

REPORT

Port of Dundee Capital Dredge and Improvement Works

EIA Screening Report

Client: Port of Dundee Limited

Reference: PC6550-RHD-XX-XX-RP-EV-0001

Status: Final/01

Date: 17 January 2025



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Acronyms

AQMA	Air Quality Management Area
DCC	Dundee City Council
EIA	Environmental Impact Assessment
GHG	Greenhouse Gases
HES	Historic Environment Scotland
HGV	Heavy Goods Vehicle
HRA	Habitats Regulations Appraisal
IAQM	Institute Of Air Quality Management
ICES	International Council For The Exploration Of The Sea
LCT	Landscape Character Type
LGV	Light-Duty Road Vehicle
LPA	Local Planning Authority
MD	Marine Directorate
MPA	Marine Protected Area
MWRs	Marine Works (EIA) (Scotland) Regulations 2017
NRHE	National Record Of The Historic Environment
PCW	Prince Charles Wharf
SAC	Special Area Of Conservation
SEPA	Scottish Environmental Protection Agency
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
TCPRs	Town and Country Planning (EIA) (Scotland) Regulations 2017 (as amended)
UKHO	UK Hydrographic Office
WTG	Wind Turbine Generator

Executive summary

This report has been issued to the Dundee City Council (DCC) and the Marine Directorate (MD) in support of a request for Screening Opinions under The Town and Country Planning (Environmental Impact Assessment (EIA)) (Scotland) Regulations 2017 (as amended) and the Marine Works (EIA) (Scotland) Regulations 2017 (as amended), respectively (the EIA Regulations). This report presents the findings of an EIA screening exercise, to determine the requirement for EIA under the EIA Regulations.

Offshore wind is a key growth sector in Scotland, and the generation and development of offshore wind infrastructure is a key component for reaching Scotland's target to reduce greenhouse gas emissions (by 75% by 2030), and for being net-zero by 2045.

One of the primary uses for the Port of Dundee is to service and support of the offshore renewables industry. The port provides facilities for the transshipment and storage of components, such as all wind turbine generators (WTGs) and other component parts associated with wind farm projects. Due to the increasing size of the components and vessels used by the offshore renewables industry, the Port of Dundee Limited is proposing to undertake a suite of works at the Port of Dundee and to the Lady Shoal approach channel in order to continue to accommodate the increasing needs of the offshore renewables industry.

The Proposed Development is considered to be a Schedule 2 EIA development, falling under Schedule 2 10(g) of the EIA Regulations, as:

10 (g) Construction of harbours and port installations, including fishing harbours (unless included in schedule 1) – where the area of works is greater than 1 hectare;

The potential impacts of the Proposed Development have therefore been assessed in accordance with the criteria set out in Schedule 3 of the EIA Regulations, and are concluded as follows:

- The Proposed Development would have a beneficial effect on the local and regional socio-economy, through the continued provision of well-paid permanent jobs and career opportunities, as well as indirect and induced employment opportunities.
- Beneficial impacts on the local visual setting would also arise from the extension of the laydown area, which is currently used for the storage of timber, road salt, North Sea Oil and Gas components.
- No significant impacts have been identified during the operational phase of the Proposed Development, given there would be no changes to the day to day operations of the port. A slight increase in maintenance dredging has been identified; however, the potential impacts of this are not considered to be significant.
- During construction, potential impacts to ornithology and marine mammals could occur; however, these can be managed by standard industry best practice.
- Potential impacts to benthic ecology, ornithology and fish have the potential to occur, due to the proposed dredging. Whilst these are not considered to be significant at this stage, further studies and investigations will be undertaken to inform the marine licence application, the findings of which will be discussed with NatureScot as part of the Habitats Regulations Appraisal (HRA) process.

Given the beneficial impacts that have been identified and the limited potential for the Proposed Development to result in significant environmental impacts, which can be managed using best practice construction methodology and industry standard mitigation measures, it has been concluded by the Port of Dundee Limited and their advisors that **the Proposed Development does not require an EIA** under the Marine Works (EIA) (Scotland) Regulations 2017 (as amended) or The Town and Country Planning (EIA) (Scotland) Regulations 2017 (as amended).

1 Introduction

1.1 Background

One of the primary uses for the Port of Dundee is to service and support the offshore renewables industry. The port already provides facilities for the transshipment and storage of components, such as all wind turbine generators (WTGs) and other component parts associated with wind farm projects. Due to the increasing size of the components and vessels used by the offshore renewables industry, the Port of Dundee Limited is proposing to undertake a suite of works at the Port of Dundee and Lady Shoal approach channel in order to accommodate the increasing needs of the offshore renewables industry.

The suite of works that comprise the Proposed Development includes the following (see **Figure 1-1**):

- Deepening of the approaches to DunEco Quay and Prince Charles Wharf (PCW) to -6.3m CD and -6.8m CD, respectively, and extension to the PCW berth pocket to -10.3m CD;
- A 34,000m² extension of the existing lay-down area for WTG components;
- PCW remedial works; and,
- Deepening of a section of the Lady Shoal approach channel to -6.5m CD.

For further information on the Proposed development see **Section 3**.

1.2 Purpose of this report

This report provides information to support an Environmental Impact Assessment (EIA) screening request to the Marine Directorate (MD) (under the Marine Works (EIA) (Scotland) Regulations 2017 (as amended¹)) (MWRs) and Dundee City Council (DCC) (under The Town and Country Planning (EIA) (Scotland) Regulations 2017² (TCPs)).

