

# REPORT

## Port of Leith – Outer Berth

### EIA Non-Technical Summary

Client: Forth Ports Limited

Reference: PC2045-RHD-ZZ-XX-RP-EV-0008

Status: Final/00

Date: 11 April 2022



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Status: 00/Final  
Date: 11 April 2022  
Project name: Port of Leith Outer Berth  
Project number: PC2045  
Author(s): RP

Drafted by: KF and RP

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Checked by: JG

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Date: 06/04/2022

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Approved by: JG

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Date: 06/04/2022

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Classification

Project related

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## 1 Introduction

### 1.1 Purpose of this Document

This document presents the Non-Technical Summary (NTS) of the Environmental Impact Assessment (EIA) Report for improvement works to the outer berth at the Port of Leith, referred to as the 'proposed development', which is been prepared in accordance with the Marine Works (EIA) (Scotland) Regulations 2017 (as amended) (the MWRs).

The purpose of this NTS is to provide an overview, in non-technical language, of the main findings of the EIA. It is important to note that this NTS does not, and is not intended to, convey all of the information relating to the proposed development and its potential effects on the environment. By necessity, the text provided herein is a summary of the detailed assessments discussed in the EIA Report.

### 1.2 Background

Offshore wind is a key growth industry for Scotland, and a key component for reaching Scotland's target to reduce greenhouse gas emissions by 75% by 2030 and being net-zero by 2045<sup>1</sup>. The ScotWind process will mean more wind farm projects in the future, and a part of that process includes the commitment to at least 25% of the Offshore Wind Farm (OWF) industry being local<sup>2</sup>. To be able to achieve this, additional suitable port capacity is required in Scotland. To date, there has been limited local content in relation to the currently installed / being installed capacity. An increase in suitable port capacity will facilitate increased local content. Given the proximity of the Port of Leith to either consented or planned developments, it has been identified that Leith should be a strategic element for the offshore wind supply chain in the future.

The lock gates at the Port of Leith currently restrict access for vessels with a beam (width) of over 30m. Forth Ports Limited is therefore proposing to improve the berth seaward of the entrance to lock to support vessels associated with the offshore renewables industry which cannot currently transit the lock entrance.

The proposed development would (shown in **Figure 1.1**):

- Improve a 125m section of existing berth (Area 1);
- Provide an area of hardstanding to be used for loading/unloading (Area 2);
- Provide a laydown area for the storage and transhipment of components for the offshore renewables industry (Area 3); and,
- Include capital dredging to enlarge the existing berth pocket (Area 4).

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<sup>1</sup> <https://www.gov.scot/policies/climate-change/reducing-emissions/>

<sup>2</sup> <https://www.crownstatescotland.com/resources/documents/supply-chain-development-statement-summary-1>



**Legend:**

- Red line boundary
- 1 - New Berth
- 2 - Hardstanding Area
- 3 - Berth Pocket
- 4 - Laydown area for OWF support

Client: Forth Ports Limited	Project: Port of Leith - Outer Berth
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Title:  
Port of Leith Outer Berth Development

Figure: 1.1      Drawing No: PC2045-100-003

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
03	01/04/2022	JR	RP	A3	1:5,000
02	14/05/2021	JT	GS	A3	1:5,000

Co-ordinate system: British National Grid



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### 1.3 Requirement for EIA

The following EIA regulations apply to the proposed development:

1. the MWRs; and,
2. Town and Country Planning (EIA) (Scotland) Regulations 2017 (as amended) (TCPRs).

The proposed development falls under Schedule 2 10(g) of the above regulations, as:

- Construction of harbours and port installations, including fishing harbours (unless included in schedule 1)

Thus, an EIA Screening Report was submitted to both the City of Edinburgh Council (CEC) and Marine Scotland (MS) along with requests for Screening Opinions on 20<sup>th</sup> September 2021 and 9<sup>th</sup> November 2021, respectively. CEC's Screening Opinion was received on 14<sup>th</sup> October 2021, which determined that the proposed development was not EIA development in accordance with the TCPRs and Circular 1/2017. Subsequent to this, MS provided their Screening Opinion on 18<sup>th</sup> January 2022, which determined the proposed development to be EIA development under the MWRs.

As the proposed development was determined to be EIA development by MS, an EIA is required to support the Marine Licence application under the MWRs.

## 2 Need for the Project

The proposed development is a key component in Scotland's economic recovery and energy transition plans, and in the achievement of Scotland's net zero carbon emissions targets. It represents a £50m private sector investment that will see the creation of a bespoke, riverside marine berth capable of accommodating the world's largest offshore wind installation vessels. This will be supplemented by the upgrading of a cargo handling site to accommodate lay down, assembly and supply chain opportunities.

Renewable energy is critical to the decarbonisation effort to achieve net zero greenhouse gas emissions; however, it also has a significant role to play in safeguarding energy security, which has been highly exposed due to the recent events in Eastern Europe, causing the supply crunch in oil market fuelling further exacerbating the volatility of energy prices. The 2020 Sectoral Marine Plan for Scotland<sup>3</sup> highlights that growth of the renewable energy sector in Scotland will be an essential feature of its future clean energy system and a potential key driver of economic growth and port are vital infrastructure to support the offshore wind projects.

