connect the two parts of

[1] Cox & Gould, *Civil Engineering Heritage*, p. 25.

[2] *Oibre*, 14, p. 7.

[3] 45 Geo. III c. 55 (Cox & Gould, p.25)

[4] Irish Architectural Archive, *Dictionary of Irish Architects*, entry on John Rennie (1761-1821)

the pier/breakwater (as shown in Rennie's Plan of the Harbour, Fig. 2, below). Charles Rennie was responsible for the reconstruction of the East Pier, and also for the design of the West Pier, which began in 1810. Both piers were substantially complete by 1813.

Local stone from a quarry at Kilrock was originally used, but large quantities of granite for the inner facing of the piers was later ferried across the bay from Dalkey[5].

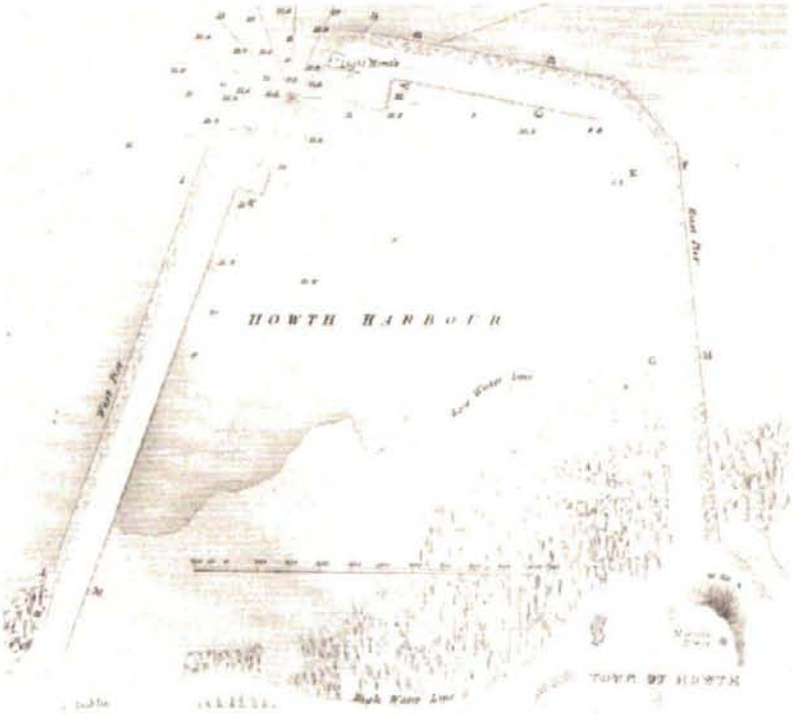


Figure 4: Rennie's Plan of Howth Harbour (Cox & Gould)

Information regarding the detail of construction of Howth Harbour may be found in the *Report from the Commission on Howth Harbour* (1810) in the Institute of Civil Engineers in London[6]. The copy of the *Report* housed there contains a number of original plan drawings, by Charles Rennie, of Howth Harbour, but no section drawings of the harbour. A cross-section drawing of Dun Laoghaire Harbour, undertaken by Rennie shortly after his work at Howth, shows a design very similar to that described in the Report *from the Commission on Howth Harbour*, however, so it is assumed that the construction of the pier at Howth is very similar.

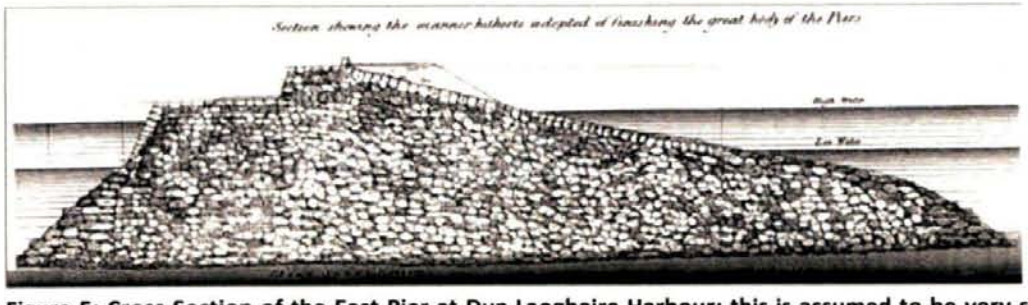


Figure 5: Cross Section of the East Pier at Dun Laoghaire Harbour: this is assumed to be very similar to the construction of the West Pier at Howth.

[5] Cox & Gould, *Civil Engineering Heritage*, p. 25.

[6] Arup, *Future Structural Integrity of the East Pier*, Dec. 2013

The *Report* indicates that the system for constructing the pier was to deposit large diameter rubble along the proposed line of the pier, and to allow the blocks to adjust themselves to a natural slope by the action of the waves. The surface of the slope was paved with large stones, well wedged and cemented together to form a gentle incline. The stone used for this work came from Lord Howth's quarries on the Hill of Howth. The foundations for the inner faces below water were prepared using large blocks of red grit stone from Liverpool. This stone had a soft texture which made it easy to cut and when it was submerged it acquired a hard texture. It was laid at an angle of 40 degrees and then regular blocks of granite from Dalkey were laid in mortar on top. The pier head was paved with granite setts, while the remainder of the pier was paved with local stone.
The *Report from the Committee on Howth Harbour* (dated 13 April 1810) was obtained from the Institution of Civil Engineers (ICE) archives library in London. 'The Committee' was an appointed body to 'enquire into the state of Howth Harbour; the sums expended, and the sums necessary to complete the same.' Two pages in particular provide a detailed description of the proposed construction method and cost by John Rennie. A brief summary of both pages is provided below:

I) Appendix 2 – Proposed Construction Method of the proposed Harbour at Howth:

...'we shall next describe the manner in which we propose the work to be executed'

'The Pier from the foot of the Castle-hill to the Eastern end of the Caroline Rock (East Pier), should be founded on a base of Rubble Stone, having the stones on each side, that will be exposed to the action of the sea, of larger dimensions than those in the interior part of it. These stone should not be less than from half a ton to a ton weight and upwards, the interspaces being filled up with smaller rubble. The interior part may be done with stones of much smaller dimensions. The Pier on the Caroline Rock should be done in a similar manner, but with materials rather larger, except to within about 350 feet of its end on the inside, and about 150 feet on the outside, together with the jetty which should be laid in caissons. If this part were to be done with Rubble Stones, some of them might probably be removed by storms and lodged in the entrance....'

'The Rubble base should be raised about six inches above low water, and carried forward at least fifty feet before any part of the superstructure is built. In this state it should remain for two or three weeks exposed to the sea, by the action of which it will be consolidated, and rendered more fit to bear the superstructure without giving way. On the inner side of this base the breast wall or quay is to be built with cut stone, and carried to the height of about six feet above the flow of ordinary spring tides, being backed with rubble to the width of forty feet for the Pier and 50 feet for the Return Head; at the extremity of which we propose a parapet of cut stone of about eight feet high; and from the top of this the outside is to be formed in a slant of four horizontal to one perpendicular, and composed of large Rubble Stone of similar dimensions to the outside of the base.'

The harbour as originally built was formed by the two piers, East and West, each 200ft wide at the base and 85ft wide at the high water mark, with a 42 ft roadway on top. The East pier is formed in three kants, extending 1300 ft in a NNE direction, then 230 ft NNW and finally 920 ft NW by W. The West pier, which begins approximately 2000 ft along the shoreline, is 1900 feet in length. The harbour entrance is 3502ft wide, and the area enclosed is some 52 acres[7].

In 1821, Samuel Lewis described a busy Howth harbour : *'Previously to the formation of Kingstown harbour, this was the station for the Dublin post-office packets, and the most usual place of landing and embarkation between the English coast and Dublin; and on the 12th of August, 1821, his late*

[7] Cox & Gould, p. 27

Majesty Geo. IV. landed at the pier on his visit to Ireland[8]'. While the harbour did eventually open as a mail packet station in 1818, it was not a success at this location, and the mails were transferred to Kingstown (Dun Laoghaire) in 1834, following completion of the railway line between Dublin and Kingstown[9]. Drifting of sand began to cause difficulties for larger ships using the harbour within a decade of its construction, and since that time, Howth Harbour has been used primarily for smaller vessels, as both fishing port and for small pleasure craft.

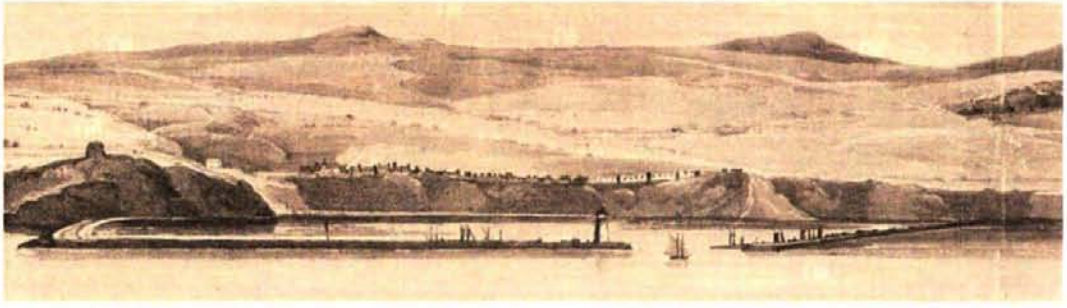


Figure 6: Drawing of the new harbour at Howth ,Daniel Havell, 15 September 1817 (National Library of Ireland)

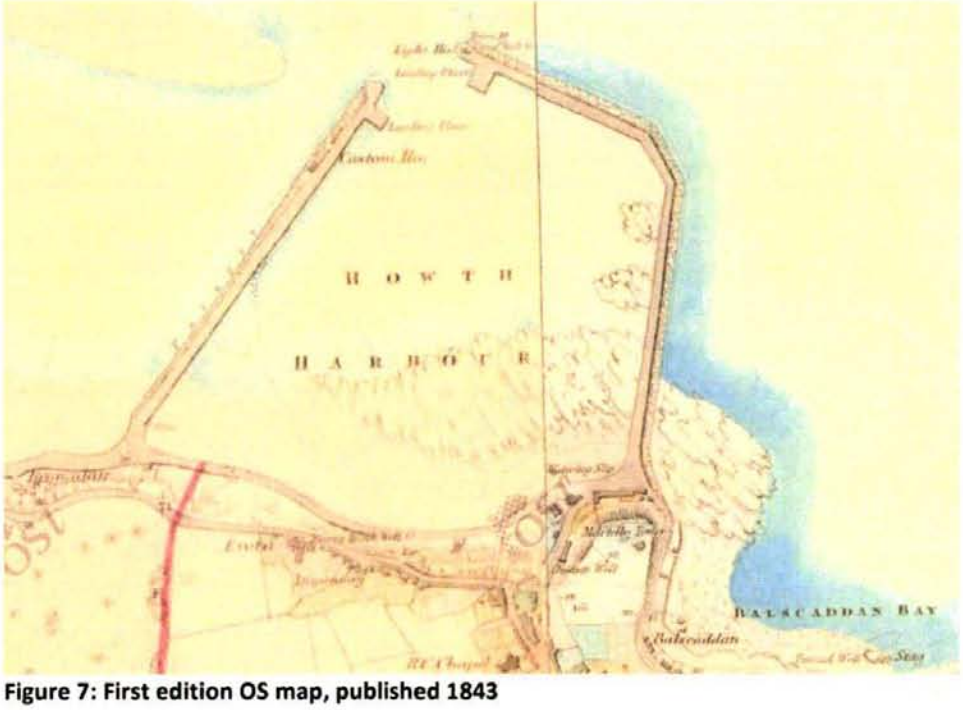


Figure 7: First edition OS map, published 1843

Early visual sources, such as John Rennie's original plan drawing (Fig. 3) and Daniel Havell's drawing of 1817, indicate no buildings on the West pier when it was first built. Over time, the West pier gradually became the site of a substantial number of buildings. The 1843 OS map indicates a small number of buildings on the West Pier, at its northern end, by that date, including a Custom House. This appears to be located on the site of the later Harbour Master's House, which continues to occupy the site today.

[8] Lewis, Samuel, 'Howth', in *A Topographical Dictionary of Ireland*, London, 1821.

[9] *Oibre*, p. 7.

The first Harbour Master, John Browne, was appointed in 1818, and many applications for Royal Navy officers for the position survive in the OPW's archives[10]. Other records survive in the OPW archives relating to the Harbour Master's house, but it is not clear if this was the same building marked as 'Custom House' on the 1843 OS map. The need for a Custom House at Howth Harbour is likely to have waned as problems with silting developed and larger cargo ships on which revenue would need to be collected reduced in number. The present two-storey classical building in this location is indicated as having been built c. 1880 on the NIAH, although the architect is unknown.

The late 19th century photograph below shows the present (former) Harbour Master's house in situ, and also the two storey coastguard station adjoining it on the northern side. Typical of 19th coastguard stations at other harbours around Ireland, it had a taller tower at its northern end to provide a clear view of the harbour and beyond, and would have included living accommodation as well as offices for the coastguard. The coastguard station is marked on the 1907 OS map (fig. 8), but has been removed by the time of the 1952 aerial photograph (fig. 9) shown overleaf.

Figure 8: Photograph of the West Pier, taken c. 1880-90 (Robert French Collection, National Library of Ireland)

Possibly the earliest surviving building is the Mariner's Hall, a detached building of rubble stone construction with gothic-style arched openings, which was completed in 1864, opening for use on 18 June that year[11]. It was built to serve as a meeting hall for the harbour's busy fishing community, and was built and, apparently, funded by the architect F.V. Clarendon. Later accounts indicate that it was principally used as a Presbyterian meeting hall for visiting Scottish fishermen. It is visible to the far left of the early photograph of the pier, fig. 8 below.

Figure 9: Photograph of the West Pier, taken c. 1880-90 (Robert French Collection, National Library of Ireland)

An article in the *Irish Builder* from June 1867 describes a number of buildings under construction at that time (without indicating their exact locations):
'This hitherto comparatively slow locality as regards "building enterprise," is presenting just now a field of extensive operations....On the West Pier (Board of Works property) 120 ft. frontage has been

[10] Lohan, Rena, *Guide to the Archives of the Office of Public Works*. Dublin, 1994, p. 174.
[11] *Dublin Builder,* 1 July 1864, p. 134

allotted to Mr. Nicholas May, fish merchant, who, in addition to his general business concerns, is erecting a commodious wing building for refreshment and dining rooms, which will prove a desideratum to the legion frequenters of this pier, during the fishing season especially. On an adjoining plot, Mr. Duncan, of Liverpool, has secured 100 ft. frontage for a curing establishment, salt stores &c.: and Mr. Comerford, a local shipbuilder, has 60ft. frontage, on which buildings are about to be erected. For the foregoing Mr. Lyons is the architect, and Mr. Campbell (of the town), the contractor for masonry and brickwork, with Mr. James Lyons as contractor for carpentry and joinery[12].

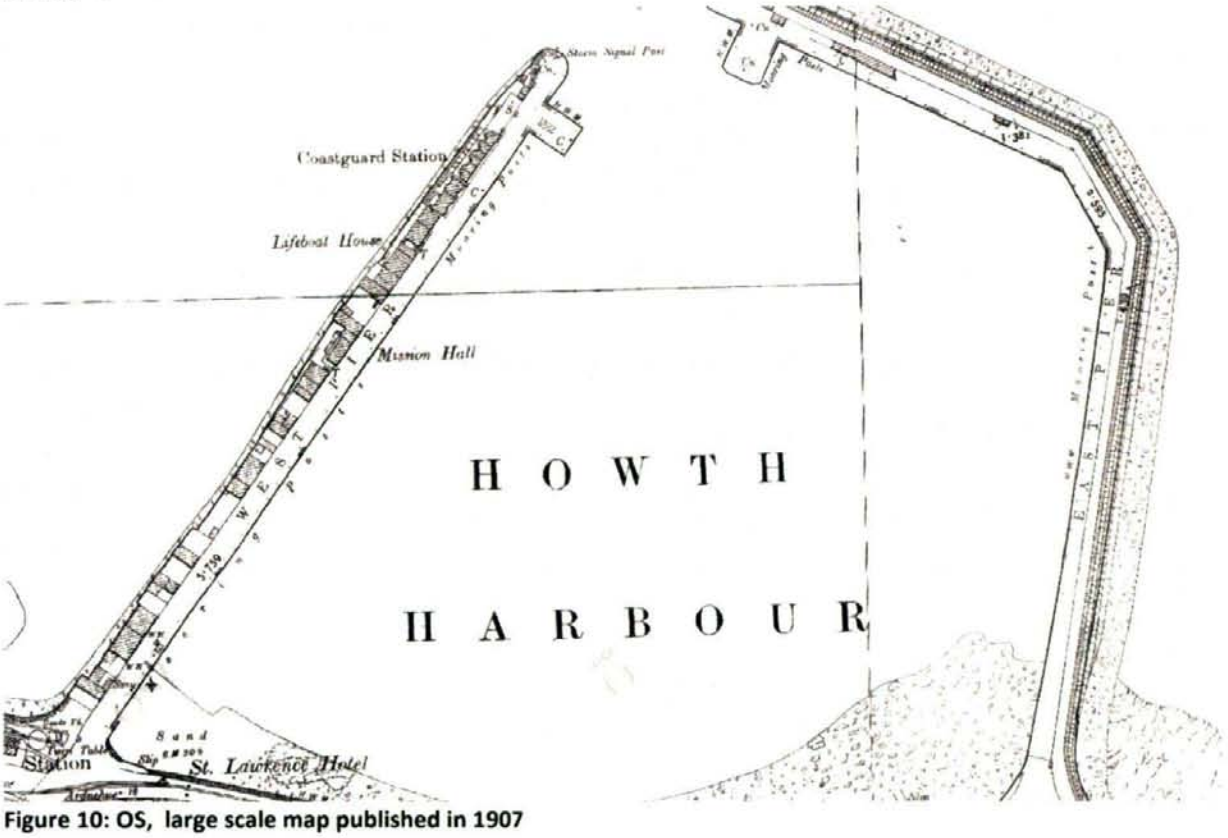


Figure 10: OS, large scale map published in 1907

The 1907 map also notes the location of the then Lifeboat House, which is likely to be the same gable-fronted single-storey boathouse building with a granite slipway to the rear as the one presently standing, which the NIAH indicates was built c. 1870. The majority of significant surviving historic buildings on the pier are located on the northern half of the pier, with more changes having taken place over time at the southern end.

Figure 11: Photograph of the West Pier, taken c. 1880-90 (Robert French Collection, National Library of Ireland)

[12] *Irish Builder*, 9, 15 June 1867, p. 147

Figure 12: Aerial photograph of West Pier, 1952 (Britain from Above)

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, including the western trawler basin, swing mooring area and marina area.

Figure 13: Current Aerial Photograph of Howth Harbour (OSI)

1.2.3 Protected Structures & structures included on the National Inventory of Architectural Heritage in the study area

The West Pier at Howth FHC is a Protected Structure (RPS no. 0595b on the Fingal Development Plan 2017-2023). It is also included in the National Inventory of Architectural Heritage (reg. no. 11359040).

There are a number of structures located on the Pier which are included on the Fingal RPS and/or the NIAH. These are

- Former Mariner's Hall (RPS 560/NIAH 11359038),
- Former Lifeboat House (RPS 562/NIAH 11359037),
- Harbour building (RPS 563/NIAH 11359036),
- Former Harbourmaster's House (RPS 564/ NIAH 11359035),
- Former house/Warehouse (RPS 937/ NIAH 11359039),
- Boat Turning Station (NIAH 11359040)
- Boathouse (NIAH 11359044).

Figure 14: Extract from Fingal Development Plan 2017-2023 zoning map showing location of Protected Structures (yellow circles)

Figure 15: Protected Structures on West Pier, viewed from south of harbour

1.2.4 Descriptions of Protected Structures & NIAH buildings in the study area

Former Mariner's Hall (RPS 560/NIAH 11359038)

The former Mariner's Hall is a detached five-bay roughly dressed stone built former church, built 1864, with exposed rubble stone façade and polychromatic brick dressings to openings. There is a two-bay, two-storey gable fronted warehouse attached to the north-east gable. The building is presently in use as offices.

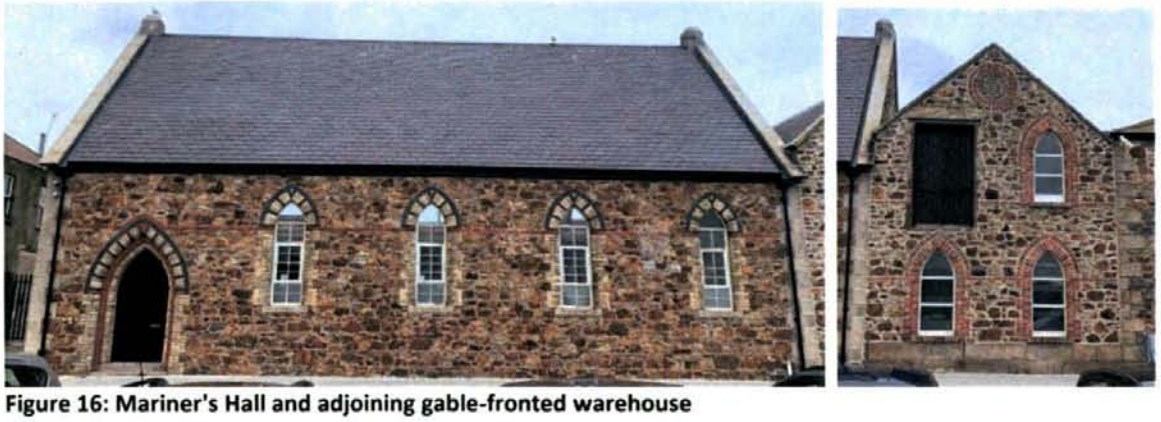


Figure 16: Mariner's Hall and adjoining gable-fronted warehouse

Former Lifeboat House (RPS 562/NIAH 11359037)

Single-bay, single-storey gable-fronted former coastguard boathouse, built c. 1870, with a granite slipway to the rear.

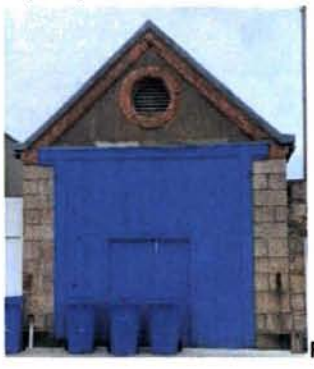


Figure 17: Former Lifeboat House

Harbour building (RPS 563/NIAH 11359036)

Two-bay, two-storey harbour building with ashlar granite to ground floor and render finish to first floor. Built c. 1870. Distinctive canted bay window to first floor.