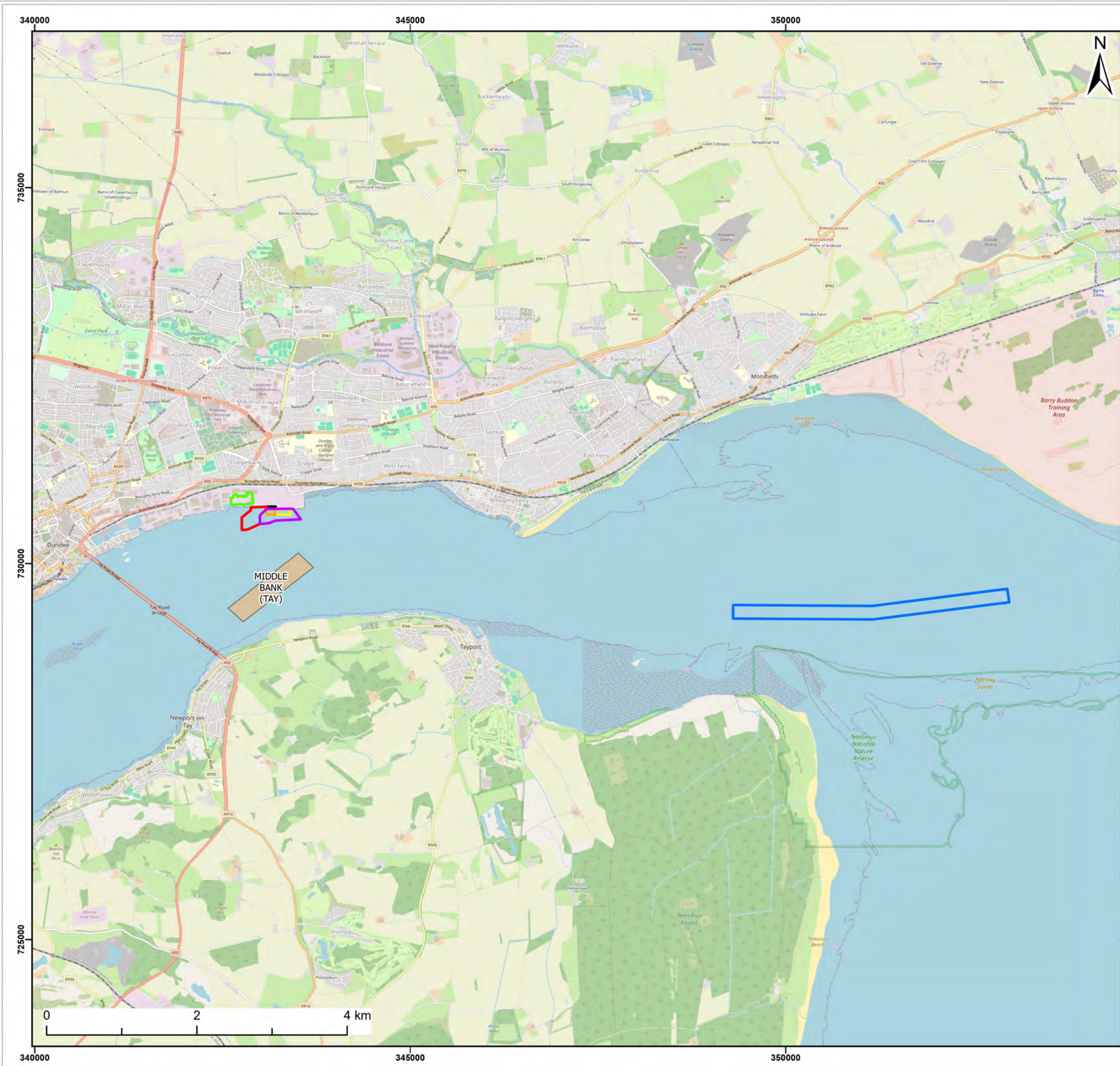
1.3 Structure of this report

This EIA Screening Report is structured as follows:

- **Section 2** provides a review of the legislation relevant to the screening for EIA;
- **Section 3** provides an outline description of the Proposed Development;
- **Section 4** provides a description of the potential environmental impacts arising from the Proposed Development and whether these are deemed to be significant;
- **Section 5** presents the conclusions of the screening exercise; and,
- **Section 6** presents the references used to inform this report.

¹ The Marine Environment (EU Exit) (Scotland) (Amendment) Regulations 2019

² The Town and Country Planning and Electricity Works (Miscellaneous Amendments) (EU Exit) (Scotland) Regulations 2019



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Legend:

- Prince Charles Wharf Approach Channel Dredge Area
- DunEco Quay Approach Channel Dredge Area
- Proposed Extension to PCW Berth Pocket
- Existing PCW Berth Pocket
- Lady Shoal Approach Channel Dredge Area
- Remedial Quay Works
- Laydown Area
- Disposal Site

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Title:

Location Plan showing the Proposed Development

Figure:	1-1	Drawing No:	PC6550-RHD-XX-ZZ-DR-Z-0001			
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2 Enabling and EIA legislation

2.1 Enabling Legislation

2.1.1 Town and Country Planning (Scotland) Act 1997

The Town and Country Planning (Scotland) Act 1997 regulates the development of land in Scotland and provides Local Planning Authorities (LPAs) the power to approve planning proposals, preserve buildings of architectural or historical interest (Listed Buildings) and redevelop land, amongst others. The Town and Country Planning (Scotland) Act 1997 extends to the Mean Low Water Springs. DCC is the LPA.