In response to this, the Edinburgh Waterfront has been designated as a 'National Development' under the draft Fourth National Planning Framework<sup>4</sup> for the provision of services, including port use, to support offshore energy production. NPF4 specifically supports "new and/or upgraded green and blue infrastructure" and "new and/or upgraded port facilities for vessel berthing and related landside activities including for lay-down, and marine sector services". The proposed development has been identified as contributing to this National Development by supporting the manufacture, assembly, storage and distribution and shipment of off-shore renewable structures<sup>5</sup>.

Further evidence for the need for the proposed development, a recent report to the Scottish Offshore Wind Energy Council<sup>6</sup> highlighted a need for between 100 and 200Ha of space suitable for marshalling/assembly facilities in Scotland to deliver the current ScotWind proposals and between 175 and 300Ha to support deployment beyond the current ScotWind leasing round. Leith and Dundee are deemed suitable to support North Sea Leasing Zones due to proximity and existing capacity for marshalling and assembly as well as future expansion opportunities, addressing significant port capacity shortfall. **The proposed development would provide 16Ha of space suitable to support the offshore renewables industry.**

In summary, the proposed development would:

- Make a major contribution to Scotland achieving its 70% reduction by 2030 and 2045 net zero targets, as defined in the Climate Change (Scotland) Act 2009 (as amended) and Climate Change (Emissions Reduction Targets) (Scotland) Act 2019;
- Secure the Firth of Forth as the driver for Scotland's green energy transition as envisaged in Scotland's National Marine Plan 2015 and adopted in the 2020 Sectoral Marine Plan for Scotland to support and facilitate growth of offshore wind renewable energy;
- Support Forth Ports' planned bid to the Scottish Government for Firth of Forth Greenport, encompassing the Port of Leith, which aims to fuel economic growth and Covid recovery in designated areas by developing freeports with lower tax levies, less regulations and allocation of government funds;

<sup>3</sup> [2020 Sectoral Marine Plan for Scotland \(offshorewindscotland.org.uk\)](https://www.offshorewindscotland.org.uk)

<sup>4</sup> <https://www.transformingplanning.scot/national-planning-framework/national-developments/what-are-national-developments/>

<sup>5</sup> [Annex B: Suggestions Contributing to the Proposed National Developments \(in whole or in part\) - Scotland 2045 - fourth National Planning Framework - draft - national developments: assessment report - gov.scot \(www.gov.scot\)](https://www.gov.scot)

<sup>6</sup> SOWEC, 2021. *Scottish Offshore Wind Strategic Investment Assessment - An Independent report to the Scottish Offshore Wind Energy Council, August 2021*

## Project related



- Help spearhead Edinburgh's and Scotland's Covid 19 recovery plan in-line with the green recovery policy including the Covid Recovery Strategy 2021; and,
- Support up to 1,000 high quality, long term direct jobs and about 2,000 indirect jobs..

### 3 Description of the Proposed Development

#### 3.1 Construction Phase

##### 3.1.1 Outer Berth

The improved berth would be constructed seaward of the existing concrete lead-in jetty as a suspended deck, approximately 125m long, 35m in width, with a 10m run off apron landside (shown as Area 1 on **Figure 1.1**). A plan and cross-section of the improvement works to the outer berth are provided as **Figure 3-1** and **Figure 3-2**.

Prior to the piles being delivered, a site clearance and initial dredge would be undertaken. A barge would be mobilised to remove the existing walkways and existing piles from the dolphins. Given the existing piles are socketed it would be difficult to extract them and therefore they would be cut off at bed level.

The initial dredging works are required to remove the overburden prior to the piles being installed. This would be undertaken using two excavators, one on the existing breakwater and the second on a barge. The material would be re-used on site, loaded onto barges and taken to the offsite disposal site (Narrow Deep B Spoil Disposal Ground) or disposed of on land, as appropriate. The total quantity of pre-dredge works material is approximately 47,000m<sup>3</sup>.

Once the excavators have removed the overburden material, they would place the first layer of the rock armour to provide protection to the breakwater. When the piling works are complete, a second layer of rock armour would be placed by similar methods.

Piling platforms would be created on the breakwater to enable the crane to hold the piling hammer. Up to 168 tubular piles (6 rows of 28 piles) of approximately 1.2m diameter would be installed. In addition, a front row of smaller piles (39 piles of approximately 0.8m diameter) would be installed connected with sheet piles. To support the tubular piles and landward development, sheet piles would also be installed.

Precast beams would be casted in the hinterland area before placing onto the piles by the crane. The concrete topping would be poured in-situ followed by the installation of the quay furniture, including the fenders and bollards. The pavement behind the quay structure would also be installed along with the sheet piles for the floodwall.

##### 3.1.2 Laydown Area

Excavators and dumpers would be used to level the area and a compaction roller would be used to compact the fill material prior to placing the wearing course. Drainage infrastructure and lighting would be installed, including new storm water drainage outfalls that would discharge surface water run-off into the sea following suitable treatment, as per the current situation. All lighting would be directed downwards to minimise any spill and use minimum lux levels as required for health and safety purposes.