Figure 18: Harbour Building

Former Harbour Master's House (RPS 564/ NIAH 11359035)

Detached (originally terraced) five-bay, two-storey former Harbour Master's house, built c. 1880. With breakfront end bays and pediment over central breakfront entrance bay. Single-bay, two-storey extension, c. 1970, to north-east. Now in use as a restaurant.

Figure 19: Former Harbour Master's House

Former House (also referred to as Former Warehouse on RPS) (RPS 937/ NIAH 11359039)

Detached, gable-fronted three bay two-storey former house, built c. 1870

Figure 20: Former House

Howth Harbour (RPS 595/ 11359041)

Harbour, built 1807-13, comprising East and West Piers, constructed of ashlar granite and rubble stone, with ashlar granite sea walls.

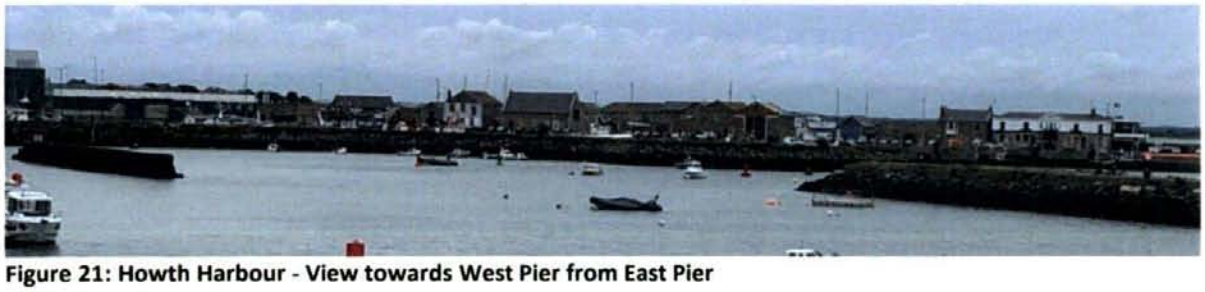


Figure 21: Howth Harbour - View towards West Pier from East Pier

Boathouse (NIAH 11359044)

Single-bay double-height ashlar granite boathouse, built c. 1870, with ashlar granite steps to platform above the entrance door

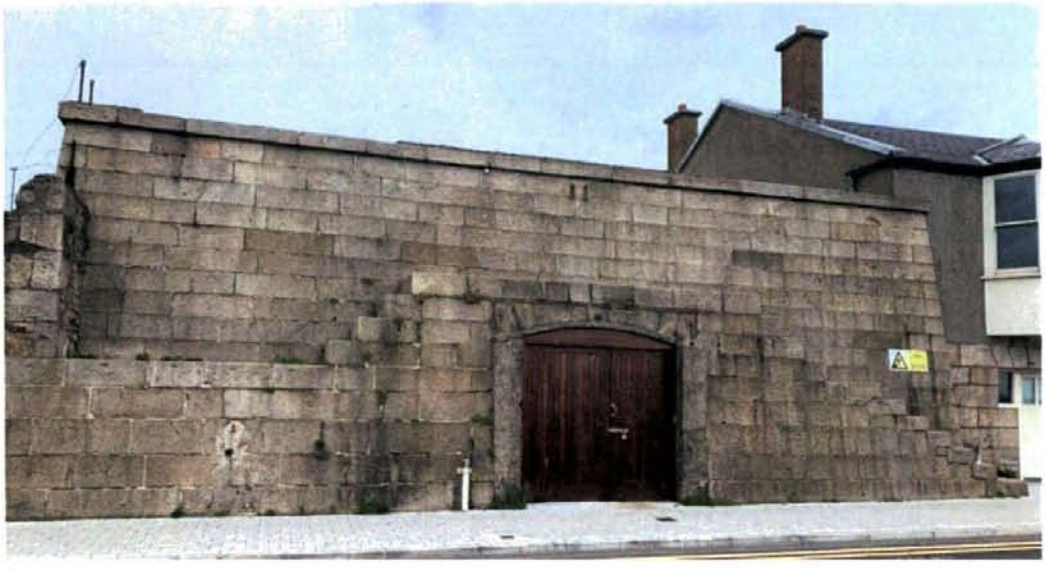


Figure 22: Boathouse

Boat turning station (NIAH 11359040)

Boat turning station with cast-iron tracks, c. 1910,

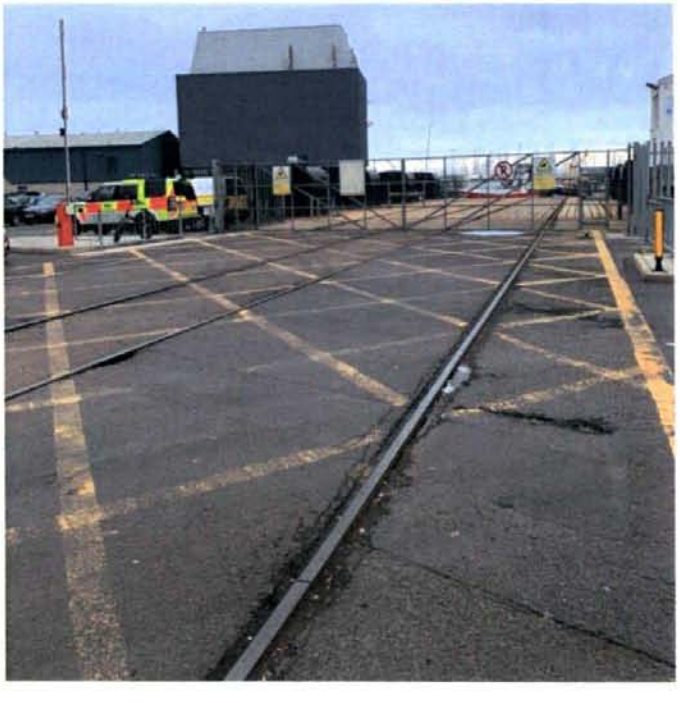


Figure 23: Boat turning station

1.3 PRESENT DESCRIPTION OF MATERIALS ON WESTERN FACE OF WEST PIER

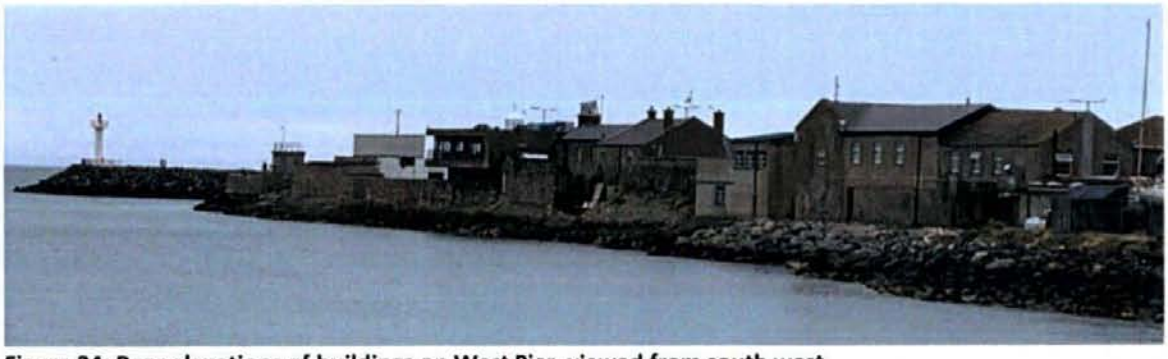


Figure 24: Rear elevations of buildings on West Pier, viewed from south west

The makeup of the western edge of the pier is presently a mixture of materials.
At southern end, starting at Claremont beach, & along western face of the boatyard there is a Rock Armour revetment/facing retaining dredged infill.
The area to the immediate North of the boatyard comprises a Rock Armour revetment and a facing retaining infill. This continues northward to the point , just northerly beyond the boat storage compound. At Points North, the makeup is similar to the East Pier, with a sloped semi dressed stone revetment over rock fill that is topped by a wall or rear wall of building until you get to the 1980s rock armour to the North of the round head[13].
The existing sloped semi-dressed revetment probably still resides below the rock armour to the upper section of infill.

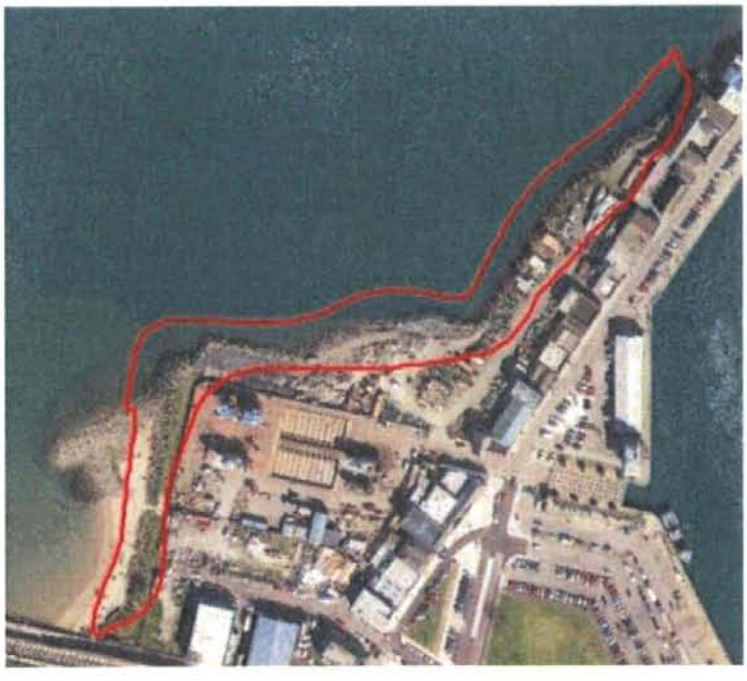


Figure 25: Aerial view of pier, highlighting western edge (MWP)

[13] Source for description of materials: Department of Agriculture, Food & The Marine

1.4 LIKELY SIGNIFICANT IMPACTS

1.4.1 Assessment of Impact Methodology

An evaluation was made of the likely impacts of the proposed development upon the heritage chracteristics of all the buildings within the site. Changes to their physical attributes could potentially arise from:

- Indirect disturbance to upstanding structures, e.g. vibrations from construction traffic, stockpiling of earth, and overshadowing by new buildings.
- Direct physical interventions to upstanding structures, e.g. piecemeal demolitions, new extensions, and the replacement of existing fabric, fixtures and fittings

.

The magnitude of these impacts can range from 'major' in the case of drastic alterations or demolitions, to 'negligible' or 'none' where little no or change will ensue as a result of the impact. Such impacts can either be 'beneficial' or 'adverse' depending on whether the heritage character of the feature being impacted upon is enhanced or degraded as a result. A 'neutral' impact will be neither beneficial nor adverse.

- Major: *Beneficial* - Large scale or major improvement of resource quality; extensive restoration or enhancement; major improvement of attribute quality. *Adverse* - Loss of resource and/or quality and integrity of resource; severe damage to key attributes.
- Moderate: *Beneficial* - Benefit to, or addition of, key attributes; improvement of attribute quality. *Adverse* - Loss of resource, but not adversely affecting integrity; partial loss of/damage to key attributes.
- Minor: *Beneficial* - Minor benefit to, or addition of, one or several key attributes; some beneficial impact on attribute or a reduced risk of negative impact occurring. *Adverse* - Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one or several key attributes.
- Negligible: *Beneficial* -Very minor benefit to or positive addition of one or more attributes. *Adverse* -Very minor loss or detrimental alteration to one or more attributes.
- None: No loss or alteration of attributes; no observable impact, ie neither beneficial nor adverse.

The *significance* of an impact will depend on its magnitude and the heritage value of the feature being impact upon. It can range from 'neutral', through 'moderate' to 'very large'. Thus, a major negative impact on a feature of very high heritage value will have a significantly large adverse effect, whereas the same impact on a feature of negligible value will be releatively insignificant. For the purposes of this analysis, the levels of impact significance are defined as follows:

- Very large: Only very adverse effects are normally assigned this level of significance. They are generally, but not exclusively, associated with sites of international, national or regional importance that are likely to suffer a most damaging impact and loss of integrity. However, a major change in a site or feature of local importance is not precluded from this cattegory.
- Large: These beneficial or adverse effects are considered to be very important considerations and are likely to be material in the planning process.
- Moderate: These beneficial or adverse effects may be important, but are not likely to be key factors in the planning process. Their cumulative effects may, however, be relevant if they lead to an increase in the overall adverse effect on a particular feature.
- Slight: These beneficial or adverse effects may be raised as local factors but are unlikely to be critical issue in the planning process.
- Neutral: No effects or those that are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error.

The various permutations of 'magnitude of impact' and 'heritage value' will result in the following impact significances:

Heritage Value	Magnitude of Impact				
	None	Negligible	Minor	Moderate	Major
Very High	Neutral	Slight	Moderate/ Large	Large/Very Large	Very Large
High	Neutral	Slight	Slight/Moderate	Moderate/Large	Large/Very Large
Medium	Neutral	Neutral/ Slight	Slight	Moderate	Moderate/Large
Low	Neutral	Neutral/Slight	Neutral/ Slight	Slight	Slight/Moderate
Negligible	Neutral	Neutral	Neutral/ Slight	Neutral/ Slight	Slight

The duration of the impact is also of relevance. Short-term impacts upon a site's built heritage may arise during the construction phase of a development. There is likely to be long-term residual impacts as well once the development is completed and the site operational.

1.4.2 Summary of Proposed Works

The proposed development involves the following main elements:

- Dredging the harbour;
- Reclaiming land on the west side of the pier using dredge material;
- Coastal protection works to the perimeter of the reclaimed area;
- Pavements, e.g. footways, roadways & parking areas;
- Slipway for access to the water;
- Storage area for harbour activities;
- Provision of services

Material will be placed on top of the existing West Pier revetment and there will be no removal or demolition required to the existing West Pier.

Figure 26: Serial photograph showing potential commencement/finishing points for the perimeter embankment (MWP)

1.4.3 Likely Impacts on Protected Structures and NIAH buildings in the study area

1.4.3.1 Construction Phase

The proposed works will have no direct physical impact on the original historic fabric of the West Pier or on any of its Protected structures or NIAH buildings. However it is proposed to remove an area of wall to the north of the former Harbour Master's House in order to provide access from this end of the original pier to the proposed new public realm to the west. The wall is approximately 2-2.5m high, of rubble masonry construction with concrete buttresses to the eastern side. The Harbour Master's House originally adjoined a coast guard station (see Figs. 8 & 9) located on the site of this area of boundary wall. The coast guard station was still in place on the 1907 OS map (Fig. 10) but had been removed by the 1950's (see aerial photograph Fig. 12).

The date of construction of the existing wall is uncertain, but it appears very unlikely that it formed part of the structure of the coast guard station, and was probably originally constructed after that building was demolished in the early 20th century. It also bears signs of having undergone a number of phases of repairs and possible modifications, generally using cementitious mortars, with the concrete buttresses also likely to be a later addition.

The area immediately in front of the wall on the pier side is in use for storage tanks, bin storage and car parking, and it is bounded to the north and south by modern structures. The proposed removal of this section of wall would have a moderate adverse physical impact on the historic character of this part of the pier. This derives principally from the removal of the physical boundary between the

historic pier and the area to the west of the pier. It is likely that there has been some sort of physical boundary on this area of the western side of the West Pier since it was originally constructed. The magnitude of impact of this intervention is, however, reduced by the fact that the wall, in its present form at least, is not original to the construction of the pier. The visual impact may also be regarded as moderate in nature due to the present appearance and use of the area for storage and car parking.

Figure 27: Area of wall to be removed to north of the former Harbour Master's House

Other than the removal of this area of wall, the project is confined to the seaward side of the pier, and at present there is no visible surviving historic fabric on the surface of the Western slope.

Material will be placed on top of the existing West Pier revetment and there will be no removal or demolition required to the masonry structure of the existing West Pier.

1.4.3.2 Operational Phase

The visual impact of the proposed works on the historic fabric of the West Pier and on the Protected Structures and NIAH buildings located on it will be limited to the seaward side, apart from the removal of the area of wall discussed in 10.4.3.1. The addition of the dredged material to create an additional c. 4.8 Ha of land area will alter the current appearance of this part of the pier. The western edge of the original pier may not be recognisably delineated in the context of the new land area and the original form of the pier as an independent structure may be less apparent from certain viewpoints. This has the potential to have a moderate/large adverse visual impact on the character of the historic pier. The changes that have already taken place over time to the rear elevation of the pier, the continuing functional nature of the structure and the fact that the seaward side of the pier is visually secondary in comparison to the harbour side all provide some mitigation against the magnitude of this impact.

The visual impact of the proposed works on the Protected Structures and NIAH buildings on the pier is likely to be of a slight adverse nature, as material changes have already taken place over time to the seaward side of the pier. The rear elevations of these buildings are very much secondary in significance in comparison to their front elevations, which provides some mitigation against this impact.

1.4.3.3 Do-Nothing Scenario

The principal impact of a do-nothing scenario would be the loss of adequate depth within the harbour for it to remain in its original intended use as a working harbour for both fishing and leisure boats. This would have a large adverse impact on the original historic character of the harbour. The principal function of the proposed scheme, the dredging of material from the harbour, is intended to retain the original use of the harbour, thereby retaining the original function for which it was designed.

1.4.4 Cumulative Impacts

The cumulative impacts are expected to be primarily visual in nature, with only the removal of the later wall at the pier's northern end proposed. The potentially moderate/large visual impact is limited primarily to the seaward side of the West Pier, as illustrated in the Visual Impact Assessment photomontages. Mitigating factors include the fact that the harbour has undergone incremental physical and visual change over time, including the addition of the Middle Pier and East Pier breakwater in the early 1980s, and to the extensive functioning shipyard on the western side. The present works are essential to the continued operation of Howth Harbour as a functioning Fishery Harbour Centre and Yacht Club. These activities are very significant in retaining the original historic purpose and character of the harbour.

1.5 MITIGATION

Physical interventions into and removal of historic fabric associated with the original pier construction should be kept to a minimum in order to preserve the integrity of the structure, with physical repairs only carried out in order to prolong the life of the pier.

Care should be taken when transporting heavy building materials to avoid damage to the existing building fabric of the pier and the historic buildings situated on it. Protective measures should be put in place in areas which might be vulnerable to damage.

1.6 SUMMARY PHYSICAL AND VISUAL IMPACTS OF THE PROPOSED DEVELOPMENT ON THE PROTECTED STRUCTURES ON THE SITE

The proposed development will have a moderate adverse physical impact on a small section of rubble masonry wall which, although of later construction than the pier itself, forms part of the overall existing historic building fabric occupying the West Pier. There is likely to be a moderate/large adverse visual impact to the historic character of the seaward side of the historic West Pier from the addition of reused dredged material to form new land, although the appearance and fabric of this side of the pier have undergone incremental changes over time.

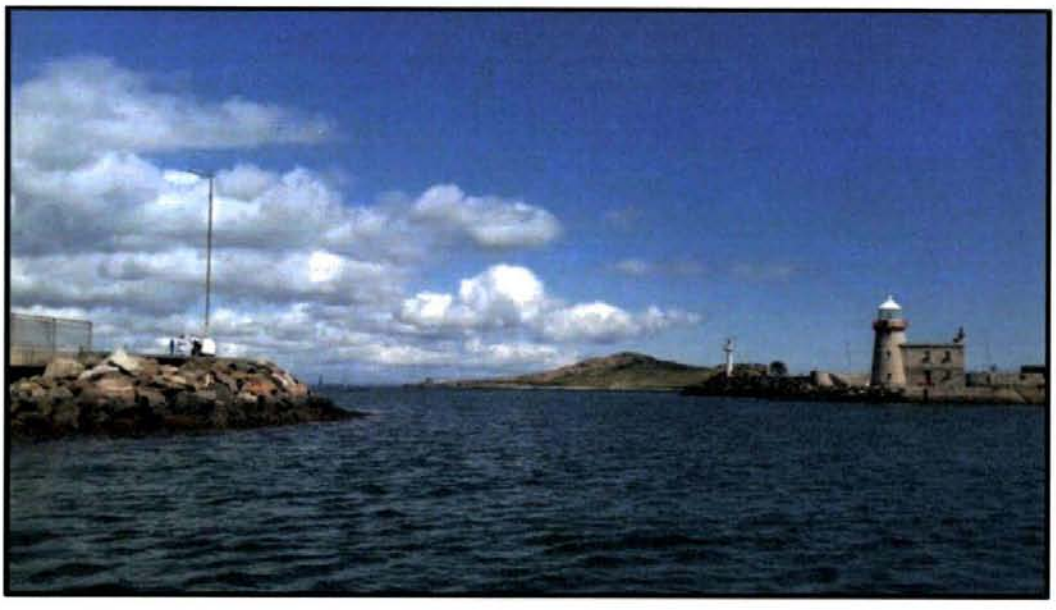
The visual impact of the proposed works on the Protected Structures and NIAH buildings on the pier is likely to be of a slight adverse nature, as material changes have already taken place over time to the seaward side of the pier. The rear elevations of these buildings are very much secondary in significance in comparison to their front elevations, which provides some mitigation against this impact.

Appendix 12

Terrestrial Habitat, Otter and bat survey 2019 Woodrow

Howth Harbour FHC Proposed Dredging And Reclamation Works

Terrestrial Habitat, Otter And Bat Survey 2019



Report produced by Woodrow Sustainable Solutions Ltd.

For Malachy Walsh and Partners

On Behalf of Department of Agriculture, Food and the Marine

Woodrow Sustainable Solutions Ltd.

Main Street,

Ballisodare,

Co. Sligo,

Ireland.

Telephone: 071 914 0542

Email: info@woodrow.ie

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Prepared by	Woodrow Sustainable Solutions Ltd Main Street, Ballisodare, Co Sligo, Ireland. T: +353 71 914 0542
Lead Author	Róisín NigFhloinn
Checked internally	Bridget Keehan
Approved by	Will Woodrow
Checked by client	MWP 17.04.2020
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STATEMENT OF AUTHORITY

This report is written by Róisín NigFhloinn BA Mod (Hons) MSc, MCIEEM, with input from Bridget Keehan BSc ACIEEM and Rachael Irwin BSc. The report has undergone checking and review by Bridget Keehan, and has been approved by Will Woodrow MSc MSc(Arch) CEcol MCIEEM.