2.1.2 The Town and Country Planning (General Permitted Development) (Scotland) Order 1992

The Town and Country Planning (General Permitted Development) (Scotland) Order 1992, as amended, grants planning permission for classes of specific types of developments.

2.1.3 Marine Scotland Act 2010

Part 4 of the Marine Scotland Act 2010 provides a framework for the marine licensing system for those 'licensable marine activities' undertaken within Scottish waters below Mean High Water Springs. The MD is the regulator for marine licensing in Scottish inshore and offshore waters.

2.2 EIA Legislation

The following regulations apply:

1. Marine Works (EIA) (Scotland) Regulations 2017 (as amended); and,
2. The Town and Country Planning (EIA) (Scotland) Regulations 2017 (as amended).

For the purposes of this report, these regulations are termed the 'EIA Regulations'. The EIA Regulations contain two Schedules that identify projects that are considered EIA development, and whether an EIA is mandatory or whether this is dependent upon set thresholds and criteria, as follows:

- Schedule 1: development of this type requires that an EIA is undertaken; and,
- Schedule 2: development of this type may require that an EIA is undertaken depending on the scale of the development, its characteristics and the sensitivity of the environment in which the development will take place.

It has been concluded that the Proposed Development is not a Schedule 1 Development under the EIA Regulations, and falls under Schedule 2. The reasons for this are outlined in more detail below.

Paragraph 8 of Schedule 1 of the MWRs states:

(1) Inland waterways and ports for inland-waterway traffic which permit the passage of vessels of over 1,350 tonnes.

(2) Trading ports, piers for loading and unloading connected to land and outside ports (excluding ferry piers) which can take vessels of over 1,350 tonnes.

Paragraph 21 of the MRWs and Paragraph 24 of the TCPRs of Schedule 1 states:

Any change to or extension of projects listed in this schedule where such a change or extension in itself meets the thresholds, if any, or description of projects set out in this schedule.

Paragraphs 21 and 24 of the MRWs and TCPRs respectively, as outlined above, are to be read in conjunction with paragraphs 8(1) and 8(2). The Proposed Development does not fall under paragraphs 8(1) and 8(2) of schedule 1; 8(1) does not apply as the development is not for an “inland waterway” or a “port for inland waterway traffic”, and 8(2) is aimed at the provision of new “ports” or “piers” with potential to take large vessels. That is not the case with regard to the Proposed Development. The reference to piers (paragraph 8(2)) is not relevant as it refers to piers outside of, i.e. not part of, an existing port. The construction elements of the Proposed Development are wholly within the Port of Dundee’s existing harbour area. The proposed works at the Port of Dundee are concerned with the improvement of existing infrastructure at a port, which already provides for vessels of over 1,350 tonnes. The works are not to form a new port which can take vessels of over 1,350 tonnes, or to increase the capacity of a port such that in future it can take vessels of over 1,350 tonnes. As such, paragraphs 21 and 24 of the MRWs and TCPRs respectively are not considered relevant as these relate only to changes or extensions to the type of projects listed in schedule 1 which itself does not apply to the proposed works.

It is considered the Proposed Development falls under Schedule A2 of the MWRs and Schedule 2 of the TCPRs as per the below criterium:

10 (g) Construction of harbours and port installations, including fishing harbours (unless included in schedule 1) – where the area of works is greater than 1 hectare;

Schedule 3 of the EIA Regulations sets out the criteria that should be considered for deciding whether a project should be screened as EIA development (see **BOX 1**).

Taking these criteria into account, Screening Opinions are sought from the MD under the MWRs and DCC under the TCPRs. In accordance with Schedule 3 of the EIA Regulations, this request comprises the following information:

- A chart or map (or both) sufficient to identify the location of the project and of the regulated activity (**Section 3** and **Figure 1-1**).
- A description of the project, including in particular:
 - o a description of the physical characteristics of the whole project and, where relevant, of demolition works (**Section 3**); and,
 - o a description of the location of the project, with particular regard to the environmental sensitivity of geographical areas likely to be affected (**Section 4**).
- A description of the aspects of the environment likely to be affected by the project (**Section 4**).
- A description of any likely significant effects of the project on the environment (**Section 4**), to the extent of the information available on such effects resulting from:
 - o The expected residues and emissions and the production of waste, where relevant; and,
 - o The use of natural resources, in particular soil, land, water and biodiversity.

Such further information or representations as the applicant may wish to provide or make, including a description of any features of the project or measures envisaged to avoid or prevent what might otherwise have been significant adverse effects on the environment (**Section 4**).

Box 1: Schedule 3 of the EIA Regulations

Characteristics of works

1. The characteristics of works must be considered having regard, in particular, to—
 - a) the size and design of the works;
 - b) cumulation with other existing works and/or approved works;
 - c) the use of natural resources, in particular land, soil, water and biodiversity;
 - d) the production of waste;
 - e) pollution and nuisances;
 - f) the risk of major accidents and/or disasters which are relevant to the project concerned, including those caused by climate change, in accordance with scientific knowledge;
 - g) the risks to human health (for example due to water contamination or air pollution).

Location of works

2. The environmental sensitivity of geographical areas likely to be affected by works must be considered having regard, in particular, to—
 - a) the existing and approved land use;
 - b) the relative abundance, availability, quality and regenerative capacity of natural resources (including soil, land, water and biodiversity) in the area and its underground;
 - c) the absorption capacity of the natural environment, paying particular attention to the following areas—
 - I. wetlands, riparian areas, river mouths;
 - II. coastal zones and the marine environment;
 - III. mountain and forest areas;
 - IV. nature reserves and parks;
 - V. European sites and other areas classified or protected under national legislation;
 - VI. areas in which there has already been a failure to meet the environmental quality standards, laid down in Union legislation and relevant to the project, or in which it is considered that there is such a failure;
 - VII. densely populated areas;
 - VIII. landscapes and sites of historical, cultural or archaeological significance.