##### 3.1.3 Berth Pocket

The existing berth pocket, which undergoes regular maintenance dredging to -7m CD, would be enlarged by dredging to -9m Chart Datum (CD) and be approximately 300m long by 60m wide. Approximately 54,000m<sup>3</sup> of material would be dredged using a backhoe dredger supported by a barge to take the dredged arisings to the offshore disposal site (Narrow Deep B Spoil Disposal Ground).

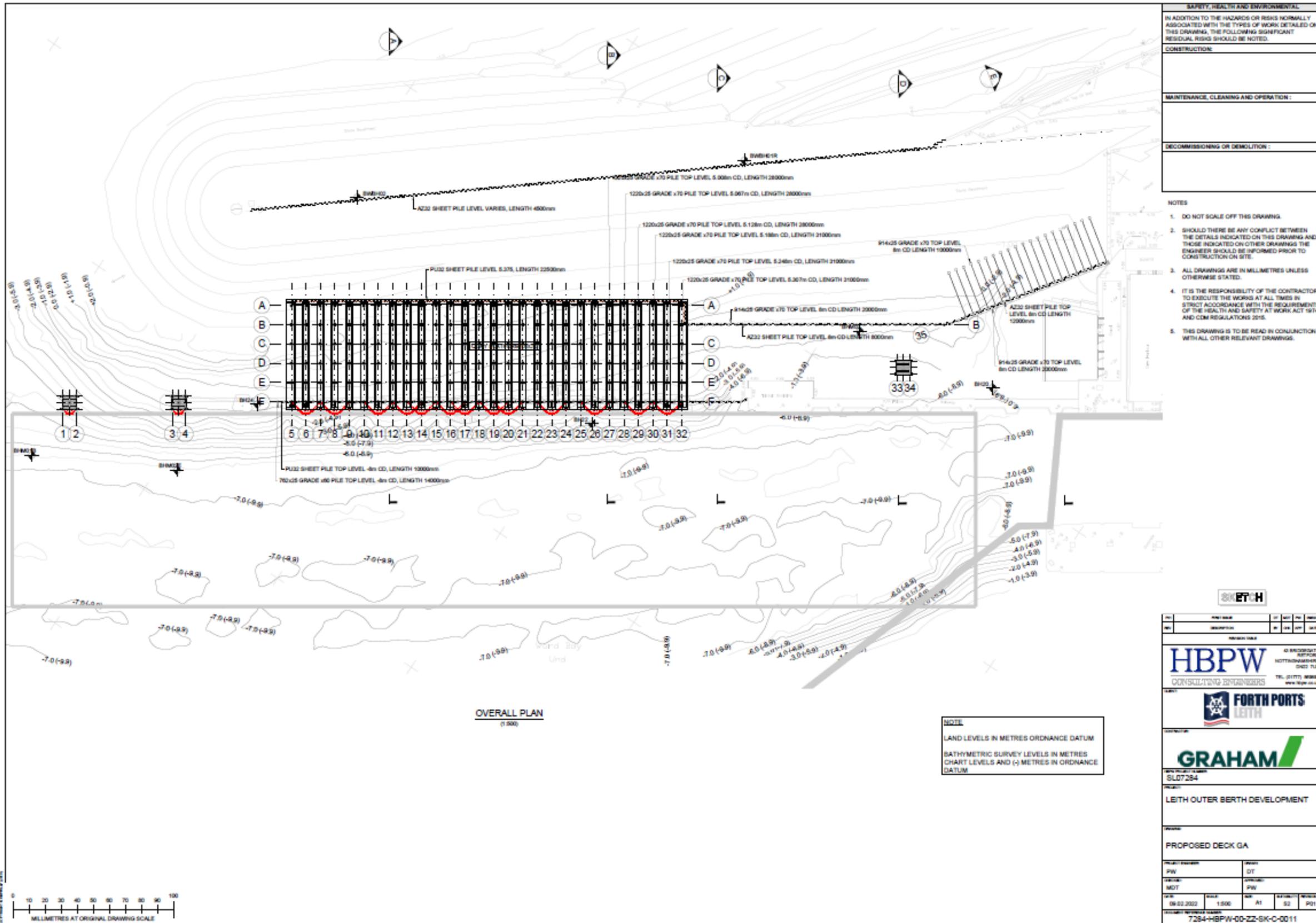


Figure 3-1 Plan view of the pile layout of the outer berth

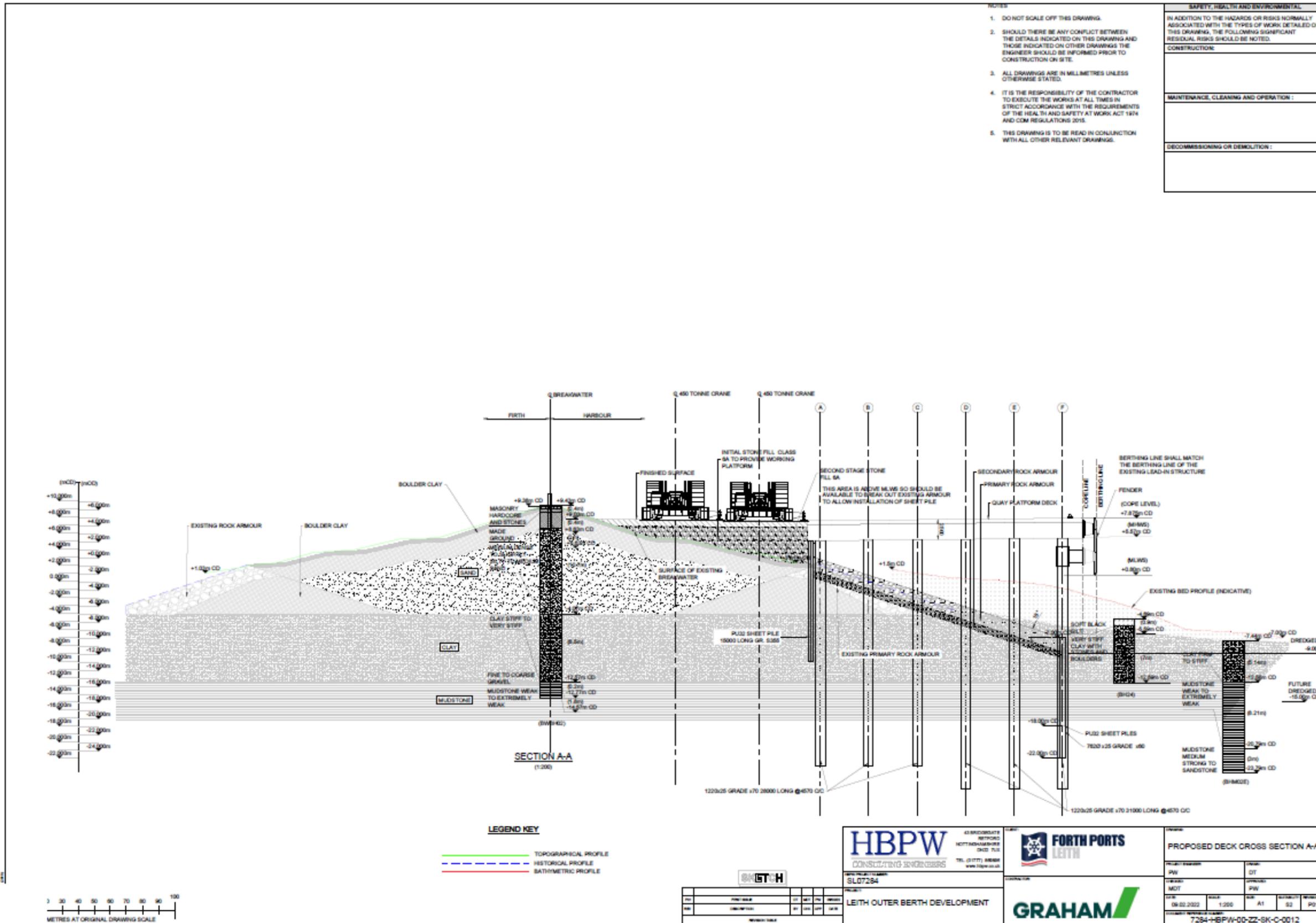


Figure 3-2 A typical cross section of outer berth and landward area

### 3.1.4 Delivery of materials

The majority of the construction materials would be delivered to site by the sea. Material required for raising levels of the hinterland and the wearing course would be imported from local quarries and enter the port via the road network.

### 3.1.5 Outline Construction Programme

Mobilisation is anticipated to commence mid to late 2022 and the construction, including demobilisation works, is anticipated to be completed by late 2023. A high-level construction sequence, and indicative timings, is provided below. These activities will not necessarily be carried out consecutively and may be undertaken partially or wholly in parallel:

- Demolition of existing dolphins and associated walkways, and excavation of overburden - four months;
- Installation of primary rock armour, before driving of piles – one month;
- Piling works for the improved quay – five and a half months;
- Installation of secondary rock armour, following driving of piles – three months;
- Installation of precast deck panels and concrete - six months;
- Installation of fender sleeves and fenders – three months;