Rachel is an Assistant Ecologist for Woodrow and manages the deployment and collection of static bat detectors for numerous large sites, including several wind farms, both in the Republic of Ireland and Northern Ireland. She regularly assists with report writing for specialist reports including Ecological Impact Assessment (EcIA), Biodiversity Chapters for Environmental Impact Assessment Reports (EIAR) and to inform the Appropriate Assessment (AA) process. She is a Qualifying member of the Chartered Institute of Ecology and Environmental Management (CIEEM).

Bridget Keehan has over ten years' experience working as a botanical surveyor, and has more than 30 years' experience in plant identification. She is experienced in conducting ecological surveys and preparing impact assessments and other ecological reports, including reporting to inform the Appropriate Assessment process. Her reports are regularly used to inform planning applications in Ireland and the UK. As an Associate Member of CIEEM, she employs a high degree of competence and professional standard in her approach to environmental assessment.

Róisín NigFhloinn is a Senior Ecologist with Woodrow. Róisín has completed an honours B.Sc. specialising in Botany and a M.Sc. in Ecology and Management of the Natural Environment. She is a full member of the Chartered Institute of Ecology and Environmental Management (CIEEM). She regularly carries out reporting on Ecological Impact Assessment and to inform Natura Impact Assessments / Appropriate Assessments carried out by statutory authorities. Furthermore, she has more than ten years' experience in habitat, mammal, bird and bat surveys for a number of large infrastructure schemes, commercial and residential projects. Róisín is an experienced Ecological Clerk of Works (ECoW).

Initial habitat and mammal (otter and bat) surveys were undertaken by Róisín NigFhloinn, and an additional Annex I habitat survey was carried out by Róisín NigFhloinn and Kristi Leyden.

Kristi is an Ecologist with Woodrow Sustainable Solutions Ltd. She has completed an honours B.Agr.Sc. in Agri-Environmental Sciences and M.Sc. in Ecological Assessment. She is a graduate member of the Chartered Institute of Ecology and Environmental Management (CIEEM). She regularly carries out reporting on baseline surveys, input into Ecological Impact Assessment and to inform the Appropriate Assessment process. Furthermore, the author has over five years' experience in ecological surveys including habitat surveys, mammal surveys, bat surveys and incidental bird surveys for a number of large infrastructure schemes, commercial and residential projects. She has particularly strong experience in the areas of botany and bat surveying.

The report has been checked and approved by Will Woodrow. Will is a Director at Woodrow Sustainable Solutions Ltd. He is an experienced ecologist with over 30 years of experience in ecological surveys and assessment. Will is a full member of the Chartered Institute of Ecology and Environmental Management and a Chartered Ecologist.

Róisín NigFhloinn – Qualifications:

B.A. Mod (Hons) – Natural Sciences (specialising in Botany), Trinity College, Dublin, 2008.

M. Sc. – Ecology and Management of the Natural Environment, University of Bristol, England, 2011.

Rachel Irwin – Qualifications:

B.Sc. (Hons) – Zoology with Conservation, Bangor University, 2015 – 2018.

Kristi Leyden – Qualifications:

B.Agr.Sc.(Hons) – Agri-Environmental Sciences, University College Dublin, 2008.

M.Sc. – Ecological Assessment, University College Cork, 2011.

Bridget Keehan – Qualifications:

BSc (Hons) – Botany, University College of North Wales, Bangor, 1992

Will Woodrow – Qualifications:

HND Conservation Management. Farnborough College of Technology, 1989.

M.Sc. – European Environmental Policy and Regulation, Lancaster University, 1994.

M.Sc. (Arch) – Advanced Environmental and Energy Studies. University of East London, 2006.

Table of Contents

1 INTRODUCTION

This survey and report has been undertaken by Woodrow Sustainable Solutions Ltd. ('Woodrow') on behalf of Malachy Walsh and Partners ('MWP'). Woodrow were commissioned by MWP on behalf of The Department of Agriculture, Food and the Marine (DAFM) to undertake a Phase 1 terrestrial Habitat Survey (Fossitt 2000), in addition to an otter and bat survey, in order to inform a proposed project within Howth Harbour, Co. Dublin (See Figure 1 for Site Location). Woodrow also carried out both breeding and wintering bird surveys from May 2019 – March 2020 – the results of which are presented within the Howth Harbour bird report (Woodrow, 2020).

The results of this terrestrial habitat, otter and bat survey shall be used to inform the Biodiversity Chapter and Natura Impact Statement (NIS) for a proposed dredging project in Howth Harbour. The aim of this report is to provide ecological data and brief recommendations to inform this work. The detailed impact assessment and proposed mitigation for the project is not included here and will be carried out by MWP within their Biodiversity and NIS assessments.

This report summarises the findings of terrestrial habitat, otter and bat surveys conducted at Howth Harbour in 2019.

The surveys were conducted by Woodrow ecologists as follows:

- A Phase 1 Terrestrial Habitat Survey (Fossitt, 2000) was conducted at the site on 20.05.2019 and 22.06.2019 by Róisín NigFhloinn.
- An otter survey was conducted on 20.05.2019 and 22.06.2019. Survey data was updated during the additional site visits on 29.07.2019 and 02.09.2019 by Róisín NigFhloinn.
- Areas which were considered to support habitats which had affinity to EU Annex I habitats were re-surveyed on 29.07.2019 by Róisín NigFhloinn and Kristi Leyden.
- As a precautionary measure, a pre-dusk emergence and bat activity survey was conducted on 02.09.2019, led by Róisín NigFhloinn. This survey included the deployment of 2 no. static bat detectors which were collected on 03.09.2019.

1.1 Aim of the 2019 Habitat, Otter and Bat Survey

The results of the ecology surveys conducted at the Application Site will inform the Biodiversity Chapter of the Environmental Impact Assessment Report (EIAR) being conducted by Malachy Walsh and Partners (MWP). In addition, data from these surveys will be used to inform a Natura Impact Statement (NIS) to be carried out for the Proposed Development. As such, Woodrow were requested to undertake terrestrial habitat, otter and bat surveys within the Howth Harbour area to assess the potential ecological constraints at this site, and to ascertain the risk of potential impacts upon flora and fauna in the vicinity of the works. This data is also being used to inform a Natura Impact Statement (NIS) in order to ascertain if the proposal may adversely affect the integrity of any European Sites.

This report outlines the surveys that were undertaken in relation to habitats, otter and bats for the proposed Howth Harbour dredging and reclamation works by Woodrow during May to September 2019. The results of these surveys are detailed here and have been interpreted, to provide general recommendations to inform this proposal. The report includes information from a desk study review, which lists recent or historic records within proximity of the site.

The survey methodology is described in **Section 3** of this report, with the results of these surveys being presented in **Section 4** below. Conclusions and general recommendations are provided in **Section 5**.

1.2 Site Location and Surrounding Environment

1.2.1 Site Description and Context

Howth Harbour is situated on the north side of Howth Peninsula, to the north of Dublin Bay as illustrated in **Figure 1** below. The Harbour itself comprises of three main areas; a trawler basin entered between two bull-noses to the north, swing moorings area to the east and the yacht club marina.

For the purposes of the dredging project the Harbour is considered to comprise of five areas:

1. *Trawler Basin;*
2. *Harbour Approach Channel;*
3. *Mooring area;*
4. *Marina Approach Channel; and,*
5. *Marina Area.*

Howth Harbour operates as a Fishery Harbour Centre under the Department of Agriculture, Food and the Marine. The core fishing fleet is *c.* 65 vessels, and there is significant marine leisure activity including the Howth Yacht Club and the Howth Sailing and Boating Club, in addition to other local water-sports activities undertaken in this area by both locals, visitors and tourists. 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.

The proposed site is situated in close proximity to a number of Special Protection Areas (SPA) and Special Areas of Conservation (SAC), the closest of which are Baldoyle Bay SAC [Site Code: 000199], Ireland's Eye SPA [Site Code: 004117], Ireland's Eye SAC [Site Code: 002193], Howth Head SAC [Site Code: 000202], Howth Head Coast SPA [Site Code: 004113], and Rockabill to Dalkey Island SAC [Site Code: 003000]. In addition, the two proposed Natural Heritage Areas (pNHA's) in closest proximity are: Baldoyle Bay pNHA and Howth Head pNHA. These sites are illustrated on **Figure 2** below. Site synopsis for the closest and most relevant SAC's to the Application Site are provided in **Appendix II to IV**.

1.2.2 Nearby Designated Sites

The Application Site is located immediately adjacent to the following European Sites:

Baldoyle Bay SAC [Site Code: 000199]

This site lies on the boundary of the existing Harbour infrastructure (at West Pier) to the south and west of the Application Site and is designated for the following Qualifying Interest (QI) features:

- **Mudflats and sandflats not covered by seawater at low tide [1140][1];**
- *Salicornia* and other annuals colonising mud and sand [1310];
- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]; and,
- Mediterranean salt meadows (*Juncetalia maritimi*) [1410].

Baldoyle Bay SAC extends from just below Portmarnock village to the West Pier at Howth in Co. Dublin. It is a tidal estuarine bay protected from the open sea by a large sand-dune system. Two small rivers, the Mayne and the Sluice, flow into the bay.

[1] This habitat exists within the study area immediately to the south-west of the West Pier. Benthic habitats are addressed in a separate report (University College Cork, Aquatic Services Unit [ASU], 2019) and were not the focus of the terrestrial habitat survey conducted by Woodrow in 2019.

The Site Synopsis for Baldoyle Bay SAC has been attached to this report within **Appendix II.**

Howth Head SAC [Site Code: 000202]

This site lies on the boundary of the East Pier, approximately 75 m south-east of the Application Site (outside of the Harbour) and is designated for the following Qualifying Interest (QI) features:

- Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]; and,
- European dry heaths [4030].

Howth Head is a rocky headland situated on the northern side of Dublin Bay. The peninsula is composed of Cambrian slates and quartzites, joined to the mainland by a post-glacial raised beach. Limestone occurs on the north-west side while glacial drift is deposited against the cliffs in places.

The Site Synopsis for Howth Head SAC has been attached to this report within **Appendix III.**

Ireland's Eye SAC [Site Code: 002193]

This site lies *c.* 800 m north of West Pier, and *c.* 670 m (outside of the Application Site) and is designated for the following Qualifying Interest (QI) features:

- Perennial vegetation of stony banks [1220]
- Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]

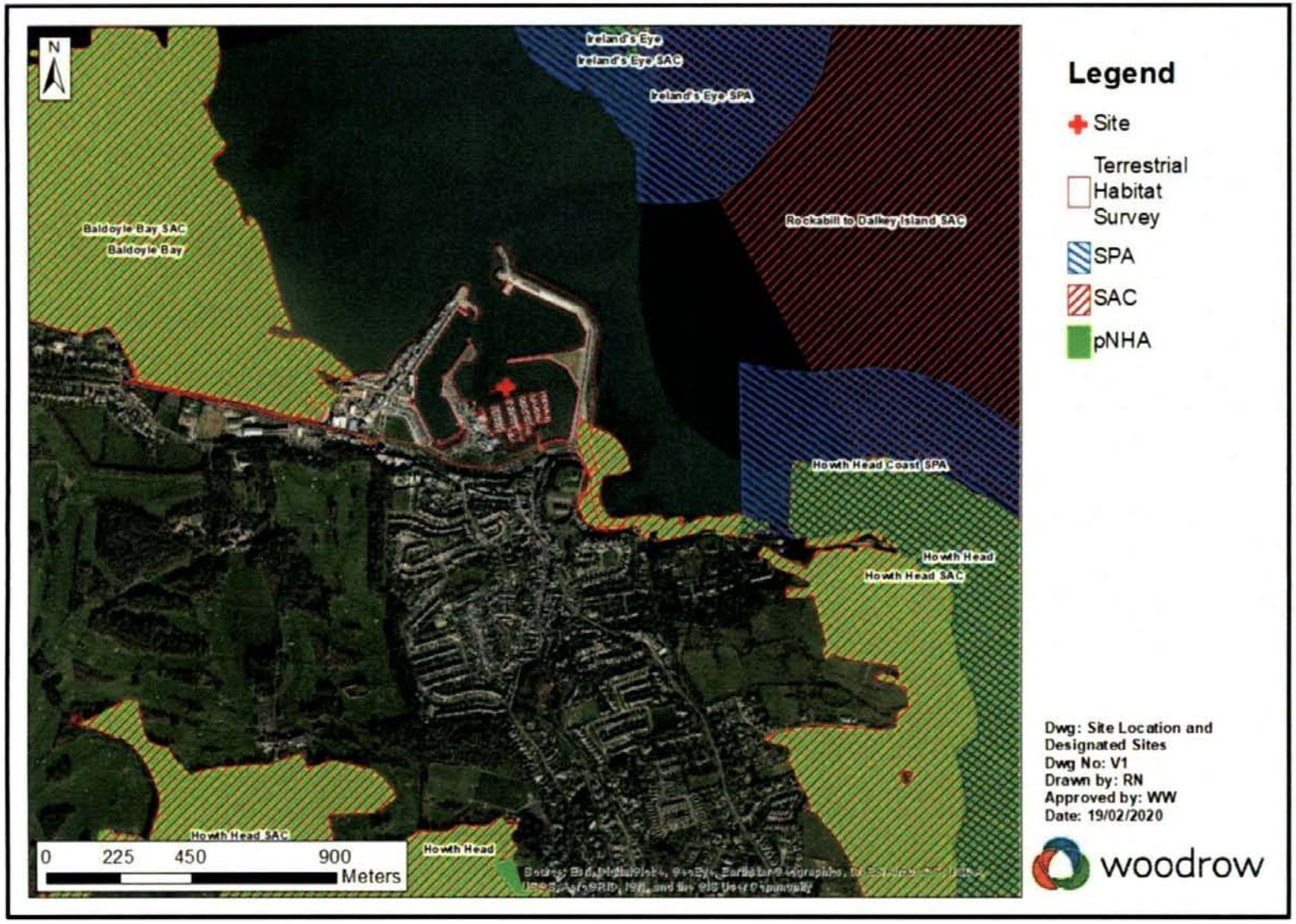
This uninhabited marine island has a well-developed maritime flora, with two habitats (sea cliffs and shingle) listed on Annex II of the E.U. Habitats Directive, and nationally important seabird colonies. Owing to its easy access and proximity to Dublin it has great educational and amenity value.

The Site Synopsis for Ireland's Eye SAC has been attached to this report within **Appendix IV.**

Other European Sites exist within the wider area – these are discussed in more detail within the Natura Impact Statement for the project (MWP, 2020a). Designated Sites in close proximity to the Application Site can be seen in **Figure 2** below, and **Appendix I**.

Figure 1 – Site Location (Source: MWP, 2020)

Figure 2 – Howth Harbour in Relation to Nearby Designated Sites



1.3 Brief Project Description

The full details and plans for the proposed project are available within the EIAR for the scheme (MWP, 2020b). However, a brief project description is provided here to contribute more background information to this survey results report.

Howth Fishery Harbour Centre (FHC) was last dredged in the 1980s, and due to build-up of silt, it is necessary 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.

It is proposed to dredge *circa* 240,000 m^3 of material from the seabed within Howth FHC, process and re-use this material to the west of the West Pier in order to create an additional *circa* 4.8 Ha of land area. The aim of the overall project is to increase the depth of water in the Harbour in order to provide safe access for the largest range of vessel sizes and types on the widest range of tides, within the structural parameters of the existing Harbour quay structures; and, where possible to process and re-use or dispose of dredge material in an environmentally sensitive and cost effective manner.

Woodrow were commissioned to conduct a terrestrial habitat survey, otter, bat and bird surveys at Howth Harbour in 2019[2] in relation to the following proposed dredge and reclamation design as summarised below (source: MWP, 2020b):

The proposed development involves the following main elements:

- Dredging the Harbour;
  - Standard hours for dredging are proposed to be 24/7;
  - Work compound will be lit at night;
- Reclaiming land on the west side of the West Pier using dredge material;
- Coastal protection works to the perimeter of the reclaimed area;
- Landscaping on the reclaimed area;
- Pavements e.g. footways, roadways and parking areas;
- Slipway for access to the water;
- Storage areas for Harbour activities; and,
- Provision of services.

Equipment proposed to be used during night work includes:

- Long reach excavator;
- Pump with 500 m^3/ day capacity;
- Mixing / processing plant;
- An excavator on shore; and,
- A work boat for moving barges and a safety boat for emergencies.

Based on sediment sampling and testing results, the dredge material has been found to contain both Class 2 and Class 3 contamination levels. Contaminant levels are such that the vast majority of the material cannot be disposed of at sea directly.

The proposed construction works can be divided into 4 stages as follows:

[2] Winter bird surveys are on-going into March 2020 (Woodrow, 2020).

- Stage 1: Construction of a perimeter embankment and rock armour revetment to the seawards edge of the reclaimed land area;
- Stage 2: Dredging of Howth Harbour;
- Stage 3: Reclamation of land up to ground level; and,
- Stage 4: Finishings

Full details regarding the Stages of this proposal are included within Chapter 2 of the EIAR - Description of The Proposed Development (MWP, 2020).

Monitoring of water quality (i.e. suspended sediments and turbidity) will be carried out on the outside of the dredge site at selected locations. Limits will be set based on background levels recorded prior to the works. Contingency plans will be in place for when the limits are exceeding by dredging activities. These will include ceasing works until the source is identified and adjustment of methodology until levels can be reduced below the limit levels.

Approximately, 10% of the dredge material will be bedrock. It will be necessary to break this rock prior to excavation. Breaking will be carried out by a long reach excavator using a rock breaker attachment such as a Sandvik G130. The broken rock will then be excavated from the bed by the long reach excavator with a bucket attachment. (No rock breaking will occur during night time hours).

Dredge spoil will be transferred into floating dump barges from the floating pontoon/ dredger. Once loaded, the barges will be towed to an unloading quay side point within the harbour. The unloading point will be located adjacent to the stabilisation and solidification process facility. The locations of dredging, quantities, times etc. will be recorded.

Bathymetric surveys will be used to ensure the correct dredge depths are achieved and to identify high-spots for further dredging.

1.3.1 Area to be Dredged

Howth Fishery Harbour Centre can be divided into a number of areas based on use:

- West Trawler Basin. This area is used almost solely for fishery activities. The only exception being the use of the north-west corner for ferry boat activities.
- Approach Channel. This is the area between and just south of the heads of the East and West Piers. It is used by all Harbour users to enter and exit the Harbour.
- Mooring Area. This is an area to the north east of the Harbour. It is presently used during the summer period by some 170 leisure craft on swing moorings.
- Marina Area. Within this area there is an area leased to Howth Yacht Club in which is the marina operator of the pontoons and facilities for some 300 leisure craft. The adjacent area is used by DAFM, the public and the Royal National Lifeboat Institution (RNLI).
- Marina Approach Channel. This is an area north and east of the existing area leased by Howth Yacht Club (HYC)

A site location plan showing the areas to be dredged and potential extent of a reclamation area to the west of the West Pier is shown in **Figure 3** below. This drawing outlines the areas where works are proposed to be completed. This drawing was issued to Woodrow in March 2019, and was used to inform the Survey Area for the ecology surveys that were commissioned here in 2019 / 2020.

1.3.2 Reuse of Treated Contaminated Material Used in Land Reclamation West of the West Pier

The option of re-using the contaminated material, following treatment in land reclamation, is being considered and the area immediately to the west of the West Pier has been identified as the most suitable reclamation location. The reclaimed area will be developed for mixed use.

This reuse option involves pre-treatment of the dredged contaminated material to de-water and lock-in the contaminants. The reclamation works to the west of West Pier will also require protection works in the form of a rock armour revetment.

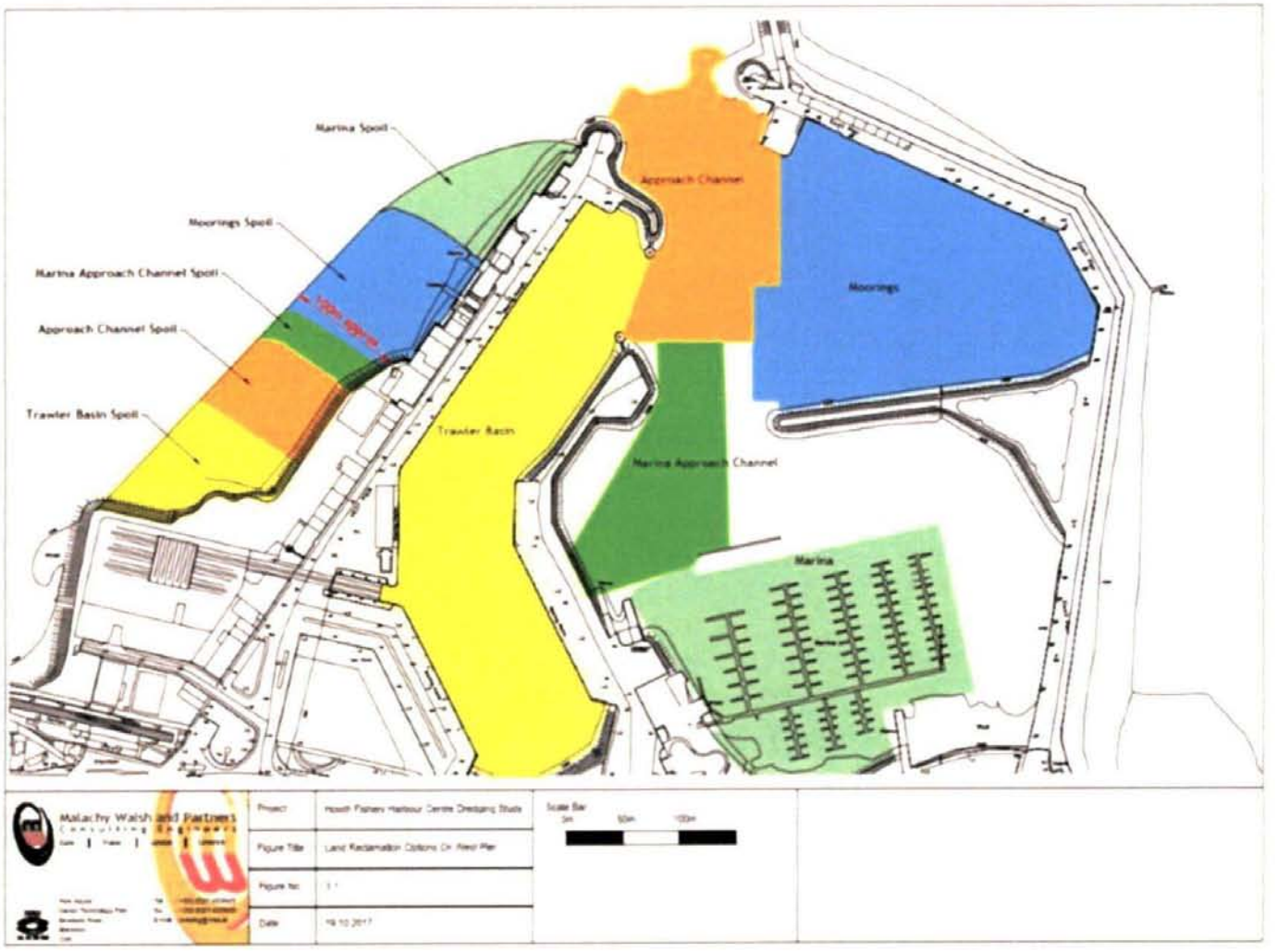
The potential programme of works is outlined in **Table 1** below.