Characteristics of the potential impact

3. The likely significant effects of the works on the environment must be considered in relation to criteria set out in paragraphs 1 and 2 above, with regard to the impact of the works on the factors specified in regulation 5(3), taking into account—
 - a) the magnitude and spatial extent of the impact (for example geographical area and size of the population likely to be affected);
 - b) the nature of the impact;
 - c) the transboundary nature of the impact;
 - d) the intensity and complexity of the impact;
 - e) the probability of the impact;
 - f) the expected onset, duration, frequency and reversibility of the impact;
 - g) the cumulation of the impact with the impact of other existing and/or approved works;
 - h) the possibility of effectively reducing the impact.

3 Description of the Proposed Development

One of the primary uses of the Port of Dundee is the service and support of the offshore renewables industry. The port provides facilities for the transshipment and storage of components associated with wind farm projects. Due to the increasing size of the components and vessels used by the offshore renewables industry, the Port of Dundee is proposing to undertake works to accommodate changes in the industry, including deepening a section of the Lady Shoal approach channel (see **Figure 1-1**).

The Proposed Development would include the following components:

- Deepening of the approaches to DunEco Quay and PCW to -6.3m CD and -6.8m CD, respectively, and extension of the PCW berth pocket to -10.3m CD (see **Figure 3-1** Error! Reference source not found.);
- A 34,000m² extension of the existing lay-down area for WTG components (see **Figure 3-1**);
- PCW remedial works (see **Appendix A**); and,
- Deepening of a section of the Lady Shoal approach channel to -6.5m CD (see **Figure 3-2**).

3.1 Construction Phase

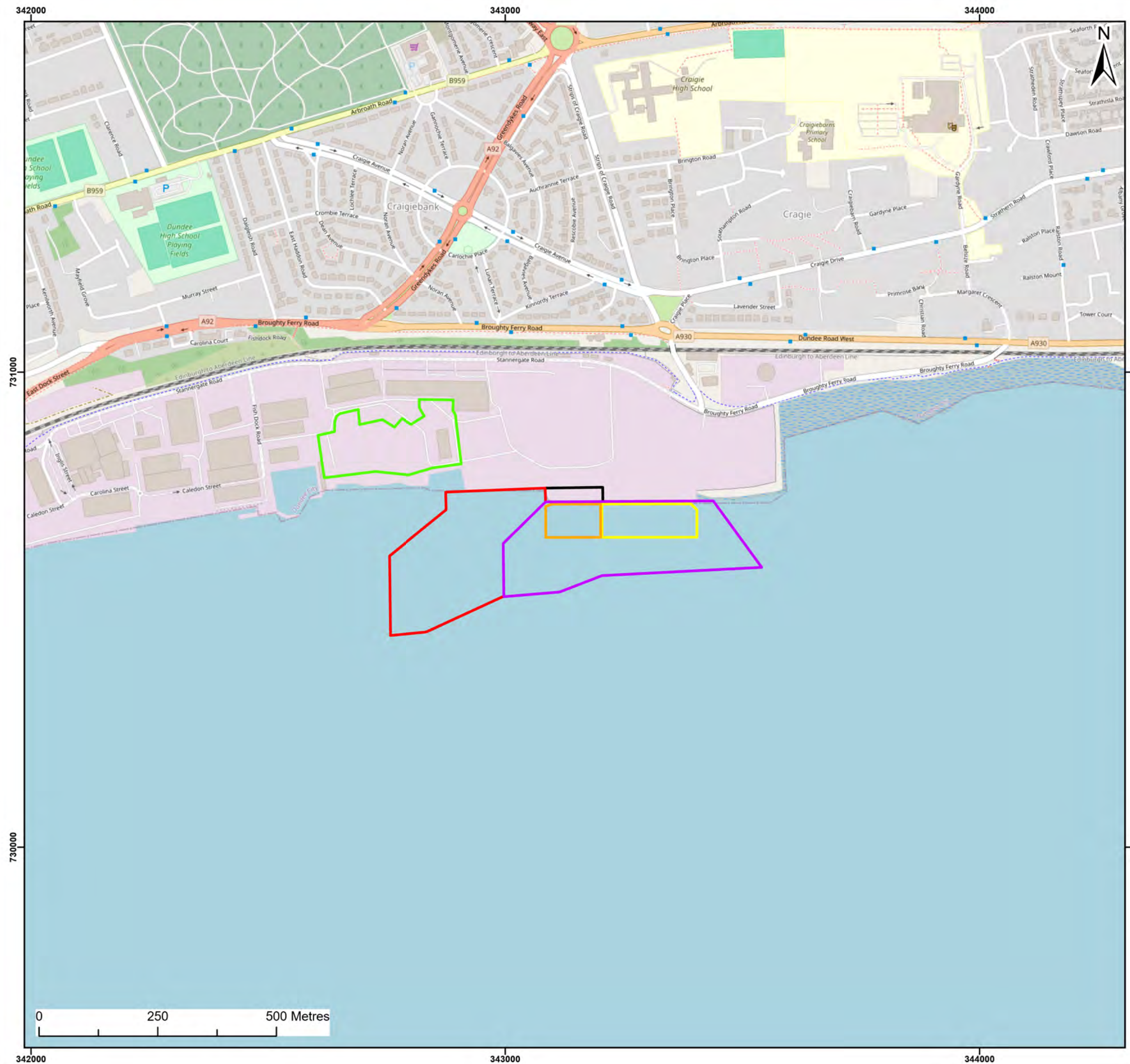
3.1.1 Deepening of the approaches to DunEco Quay and PCW, and extension of the PCW berth pocket

The DunEco Quay approach is proposed to be deepened to -6.3m CD and the PCW approach to -6.8mCD. In addition, the existing PCW berth pocket would be widened to 70m and extended to the east along the PCW, with the extension deepened to -10.3m CD.