- Installation of bollards and ladders – one month;
- Dredging – four months;
- Hardstanding to rear of jetty and landward side – two months;
- Rear Wave Wall – four months;
- Drainage system, lighting, and services - four months; and,
- Inspection, snagging and demobilisation – four months.

### 3.1.6 Consideration of Alternatives

A range of alternative options to the proposed development were considered, including the Do Nothing Scenario, alternative quay designs and site location. None of these options were considered feasible in terms of achieving the required objectives or minimising environmental effects, which led to the identification of the preferred option.

### 3.1.7 Embedded Mitigation

Forth Ports Limited is committed to the use of best practice techniques and due diligence regarding the potential for accidental pollution events throughout all construction, operation and maintenance activities. A Construction Environmental Management Plan would be developed following the standard best practice measures. As such the risk of accidental leaks and spills would be reduced as far as possible and therefore has not considered further.

## 3.2 Operational Phase

### 3.2.1 Outer Berth

The primary use of the improved outer berth would be for the offshore renewables industry, providing facilities for the transshipment and storage of components such as all wind turbine generator (WTGs) parts associated with a wind farm project (including the blades, towers and nacelles) as well as foundations (such as pin piles, jackets and floating foundations) (**Figure 3-3**). The berth could also be used for other tidal

energy projects and the decommissioning of redundant oil and gas structures where vessels cannot transit the existing lock entrance.