Table 1: The proposed Programme of Works is likely to be as follows, but in accordance with any required mitigation (Source: MWP, 2020):

Year	1												2											
Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Stage1 – Perimeter Embankment																								
Stage2 - Dredging of Howth Harbour																								
Stage3 - Reclamation of land up to ground level																								
Stage4 - Finishings																								

Figure 3 – Proposed Dredging and Land Reclamation Option (Source: MWP, April 2019)

Note – this preliminary design is subject to amendments and was used to inform the surveys in 2019.



2 LEGISLATIVE PROTECTION, POLICIES AND GUIDANCE

2.1 Habitats and Species

2.1.1 EU Habitats Directive 92/43/EEC, European Communities (Natural Habitats) Regulations 1997, European Communities (Birds and Natural Habitats) Regulations 2011

The Habitats Directive provides the basis of protection for European Sites, namely Special Protection Areas ("SPAs") and Special Areas of Conservation ("SACs"). Article 6 of the EU Habitats Directive requires that any proposal that may have a significant effect on a European Site must be subject to an Appropriate Assessment.

The Habitats Directive was transposed in to Irish law by the European Communities (Natural Habitats) Regulations 1997 and subsequently amended in the European Communities (Birds and Natural Habitats) Regulations 2011. Regulation 42 of the 2011 regulations requires that any proposal likely to have a significant effect on a European Site, alone or in combination with other operations or activities, needs to be assessed with respect to its potential impact in the site's conservation objectives (through an Appropriate Assessment) and that the decision-making authority should be furnished with a Natura Impact Statement that incorporates a Screening Assessment and Appropriate Assessment as necessary.

The Habitats Directive also provides for the protection of species listed under Annex IV of the Directive wherever they occur. As such, member states must ensure that a strict protection regime is applied across their entire natural range within the EU, both within and outside European Sites. These species include otter *Lutra lutra* and all bat species. Otter and the lesser horseshoe bat *Rhinolophus hipposideros* are also listed under Annex II of the Directive which ensures that core areas of their habitat – designated as Sites of Community Importance[3] - must be protected under the Natura 2000 Network and the sites managed in accordance with the ecological requirements of the species.

2.1.2 Bern and Bonn Convention

The Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention 1982) exists to conserve all species and their habitats. The Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention 1979, enacted 1983) was instigated to protect migrant species across all European boundaries.

2.1.3 The Wildlife Act (1976) as amended (2000)

The Wildlife Act 1976 gives protection to a wide variety of birds, animals and plants in the Republic of Ireland. It is unlawful to disturb, injure or cause damage to their breeding or resting place wherever these occur without an appropriate licence from National Parks and Wildlife Service ("NPWS"). The act also provides a mechanism to give statutory protection to Natural Heritage Areas ("NHAs"). The amendment in 2000 broadens the scope of the Wildlife Acts to include most species, including the majority of fish and aquatic invertebrate species which were excluded from the 1976 Act.

[3] Once adopted by member states in the EU these *'Sites of Community Importance'* become designated areas known as Special Areas of Conservation (SACs).

2.1.4 Flora (Protection) Order, 1999

The Flora (Protection) Order affords protection to 56 vascular plants, fourteen mosses, four liverworts and two stoneworts. It is illegal to cut, uproot or damage the listed species in any way, or to offer them for sale. This prohibition extends to the taking or sale of seed. In addition, it is illegal to alter, damage or interfere in any way with their habitats. This protection applies wherever the plants are found, and is not confined to sites designated for nature conservation.

2.2 Otter

This species is protected under the Wildlife Act (1976) and Wildlife (Amendment) Act 2000 – collectively known as the Wildlife Acts (as amended). In addition, otter are protected under Annex II and Annex IV of the EU Habitats Directive. The EU Habitats Directive has been transposed into both Irish legislation and the European Communities (Birds and Natural Habitats) Regulations 2011.

As a result of its level of protection, this species can be selected as a Qualifying Interest (QI) for the designation of Special Areas of Conservation (SACs) where important areas for this species' survival exist. It should be noted that otter is not listed as a Qualifying Interest species for nearby SACs in the Howth Harbour area.

According to the Vincent Wildlife Trust, the otter population in Ireland remains one of the most stable in Europe. Given its legal protection, without a specific licence from the National Parks and Wildlife Service (NPWS) for certain activities, it is illegal to deliberately capture, injure or kill an otter; intentionally or recklessly disturb an otter in its resting place; damage or destroy the breeding or resting place of an otter; possess an otter (alive or dead), or any part of an otter; and, intentionally or recklessly obstruct access to the resting place of an otter.

2.3 Bats

All bat species in Ireland are protected by the Wildlife Acts (as amended). Under this legislation it is an offence to wilfully interfere with or destroy the breeding or resting place of these species. Any work to be undertaken on a known roost must be carried out under a licence from the NPWS, and in accordance with an agreed working methodology. All species of bats are listed in Schedule 5 of the 1976 Act and therefore are subject to the provisions in Section 23. The Wildlife Amendment Act 2000 further improved the conservation of both species and their habitat, and also gives statutory protection to Natural Heritage Areas (NHAs).

Bats are afforded significant additional protection under Annex IV of the EU Habitats Directive (92/34/EEC), which ensures that a strict protection regime must be applied across their entire natural range within the EU, both within and outside Natura 2000 sites. All species of bats in Ireland are protected under this legislation. The lesser horseshoe bat *Rhinolophus hipposideros* is also listed under Annex II of this Directive. This means that this particular species can be listed as a Qualifying Interest species for the designation of an SAC where important habitat for this species arises. Member States must ensure that these sites are managed in accordance with the ecological needs of the species. There are no SACs for bats in the vicinity of the Application Site.

3 METHODOLOGY

3.1 Desk Study

A desktop study was undertaken to obtain any relevant ad hoc records through publicly available data sources. These included the following sources of information:

- A search of National Biodiversity Data Centre (NBDC) for records within 2 km of the Application Site (10 km search for bats); and,
- A data request for species records within 10 km from the National Parks and Wildlife Service (NPWS).

The results of this desk-based assessment are provided in **Section 3** below.

3.2 Terrestrial Habitat Survey

An initial Phase 1 habitat survey was undertaken (on 20.05.2019 and 22.06.2019) within the Survey Area shown on **Figure 4** below.

This assessment was carried out according to the standard habitat classification system described in '*A Guide to Habitats in Ireland*' (Fossitt, 2000), a field survey methodology devised specifically for habitat classification in the Republic of Ireland.

The entire site was walked, plant species composition noted, and broad habitat types were assigned to the species assemblages as appropriate. Correspondence of these habitats to EU Annex I habitats was also noted.

The habitats encountered could then be cross-referenced to EU Habitats Directive Annex I habitat types, as described in the Interpretation Manual of European Union Habitats (European Commission, 2013) and the Article 17 Habitats Conservation Assessment Report (NPWS, 2019).

Following the initial Phase 1 habitat assessment, a further site visit was conducted on 29.07.2019 by Róisín NigFhloinn and Kristi Leyden. This allowed for further late summer flora species identification, and habitats were assigned an Annex I classification, or affinity to Annex I habitats, where applicable.

Habitat maps were drawn to illustrate Fossitt 2000 Habitat assemblages.

3.3 Otter Survey

An otter survey was conducted on 20.05.2019 and 22.06.2019. Survey data was updated during the additional site visits on 29.07.2019 and 02.09.2019 by Róisín NigFhloinn.

This survey involved a walkover of the Application Site by an experienced mammal surveyor. The Survey Area included the area illustrated on **Figure 4** below, and an additional 200 m buffer outside of this area to identify any evidence of otter activity at the Application Site. Searches were undertaken for field signs of Otter *Lutra lutra*, including spraint, prints, resting sites (holts, couches), slides, tracks and feeding remains.

The surveyor also enquired with the local fishermen during all surveys, and the Harbour Master, to obtain any additional *ad hoc* records for otter sightings at this site.

3.4 Bat Survey

A daytime preliminary assessment (habitat suitability and external checks of accessible buildings) was conducted during the initial habitat surveys (on 20.05.2019 and 22.06.2019) to ascertain if any structures supported Potential Roost Features (PRF's).

The pre-dusk emergence and bat activity survey was conducted to identify the likelihood of a bat roost existing within the Survey Area (as illustrated on **Figure 4** below), and to gain data regarding usage of the Survey Area by Bats. Surveys were conducted following advice provided within the Bat Conservation Trust (BCT) Guidelines (Collins, 2016).

Given the presence of suitable Potential Roost Features within buildings along the West Pier, it was considered best practice to undertake a bat activity survey within the vicinity of the Application Site to inform the proposed works.

A pre-dusk emergence and bat activity survey was conducted on 02.09.2019, led by Róisín NigFhloinn.

Transect Surveys were carried out at the following Locations:

Table 2 – Locations for transect bat surveys

Site (Survey)	Dates	Start Time	End Time
Howth Harbour (Walked and by boat bat activity transect along the Harbour, including pre-dusk emergence watch)	02 September 2019	19:55	21:45

'Batlogger' manual bat detectors, with internal GPS locating equipment, were used during the surveys to record bats. In addition, as a contingency plan, heterodyne bat detectors were also carried during the surveys. The dusk bat surveys were undertaken during suitably dry weather conditions, when temperatures were well above 10 degrees Celsius, and there were no strong winds.

The survey involved one surveyor walking the West Pier, while a second surveyor conducted a survey of the Harbour and West Pier by boat.

This survey included the deployment of 2 no. SM2 static bat detectors which were collected on 03.09.2019, to allow for comparative data and greater coverage of the Application Site during bat activity surveys.

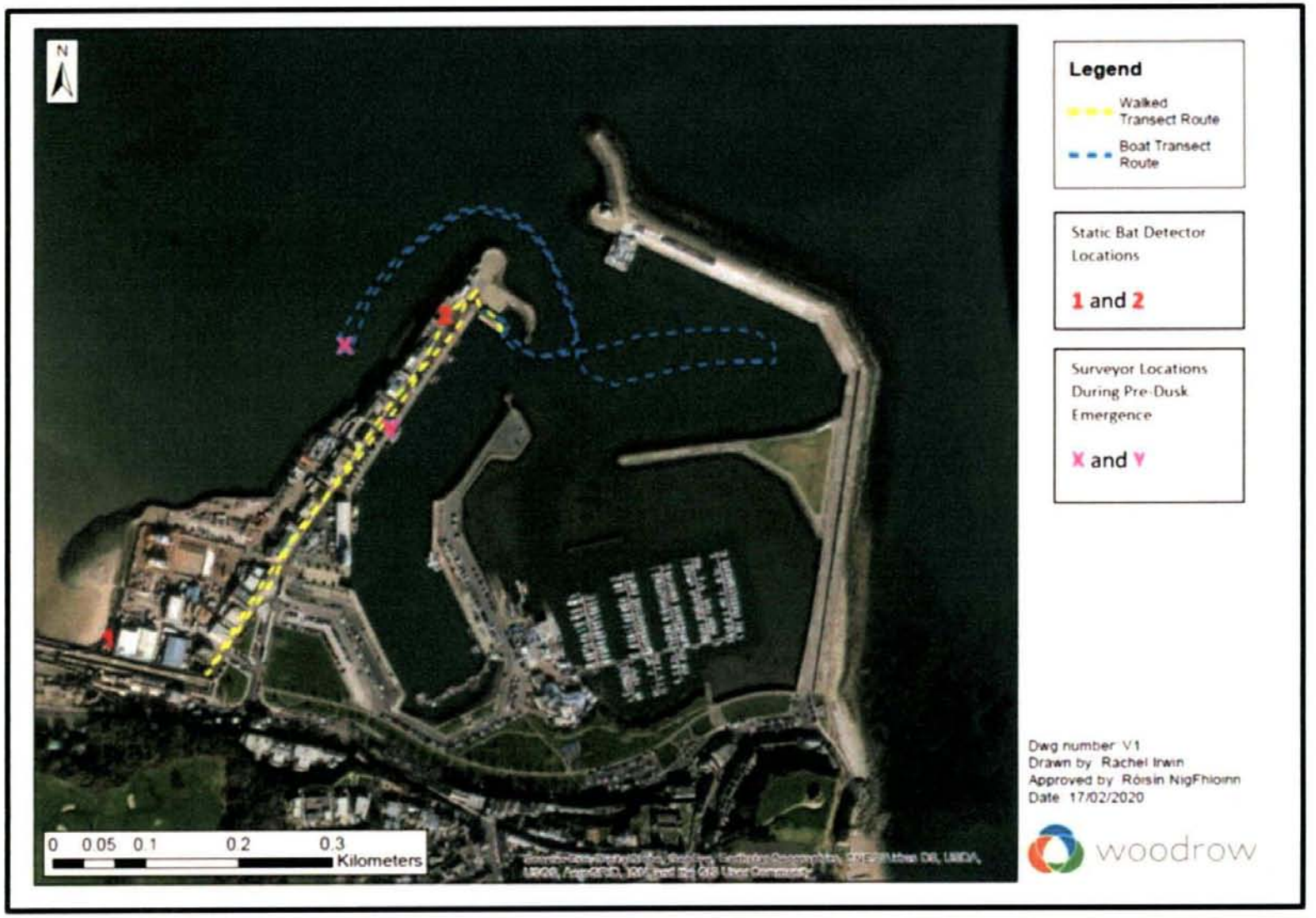
The locations where static bat detectors were placed are as follows:

1. To the south-west of the West Pier, within woody vegetation at the back of the sandy beach - Date: 02 September 2019 – 03 September 2019; and,
2. To the north, near the end of the West Pier at Howth Harbour adjacent to the port entrance of the Harbour - Date: 02 September 2019 – 03 September 2019.

Figure 5 below illustrates the locations of emergence watch points, walked transects and static bat detector placements during the bat activity survey in 2019.

Figure 4 – Terrestrial Habitat Survey Area

Figure 5 – Bat Activity Survey Locations in 2019



4 RESULTS

4.1 Desk Study Results

The results of the desk study are provided in **Appendix IV**. Mammal and invasive species records for species which are likely to occur on or in close proximity to the Application Site are summarised in **Table 3** below.

Otter have not been recorded within 2 km of the site since 1980 (NPWS). However, taking a wider search area, there is a record for otter from NBDC *"dead, not road kill, Gray, B. November, 2017* which lies approximately 3.9 km west from the Application Site, in the vicinity of Baldoyle (NBDC).

There are more recent records for three bat species within proximity of the Application Site (see **Table 3** below).

Species highlighted in **Bold** were recorded within the Survey Area during the surveys in 2019.

Table 3 Summary of Relevant Mammal and Invasive Species Records within Proximity of the Application Site (2 km search; 10 km for bats)

Species	Scientific Name	Habitats Dir. (Annex II / IV)	Wildlife Acts (as amended)	Red List Status	Flora Protection Order	Likelihood on Application Site	Likelihood within 2 km	Most recent record	Record Source
Mammal Records Relevant to this Proposal Within The Application Site									
Otter	*Lutra lutra*	Y	Y	NT	-	3	3	1980	NBDC [Spraint recorded at Grid reference: O292366], NPWS
Brown Long Eared Bat	*Plecotus auritus*	Y	Y	LC	-	4	2	2014	NBDC [Grid reference: O2738]
Leisler's Bat	***Nyctalus leisleri***	**Y**	**Y**	**NT**	-	1	**1**	**2013**	**NBDC [Grid reference: O213371]**
Soprano Pipistrelle	*Pipistrellus pygmaeus*	Y	Y	LC	-	2	2	2014	NBDC [Grid reference: O2838]
Invasive Species									
Canadian Waterweed	*Elodea canadensis*	-	-	-	-	4	3	2014	NBDC
Cherry Laurel	*Prunus laurocerasus*	-	-	-	-	4	2	2013	NBDC
Common Cord-grass	*Spartina anglica*	-	-	-	-	4	2	2018	NBDC
Evergreen Oak	*Quercus ilex*	-	-	-	-	4	2	2013	NBDC
Giant Hogweed	*Heracleum mantegazzianum*	-	-	-	-	4	3	2013	NBDC

Himalayan Honeysuckle	*Leycesteria formosa*	-	-	-	-	4	3	2013	NBDC
Hottentot-fig	***Carpobrotus edulis***	-	-	-	-	**1**	**1**	**1986**	**NBDC**
Japanese Knotweed	*Fallopia japonica*	-	-	-	-	3	2	2018	NBDC
Japanese Rose	***Rosa rugosa***	-	-	-	-	**1**	**1**	**2018**	**NBDC**
Rhododendron	*Rhododendron ponticum*	-	-	-	-	4	1	2018	NBDC
Sea-buckthorn	*Hippophae rhamnoides*	-	-	-	-	3	2	2018	NBDC
Salmonberry	*Rubus spectabilis*	-	-	-	-	3	3	2014	NBDC
Spanish Bluebell	*Hyacinthoides hispanica*	-	-	-	-	3	2	2018	NBDC
Butterfly-bush	***Buddleja davidii***	-	-	-	-	**1**	**1**	**2016**	**NBDC**
Sycamore	***Acer pseudoplatanus***	-	-	-	-	**1**	**1**	**2016**	**NBDC**
Three-cornered Garlic	*Allium triquetrum*	-	-	-	-	2	2	2018	NBDC
Traveller's-joy	*Clematis vitalba*	-	-	-	-	2	2	2018	NBDC
Turkey Oak	*Quercus cerris*	-	-	-	-	4	2	2013	NBDC
Turbellaria	*Arthurdendyus triangulatus*	-	-	-	-	3	3	2016	NBDC
Common Garden Snail	*Cornu aspersum*	-	-	-	-	2	2	2013	NBDC
Eastern Grey Squirrel	*Sciurua carolinensis*	-	-	-	-	4	2	2017	NBDC
European Rabbit	*Oryctolagus cuniculus*	-	-	-	-	4	3	2015	NBDC
Brown Rat	*Rattus norvegicus*	-	-	-	-	1	2	2015	NBDC
House Mouse	*Mus musculus*	-	-	-	-	2	2	2015	NBDC

4.2 Field Survey Results

The results of the ecology surveys (terrestrial habitats, otter and bats) in 2019 are summarised below. **Figure 7** below illustrates identified Fossitt 2000 Habitats. Three areas, outside of the proposed works, were identified as supporting EU Annex I habitats, or habitat with affinity to EU Annex I classifications.

4.2.1 Terrestrial Habitat Survey

4.2.1.1 Fossitt 2000 Habitats

The vast majority of the Application Site is comprised of built structures, hardstanding, and amenity grassland and parkland habitats which have a low species diversity in general. On the outskirts of the Survey Area there are areas of coastal habitat which support a more diverse flora. The different Fossitt 2000 (Level 3) habitats that were encountered on this site are described below.

BL3 Buildings and Artificial Surfaces

At Howth Harbour, this habitat type included paths, roads, car parks, cement walls and buildings. As to be expected, these areas were species poor; however plants were recorded occasionally within cracks and crevices within this built landscape. Species recorded within this habitat included commonly occurring plants such as shepherd's-purse *Capsella bursa-pastoris*, annual meadow-grass *Poa annua*, daisy *Bellis perennis*, and Yorkshire fog *Holcus lanatus*. Occasionally, coastal species such as common scurvygrass *Cochlearia officinalis* and sea pearlwort *Sagina maritima* were recorded. Plants such as red valerian *Centranthus ruber*, pellitory-of-the-wall *Parietaria judaica* and snapdragon *Antirrhinum majus* were noted, particularly on the beach access walls behind Howth Dart Station.

Plate: 1 – Typical vegetation occurring within cemented areas around the Harbour	**Plate: 2 – A building on the West Pier**
	

CC1 Sea Walls, Piers and Jetties

Given the location of the Site, this habitat type was by far the most frequently encountered during the survey. Although much of this habitat comprised of rock and/or cement, it still supports an interesting flora, particularly given its coastal location. These areas were found to support a variety of garden escapes as well as mainly native species. The vast majority of this habitat was comprised of rock, stone slabs, cement and similar constructions which formed the harbour piers, slipways, sea walls, breakwater, marina (jetties) and coastal defences. Some of the coastal defence has been placed on top of dune formation (e.g. along the sandy beach to the south of the boat-yard on West Pier; Sycamore *Acer pseudoplatanus* scrub is now forming along the fence-line here).

Within the more sheltered centre of the Harbour, a good variety of flowering plants were scattered, growing within cracks and crevices on the pier structures. These included species such as red clover *Trifolium pratense*, nipplewort *Lapsana communis*, perennial sow-thistle *Sonchus arvensis*, prickly sow-thistle *Sonchus asper*, smooth sow-thistle *Sonchus oleraceus*, doves-foot crane's-bill *Geranium molle* (a single plant), turnip *Brassica rapa*, hedge mustard *Sisymbrium officinale*, annual wall-rocket (stinkweed) *Diplotaxis muralis*, scarlet pimpernel *Anagallis arvensis*, common vetch *Vicia sativa* ssp. *segetalis*, spear thistle *Cirsium vulgare*, yarrow *Achillea millefolium*, common poppy *Papaver rhoeas*, common chickweed *Stellaria media*, common mouse-ear *Cerastium fontanum* and germander

speedwell *Veronica chamaedrys*. These plants were found in small numbers, within holes, cracks and crevices in the more sheltered areas of harbour, in and around rock armour, or on the edge of the amenity grassland. In addition, grasses such as false oat-grass *Arrhenatherum elatius*, annual meadow-grass, Yorkshire fog, red fescue *Festuca rubra*, wall barley *Hordeum murinum*, barren brome *Anisantha sterilis (Bromus sterilis)* and sea couch *Elytrigia atherica* were scattered throughout the built environment around the Harbour-side.