From previous sampling, it is considered that the material will primary be sand and silt; however, it is possible that some boulder clay may be encountered. All dredging, with the exception of a very small area in the south-west corner of the dredge footprint, is within the Port of Dundee Limited's licenced maintenance dredge area. The proposed dredging would generate approximately 78,100m³ of material respectively, which includes an overdredge tolerance of 0.3m, and which would be disposed of at the existing licenced Middle Bank disposal site (see **Figure 1-1**). The majority of the dredge depth would be between approximately 0.5m to 2.5m.

3.1.2 Western extension of the lay-down area

An area of approximately 34,000m² within the Port of Dundee is proposed to be cleared to extend the existing lay down area, with the existing buildings and infrastructure removed. Thereafter, a stone hardstanding surface would be installed, along with new drainage and lighting as required. Any new lighting will be directed downward and away from the Firth of Tay in order to minimise potential impacts on local ecology and designated sites. Existing outfalls will be retained wherever possible. There are no marine works associated with this element of the works. The majority of materials will be transported by sea to reduce traffic (Heavy Goods Vehicles (HGVs)) on the roads.



- Legend:
- Prince Charles Wharf Approach Channel Dredge Area
 - DunEco Quay Approach Channel Dredge Area
 - Proposed Extension to PCW Berth Pocket
 - Existing PCW Berth Pocket
 - Remedial Quay Works
 - Laydown Area

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Port of Dundee Limited	Port of Dundee Capital Dredge and Quay Improvement Works

Title:

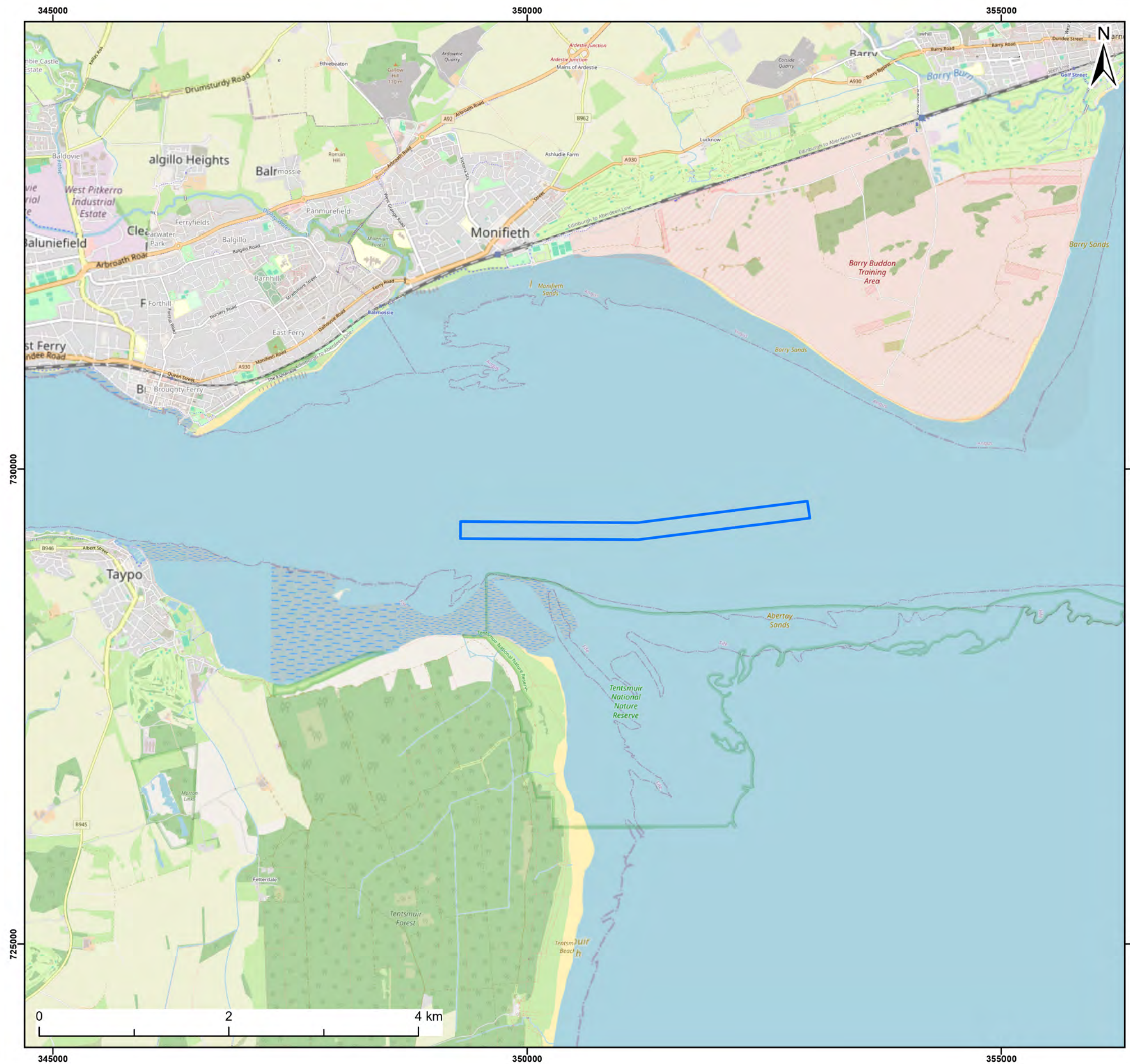
Proposed Works at the Port of Dundee

Figure: 3-1 Drawing No: PC6550-RHD-XX-ZZ-DR-Z-0002

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Legend:
 Lady Shoal Approach Channel Dredge Area