The berth is expected to be used around 2 to 4 times per month, with loading/unloading taking up to 24 hours; whilst a vessel is berthed, during which the entrance to the Port of Leith would be restricted. It is therefore in the interest of the port to ensure the berth is occupied for the minimum time possible. Overall lock and berth utilisation would be controlled by the port, as is the case today.

The number of vessels currently using the port is, on average, 1,150 per year. Given this, and the fact that vessels would no longer access the port for the decommissioned Shawcor facility, the overall change in vessel numbers using the port would be negligible. Facilities will be provided for the future provision of shore power; this would reduce the need for vessels to be 'idling' at the berth with engines running, therefore reducing noise and emissions to air.

### 3.2.2 Laydown Area

The type of components that may be stored within the laydown area include those that are required for offshore wind farms (such as foundations, towers, nacelles, blades, tidal turbines) as well as other components related to the offshore renewable industry.



Figure 3-3 Example loading of offshore renewables vessel when berthed and laydown area

### 3.2.1 Maintenance Dredging

It has been predicted that maintenance dredging, required to maintain the required water depth to the port would increase by around 22% on the annual average, with most of this arising from the enlarged berth pocket. Based upon a current average maintenance dredge volume of 19,197m<sup>3</sup>, derived from the past dredging records, this would equate to a predicted increase of approximately 4,225m<sup>3</sup>.

The marine licence application being made for the proposed development will not include for maintenance dredging; this will likely form a variation to Forth Ports' existing maintenance dredge licence. Consequently, maintenance dredging is not assessed within the EIA Report.

## 4 The EIA Process

### 4.1 What is EIA?

In accordance with Scottish law, certain projects must be the subject of a particular process of environmental assessment due to their size, nature and the likelihood that they will have significant effects upon the environment. This assessment process is known as EIA.

EIA provides a valuable opportunity to avoid and reduce potential environmental impacts through design refinement. Environmental constraints and issues were identified through consultation, extensive environmental surveys and technical assessments. The information gathered has informed decision-making throughout the design process, providing opportunities to address potentially significant impacts where practicable, for example by refinement of the proposed scheme design or by the incorporation of measures to avoid or reduce potential adverse impacts. The process is outlined in **Table 4.1**.

Table 4-1 The EIA process

Stage	Task	Aim / objective	Work / output (examples)
Screening report	Screening	To formally confirm route for EIA and lead responsible authority.	Appropriate level of information on proposals and approach.
Scoping study (optional)	Scoping	To identify the potentially significant direct and indirect impacts of the proposed scheme.	Preliminary consultation with key consultees. Targets for specialist studies (e.g., bird survey).
<b>EIA</b> 	Consultation	Consult with statutory and non-statutory organisations and individuals with an interest in the area and the proposed scheme.	Local knowledge and information.
	Primary data collection	To characterise the existing environment.	Background data including existing literature and specialist studies.
	Specialist studies	To further investigate those environmental parameters which may be subject to potentially significant effects.	Specialist reports.
	Impact assessment	To evaluate the existing environment, in terms of sensitivity. To evaluate and predict the impact (i.e., magnitude) on the existing environment. To assess the significance of the predicted impacts.	Series of significant adverse and beneficial impacts.
	Mitigation measures	To identify appropriate and practicable mitigation measures and enhancement measures.	The provision of solutions to minimise adverse impacts as far as possible. Feedback into the design process, as applicable.
	EIA Report	Production of the EIA Report in accordance with EIA guidance.	EIA Report.

## 4.2 Screening

As stated in **Section 1.3**, the CEC determined that the proposed development was not EIA development in accordance with the TCPRs. Its reason for this was as follows:

- The proposal relates to uses that are of a similar nature to operations already undertaken within the wider area. Vessels of a similar size are already accepted within the dock. It also includes the removal existing facility that creates noise and air emissions.
- The screening request indicates that there will be some effects from the construction stage, but these will be short term.
- To the south and east of the site there are identified Air Quality Management Area areas but the continued use of the dock for appropriate uses would not warrant an EIA with the proposals including the loss of an existing industrial use and proposed materials associated with this development indicated to be transported by sea.
- In terms of noise, the area already accepts ships and operates as a port.
- The Habitats Regulations Appraisal submitted to accompany the screening request indicates that Appropriate Assessment will be undertaken and agreed with NatureScot and mitigation measures put in place if required.
- The Martello Tower is a Scheduled Monument, but its location is already surrounded by existing industrial style uses.
- Visual impacts will be temporary in nature.

Consultation undertaken to inform MS's Screening Opinion either expressed no opinion on the need for EIA or determined the proposed development to not be EIA development with the exception of NatureScot, who considered that the proposed development had the potential to result in significant impacts specifically to:

- several European sites (Special Areas of Conservation (SACs) and Special Protection Areas (SPAs)); and,
- European Protected Species (EPS) that are not specifically protected by relevant European sites, for example otter, minke whale or harbour porpoise.