Typical coastal species such as sea beet *Beta vulgaris ssp. maritima*, bucks-horn plantain *Plantago coronopus*, sea plantain *Plantago maritima*, sea thrift *Almeria maritima*, annual seablite *Suaeda maritima* (a small number of plants within holes in the East Pier), spear-leaved orache *Atriplex prostrata* agg., sea mayweed *Tripleurospermum maritimum*, common scurvygrass, greater sea-spurrey *Spergularia media*, lesser sea-spurrey *Spergularia marina* (the latter was recorded within the centre of the Harbour), and sea pearlwort were also found here. In drier, more sheltered areas plants recorded included white stonecrop *Sedum album* (recorded on the Central Pier), common valerian *Valeriana officinalis* and pellitory-of-the-wall. Commonly occurring species such as white clover *Trifolium repens*, herb-robert *Geranium robertianum*, with scattered dandelion *Taraxacum officinale* agg. Ivy *Hedera hibernica* and young sycamore (*Acer pseudoplatanus*) were also noted.

It was evident that, in some areas, plants along the Harbour are sprayed with herbicide (e.g. alongside the piers in the centre of the Harbour).

Plate: 3 – A section of the West Pier	**Plate: 4 – Slipway from the promenade on Claremont Beach**
	

CB1 Shingle and Gravel Banks

This habitat was found to occur immediately south of the proposed reclamation area, on the northern end of the sandy beach, where a shingle bank has formed adjacent to the West Pier. Although the terrain was slightly elevated in comparison with the sandy beach surrounding this point, the bank was not very well developed. However, this area supported an interesting coastal flora, growing on shingle and gravel during all of the site visits. In June, sea purslane *Atriplex portulacoides* was noted to be the dominant plant found growing within this habitat type, while in July this habitat supported additional species including spear-leaved orache (which was locally abundant, in addition to sea purslane), prickly saltwort *Salsola kali* (occasional), and the more rarely occurring Babington's Orache *Atriplex glabriuscula*. Annual seablite was locally frequent. Other species which were rarely or occasionally recorded within this habitat included sea mayweed nipplewort, sea beet, perennial sow-thistle and bucks-horn plantain. This is an EU Annex I habitat, ***'Annual Vegetation of Drift Lines (1210)'***, and is discussed further below in Section 4.2.1.2 – Area 3. In more disturbed ground, creeping thistle and the non-scheduled invasive plant, butterfly-bush *Buddleja davidii* were infrequently recorded.

Plate: 5 – Shingle bank behind West Pier on Claremont Beach	Plate: 6 - Sea purslane *Atriplex portulacoides*
	

CD1 Embryonic Dune

This habitat occurred in two locations within the Survey Area (at Area 1 and Area 2 referred to below in Section 4.2.1.2). Both locations had undergone recent and significant erosion and disturbance (which could be seen within the adjacent habitats), however, the initial stages of dune formation was occurring here during the site visits in 2019. The vegetation supported lyme-grass *Leymus arenaria* (dominant / locally abundant) and sand couch *Elytrigia juncea* (occasional). Other herbaceous species recorded here are listed in Section 4.2.1.2 Area 1 and 2 below, and included coastal plants such sea rocket *Cakile maritima*. This is an EU Annex I habitat ***'Embryonic Shifting Dunes (2110)'***.

Plate: 7 – CD1 Embryonic Dune (Area 1)	Plate: 8 – CD1 Embryonic Dune (Area 1)
	

CD2 Marram Dune

This habitat occurred within Area 1 and is discussed further in Section 4.2.1.2 below. This small marram dune, dominated by marram *Ammophila arenaria,* was heavily eroded at this location as a result of wave action and trampling by walkers. Common cat's-ear *Hypochaeris radicata* was also recorded here, but the majority of vegetated dune habitat at this location was considered to support Fixed Dune (see below). Along the periphery of the sandy beach (see Area 2 in Section 4.2.1.2) coastal defences have been placed on top of the line where dune formation occurs. Where this habitat occurs in good condition, it is an EU Annex I habitat - ***'Shifting dunes along the shoreline with Ammophila arenaria ("white dunes") (2120)'.***

Plate: 9 – CD2 Eroded Marram Dune (Area 1)	Plate: 10 – CD2 Eroded Marram Dune (Area 1)
	

CD3 Fixed Dune

This habitat occurs at Area 1 (as described below in in Section 4.2.1.2). This area of fixed dune represents a good (albeit small) example of its type, corresponding to the Priority Annex I habitat type ***'*Fixed Coastal Dunes with Herbaceous Vegetation ("Grey Dunes") (2130)'***, although it was observed to be eroded along the edge. This area supports bee orchid *Ophrys apifera* and pyramidal orchid *Anacamptis pyramidalis*. Patches of non-scheduled, invasive species such as hottentot-fig *Carpobrotus edulis*[4] and wall-spray *Cotoneaster horizontalis* were also recorded here.

Plate: 11 - CD3 Fixed Dune	Plate: 12 - CD3 Fixed Dune
	

CD4 Dune Scrub and Woodland

Good examples of this habitat are rare in Ireland as a result of disturbance to dune habitats (and dune woodland occurring in Ireland is generally planted). The CD4 habitat within the Survey Area does not represent a good example of this habitat, and was mainly dominated by scattered invasive sycamore and bramble *Rubus fruticosus agg.* which has recently established here. The invasive garden escape, cabbage-palm *Cordyline australis*, was also recorded here. This habitat does not represent an EU Annex I habitat classification.

[4] This species is Listed species under the Third Schedule (Part 1) of the European Communities (Birds and Natural Habitats) Regulations 2011 (Non-native species subject to restrictions under Regulations 49 and 50).

Plate: 13 – (CD4) Sycamore scrub on Fixed Dune	Plate: 14 – (CD4) Sycamore and Bramble Scrub on Fixed Dune
	

GA2 Amenity Grassland (Improved)

The amenity grasslands within the Survey Area were largely uniform, regularly mown and improved. In general, they comprised of perennial rye grass, Yorkshire fog and annual meadow-grass with flowering plants such as daisy, dandelion, ribwort plantain *Plantago lanceolata* and white clover. Species occasionally recorded on the peripheries of these areas included curled dock *Rumex crispus*, black medick *Medicago lupulina*, hogweed *Heracleum sphondylium*, pineapple weed *Matricaria discoidea*, red fescue, cock's-foot *Dactylis glomerata*, scarlet pimpernel and common ramping fumitory *Fumaria muralis*.

WS3 Ornamental/non-native shrub

On the peripheries of the central amenity grassland alongside Harbour Road, there were flower beds with planted shrubs which included red currant *Ribes sanguineum*, dogwood *Cornus sanguinea*, sycamore, garden privet *Ligustrum ovalifolium*, hedge veronica *Hebe* x *franciscana (Hebe elliptica* x *H. speciosa)*, a cotoneaster (likely Stern's cotoneaster *Cotoneaster sternianus*) and a willow *Salix sp.* (likely grey willow *Salix cinerea)*. Ground flora here included red valerian, cleavers *Galium aparine*, hedge mustard, creeping thistle, nipplewort, daisy, ivy, bramble and spear thistle.

The non-scheduled, invasive plants butterfly-bush and Japanese rose *Rosa rugosa* were also recorded within the planted ornamental scrub surrounding the amenity grassland alongside Harbour Road.

WL2 Treelines

Alongside the Howth Yacht Club boundary fence-line there is a small species-poor planted treeline supporting mainly lodgepole pine *Pinus contorta* ssp. *latifolia*. Cabbage-palm was also noted here.

Plate: 15 – GA1 Amenity Grassland	Plate: 16 – WS3 Ornamental/non-native shrub
	

LR1 Exposed Rocky Shores

This habitat is described in more detail within the Benthic Habitat Survey Study (University College Cork, Aquatic Services Unit [ASU], 2019).

There was no terrestrial flora associated with this habitat.

Plate: 17 – LR1 Exposed rocky shores	**Plate: 18 – LR1 Exposed rocky shores in background**
	

LS1 Shingle and Gravel Shores

This habitat is described in more detail within the Benthic Habitat Survey Study (ASU, 2019).

At low tide the beach at Balscadden Bay comprised of loose rocky material mainly comprising of small boulders, pebbles and rocks. This particular beach habitat was found to be unvegetated during the terrestrial habitat surveys in 2019.

Plate: 19 - LS1 Shingle and Gravel Shores at Balscadden Bay	**Plate: 20 - LS1 Shingle and Gravel Shores at Claremont Beach**
	

LS2 Sand Shores

Intertidal sandflats and strandlines are included within this habitat type and such habitats are described further within the Benthic Habitat Survey Study (ASU, 2019).

Found on the western side of West Pier, at Claremont Beach, this particular habitat was comprised of fine sands, and did not support any associated herbaceous flora during the surveys in 2019. Typically sandy strandlines may support annual communities of terrestrial plants such as orache species, sea rocket, and annual sea-blite within less mobile substrates. The area of sand shore surveyed along Claremont Beach supported highly mobile sand and was found to be impoverished of flora and fauna.

In addition, it is uncertain if beach cleaning activities are regularly conducted in areas of sand shore within the Survey Area (see Plate 22 below which shows the indicative tracks of this activity). If this is the case, the potential effect this is having on the typical flora and fauna of the area is currently unknown. The floral assemblages that are found within the adjacent dune formations around Howth Harbour are discussed above, and below (in reference to Areas 1 and 2).

Plate: 21 - LS2 Sand Shores at Claremont Beach	Plate: 22 - LS2 Sand Shores; the tracks suggest that beach cleaning activities are conducted here
	

WD5 Scattered Trees and Parkland

Parkland areas surrounding the harbour consisted of small clusters of planted trees on amenity grassland, including species such as sycamore and ash *Fraxinus excelsior*. These areas were regularly maintained, and species poor.

Plate: 23 - WD5 Scattered Trees and Parkland	Plate: 24- WD5 Scattered Trees and Parkland
	

WS1 Scrub

Dense areas of bramble, ivy and sycamore scrub occurred on the slopes of Balscadden Bay. It was evident that some areas were influenced by water run-off here, given that species such common reed *Phragmites australis* were found to be locally abundant within this scrub habitat. In addition, scattered patches of bramble scrub were found within the *WS3 Ornamental / non-native shrub* planting and in some areas within the vicinity of *CC1 Sea Walls, Piers and Jetties*. Herbaceous plants recorded within scrub habitats around Howth Harbour included hogweed, creeping thistle, spear thistle and tree-mallow *Lavatera arborea*.

Additional flowering plants which were occasionally recorded within this habitat (particularly on the slopes at Balscadden Bay) included hemp-agrimony *Eupatorium cannabinum*, tree-mallow, cabbage-palm and Russian Comfrey *Symphytum* x *uplandicum (S. asperum* x *S. officinale)*, the latter three species are garden escapes.

The non-scheduled, invasive species noted within areas of scrub included Montbretia *Crocosmia* x *crocosmiiflora* and butterfly-bush.

Plate: 25 - WS1 Scrub	Plate: 26 - WS1 Scrub
	

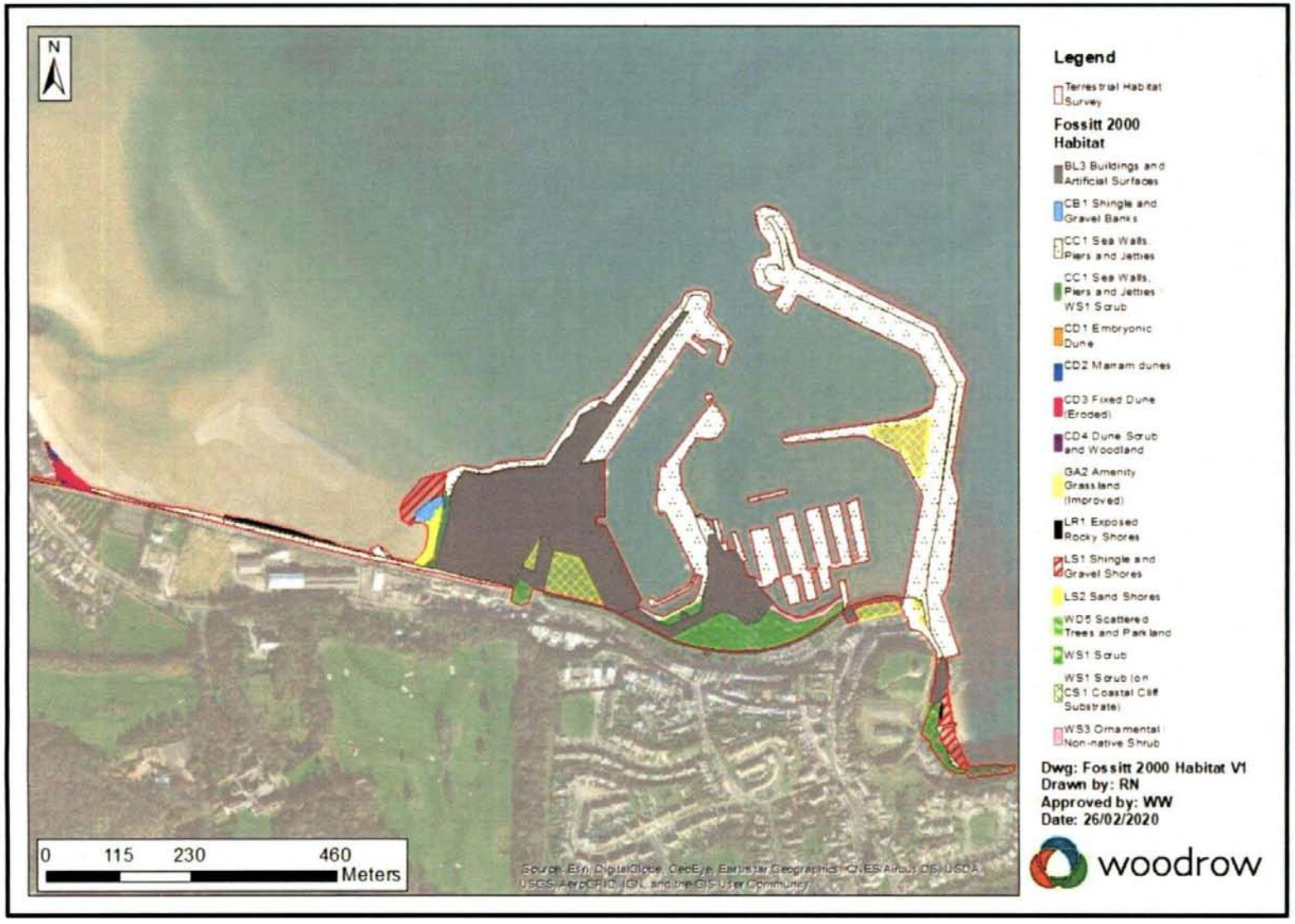
WS1 Scrub on CS1 Coastal Cliff

Scrub habitat growing on the sea cliff at Balscadden Bay was dominated by bramble, sycamore and the non-native hedge veronica. Herbaceous plants recorded here included frequent common scurvygrass, rosebay willowherb *Chamerion angustifolium*, and honeysuckle *Lonicera periclymenum*. Broad-leaved dock *Rumex obtusifolius* and curled dock were also occasionally recorded here. Grasses included red fescue grass *Festuca rubra* agg., amongst others. It was not possible to safely access all cliff-side vegetation during this survey.

Within the Survey Area, this habitat, was more akin to WS1 Scrub and **did not** correspond to EU Annex I habitat *'Vegetated sea cliffs of the Atlantic and Baltic Coasts (1230)'*.

Plate: 27 - WS1 Scrub on CS1 Coastal Cliff	Plate: 28 - WS1 Scrub on CS1 Coastal Cliff
	

Figure 7 – Fossitt 2000 Habitat Classifications



4.2.1.2 EU Annex I Habitats

There were three main locations where EU Annex I habitats (or habitats which had affinity to these protected habitats) were recorded, *albeit*, all of these habitats lie outside of the proposed dredging and reclamation extents. These EU Annex I habitats, however, are in close proximity of the proposed works, and therefore, they still require consideration within the EIAR in terms of their potential to be impacted by unmitigated pollution or disturbance. These habitat areas are described in more detail below.

EU ANNEX 1 HABITATS - AREA 1 – FIXED DUNE AT CLAREMONT BEACH

Area 1 – Habitat supporting mainly Fixed dune – approximate Irish Grid ref O 27528 39536

The vegetation at this location shows a transition from Embryonic dune (Fossitt code CD1), dominated by lyme-grass *Leymus arenarius* with patches of marram *Ammophila arenaria*, through fixed dune (CD3) variously dominated by red fescue *Festuca rubra* and marram/lyme grass, to a more established vegetation type composed of continuous red fescue dominated grassland that is developing some scrub and trees in places. A tall wall flanks the northern end of the area, supporting ivy *Hedera hibernica*, red valerian *Centranthus ruber* and rock sea spurrey *Spergularia rupicola*, with some scattered shrubs such as sycamore *Acer pseudoplatanus* and privet *Ligustrum* sp.. The base of the wall supports more luxuriant dune vegetation, its species composition most resembling eroding dune, dominated by lyme grass, marram, red fescue and sea beet *Beta vulgaris* ssp. *maritima* with some meadow pea *Lathyrus pratensis*.

The fixed dune area supports a diverse characteristic flora, supporting species locally abundant hare's-foot clover *Trifolium arvense*, Kidney vetch *Anthyllis vulneraria*, and a large swathe of pyramidal orchid *Anacamptis pyramidalis*. In addition, approximately 13 No. bee orchid *Ophyrs apifera* were counted here in June 2019.

Patches of the non-native invasive species wall-spray *Cotoneaster horizontalis* and hottentot-fig *Carpobrotus edulis* were also noted in this area. Hottentot-fig is listed as a Scheduled invasive weed (i.e. a non-native species listed on the Third Schedule (Part 1) of the European Communities (Birds and Natural Habitats) Regulations 2011 (Non-native species subject to restrictions under Regulations 49 and 50).

EU Annex I habitat types present here include:

- *Fixed Coastal Dunes with Herbaceous Vegetation ("Grey Dunes") (2130) – A Priority Habitat;
- Embryonic Shifting Dunes (2110); and,
- Remnants of eroded 'Shifting Dunes along the Shoreline with *Ammophila arenaria* ("white dunes") (2120)'.

Plate: 29 - 'Embryonic Shifting Dunes (2110)'	**Plate: 30 - '*Fixed Coastal Dunes with Herbaceous Vegetation ("Grey Dunes") (2130)' with pyramidal orchid *Anacamptis pyramidalis***
33 	

Plate: 31 - Bee orchid *Ophyrs apifera*	**Plate: 32 – The invasive hottentot fig *Carpobrotus edulis***
	
PRESSURE/THREATS NOTED:	**Coastal erosion; litter; trampling; nutrient enrichment (by dogs), and potentially mechanised beach cleaning activities.**
TYPICAL SPECIES OCCURRING IN THE <u>CD1 EMBRYONIC DUNE</u> AND <u>CD2 MARRAM DUNE</u> INCLUDE:	**TYPICAL SPECIES OCCURRING IN THE <u>CD3 FIXED DUNE</u> AREA:**
Lyme grass *Leymus arenarius* Marram *Ammophila arenaria* (but not dominant) Sand couch *Elytrigia juncea* (at sandy beach near west pier) Sea rocket *Cakile maritima* Perennial sow-thistle *Sonchus arvensis* Smooth sow-thistle *Sonchus oleraceus* Sea Radish *Raphanus raphanistrum* ssp. *maritimus* Note, while there is evidence to suggest that CD2 Marram Dune had previously formed here (presence of scattered *Ammophila arenaria*), it could be seen that this habitat has been heavily eroded by the sea. Marram dune habitat was sparse here and dominated by Marram *Ammophila arenaria* with some Common cat's-ear *Hypochaeris radicata*.	Red fescue *Festuca rubra* Lyme grass *Leymus arenarius* Marram *Ammophila arenaria* Kidney vetch *Anthyllis vulneraria* Hare's-foot clover *Trifolium pratense*, Common cat's-ear *Hypochaeris radicata* Black medick *Medicago lupulina* Perennial sow-thistle *Sonchus arvensis* Smooth sow-thistle *Sonchus oleraceus* Scarlet pimpernel *Anagallis arvensis* Nipplewort *Lapsana communis* Bee orchid *Ophrys apifera* Biting stonecrop *Sedum acre* Common ragwort *Senecio jacobaea* Sea Radish *Raphanus raphanistrum* ssp. *maritimus* Towards the southern part of the area, the fixed dune grades into a more established dune grassland (still CD3) where some low **CD4 Dune scrub and woodland** are colonising. Species included: Sycamore *Acer pseudoplatanus* Wallspray *Cotoneaster horizontalis* Bramble *Rubus fruticosus* agg. Spruce *Picea* sp. Cabbage-palm *Cordyline australis*

AFFINITY TO EU ANNEX 1 HABITAT - AREA 2 – EMBRYONIC DUNE AT CLAREMONT BEACH

Area 2 – Habitat supporting mainly disturbed Embryonic Dune – approximate Irish Grid ref O 28114 39423

The vegetation at this location shows a transition from Embryonic dune (Fossitt code CD1), where loose sandy banks are forming against a more stabilised, but eroded dune which is now supporting Sycamore scrub habitat. The dune formation here has been largely disrupted by disturbance through the placement of sea defences in some locations along this stretch of habitat, in addition to erosion on the outer edge.

The initial line of vegetation is dominated by sea beet and tree-mallow, which progresses into a habitat supporting lyme-grass as the dominant grass species within more stabilised areas. Other less commonly occurring grasses included marram grass and sand couch within the more stabilised dune scrub. This is not a good example of embryonic dune due to the high level of disturbance from sea defences, trampling and erosion in this area.

Affinity to EU Annex I habitat type:

- Embryonic Shifting Dunes (2110) – albeit a poor example of embryonic dune which does not fully conform with the EU Annex I habitat classification, and is not thought to be of EU Annex I quality.