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Title:
Location of Lady Shoal Approach Channel Dredge

Figure: 3- 2 Drawing No: PC6550-RHD-XX-ZZ-DR-Z-0003

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Co-ordinate system: British National Grid



3.1.3 PCW remedial works

The existing retaining wall, to the rear of the quay wall, will be retained and a pressure relieving slab provided behind the retaining wall using land-based equipment. A 105m section of piled wall along the front of the PCW quay will be installed. Localised excavation may be required to remove any obstructions, using either land-based long reach excavators or dredging equipment, as appropriate, and fill will be added as required to bring to a level in front of the wall to -10m CD.

3.1.4 Deepening of a section of the Lady Shoal approach channel

A section of the Lady Shoal approach channel would be dredged, targeting high spots to create a uniform depth of -6.5m CD. Dredge depth would mostly be less than 1m and the dredge volume would be approximately 160,000m³ plus an overdredge allowance, which has yet to be determined. Dredging will likely be undertaken by a back hoe dredger, with the dredged material being disposed offshore at Middle Bank disposal site. Sediment sampling results show that this material will be predominantly sand with some silt.

3.1.5 Outline of construction programme

The works at the Port of Dundee are anticipated to take up to nine months to complete. Within that time period, piling works are anticipated to take up to 35 days. The detailed dredge methodology has not yet been confirmed; however, a conservative estimate of dredging period is up to 30 weeks dependant on the size of dredger deployed. Within that 30 week period, the Lady Shoal approach channel dredge would be undertaken by backhoe dredger and take up to 30 days to complete.

3.2 Description of the Operational Phase

The Proposed Development will not change the number or type of vessel berthing at the Port of Dundee; however, will allow for vessels with a greater draft and under keel clearance to access the port. The use of the extended lay down area will reflect the existing uses of the Port of Dundee, i.e. the storage of components to support the offshore renewables industry.

There is likely to be small change in maintenance dredging effort at the port; however, all dredging would remain within the existing licenced maintenance dredge area. It is not yet known whether maintenance dredging would be required to maintain the deepened section of the Lady Shoal approach channel; however, given the fast-flowing currents in this area, this requirement is considered unlikely. A qualitative assessment, using the findings of the numerical modelling, will be undertaken to determine whether maintenance dredging is required.

4 Description of potential environmental impacts

4.1 Introduction

This section provides an overview of the potential impacts that could arise as a result of the Proposed Development during the construction and operational phases, and, where applicable, describes measures that have been identified to avoid or mitigate these impacts in order to prevent significant effects.

In addition to the measures set out in the following chapters to avoid or mitigate any adverse effects that could arise as a result of the Proposed Scheme, the Port of Dundee Limited is committed to the use of best practice techniques and due diligence regarding construction projects. The following pollution prevention guidelines are relevant to the Proposed Development and would be adhered to during dredging/disposal and construction:

- Guidance for Pollution Prevention (GPP) 1: Understanding your environmental responsibilities – good environmental practices;
- GPP 5: Works and maintenance in or near water;
- PPG 6: Working at construction and demolition sites;
- Pollution Prevention Guidance (PPG) 7: Safe storage - The safe operation of refuelling facilities;
- GPP 8: Safe storage and disposal of used oils;
- GPP 13: Vehicle washing and cleaning (April 2017);
- GPP 21: Pollution incident response planning;
- GPP 22: Dealing with spills; and,
- CIRIA Coastal and Marine Environmental Site Guide (second edition) (CIRIA report C744).

4.2 Estuarine processes

4.2.1 Existing environment

4.2.1.1 Bathymetry

The Proposed Development is in the Firth of Tay, which extends from the confluence of the Rivers Earn and Tay, opening into the North Sea beyond Buddon Ness on the north shore and Tentsmuir Point on the south shore. Its channel is 37km long, has a maximum width of 5km, at Invergowrie to the west of Dundee, and a maximum depth of 30m, at Broughty Ferry. Admiralty Chart 2006 shows that the subtidal bed adjacent to the Port of Dundee slopes down to between -6m CD and -8m CD. From the Port of Dundee to Broughty Ferry, the centre of the channel is on average -11m CD to -13m CD with small pockets reaching -16m CD. The Lady Shoal approach channel has a maximum depth of approximately -7m CD and shallows up the flanks to the north and south to a minimum of -3m CD.

4.2.1.2 Tidal currents and waves

The mean tidal range at Dundee is 4.5m for spring tides and 2.3m for neap tides. In addition, the maximum height of the tide can be influenced by up to 2m of wind generated increased levels between the outer Tay and Newburgh. The Firth of Tay is characterised by powerful tidal currents (Bates *et al.*, 2004). Tidal current

strength and direction are heavily influenced by the large shallow sandflats and sand banks. Maximum tidal velocities of 1.9m/s have been recorded on spring tides in the narrower channel west of Broughty Ferry (Neill *et al.*, 2000). It has been estimated that up to 60% of the volume of the Firth of Tay ebb flow is exchanged with the sea each tidal cycle and that full exchange would be achieved after 5-6 tides (Charlton, 1980).