NatureScot recommended that an EIA should be undertaken that focuses on the above receptors and, for this reason, MS determined that the proposed development was EIA development under the MWRs.

## 4.3 Scoping

Taking account the EIA screening exercise and discussions with key stakeholders, including MS and NatureScot, the following topics have been scoped into this EIA:

- Coastal processes
- Marine water and sediment quality
- Marine and coastal ecology
- Fish and shellfish ecology
- Ornithology
- Marine mammals
- Cumulative Impacts

The characteristics of the existing (baseline) environment for each topic have been defined, and the potential environmental impacts of the proposed scheme identified and assessed through the following methods and activities:

- Desk based reviews, interpretation and assessment of existing data;
- Site surveys; and,
- Consultation.

The following surveys and investigations have been undertaken to characterise the baseline environment and predict environmental effects:

- Hydrodynamic, sediment dispersion and sedimentation numerical modelling
- Sediment sampling and analyses
- Desk based benthic ecology assessment
- Bird surveys, comprising:
  - Twice-monthly estuarine bird counts within the impounded dock system and nearby coastal / offshore locations between March 2021 and March 2022.
  - Twice monthly tern colony counts during May to July 2021 (inclusive), denoting the number of apparently occupied nests (AON) at Imperial Dock Lock Leith SPA; and,
  - Twice monthly tern flight behaviour surveys during May to July 2021 (inclusive).
- Airborne noise modelling on ecological receptors
- Underwater noise modelling

#### 4.4 Consultation

Consultation has been ongoing throughout the EIA process. Early stakeholder consultation was undertaken with:

- |                                  |   |
|----------------------------------|---|
| • MS                             | • Northern Lighthouse Board                 |
| • The CEC                        | • Royal Forth Yacht Club                    |
| • NatureScot                     | • Scottish Wildlife Trust                   |
| • Historic Environment Scotland  | • Transport Scotland                        |
| • RSPB                           | • Inshore fisheries and coastal communities |
| • SEPA                           | • Forth District Salmon Fishery Board       |
| • Crown Estate Scotland          | • Whale and Dolphin Conservation            |
| • Maritime and Coastguard Agency | • Scottish Fishermen's Federation           |

Specific consultation was carried out with NatureScot to confirm the information required and approach to the ecological assessments.

An online Pre-Application Consultation (PAC) event was planned for the 25 January 2022. No members of the community or stakeholders registered for the event.

#### 4.5 Impact Assessment Methodology

The approach to determining the significance of an impact follows a systematic process for all impacts. This involves identifying, qualifying and, where possible, quantifying the sensitivity, value and magnitude of all receptors which have been scoped into this assessment. Using this information, a significance of each potential impact has been determined.

Mitigation measures have been proposed, where available and practical, in those cases where adverse impacts have been identified. Whilst mitigation for minor or negligible impacts may not be specifically defined as a matter of course, industry standard or 'embedded' mitigation often applies in these cases. Where mitigation measures have been identified, the significance of the residual environmental impact (i.e. the post-mitigation impact) has been assessed.

## 4.6 Reporting

This NTS presents a summary of the EIA Report, including key aspects of the proposed development and the associated beneficial and adverse impacts considered to be of particular importance. Further details about the likely significant impacts of the proposed development can be found within the full text of the EIA Report. The EIA Report documents have been subdivided into three volumes:

1. NTS;
2. EIA Report; and,
3. Technical Appendices – Specialist Technical Reports.

## 5 Summary of Predicted Environmental Impacts

### 5.1 Coastal Processes

To consider the potential effects of the proposed development on coastal processes, assessments were carried out based on existing site data and numerical modelling of tidal currents and suspended sediment transport changes caused by the construction and operation.

The results show that any predicted increase in bed thickness as a result of the settlement of disturbed sediment would be confined predominantly to within the boundary of the dredging and disposal site, with settlement outside this region being small at less than 0.005m (5mm), which represents a **negligible impact, which is not significant in EIA terms**.

Changes to current velocities are predicted along the full length of the eastern breakwater and extend slightly (approximately 50m) off the end of the eastern breakwater head during the flood tide period. During the ebb tide period, the changes are less and mainly focussed around the improved outer berth and eastern breakwater head. There are no other changes within the wider model extent. As such the proposed development would have a **negligible impact, which is not significant in EIA terms**, on tidal currents due to the presence of the improved outer berth and enlarged berth pocket.

### 5.2 Marine Water and Sediment Quality

The proposed development is within the Kinghorn to Leith Docks coastal water body which has an overall status of Good, a chemical status of Pass and an ecological status of Good. Within the study area there are no shellfish areas or bathing areas.

Potential impacts to marine water and sediment quality during construction of the proposed development could arise from increases in suspended sediment concentrations (SSCs) and the potential release of contaminants during dredging and disposal activities. No potential impacts during operation were identified.

To assess the potential effects of dredging on SSC, sediment dispersion modelling was carried out at both the dredging and disposal locations. The model results showed that increases in SSC was localised and would dissipate to within background levels within 1.5hrs. At the disposal site, the plume extent is predicted to be larger; however, peaks in SSC would also be short term and return to baseline within a matter of hours. In both cases, predicted peak SSCs outside of the dredge and disposal locations are well within background levels recorded within the Forth.