Plate: 33 – Disturbed dune formation and scrub	**Plate: 34 – Sea Defences placed on Dune Formation**
	
PRESSURE/THREATS NOTED:	**Coastal erosion; litter; trampling; nutrient enrichment (by dogs); mechanised beach cleaning, and sea defences.**

TYPICAL SPECIES OCCURRING IN THE <u>CD1 EMBRYONIC DUNE</u> grading into FIXED DUNE WITH SCRUB

Sea beet *Beta vulgaris ssp. maritima*	Common cat's-ear *Hypochaeris radicata*
Tree-mallow *Lavatera arborea*	Sea rocket *Cakile maritima*
Lyme grass *Leymus arenarius*	Perennial sow-thistle *Sonchus arvensis*
Other species occurring here in association with the more fixed dune / scrub areas (these habitats are not considered to support EU Annex I habitat in their current condition) include:	Wild carrot *Daucus carota*
	Alexanders *Smyrnium olusatrum*
	Sea mayweed *Tripleurospermum maritimum*
Lyme grass *Leymus arenarius*	
Marram *Ammophila arenaria* (but not dominant)	
Sand couch *Elytrigia juncea* (at sandy beach near west pier)	
Red fescue *Festuca rubra*	
Common ragwort *Senecio jacobaea*	

EU ANNEX 1 HABITATS - AREA 3 – SHINGLE AND GRAVEL BANKS AT CLAREMONT BEACH

Area 3 – Habitat supporting Shingle and Gravel Banks (CB1) – approximate Irish Grid ref O 28111 39476

A low shingle and gravel bank has formed to the south of the proposed reclamation area (outside of the working area) which supports an interesting assemblage of coastal flora associated with this substrate. The vegetated areas of this habitat are dominated by sea purslane and spear-leaved orache. Additional species included locally frequent annual seablite, occasionally occurring prickly saltwort, in addition to Babington's Orache *Atriplex glabriuscula* which was also recorded here in small amounts.

It was noted that parts of the substrate appeared to be broken down cement and brick fragments, as well as naturally occurring shingle and gravel. The habitat was largely undisturbed by trampling given its location away from the sandy beach. It appears that some materials from mechanised beach cleaning activities have been disposed of in this area (See Plate 36 below).

Other species which were rarely or occasionally recorded within this habitat included sea mayweed, nipplewort, sea beet, perennial sow-thistle and buckshorn plantain.

Small amounts of butterfly-bush *Buddleja davidii* were also noted adjacent to this habitat. This species is not a Scheduled invasive weed (i.e. it is not listed under non-native species in the Third Schedule (Part 1) of the European Communities (Birds and Natural Habitats) Regulations 2011 (Non-native species subject to restrictions under Regulations 49 and 50).

EU Annex I habitat types present here include:

- Annual Vegetation of Drift Lines (1210).

Plate: 35 – Annual Vegetation of Drift Lines (1210)	**Plate: 36- Waste material from mechanised beach cleaning**
	
PRESSURE/THREATS NOTED:	**LITTER; POULLUTION FROM CEMENT DEBRIS; MECHANISED BEACH CLEANING WASTE**

TYPICAL SPECIES OCCURRING IN THE CB1 SHINGLE AND GRAVEL BANKS	
Sea purslane *Atriplex portulacoides* Spear-leaved orache *Atriplex prostrata agg.* Prickly saltwort *Salsola kali* Babington's Orache *Atriplex glabriuscula* Annual seablite *Suaeda maritima*	Other species which were rarely or occasionally recorded within this habitat included: Sea mayweed *Tripleurospermum maritimum* Nipplewort *Lapsana communis* Sea beet *Beta vulgaris ssp. maritima* Perennial sow-thistle *Sonchus arvensis* Bucks-horn plantain *Plantago coronopus*

4.2.2 Otter Survey

Following all site visits by Woodrow in 2019 and extensive searches of the Survey Area and habitat upstream and downstream within 200 m of the site, there was no evidence of any otter field signs, resting sites or other activity noted. In addition, no *ad hoc* records were provided from querying local harbour users such as fishermen and tour boat operators, who attend this site on a daily basis.

During the surveys in 2019, the surveyor noted a high level of local disturbance from people, boats and general harbour-side activity which is to be expected here. In addition, oil slicks could be regularly seen on the water within the harbour area including the approach channels, trawler basin, and marina. There was also considerable flotsam (floating litter) noted within the harbour. It was also noted that local freshwater streams have been culverted. All of these factors could culminate in reducing the suitability of the Application Site for use by otter. However, given that this species have been recorded in the 10 km grid square in the past, the presence of otter has not be exclusively ruled out.

There are 2 no. NPWS records for otter from 1980 within 2 km of the Application Site, and no records from NBDC were returned within 2 km.

The NBDC records also include records from the 1960s and 1980s at Lion's Rock which is situated on the south-eastern extents of Howth Head which lies greater than 3.5 km from Howth Harbour (approximately Grid Reference O 29 36). In addition, as referred to within the desk study information, there is a record of a dead otter in the vicinity of Baldoyle from November 2017 (NBDC).

A number of records are shown on the NBDC website for otter sightings or spraint being recorded within 10 km of the Application Site, however, none of these are within 2 km.

These include records from the North Bull Wall in Clontarf, however all records appear to be from the 1980s or earlier.

Subsequently, it is considered to be possible that otter could commute within or past the Application Site. However, based on the desk study and survey results, it is considered that they are unlikely to be foraging or resting within 200 m of the Application Site during the proposed works.

4.2.3 Bat Survey

The bat activity survey paid particular attention to buildings along West Pier given that a number of these were identified as supporting PRF's during the day time assessments. However, suitability for foraging bat activity was deemed to be low given the lack of optimal foraging habitat in this harbour-side and coastal environment. It should also be noted that the majority of the Survey Area was well-lit by street lights at night time during the dusk bat activity survey, particularly along the promenade of West Pier.

Bats often feed along continuous lines of vegetation such as those provided by rivers and hedgerow. However, the harbour consists of a series of exposed buildings with little or no vegetation and as such foraging and commuting habitats were deemed to be of negligible to low suitability, and the Application Site was not predicted to be used by high numbers of foraging bats. The results of the bat surveys are provided below.

4.2.3.1 Manual Bat Activity Surveys

Two transects were conducted along the harbour on 02 September 2019. One surveyor walked the harbour, while the other conducted the survey by boat (see Figure 3 below). The survey was conducted approx. 15 mins before sunset at 19:55 (Sunset: 20:12) until 1.5 hours after sunset at 21:45. Weather conditions during this survey were mild, with temperatures approx. 16°C, 21km/hr WSW winds and little or no rain.

No bats were recorded foraging or commuting within the Survey Area (See **Figure 5** above).

No bats were recorded exiting any buildings on West Pier during the pre-dusk emergence survey.

4.2.3.2 Static Bat Activity Surveys

The below tables provide the results of the static SM2 bat activity surveys.

Southern end of West Pier – At Howth DART Station

Table 3 – SM2 WSS20 at the Southern end of West Pier

Date: 02 September 2019 – 03 September 2019

Species	No. of passes	Timings
Leisler's bat *Nyctalus leisleri*	5	Earliest pass 00:06 Latest pass 05:01

Only one species of bat, Leisler's bat (*Nyctalus leisleri*), was recorded from the static detector placed adjacent to Howth DART station, at the Southern end of West Pier. Furthermore, only five bat passes were recorded concluding in a low bat activity level over the night. The low level of bat activity may be contributed to the lack of foraging or commuting habitats and an overall exposed area close to the coast. It is possible that all bat passes were from an individual bat, or very low numbers of commuting bats.

Northern end of West Pier

Table 4 – SM2 WSS23 at the north end of West Pier

Date: 02 September 2019 – 03 September 2019

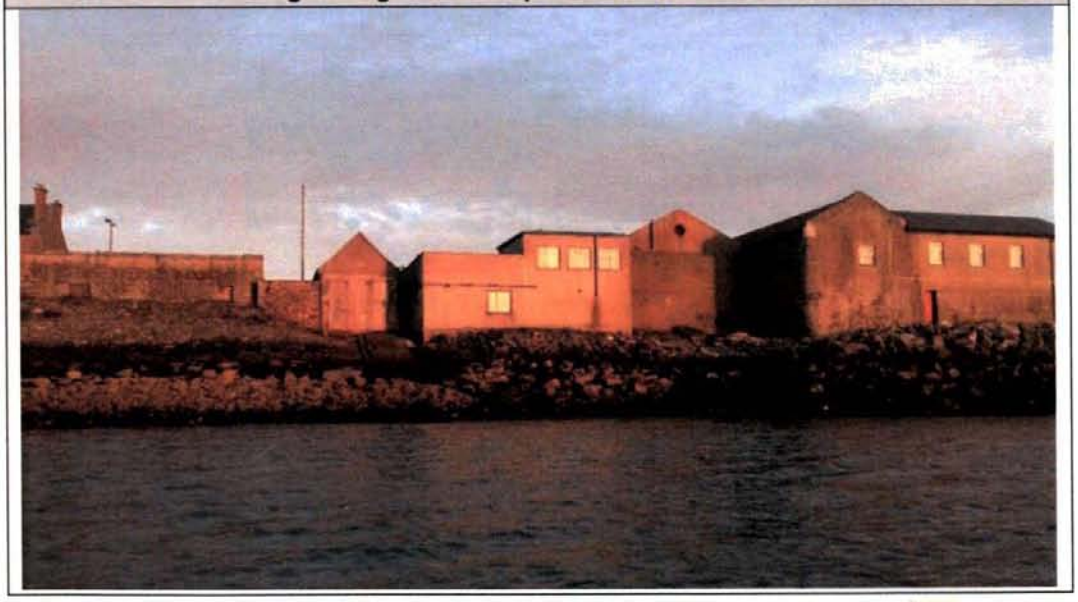
Species	No. of passes	Timings
Leisler's bat *Nyctalus leisleri*	1	21:16

This SM2 recorded only one species of bat, Leisler's bat. Only one bat pass was recorded at 21:16 demonstrating that the Survey Area had very low bat activity, which is likely to be due to the habitats present here which provide sub-optimal foraging habitat.

The time that Leiser's bats were recorded on both static bat detectors does not indicate that a Leisler's bat roost exists in close proximity to the Application Site. However, suitable features for roosting bats do exist within buildings along West Pier (see Figures 37 to 38 below).

Plate: 37 – Old buildings along West Pier during day time assessments

Plate: 38 – Old buildings along West Pier pre-dusk



Note: Suitable structural features such as Soffits, Loose Roof Tiles, Lead Flashing, Chimney breasts, Crevices in old stone walls were recorded from the ground during the day. An external inspection of all structures was conducted from the ground with no evidence of bats being found.

Bat activity surveys did not highlight the probability of any bat roosts occurring within the Application Site, however, there are suitable PRF's within the Survey Area.

5 CONCLUSIONS AND RECOMMENDATIONS

Following the results of the Woodrow 2019 terrestrial habitat, otter and bat surveys conducted in May to September 2019, it is considered that the proposed Howth Harbour FHC dredging and reclamation works[5] are unlikely to significantly impact upon any otter or bat species occurring locally given the low likelihood of these species occurring within the proposed dredging or reclamation zones during the works.

No potential otter holts or resting sites were observed during the surveys, nor were any otters or evidence including spraints, prints or feeding remains recorded within 200 m of the Application Site. The proposed works do not lie within 150 m of any otter holts or resting sites. As such, an NPWS licence shall not be required to undertake works in these locations.

No bats were recorded during the manual pre-dusk bat activity survey. Very low numbers of passes for only one species of bat, Leisler's bat, were recorded during the static bat detector surveys. Although Leisler's bats have been known to opportunistically feed around artificial lighting, it is appropriate for an ecologist to review the lighting design for the proposed reclamation of Howth Harbour in order to reduce the potential impacts of any proposed lighting on bats.

Light spill should be reduced, and focussed onto working areas only during the period of working activities (hoods and cowls should be used to direct lighting onto any working areas). Noise and vibration disturbance should be minimised using standard methods of noise control on such construction sites. No rock breaking will occur at night.

EU Annex I habitats were found to occur outside of the proposed Application Site at Areas 1 and 3, however, these lie in close proximity to the working areas. All sensitive habitats, such as the identified EU Annex I habitats referred to in this report (and one habitat with affinity to EU Annex I Embryonic Shifting Dunes (2110) at Area 2), must be protected from disturbance by machinery, personnel (trampling), construction related waste, litter, sediment, and pollution.

There is the potential for future hydrodynamic impacts upon the EU Annex I habitat 'Annual Vegetation of Drift Lines (1210)' at Area 3 as a result of the proposal. However, this habitat is not a Qualifying Interest feature for any of the nearby SAC sites. In addition, *"this habitat is generally very species-poor, fragmented and tends not to occupy large areas due to its narrow, linear nature. It exists in a state of instability and may be absent in some years due to natural and/or anthropogenic causes. In Ireland the habitat includes drift line vegetation on sandy substrates as well as drift line vegetation on shingle"* (NPWS, 2019). As such, it is considered likely that this habitat will continue to form along the beach at this location, but perhaps in a slightly different location to its current position, post works.

[5] Please Note: This is a results report, which offers some general recommendations – it does not form a full Ecological Impact Assessment, which is conducted with the Environmental Impact Assessment Report (EIAR) for the proposed scheme. This Woodrow 2020 Terrestrial Habitat, Otter and Bat Survey Report excludes consideration of any potential for impacts as a result of other proposed works, e.g. commercial developments, occurring within reclaimed lands in the future. Such work is as of yet unknown, and as such this has not been considered or reported on here.

REFERENCES

British Bryological Society (2010). *Mosses and Liverworts of Britain and Ireland – A field guide.*

Collins, J. (ed,) (2016) *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (3rd Edition). The Bat Conservation Trust, London.

CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. September 2018. Available at: https://cieem.net/wp-content/uploads/2018/08/ECIA-Guidelines-2018-Terrestrial-Freshwater-Coastal-and-Marine-V1.1.pdf (Updated in September 2019).

Delaney, A., Devaney, F.M, Martin, J.M. and Barron, S.J. (2013). *Monitoring survey of Annex I sand dune habitats in Ireland.* Irish Wildlife Manuals, No. 75. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.

European Commission (2013). *Interpretation Manual of European Union Habitats. EUR 28.* April 2013. EC DG Environment. Nature ENV B.3.

Fossitt, J. A. (2000) *A Guide to Habitats in Ireland.* The Heritage Council.

Joint Nature Conservation Committee (2004). *Common Standards Monitoring guidance for saltmarsh habitat.* JNCC, Peterborough.

Malachy Walsh and Partners (MWP) (2020a) *Howth Harbour FHC Proposed Dredging and Reclamation Works - Natura Impact Statement.*

Malachy Walsh and Partners (MWP) (2020b) *Howth FHC – Harbour Dredge Environmental Impact Assessment Report (EIAR).*

Martin, J.R., Daly, O.H. and Devaney F.M. (2017) *Survey and assessment of vegetated shingle and associated habitats at 30 coastal sites in Ireland.* Irish Wildlife Manuals, No. 98. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs, Ireland.

McCorry, M. (2007). *Saltmarsh Monitoring Project 2006 – Summary Report.* An unpublished report for the National Parks & Wildlife Service, Department of Environment, Heritage and Local Government, Dublin.

McCorry, M. and Ryle, T. (2009). *Saltmarsh Monitoring Project 2007-2008.* A Report for Research Branch, National Parks and Wildlife Service. Department of Environment, Heritage and Local Government.

NPWS (2019) *The Status of EU Protected Habitats and Species in Ireland. Volume 2: Habitat Assessments.* Unpublished NPWS report. Edited by: Deirdre Lynn and Fionnuala O'Neill.

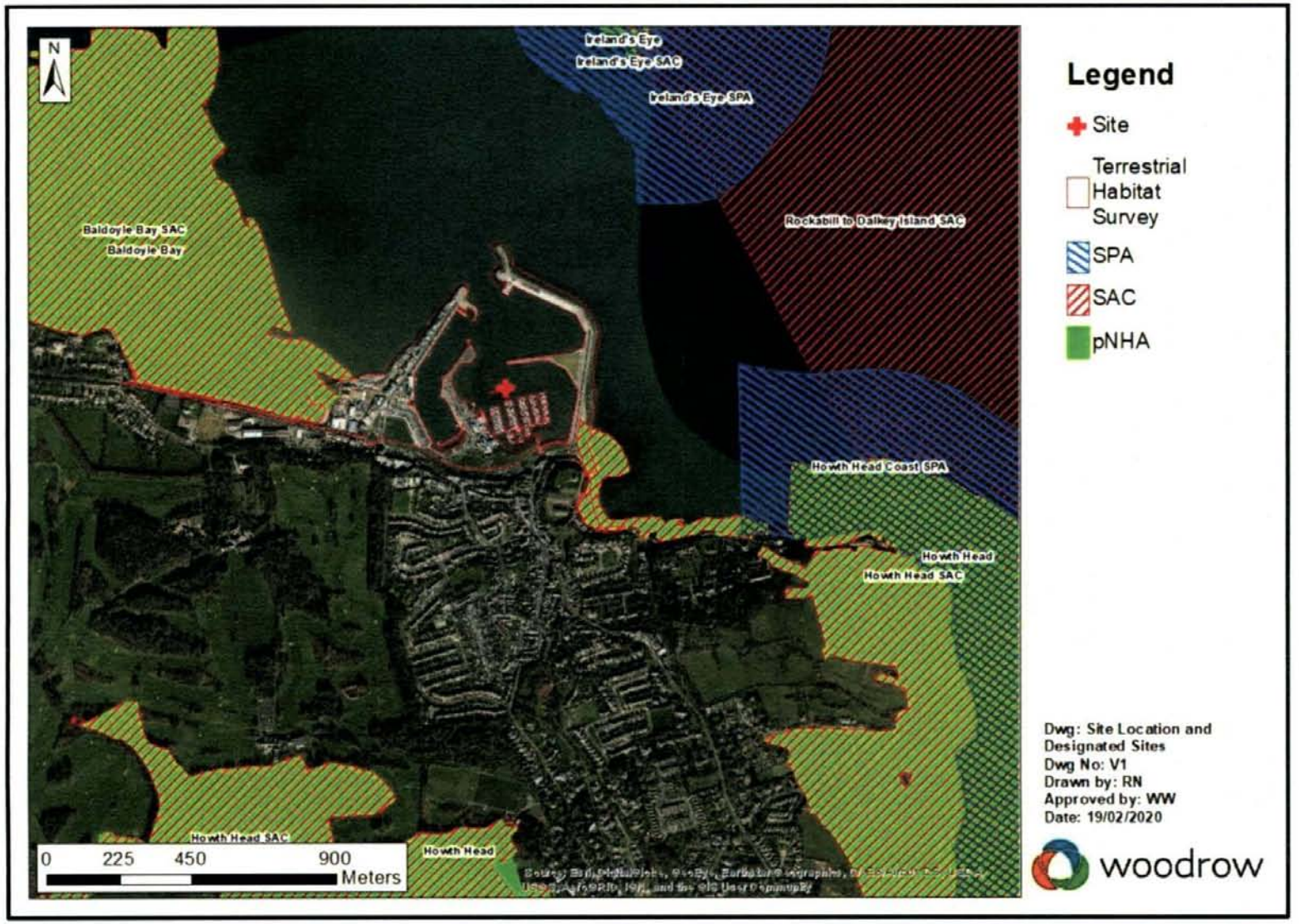
Stace, C. (2010). *New Flora of the British Isles, 3rd Edition.* Cambridge University Press, Cambridge, UK.

University College Cork, Aquatic Services Unit [ASU] (2019) *Howth Harbour Benthic Habitat Survey* Revision 01.

Webb, D.A., Parnell, J. & Doogue, D. (1996). *An Irish Flora* (7th revised Ed.). Dundalgan Press, Dundalk.

Woodrow (2020) *Howth Harbour FHC Proposed Dredging and Reclamation Works – Bird Survey Report.*

APPENDIX I – Sites within the immediate vicinity of the proposed works



APPENDIX II – Site Synopsis for Baldoyle Bay SAC

SITE SYNOPSIS

Site Name: Baldoyle Bay SAC

Site Code: 000199

Baldoyle Bay SAC extends from just below Portmarnock village to the west pier at Howth in Co. Dublin. It is a tidal estuarine bay protected from the open sea by a large sand-dune system. Two small rivers, the Mayne and the Sluice, flow into the bay.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes):

[1140] Tidal Mudflats and Sandflats
[1310] *Salicornia* Mud
[1330] Atlantic Salt Meadows
[1410] Mediterranean Salt Meadows

Large areas of intertidal flats are exposed at low tide at this site. These are mostly sands but grade to muds in the inner sheltered parts of the estuary. Extensive areas of Common Cord-grass (*Spartina anglica*) occur in the inner estuary. Both the Narrow-leaved Eelgrass (*Zostera angustifolia*) and the Dwarf Eelgrass (*Z. noltii*) are also found here. During summer, the sandflats of the sheltered areas are covered by mats of green algae (*Enteromorpha* spp. and *Ulva lactuca*).

The sediments have a typical macrofauna, with Lugworm (*Arenicola marina*) dominating the sandy flats. The tubeworm *Lanice conchilega* is present in high densities at the low tide mark and the small gastropod *Hydrobia ulvae* occurs in the muddy areas, along with the crustacean *Corophium volutator*.

Areas of saltmarsh occur near Portmarnock Bridge and at Portmarnock Point, with narrow strips along other parts of the estuary. Species such as glassworts (*Salicornia* spp.), Sea-purslane (*Halimione portulacoides*), Sea Plantain (*Plantago maritima*) and Sea Rush (*Juncus maritimus*) are found here. Portmarnock Spit formerly had a well-developed sand dune system but this has been largely replaced by golf courses and is mostly excluded from the site. A few dune hills are still intact at Portmarnock Point, and there are small dune hills east of Cush Point and below the Claremont Hotel. These are mostly dominated by Marram (*Ammophila arenaria*), though Lyme-grass (*Leymus arenarius*) is also found.

The site includes a brackish marsh along the Mayne River. Soils here have a high organic content and are poorly drained, and some pools occur. Rushes (*Juncus* spp.) and salt tolerant species such as Common Scurvygrass (*Cochleria officinalis*) and

Greater Sea-spurrey (*Spergularia media*) are typical of this area. Knotted Hedge-parsley (*Torilis nodosa*), a scarce plant in eastern Ireland, has been recorded here, along with Brackish Water-crowfoot (*Ranunculus baudotti*), a species of brackish pools and ditches which has declined in most places due to habitat loss. Two plant species, legally protected under the Flora (Protection) Order, 1999, occur in the Mayne marsh, Borrer's Saltmarsh-grass (*Puccinellia fasciculata*) and Meadow Barley (*Hordeum secalinum*).