The inner parts of the Firth of Tay are largely sheltered from wave action, while the outer areas are exposed to strong wave activity (and strong tidal streams), giving rise to complex patterns of erosion and deposition of the sand banks at the mouth of the estuary (Ferentinos and McManus, 1981).

4.2.1.3 Bedload sediment transport

Sand banks are present within the Firth of Tay, grading into the intertidal mudflats and sandflats to form part of a dynamic sediment transport system. The sand banks are primarily located in the channel in the upper Firth of Tay and in the central section of the estuary between Invergowrie and Broughty Ferry. Large areas of the Firth of Tay are also sculpted into sand waves, particularly in the subtidal channel off Dundee, east of the Tay Rail Bridge and west of Broughty Ferry.

The sand waves in the central channel east of the Tay Road Bridge are asymmetrical with their steeper slopes facing the west. This indicates that net sediment transport is flood dominated. To the south of the main channel between the Tay Road Bridge and Tayport, the large shallow area is dominated by asymmetric waves with an ebb dominated net sediment transport. To the west of the Tay Rail Bridge the sand waves are dominantly asymmetric and ebb dominant (and/or river flow dominated).

4.2.1.4 Suspended sediment concentrations

The powerful tidal currents seen in the estuary generate high suspended sediment load (Bates *et al.*, 2004).

4.2.2 Potential impacts

4.2.2.1 During construction

Potential impacts of the Proposed Development on estuarine processes during construction relate to the dredge activity at the Port of Dundee and the Lady Shoal approach channels, and comprises:

- Disturbance of sediment during capital dredging, resulting in localised and short-term increases in suspended sediment concentrations.
- Deposition of sediment that is entrained within the plume will have the potential to become deposited on the estuary bed as it settles through the water column.

These potential impacts would be short-term and temporary, lasting for the duration of the dredging activity only. Modelling will be undertaken to confirm the extent and duration of any resultant changes in suspended sediment and sediment deposition. Deposited sediment would be continually resuspended with the tidal currents and bedload transport processes following the cessation of dredging, resulting in a reversible impact. It is not, therefore, considered that construction phase impacts on estuarine processes within the Firth of Tay would be significant.

4.2.2.2 During operation

Potential impacts during operation relate to the presence of the deepened approaches and Lady Shoal channel, and for any changes to the maintenance dredge regime. The change in estuarine geometry may

result in changes to waves and tidal currents, which could potentially affect the sediment transport mechanisms and / or estuary bed morphology; however, given the shallowness of the dredge, this is considered very unlikely.

Maintenance dredging at Port of Dundee is currently undertaken. Whilst the proposed deepening of the DunEco and PCW approaches may increase the volume of maintenance dredging required, this is not expected to be significantly different to the existing situation. It is therefore anticipated that any impacts arising from the minor changes to maintenance dredging requirement because of the Proposed Development within these areas would not be discernible above current levels.

It is not yet known whether maintenance dredging would be required to maintain the deepened section of the Lady Shoal approach channel; however, given the fast-flowing currents in this area, this requirement is considered unlikely.

Qualitative assessment, using the findings of the numerical modelling, will be undertaken to determine the likely maintenance dredging requirement.

4.2.3 Summary

Overall, potential impacts from changes to estuarine processes are not considered to be significant.

4.3 Marine water and sediment quality

4.3.1 Existing environment

4.3.1.1 Water quality

Water quality is managed through the Water Environment and Water Services (Scotland) Act 2003 which enables the provision for or in connection to implementing the Water Framework Directive (2000/60/EC) through Scottish law³. The Proposed Development is within the Lower Tay Estuary, transitional waterbody (ID: 200438) and downstream from the Upper Tay Estuary, transitional waterbody (ID: 200439) in the Scotland River basin district. The current 2022 overall condition of both waterbodies are Good with an ecological status of Good the last chemical status was reported in 2013 as Good⁴.

Water quality is also monitored at Bathing Waters designated through the Bathing Water Directive (2006/7/EC) enacted in Scotland by the Bathing Waters (Scotland) Regulations 2008⁵. The closest bathing waters are Broughty Ferry and Monifieth approximately 3km and 6km east of the Proposed Development respectively. Broughty Ferry is currently classified as Excellent and Monifieth Good.

There are no Shellfish Waters within the Firth of Tay under The Water Environment (Shellfish Water Protected Areas: Designation) (Scotland) Order 2013.

³ *Water Environment and Water Services (Scotland) Act 2003* (legislation.gov.uk)

⁴ <https://www.sepa.org.uk/data-visualisation/water-classification-hub/>

⁵ <https://bathingwaters.sepa.scot/locations-and-results/>

4.3.1.2 Sediment quality

Sediment sampling will be undertaken prior to dredging works, to measure any contaminant presence against MD's Action Levels.

4.4 Potential impacts

4.4.1.1 During construction

Potential impacts on marine water and sediment quality during construction include:

- Surface water run-off from land-based construction activities;
- Potential release of historic contamination in sediments during dredging and disposal; and,
- Accidental spills or leaks from construction plant or vessels.

The proposed dredging has the potential to mobilise historic contamination. Sediment sampling and analysis will be undertaken within the area to be dredged and the results compared to the MD's Action Levels. In addition, a Best Practicable Environmental Option report will be produced confirm suitable disposal routes.