To inform the assessment on the potential release of contaminants, sediment samples were collected from within the proposed dredge area and sent for chemical analysis, and compared against MS's Action Levels (ALs). When averaged, only two metals were found to exceed AL1 and these exceedances are only marginal. Whilst most of the Polyaromatic Hydrocarbons exceed AL1, levels are generally under 0.5mg/kg; the exceptions being pyrene and fluoranthene. Average levels of Polychlorinated Biphenyls also exceeded AL1 but do not approach AL2.

Overall, potential impacts to water quality are predicted as being of **minor adverse significance** due to the localised extent of the affected area, the rapid rate of dispersion and the non-continuous nature of the activities. No mitigation measures are considered necessary. The residual impact would be of **minor adverse significance, which is not significant in EIA terms**.

### 5.3 Marine Ecology

There are a number of sites designated for nature conservation that could directly and indirectly be affected by the proposed development. Natural Site Network sites and Ramsar sites are considered in the Habitats Regulations Appraisal that has been produced in support of the marine licence application (ref: PC2045-RHD-ZZ-XX-RP-EV-0009).

Within the study area there are no known records of marine benthic species of conservation importance. Habitat maps suggest the seabed of the proposed development is mainly comprised of Atlantic infralittoral seabed and mixed sediments. Benthic species common to the Port of Leith include limpets, periwinkles, the White Furrow Shell and common mussel. Otter, a European Protected Species, have been recorded around the Waters of Leith in and around urban Edinburgh.

The majority of the benthic habitats within the footprint of the proposed development are within the existing Approach Channel to the Port of Leith, which is regularly dredged. Consequently, the species present will be tolerant to dredging related impacts. A section of the intertidal/subtidal rock armour along the western side of the eastern breakwater would be removed; however, once piling has been completed, a new rock revetment would be placed that would effectively replace what was lost. Recolonisation is expected to eventually result in benthic communities of similar diversity and composition as those present on the artificial habitat that is currently present. As such the potential impact from the direct loss of benthic habitats is considered to be of **minor adverse significance**. No mitigation is required, and the residual impact remains **minor adverse significance, which is not significant in EIA terms**.

Given the localised area, low level of sediment deposition and that the benthic communities surrounding the proposed development and the disposal site will be tolerant to sediment deposition, smothering of benthic habitats as a result of the proposed dredging and disposal activities is considered to be of **negligible significance**. No mitigation is required, and the residual impact remains of **negligible significance, which is not significant in EIA terms**.

Given the localised area, low levels of deposition predicted and low value of the benthic habitats present, the potential impact from the release of contaminants during dredging and disposal activities is considered to be of **minor adverse significance**. No mitigation is required, and the residual impact remains **minor adverse significance, which is not significant in EIA terms**.

The proposed development may cause disturbance to otters and reduce availability of prey resources for this species; however, there is no evidence to suggest significant use of habitat within the impounded dock system or the coastline immediately adjacent to the works by otters. In terms of potential impacts on prey resources within the Waters of Leith, the dam / lock gates that separate the impounded dock system from the marine environment would prevent this. As such the potential impact to otters is considered to be of **minor adverse significance**. No mitigation is required, and the residual impact remains **minor adverse significance, which is not significant in EIA terms**.

During operation, changes in erosion and accretion patterns as a result of the presence of the proposed development have the potential to impact benthic habitats. Given the negligible changes in tidal currents predicted **no impact** on benthic habitats is predicted.

## 5.4 Fish and Shellfish Ecology

The Firth of Forth supports a number of migratory fish species including Atlantic salmon, sea lamprey, river lamprey, European eel, European smelt and sea trout. A range of shellfish species may be found in the vicinity of the proposed development, including brown shrimp, pink shrimp, razor shells, European lobster, edible crab, velvet swimming crab, king scallop, Norway lobster and squid.

Underwater noise modelling was carried out on the migratory fish listed above to predict the potential impact from underwater noise generated by the proposed piling and dredging works. This modelling took account of soft start piling, a standard mitigation measure that involves the slow ramping up of piling energy so that aquatic animals can avoid harm by moving away from the works. Potential impacts were assessed as being of **minor adverse significance** for salmon, sea trout, smelt and European eel, and **negligible** for the lamprey species. No further mitigation is required, and the residual impacts remain of **minor adverse and negligible significance, which are not significant in EIA terms.**

The dredging and disposal activities have the potential to affect prey availability and migration of fish species, through changes to water quality and habitat loss. The Firth of Forth at the location of the proposed development is approximately 8km wide, hence there would be no significant obstruction or 'barrier effect' to migrating fish from increased SSC. The potential impact on benthic habitats has been shown to be not significant in EIA terms and as such the potential impact on prey species and migrating fish is considered to be of **minor adverse significance**. No mitigation is required, and the residual impact remains of **minor adverse significance, which is not significant in EIA terms.**

## 5.5 Ornithology

There are a number of sites designated for their ornithological interest that have the potential to be indirectly affected by the proposed development. These sites are considered in the Habitats Regulations Appraisal that has been produced in support of the marine licence application (ref: PC2045-RHD-ZZ-XX-RP-EV-0009).