Baldoyle Bay is an important bird site for wintering waterfowl and the inner part of the estuary is a Special Protection Area under the E.U. Birds Directive as well as being a Statutory Nature Reserve. Internationally important numbers of Pale-bellied Brent Goose (418) and nationally important numbers of two Annex I Birds Directive species - Golden Pover (1,900) and Bar-tailed Godwit (283) - have been recorded. Four other species also reached nationally important numbers: Shelduck (147), Pintail (26), Grey Plover (148) and Ringed Plover (218) - all figures are average peaks for four winters 1994/95 to 1997/1998. Breeding wetland birds at the site include Shelduck, Mallard and Ringed Plover. Small numbers of Little Tern, a species listed on Annex I of the E.U. Birds Directive, have bred on a few occasions at Portmarnock Point but not since 1991.

The area surrounding Baldoyle Bay is densely populated and so the main threats to the site include visitor pressure, disturbance to wildfowl and dumping. In particular, the dumping of spoil onto the foreshore presents a threat to the value of the site.

Baldoyle Bay is a fine example of an estuarine system. It contains four habitats listed on Annex I of the E.U. Habitats Directive, and supports two legally protected plant species. The site is also an important bird area and part of it is a Special Protection Area under the E.U. Birds Directive, as well as being a Statutory Nature Reserve. It supports internationally important numbers of Brent Goose and nationally important numbers of six other bird species, including two Annex I Birds Directive species.

APPENDIX III – Site Synopsis for Howth Head SAC

SITE SYNOPSIS

Site Name: Howth Head SAC

Site Code: 000202

Howth Head is a rocky headland situated on the northern side of Dublin Bay. The peninsula is composed of Cambrian slates and quartzites, joined to the mainland by a post-glacial raised beach. Limestone occurs on the north-west side while glacial drift is deposited against the cliffs in places.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes):

[1230] Vegetated Sea Cliffs
[4030] Dry Heath

A mosaic of heathland vegetation occurs on the slopes above the sea cliffs and in the area of the summit. This is dominated by Western Gorse (*Ulex gallii*), Heather (*Calluna vulgaris*), Bell Heather (*Erica cinerea*) and localised patches of Bracken (*Pteridium aquilinum*). In more open areas species such as English Stonecrop (*Sedum anglicum*), Wood Sage (*Teucrium scorodonia*) and Navelwort (*Umbilicus rupestris*) occur, along with some areas of bare rock.

The heath merges into dry grassland in places, with bent grasses (*Agrostis* spp.), Red Fescue (*Festuca rubra*), Cock's-foot (*Dactylis glomerata*), Yorkshire-fog (*Holcus lanatus*), Sweet Vernal-grass (*Anthoxanthum odoratum*), Lady's Bedstraw (*Galium verum*), Ribwort Plantain (*Plantago lanceolata*) and Yellow-wort (*Blackstonia perfoliata*). In the summit area there are a few wet flushes and small bogs, with typical bog species such as Bog Asphodel (*Narthecium ossifragum*) and sundews (*Drosera* spp.). Patches of scrub, mostly Hawthorn (*Crataegus monogyna*), Blackthorn (*Prunus spinosa*), Willow (*Salix* spp.) and Downy Birch (*Betula pubescens*), occur in places.

The maritime flora is of particular interest as a number of scarce and local plants have been recorded, including Golden-samphire (*Inula crithmoides*), Sea Wormwood (*Artemisia maritima*), Grass-leaved Orache (*Atriplex littoralis*), Frosted Orache (*Atriplex laciniata*), Sea Spleenwort (*Asplenium marinum*), Bloody Crane's-bill (*Geranium sanguineum*), Spring Squill (*Scilla verna*), Sea Stork's-bill (*Erodium maritimum*) and three uncommon clover species: Knotted Clover (*Trifolium striatum*), Bird's-foot Clover (*T. ornithopodioides*) and Western Clover (*T. occidentalis*).

Rock outcrops which are important for lichens are distributed widely around Howth Head. The richest area for lichens appears to be around Balscadden quarries. In

addition, the Earlscliffe area is of national importance for lichens and is the type locality for the black, yellow and grey lichen zonation.

A number of Red Data Book plant species, the latter five of which are legally protected under the Flora (Protection) Order, 1999, have been recorded at this site - Green-winged Orchid (*Orchis morio*), Bird's-foot (*Ornithopus perpusillus*), Hairy Violet (*Viola hirta*), Rough Poppy (*Papaver hybridum*), Pennyroyal (*Mentha pulegium*), Heath Cudweed (*Omalotheca sylvatica*) and Betony (*Stachys officinalis*).

Curved Hard-grass (*Parapholis incurva*), a species which had not previously been recognized as occurring in Ireland, was found at Red Rock in 1979.

The site is of national importance for breeding seabirds. A census in 1985-87 recorded the following numbers: Fulmar (105 pairs), Shags (25 pairs), Herring Gulls (70 pairs), Kittiwake (*c.* 1,700 pairs), Guillemot (585 birds), Razorbill (280 birds). In 1990, 21 pairs of Black Guillemot were counted.

A number of rare invertebrates have been recorded from the site: the fly *Phaonia exoleta* (Order Diptera) occurs in the woods at the back of Deerpark and has not been seen anywhere else in Ireland, while the ground beetle *Trechus rubens* (Order Coleoptera) is found on storm beaches on the eastern cliffs. A hoverfly, known from only a few Irish locations, *Sphaerophoria batava* (Order Diptera), is present in the heathland habitat within the site.

The main land use within the area is recreation, mostly walking and horse-riding, and this has led to some erosion within the site. Fires also pose a danger to the site. There may also be a threat in some areas from further housing development.

Howth Head displays a fine range of natural habitats, including two Annex I habitats, within surprisingly close proximity to Dublin city. The site is also of scientific importance for its seabird colonies, invertebrates and lichens. It also supports populations of at least two legally protected plant species and several other scarce plants.

APPENDIX IV – Site Synopsis for Ireland's Eye SAC

SITE SYNOPSIS

Site Name: Ireland's Eye SAC

Site Code: 002193

Ireland's Eye is located about 1.5 km north of Howth in Co. Dublin. It is a Cambrian island with quartzite which forms spectacular cliffs on the north-east side. Elsewhere much of the area is covered by drift. There is a Martello tower at the west end of the island and an ancient ruined church in the middle.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes):

[1220] Perennial Vegetation of Stony Banks
[1230] Vegetated Sea Cliffs

On Ireland's Eye the drift soils support a plant community of Bracken (*Pteridium aquilinum*) and various grasses, especially Red Fescue (*Festuca rubra*), along with Bluebells (*Hyacinthoides non-scripta*), Common Dog-violet (*Viola riviniana*) and Navelwort (*Umbilicus rupestris*). The thinner soils have some interesting species, including Spring Squill (*Scilla verna*), Knotted Clover (*Trifolium striatum*) and Field Mouse-ear (*Cerastium arvense*). Bloody Cranesbill (*Geranium sanguineum*) has also been recorded from here.

The cliff maritime flora includes Rock Sea-spurrey (*Spergularia rupicola*), Sea Stork's-bill (*Erodium maritimum*), Rock Samphire (*Crithmum martimum*), Golden Samphire (*Inula crithmoides*), Rock Sea-lavender (*Limonium binervosum*), Meadow Rue (*Thalictrum minor*), Portland Spurge (*Euphorbia portlandica*) and Tree-mallow (*Lavatera arborea*).

A small area of shingle vegetation occurs above the sandy beach at Carrigeen Bay on the western side of the island. Species such as Curled Dock (*Rumex crispus*), Silverweed (*Potentilla anserina*) and Spear-leaved Orache (*Atriplex prostrata*) occur, while the rare Sea-kale (*Crambe maritima*), a characteristic species of this habitat, has been known from this site since 1894 and was recorded as recently as 1981. Sea-kale is listed as threatened in the Irish Red Data Book. Also occurring on the sandy/ shingle beach is the Red Data Book species Henbane (*Hyoscyamus niger*).

Irelands's Eye is of national importance for breeding seabirds. In 1999 the following were counted: Fulmar - 70 pairs; Cormorant - 306 pairs; Shag - 32 pairs; Lesser Black-backed Gull - 1 pair; Herring Gull – approx. 250 pairs; Great Black-backed Gull – approx. 100 pairs; Kittiwake - 941 pairs; Guillemot – 2,191 individuals; Razorbill - 522 individuals. A Gannet colony was established on the stack at the east end of the

island in the late 1980s, and in 1999 142 pairs bred. Puffin was formerly common, but nowadays not more than 20 individuals occur. Black Guillemot also breeds, with 15 individuals recorded in 1998. Several pairs each of Oystercatcher and Ringed Plover breed, while the island is a traditional site for Peregrine Falcon.

In winter small numbers of Greylag and Pale-bellied Brent Goose graze on the island.

This uninhabited marine island has a well developed maritime flora, with two habitats (sea cliffs and shingle) listed on Annex II of the E.U. Habitats Directive, and nationally important seabird colonies. Owing to its easy access and proximity to Dublin it has great educational and amenity value.

APPENDIX V – Desk Study Results

Most recent & relevant notable or protected species with potential to occur at the site, resulting from the desk study review (Source: 10km grid square O23 NBDC Database (with the exception of a 2km grid square O23Z for plant records) & 5km search buffer NPWS Records Request).

Note: For records of Bird Species see Bird Report (Woodrow, 2020).

Key to likelihood of species presence: 1 = Confirmed; 2 = Likely; 3 = Possible; 4 = Unlikely
Key to Red List Status: CR = Critical; NT = Near threatened; VU = Vulnerable; LC = Least Concern; DD = Data Deficient; RE = Regionally Extinct

Species	Scientific Name	Habitats Dir. (Annex II / IV)	Birds Dir. (Annex I)	Wildlife Acts (as amended)	Red List Status	Flora Protection Order	Birds of Conservation Concern (2014 – 2019)	Likelihood on Application Site	Likelihood within 2 km	Most recent record	Record Source
Mammals											
Badger	*Meles meles*	-	-	Y	LC	-	-	4	2	2017	NBDC [Grid reference: O220373, O220372 & O210380]
Eurasian Pygmy Shrew	*Sorex minutus*	Y	-	-	LC	-	-	4	2	2015	NBDC, NPWS
Eurasian Red Squirrel	*Sciurus vulgaris*	-	-	Y	NT	-	-	4	2	2017	NBDC
Irish Hare	*Lepus timidus subsp.*							4	4	1977	NPWS
Irish Stoat	*Mustela erminea subsp.*							4	4	1972	NPWS
Pine Marten	*Martes martes*	Y	-	Y	LC	-	-	4	3	2013	NBDC
Otter	*Lutra lutra*	Y	-	Y	NT	-	-	3	3	1980	NPWS (records from NBDC are within 3.5 km)
Hedgehog	*Erinaceus europaeus*	-	-	Y	LC	-	-	3	2	2016	NBDC, NPWS
Bottle-nosed Dolphin	*Tursiops truncates*	Y	-	Y	LC	-	-	3	2	2014	NBDC
Common Dolphin	*Delphinus delphis*	Y	-	Y	LC	-	-	3	3	2013	NBDC
Common Porpoise	*Phocoena phocoena*	Y	-	Y	NT	-	-	3	2	2014	NBDC
Common Seal	*Phoca vitulina*	Y	-	Y	LC	-	-	1	1	2018	NBDC
Grey Seal	*Halichoerus grypus*							2	2	2012	NPWS
Minke Whale	*Balaenoptera acutorostrata*	Y	-	-	-	-	-	4	4	1860	NBDC
Northern Bottlenose Whale	*Hyperoodon ampullatus*	Y	-	-	-	-	-	4	4	1837	NBDC
Pygmy Sperm Whale	*Kogia breviceps*	Y	-	-		-	-	4	4	2013	NBDC

Species	Scientific Name	Habitats Dir. (Annex II / IV)	Birds Dir. (Annex I)	Wildlife Acts (as amended)	Red List Status	Flora Protection Order	Birds of Conservation Concern (2014 – 2019)	Likelihood on Application Site	Likelihood within 2 km	Most recent record	Record Source
Risso's Dolphin	*Grampus griseus*	Y	-	-	-	-	-	4	4	2015	NBDC
White-beaked Dolphin	*Lagenorhynchus albirostris*	Y	-	-	-	-	-	4	4	1901	NBDC
Bats (within 10km)											
Brown Long Eared Bat	*Plecotus auritus*	Y	-	Y	LC	-	-	4	2	2014	NBDC [Grid reference: O2738]
Leisler's Bat	*Nyctalus leisleri*	Y	-	Y	NT	-	-	1	1	2013	NBDC [Grid reference: O213371]
Soprano Pipistrelle	*Pipistrellus pygmaeus*	Y	-	Y	LC	-	-	2	2	2014	NBDC [Grid reference: O2838]
Invertebrates											
Agabus (Gaurodytes) conspersus	*Agabus (Gaurodytes) conspersus*	-	-	-	EN	-	-	4	4	1930	NBDC
Helophorus (Helophorus) fulgidicollis	*Helophorus (Helophorus) fulgidicollis*	-	-	-	VU	-	-	4	4	1936	NBDC
Heterocerus flexuosus	*Heterocerus flexuosus*	-	-	-	DD			4	4	1900	NBDC
Ochthebius (Asiobates) auriculatus	*Ochthebius (Asiobates) auriculatus*	-	-	-	NT			4	4	1942	NBDC
Ochthebius (Asiobates) bicolon	*Ochthebius (Asiobates) bicolon*	-	-	-	VU			3	3	2015	NBDC
Ochthebius (Ochthebius) marinus	*Ochthebius (Ochthebius) marinus*	-	-	-	NT			3	3	2015	NBDC
Dark Green Fritillary	*Argynnis aglaja*	-	-	-	VU	-	-	3	3	2015	NBDC
Dingy Skipper	*Erynnis tages*	-	-	-	NT	-	-	4	4	2015	NBDC
Gatekeeper	*Pyronia Tithonus*	-	-	-	NT	-	-	4	4	1972	NBDC
Grayling	*Hipparchia Semele*	-	-	-	NT	-	-	2	2	2017	NBDC
Marsh Fritillary	*Euphydryas aurina*	Y	-	-	VU	-	-	4	3	2018	NBDC, NPWS
Andrena (Cnemidandrena) denticulata	*Andrena (Cnemidandrena) denticulata*	-	-	-	VU	-	-	4	4	2005	
Andrena (Cnemidandrena) fuscipes	*Andrena (Cnemidandrena) fuscipes*	-	-	-	VU	-	-	4	4	2003	NBDC
Andrena (Melandrena) nigroaenea	*Andrena (Melandrena) nigroaenea*	-	-	-	VU	-	-	4	4	2008	NBDC

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Andrena (Micrandrena) semilaevis	*Andrena (Micrandrena) semilaevis*	-	-	-	VU	-	-	4	4	1973	NBDC
Bombus (Bombus) cryptarum	*Bombus (Bombus) cryptarum*	-	-	-	DD	-	-	4	4	2006	NBDC
Colletes (Colletes) similis	*Colletes (Colletes) similis*	-	-	-	NT	-	-	4	4	2009	NBDC
Gipsy Cuckoo Bee	*Bombus (Psithyrus) bohemicus*	-	-	-	NT	-	-	4	4	1923	NBDC
Great Yellow Bumble Bee	*Bombus (Subterraneobombus) distinguendus*	-	-	-	EN	-	-	4	4	1950	NBDC
Halictus (Seladonia) tumulorum	*Halictus (Seladonia) tumulorum*	-	-	-	NT	-	-	4	4	1923	NBDC
Hill Cuckoo Bee	*Bombus (Psithyrus) rupestris*	-	-	-	EN	-	-	4	4	1972	NBDC
Large Red-Tailed Bumble Bee	*Bombus (Melanobombus) lapidarius*	-	-	-	NT	-	-	2	2	2016	NBDC
Moss Carder-bee	*Bombus (Thoracombus) muscorum*	-	-	-	NT	-	-	2	2	2015	NBDC
Northern Colletes	*Colletes (Colletes) floralis*	-	-	-	VU	-	-	4	4	1925	NBDC
Nomada panzeri	*Nomada panzer*	-	-	-	NT	-	-	4	4	2005	NBDC
Neat Mining Bee	*Lasioglossum (Evylaeus) nitidiusculum*	-	-	-	VU	-	-	4	4	2008	NBDC
Reptiles											
Common Lizard	*Zootoca vivipara*	-	-	Y	-	-	-	4	3	2014	NBDC, NPWS
Kemp's Ridley Turtle	*Lepidochelys kempii*	Y	-	Y	-	-	-	4	4	1968	NBDC, NPWS
Loggerhead Turtle	*Caretta caretta*	Y	-	Y	-	-	-	4	4	2004	NBDC, NPWS
Amphibian											
Common Frog	*Rana temporaria*	-	-	Y	LC	-	-	3	2	2018	NBDC, NPWS
Smooth newt	*Lissotrton vulgaris*	-	-	Y	LC	-	-	4	3	1974	NBDC, NPWS
Mollusc											
Common Whorl Snail	*Vertigo pygmaea*	-	-	-	NT	-	-	4	4	2006	NBDC
Dog Whelk	*Nucella lapillus*	-	-	-	OSPAR Convention	-	-	3	3	2014	NBDC
English Chrysalis Snail	*Leiostyla anglica*	-	-	-	V	-	-	4	4	1934	NBDC
Field Slug	*Deroceras (Deroceras) agreste*	-	-	-	DD	-	-	4	4	1910	NBDC

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Heath Snail	*Helicella itala*	-	-	-	VU	-	-	4	4	1910	NBDC
Lesser Bulin	*Merdigera obscura*	-	-	-	EN	-	-	4	4	1940	NBDC
Marsh Whorl Snail	*Vertigo antivertigo*	-	-	-	VU	-	-	4	4	1934	NBDC
Moss Chrysalis Snail	*Pupilla (Pupilla) muscorum*	-	-	-	EN	-	-	4	4	2006	NBDC
Prickly Snail	*Acanthinula aculeata*	-	-	-	NT	-	-	4	4	1910	NBDC
Striated Whorl Snail	*Vertigo substriata*	-	-	-	NT	-	-	4	4	1934	NBDC
Tree Snail	*Balea (Balea) perversa*	-	-	-	VU	-	-	4	4	1940	NBDC
Ventrosia ventrosa	*Ventrosia ventrose*	-	-	-	VU	-	-	4	4	1993	NBDC
Plants											
Birds Foot	*Ornithopus perpusillus*	-	-	-	VU	-	-	4	4	1991	NPWS
Betony	*Stachys officinalis*	-	-	-	EN	Y	-	4	4	1887	NPWS
Corncockle	*Agrostemma githago*	-	-	-	EXTINCT	-	-	4	4	1947	NPWS
Corn Chamomille	*Anthemis arvenis*	-	-	-	EXTINCT	-	-	4	4	1994	NPWS
Small Cudweed	*Filago minima*	-	-	-	DD	-	-	4	4	1916	NPWS
Heath Cudweed	*Gnaphalium sylvaticum*	-	-	-	VU	Y	-	4	4	1836	NPWS
Red Hemp-Nettle	*Galeopsis angustifolia*	-	-	-	EN	Y	-	4	4	1972	NPWS
Henbane	*Hyoscyamus niger*	-	-	-	VU	-	-	4	4	1991	NPWS
Oysterplant	*Mertensia maritima*	-	-	-	VU	Y	-	4	4	1858	NPWS
Darnel	*Lolium temulentum*	-	-	-	EN	-	-	4	4	1893	NPWS
Lesser Snapdragon/ Weasel's snout	*Misopates orontium*	-	-	-	EN	Y	-	4	4	Unknown	NPWS
Rough Poppy	*Papaver hybridum*	-	-	-	CR	Y	-	4	4	1900	NPWS
Meadow Barley	*Hordeum secalinum*	-	-	-	EN	-	-	4	4	1991	NPWS
Sea Pea	*Lathyrus japonicus*	-	-	-	DD	-	-	4	4	1833	NPWS
Spring Vetch	*Vicia lathyroides*	-	-	-	VU	-	-	4	4	1984	NPWS
Green-winged Orchid	*Orchis morio*	-	-	-	EN	Y	-	4	4	1993	NPWS
Golden Dock	*Rumex maritimus*	-	-	-	VU	-	-	4	4	1956	NPWS
Wild Clary	*Salvia verbenaca*	Y	-	-	VU	-	-	3	3	2017	NPWS
Meadow Saxifrage	*Saxifraga granulata*	-	-	-	CR	Y	-	4	4	1970	NPWS
Bifid Crestwort	*Lophocolea bidentata*	-	-	-	LC	-	-	4	4	2007	NBDC