The assessment on ornithology was informed by the bird surveys described in **Section 4.3**, which recorded a total of 43 estuarine bird species interacting directly with the study area. Species recorded included 18 seabird species (i.e., gulls, terns, auks, skuas, gannet, cormorants, fulmar and divers); 14 waterfowl species (i.e., ducks and swans plus – for the purpose of this summary – grebes and herons); and 11 wader species. The most numerous species recorded was common tern, other abundant species recorded included gull species, eider and, during the post-migration breeding period, auks. Oystercatcher was the most abundant wader species recorded in the study area.

Airborne noise from the proposed piling works has the potential to impact breeding and foraging common tern, seabirds and non-breeding waterbirds. The potential impact is considered to be of minor adverse significance. The use of soft start piling procedures, as described in **Section 5.4**, is considered to support birds becoming habituated to this noise disturbance. With this mitigation measure in place, the residual impact remains of **minor adverse significance, which is not significant in EIA terms.**

The potential impact of airborne noise from the proposed piling works on post-breeding common tern, should piling be taking place during this period, is considered to be of **moderate adverse significance**. In addition to soft start piling, it is proposed that a piling shroud will be used to reduce the noise of the piling. With this mitigation in place, the residual impact is considered to be of **minor adverse significance, which is not significant in EIA terms.**

The significance of the potential impact due to change in prey availability due to changes in water quality (SSC and contamination) and underwater noise on fish eating/partly fish eating bird species is considered to be of **minor adverse** and **negligible significance**, respectively. No mitigation is required, and the residual impacts remain of **minor adverse** and **negligible significance, which are not significant in EIA terms**.

During the operational phase, the only potential impact would be to breeding common tern flying across the port estate when entering or leaving the port due to the change of use within the proposed laydown area; however, given that the terns are habituated to the presence of tall structures, such as the gantry cranes, this potential impact is considered to be of **minor adverse significance**. No mitigation is required, and the residual impact remains of **minor adverse significance, which is not significant in EIA terms**.

## 5.6 Marine Mammals

There are a number of sites designated for marine mammals that have the potential to be affected by the proposed development. These sites are considered in the Habitats Regulations Appraisal that has been produced in support of the marine licence application (ref: PC2045-RHD-ZZ-XX-RP-EV-0009).

A number of marine mammal species are found off the east coast of Scotland. Within the Firth of Forth, the most common are harbour porpoise, white-beaked dolphin, grey seal and harbour seal. Other species include minke whale and bottlenose dolphin, and less common species such as sei whale, humpback whale, killer whale, Atlantic white-sided dolphin, Risso's dolphin and long-finned pilot whales.

The potential impact of permanent or temporary hearing loss to marine mammals from underwater noise during tubular piling is considered to be of **minor adverse significance**. With the adoption of the best practice guidance for minimising the risk of injury to marine mammals from piling noise, the residual impact is considered to be of **negligible significance, which is not significant in EIA terms**.

The potential impact of permanent or temporary hearing loss to marine mammals from underwater noise during sheet piling is considered to be of **minor adverse significance**. Proposed mitigation measures comprise the establishment of a mitigation zone, to only commence piling operations during the hours of daylight and good visibility and a pre-piling search for marine mammals of mitigation zone by a Marine Mammal Observer. With this mitigation in place, the residual impact is considered to be of **negligible significance, which is not significant in EIA terms**.

The potential impact to marine mammals from disturbance during the proposed piling works is considered to be of **minor adverse significance**. No mitigation is required, and the residual impact remains of **minor adverse significance, which is not significant in EIA terms**.

The potential to prey availability to marine mammals, due to either underwater noise impacts or a change in water quality, is considered to be of **minor adverse significance**. No mitigation is required, and the residual impact remains of **minor adverse significance, which is not significant in EIA terms**.

## 5.7 Cumulative Impacts

A Cumulative Impact Assessment (CIA) was undertaken on other projects that could result in cumulative impacts with the proposed development. The following projects have been screened into the CIA:

Project considered	Location (approximate distance from the proposed development)
Neart na Gaoithe Offshore Wind Farm (Revised Design)	Firth of Forth, approximately 60km
Inch Cape Offshore Windfarm Revised Design	Firth of Forth, approximately 61km (landfall at Prestonpans – 11km)
Seagreen Alpha and Bravo Offshore Wind Farms (Optimised Project)	Forth of Forth, approximately 69km from cable corridor and 96km from windfarm site (or 73km from cable corridor and 98km from windfarm site around the coastline)
Ardersier Port Development	Moray Firth, approximately 185km (344km around the coastline)
NorthConnect HVDC Cable	Landfall at Peterhead, 187km (195km around the coastline)
Sea Wall Repair and Extension – Alexandra Parade	Peterhead, approximately 189km (195km around the coastline)
Nigg Energy Park East Quay	Cromarty Firth, approximately 196km (340km around the coastline)
Moray East Offshore Windfarm	Moray Firth, approximately 233km (281km around the coastline)

Given the significant distance the projects are from the proposed development, the closest being 60km away, cumulative effects only have the potential to occur to marine mammals given their wide-ranging habits. The CIA concluded **no significant cumulative impacts** from the proposed development with any of the screened in projects.