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Blueish Veilwort	*Metzgeria violacea*	-	-	-	LC	-	-	3	3	2014	NBDC
Delicate Germanderwort	*Riccardia multifida*	-	-	-	LC	-	-	4	4	2010	NBDC
Endive Pellia	*Pellia endiviifolia*	-	-	-	LC	-	-	4	3	2012	NBDC
Greasewort	*Aneura pinguis*	-	-	-	LC	-	-	4	4	2012	NBDC
Inflated Notchwort	*Gymnocolea inflata*	-	-	-	LC	-	-	4	4	2007	NBDC
Jagged Germanderwort	*Riccardia chamedryfolia*	-	-	-	LC	-	-	4	4	2010	NBDC
Overleaf Pellia	*Pellia epiphylla*	-	-	-	LC	-	-	4	4	2007	NBDC
Thick-set Earwort	*Scapania compacta*	-	-	-	LC	-	-	4	4	2007	NBDC
Top Notchwort	*Leiocolea turbinata*	-	-	-	LC	-	-	4	4	2010	NBDC
Two-horned Pincerwort	*Cephalozia bicuspidata*	-	-	-	LC	-	-	4	4	2010	NBDC
White Earwort	*Diplophyllum albicans*	-		-	LC	-	-	4	4	2010	NBDC
Amblystegium serpens var. serpens	*Amblystegium serpens var. serpens*	-	-	-	LC	-	-	4	4	2007	NBDC
Big Shaggy-moss	*Rhytidiadelphus triquetrus*	-	-	-	LC	-	-	4	4	2009	NBDC
Bird's-claw Beard-moss	*Barbula unguiculata*	-	-	-	LC	-	-	4	4	2007	NBDC
Bristly Haircap	*Polytrichum piliferum*	-	-	-	LC	-	-	4	4	2007	NBDC
Broom Fork-moss	*Dicranum scoparium*	-	-	-	LC	-	-	4	4	2007	NBDC
Bryum dichotomum	*Bryum dichotomum*	-	-	-	LC	-	-	4	4	2007	NBDC
Capillary Thread-moss	*Bryum capillare*	-	-	-	LC	-	-	4	4	2007	NBDC
Common Aloe-moss	*Aloina aloides*	-	-	-	LC	-	-	4	4	2007	NBDC
Common Cord-moss	*Funaria hygrometrica*	-	-	-	LC	-	-	4	4	2007	NBDC
Common Feather-moss	*Eurhynchium praelongum*	-	-	-	LC	-	-	4	4	2007	NBDC
Cylindric Beard-moss	*Didymodon insulanus*	-	-	-	LC	-	-	4	4	2007	NBDC
Fern-leaved Hook-moss	*Cratoneuron filicinum*	-	-	-	LC	-	-	4	4	2012	NBDC
Great Plait-moss	*Hypnum lacunosum var. lacunosum*	-	-	-	LC	-	-	4	4	2007	NBDC
Grey-cushioned Grimmia	*Grimmia pulvinate*	-	-	-	LC	-	-	4	4	2007	NBDC
Heath Plait-moss	*Hypnum jutlandicum*	-	-	-	LC	-	-	4	4	2007	NBDC
Heath Star Moss	*Campylopus introflexus*	-	-	-	LC	-	-	4	4	2007	NBDC
Intermediate Screw-moss	*Syntrichia intermedia*	-	-	-	LC	-	-	4	4	2007	NBDC
Juniper Haircap	*Polytrichum juniperinum*	-	-	-	LC	-	-	4	4	2007	NBDC

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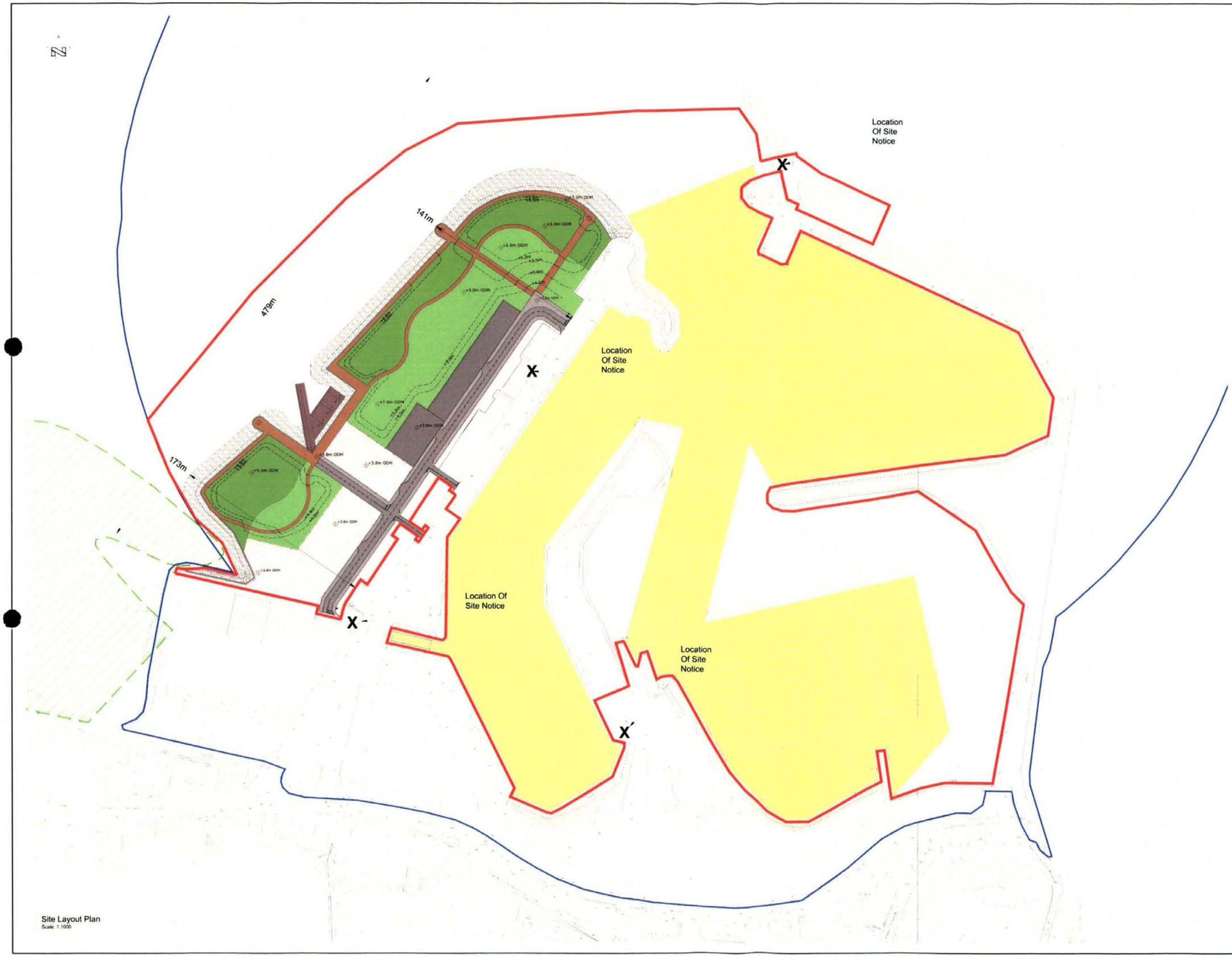
Kneiff's Hook-moss	*Drepanocladus aduncus*	-	-	-	LC	-	-	4	4	2007	NBDC
Lesser Bird's-claw Beard-moss	*Barbula convolute*	-	-	-	LC	-	-	4	4	2007	NBDC
Neat Feather-moss	*Scleropodium purum*	-	-	-	LC	-	-	4	4	2007	NBDC
Olive Beard-moss	*Didymodon tophaceus*	-	-	-	LC	-	-	4	4	2012	NBDC
Pink-fruited Thread-moss	*Pohlia melanodon*	-	-	-	LC	-	-	4	4	2007	NBDC
Pointed Spear-moss	*Calliergonella cuspidate*	-	-	-	LC	-	-	4	4	2012	NBDC
Redshank	*Ceratodon purpureus*	-	-	-	LC	-	-	4	4	2007	NBDC
Rigid Beard-moss	*Didymodon rigidulus*	-	-	-	LC	-	-	4	4	2007	NBDC
River Feather-moss	*Brachythecium rivulare*	-	-	-	LC	-	-	4	4	2012	NBDC
Rough-stalked Feather-moss	*Brachythecium rutabulum*	-	-	-	LC	-	-	4	4	2007	NBDC
Seaside Grimmia	*Schistidium maritimum*	-	-	-	LC	-	-	4	4	2007	NBDC
Silky Forklet-moss	*Dicranella heteromalla*	-	-	-	LC	-	-	4	4	2007	NBDC
Silky Wall Feather-moss	*Homalothecium sericeum*	-	-	-	LC	-	-	4	4	2007	NBDC
Silver-moss	*Bryum argenteum*	-	-	-	LC	-	-	4	4	2007	NBDC
Supine Plait-moss	*Hypnum cupressiforme var. resupinatum*	-	-	-	LC	-	-	4	4	2007	NBDC
Swan's-neck Thyme-moss	*Mnium hornum*	-	-	-	LC	-	-	4	4	2007	NBDC
Swartz's Feather-moss	*Oxyrrhynchium hians*	-	-	-	LC	-	-	4	4	2007	NBDC
Tender Feather-moss	*Rhynchostegiella tenella*	-	-	-	LC	-	-	4	4	2007	NBDC
Variable Forklet-moss	*Dicranella varia*	-	-	-	LC	-	-	4	4	2007	NBDC
Wall Screw-moss	*Tortula muralis*	-	-	-	LC	-	-	4	4	2007	NBDC
Whorled Tufa-moss	*Eucladium verticillatum*	-	-	-	LC	-	-	4	3	2012	NBDC
Wood Bristle-moss	*Orthotrichum affine*	-	-	-	LC	-	-	3	3	2014	NBDC
Yellow Crisp-moss	*Tortella flavovirens*	-	-	-	LC	-	-	4	4	2007	NBDC
Hairy Violet	*Viola hirta*	-	-	-	EN	Y	-	4	4	1988	NPWS
Petalwort	*Petalophyllum ralfsii*	Y	-	-	LC	Y	-	4	3	2009	NPWS
Cornflower	*Centaurea cyanus*	-	-	-	LC	-	-	4	4	1991	NPWS
Weissia controversa var. controversa	*Weissia controversa var. controversa*	-	-	-	DD	-	-	4	4	2008	NPWS

Species	Scientific Name	Habitats Dir. (Annex II / IV)	Birds Dir. (Annex I)	Wildlife Acts (as amended)	Red List Status	Flora Protection Order	Birds of Conservation Concern (2014 – 2019)	Likelihood on Application Site	Likelihood within 2 km	Most recent record	Record Source
Side-fruited Crisp-moss	*Pleurochaete squarrosa*	-	-	-	DD	-	-	4	4	2006	NPWS
Borrer's Saltmarsh-grass	*Puccinellia fasciculata*	-	-	-	VU	Y	-	4	4	2007	NPWS
Musk Thistle	*Carduus nutans*	-	-	-	DD	-	-	4	4	1975	NPWS
Megapolitan Feather-moss	*Rhynchostegium megapolitanum*	-	-	-	NT	-	-	3	4	2007	NPWS
Shepherd's-needle	*Scandix pecten-veneris*	-	-	-	EXTINCT	-	-	4	4	1948	NPWS
Annual Knawel	*Scleranthus annuus*	-	-	-	DD	Y	-	4	4	1887	NPWS
Potato Bryum	*Bryum bornholmense*	-	-	-	NT	-	-	4	4	2007	NPWS
Cladonia arbuscula	*Cladonia arbuscula*	-	-	-	DD	-	-	4	4	1981	NPWS
Reindeer Moss	*Cladonia portentosa*	-	-	-	DD	-	-	4	4	2004	NPWS
Rib-leaf Moss	*Tortula atrovirens*	-	-	-	NT	-	-	4	4	1857	NBDC
Basil Thyme	*Clinopodium acinos*	-	-	-	DD	Y	-	4	4	1903	NPWS
Green-flowered Helleborine	*Epipactis phyllanthes*	-	-	-	EN	Y	-	4	4	1992	NPWS
Blue Fleabane	*Erigeron acer*	-	-	-	EN	Y		4	4	1993	NPWS
Fish											
Atlantic Cod	*Gadus morhua*	-	-	-	OSPAR Convention	-	-	4	3	2014	NBDC
Short-snouted Seahorse	*Hippocampus hippocampus*	-	-	-	OSPAR Convention	-	-	4	4	1843	NBDC
Invasive Species											
American Skunk-cabbage	*Lysichiton americanus*	-	-	-	-	-	-	4	4	2013	NBDC
Brazillian Giant-rhubarb	*Gunnera manicata*	-	-	-	-	-	-	4	4	2014	NBDC
Brown Rat	*Rattus norvegicus*	-	-	-	-	-	-	1	2	2015	NBDC
Canadian Waterweed	*Elodea canadensis*	-	-	-	-	-	-	4	3	2014	NBDC
Cherry Laurel	*Prunus laurocerasus*	-	-	-	-	-	-	4	2	2013	NBDC
Common Cord-grass	*Spartina anglica*	-	-	-	-	-	-	4	2	2018	NBDC
Common Garden Snail	*Cornu aspersum*	-	-	-	-	-	-	2	2	2013	NBDC
Evergreen Oak	*Quercus ilex*	-	-	-	-	-	-	4	2	2013	NBDC
Feral Ferret	*Mustela furo*	-	-	-	-	-	-	4	4	2005	NBDC
Eastern Grey Squirrel	*Sciurua carolinensis*	-	-	-	-	-	-	4	2	2017	NBDC
European Rabbit	*Oryctolagus cuniculus*	-	-	-	-	-	-	4	3	2015	NBDC

Species	Scientific Name	Habitats Dir. (Annex II / IV)	Birds Dir. (Annex I)	Wildlife Acts (as amended)	Red List Status	Flora Protection Order	Birds of Conservation Concern (2014 – 2019)	Likelihood on Application Site	Likelihood within 2 km	Most recent record	Record Source
Giant Hogweed	*Heracleum mantegazzianum*	-	-	-	-	-	-	4	3	2013	NBDC
Himalayan Honeysuckle	*Leycesteria formosa*	-	-	-	-	-	-	4	3	2013	NBDC
Hottentot-fig	*Carpobrotus edulis*	-	-	-	-	-	-	1	1	1986	NBDC
Keeled Slug	*Tandonia sowerbyi*	-	-	-	-	-	-	4	4	1910	NBDC
House Mouse	*Mus musculus*	-	-	-	-	-	-	2	2	2015	NBDC
Turbellaria	*Arthurdendyus triangulatus*	-	-	-	-	-	-	3	3	2016	NBDC
Japanese Knotweed	*Fallopia japonica*	-	-	-	-	-	-	3	2	2018	NBDC
Japanese Rose	*Rosa rugosa*	-	-	-	-	-	-	1	1	2018	NBDC
Rhododendron	*Rhododendron ponticum*	-	-	-	-	-	-	4	1	2018	NBDC
Sea-buckthorn	*Hippophae rhamnoides*	-	-	-	-	-	-	3	2	2018	NBDC
Salmonberry	*Rubus spectabilis*	-	-	-	-	-	-	3	3	2014	NBDC
Spanish Bluebell	*Hyacinthoides hispanica*	-	-	-	-	-	-	3	2	2018	NBDC
Butterfly-bush	*Buddleja davidii*	-	-	-	-	-	-	1	1	2016	NBDC
Red-eared Terrapin	*Trachemys scripta*	-	-	-	-	-	-	4	4	2013	NBDC
Sycamore	*Acer pseudoplatanus*	-	-	-	-	-	-	1	1	2016	NBDC
Three-cornered Garlic	*Allium triquetrum*	-	-	-	-	-	-	2	2	2018	NBDC
Traveller's-joy	*Clematis vitalba*	-	-	-	-	-	-	2	2	2018	NBDC
Turkey Oak	*Quercus cerris*	-	-	-	-	-	-	4	2	2013	NBDC
White Snail	*Theba pisana*	-	-	-	-	-	-	4	4	2006	NBDC
Wrinkled Snail	*Candidula intersecta*	-	-	-	-	-	-	4	4	1992	NBDC

Appendix 13

Drawings



Site Layout Plan
Scale 1:1000

Notes

- Drawing scales have been agreed with Fingal County Council
- Reproduced from the Ordnance Survey by Permission of the Government. Licence No. EN 0015720 OS Maps No: 3222_D & 3224_D

Legend

- Area Subject To This Planning Application (Outlined In Red)
- Lands Adjoining, Abutting Or Adjacent To Lands Subject To This Application Under The Control Of The Applicant (Outlined In Blue)
- Denotes Extents Of Natura 2000 Site
- Dredge Footprint
- Hardstanding Areas (Unbound Surface)
- Hardstanding Areas (Concrete Paving)
- Parking Area (Car and Bus)
- Pedestrian Footpaths (Concrete)
- Pedestrian Walkways (Coloured Binding Grit)
- Roadways
- Natural Amenity Area: Native or native species to be reinforced by gaps/ occupied spaces into account soil depth are adjacent habitat
- Managed Amenity Area: Grass lands
- Rock Armour Revetment
- Slipway/Watersports Access
- +5.0m ODM Finished Spot Level (ODM)
- +5.0m ODM Contours (ODM)

Rev	Date	Description	By	Ch'd	App
C	24.05.2021	ISSUED FOR PLANNING	EC	PP	PP
B	19.05.2021	ISSUED FOR INFORMATION	EL	PP	PP
A	22.03.2021	ISSUED FOR INFORMATION	EL	PP	PP

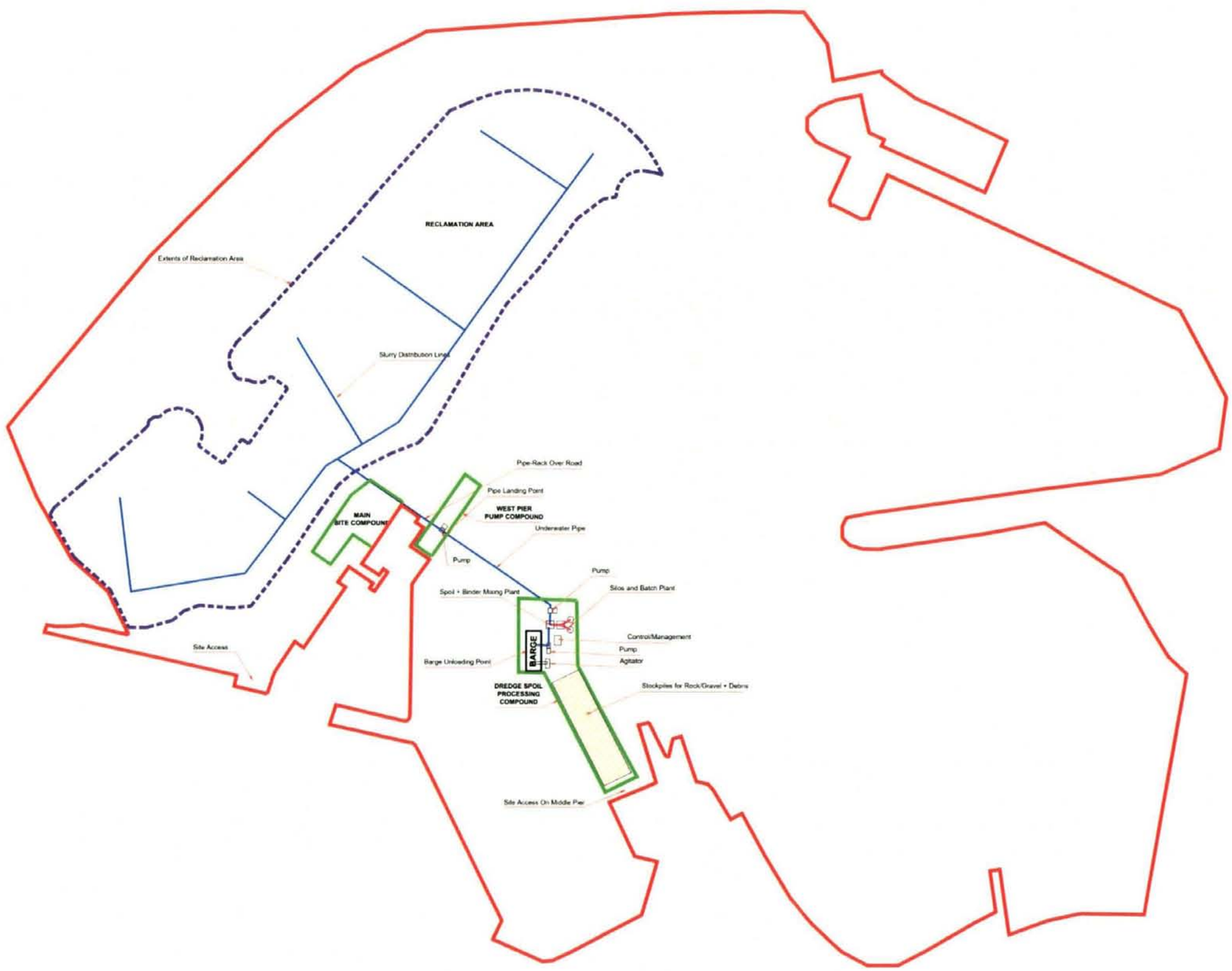
Project: HOWTH PHC HARBOUR DREDGING AND RECLAMATION PROJECT

Title: SITE LAYOUT PLAN SCALE 1:1000

Client: DEPARTMENT OF AGRICULTURE FOOD AND MARINE

Malachy Walsh and Partners
Engineering and Environmental Consultants
Cork | Tralee | London | Limerick
Park House, Mahon Technology Park, Blackpool, Cork
Tel: +353 (0)21 4536400
Fax: +353 (0)21 4536450
E-mail: mwep@mwp.ie

Scales (A3)	1:1000		Drg. No	Rev.
Drawn	EC	AUG 2020	19934 - 5002	C
Ch'd (D.)				
Ch'd (Eng.)	PP	AUG 2020		
Approved	PP	AUG 2020		



Dredge Spoil Processing
Site Layout
Scale 1:1000

Notes

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Plot Compounds

1. Main Site Compound - Located within an existing storage area on the Middle Pier. Site office, stores, welfare facilities etc
2. West Pier Pump Compound - Landing of processed dredge spoil on the West Pier and onward pumping of dredge spoil to the reclamation area
3. Dredge Spoil Processing Compound - Located on the Middle Pier

Legend

- Denotes Proposed Site Boundary
- Denotes Extents Of DAFM EHC Lands
- Denotes Extents Of Natura 2000 Site
- Denotes Compound Boundaries
- Denotes Extents Of Reclamation Area
- Denotes Dredge Spoil Pipelines

Rev	Date	Description	By	Chk	App
B	21.06.2021	ISSUED FOR PLANNING	EJ	MF	MF
A	15.06.2021	ISSUED FOR INFORMATION	EJ	MF	MF

Project: HOWTH FHC HARBOUR DREDGING AND RECLAMATION PROJECT

Title: DREDGE SPOIL PROCESSION SITE LAYOUT SCALE 1:1000

Client: DEPARTMENT OF AGRICULTURE FOOD AND MARINE

Malachy Walsh and Partners
Engineering and Environmental Consultants
Cork | Kildare | London | Limerick
Port House, Marina Technology Park, Boatstrand Road, Passage West, Cork
Tel +353 (0)21 4870200
Fax +353 (0)21 4870210
E-mail mwpcork@mwp.ie

Scales (A0)	1:1000		Drg No	Rev
Drawn	EJ	JAN 2019	19934 - 5015	B
Chkd'd ( )				
Checking	MF	JAN 2019		
Approved	MF	JAN 2019		

06-07-2021F 21A/0368
FINGAL CO CO PL DEPT