Surface water run-off and accidental spills and leakages are standard construction industry hazards and are commonly and routinely managed using industry standard practices and procedures, which will be implemented throughout the duration of the construction phase of the works.

4.4.1.2 During operation

Appropriate surface water drainage will be installed as part of the western lay down extension to manage surface water run-off. Any requirement for maintenance dredging would be within the existing licenced maintenance dredge area. No other operational impacts are anticipated.

4.4.2 Summary

Overall, and given current industry practices and procedures, potential impacts on marine water and sediment quality are not considered to be significant.

4.5 Ground conditions

4.5.1 Existing environment

Potential sources of contamination include historical and current land uses, e.g. from the storage of road salt. These have the potential to present a risk to sensitive receptors associated with the site and surrounding area.

The Port of Dundee is underlain by the Dundee groundwater (ID: 150624), in the Scotland River Basin District. Dundee ground water covers 169.4km² in area, the current status of the waterbody is good (2022)⁶.

4.5.2 Potential impacts

4.5.2.1 During construction

Potential impacts on ground conditions during construction include:

- Introduction of new sources of contamination, i.e. from the storage of fuels and chemicals during the construction phase or via spillages and leaks; and,
- Direct impacts to groundwater receptors from possible sources of contamination by the creation of new pathways as a result of new drainage and piling works.

Construction works will follow best practice and guidance to avoid potential risks to human health and ecology from any potential ground contamination. This includes an intrusive ground investigation that will allow appropriate assessments to be undertaken to ascertain if contaminants are present at concentrations that could result in harm to human health and controlled waters. If unacceptable risks are identified, a detailed remediation strategy will be designed and implemented for the Proposed Development.

4.5.2.2 During operation

Potential impacts on ground conditions during operation include:

- Indirect impacts may occur as a result of leakages of stored materials or spillages of materials stored in the extended laydown area.

The extended area would be managed under existing management plans and systems that are in place for the port.

4.5.3 Summary

Overall, potential impacts on ground conditions are not considered to be significant and can be managed using standard practices.

4.6 Water resources and flood risk

4.6.1 Existing environment

4.6.1.1 Coastal flooding

The terrestrial elements of the Proposed Development are in a potential vulnerable area⁷. Flood mapping by SEPA⁸ identified the PCW has a high likelihood of coastal flooding, with a 10% chance of flooding each year. There are various records of the Port of Dundee experiencing coastal flooding from 1868 – 1924. The last reported surface water flooding occurred in 2010⁷.

4.6.1.2 Surface water flooding

The Port of Dundee is shown to have a high to medium likelihood of surface water flooding with a 10% to 0.5% chance of flooding each year. The Port of Dundee works are in a medium likelihood area with a 0.5% chance of surface water flooding.

4.6.2 Potential impacts

4.6.2.1 During construction

Potential impacts on water resources and flood risk during construction include:

⁷ https://www2.sepa.org.uk/frmstrategies/pdf/pva/PVA_07_13_Full.pdf

⁸ <https://scottishepa.maps.arcgis.com/>

- Risk to construction workers from coastal or surface water flooding.

Best practice measures will be adopted to avoid flood risk to construction workers during the construction phase.

4.6.2.2 During operation

Potential impacts on water resources and flood risk during operation include:

- Flood risk to the extended laydown area; and,
- Laydown area changes in flood risk elsewhere.

Under SEPA's Flood Risk and Land Use Vulnerability Guidance⁹ docks, marinas and wharves are categorised as water compatible, and unlikely to have a significant impact on flood risk.

The design of the Proposed Development will take account of climate change and sea level rise, in line with best practice in respect of wave and flood periods (no less than a 1 in 100 year event of either wave overtopping or flood will be designed for).. Furthermore, the provision of improved surface water drainage, using the best available technology, is considered to improve the situation with regards to pluvial flood risk. The proposed Development does not have the potential to affect the flood risk of the surrounding area.

4.6.3 Summary

Overall, potential impacts on water resources and flood risk are not considered to be significant.

4.7 Traffic and transport

4.7.1 Existing environment

The surrounding area of the Port of Dundee contains a mixture of industrial and residential areas with a mixture of strategic and local roads. To the north of there is Stannergate Road allowing for vehicular access. The nearest residential property is in excess of 200m from the Proposed Development at its closest point, separated from the development by the A930, an operational railway and Stannergate Road.

The neighbouring Dundee Harbour hosts a mix of residential, retail, leisure, and commercial facilities, as well as hotels and serviced apartments. The Harbour hosts various Museums and Landmarks. At the western end of the Harbour is Dundee Waterfront Gardens and the Royal Research Ship Discovery permanently berthed at Discovery Point.

4.7.2 Potential impacts

4.7.2.1 During construction

Potential impacts on traffic and transport during construction include:

- Movements of materials and construction workers to and from the site.

The works to be undertaken at the Port of Dundee are anticipated to take up to nine months. The majority of construction materials would be delivered to site by sea. Any remaining construction traffic would be managed through a Construction Traffic Management Plan, implementing standard industry best practice

⁹ <https://www.sepa.org.uk/media/nvnotwqd/land-use-vulnerability-guidance.docx>

in order to minimise potential impacts on the surrounding network. Any potential effects would be temporary, lasting only for the duration of the construction works.

4.7.2.2 During operation

There would be no changes to the operation of the Port of Dundee and therefore no changes to operational traffic.

4.7.3 Summary

Overall, potential impacts to traffic and transport are not considered to be significant.

4.8 Noise and vibration

4.8.1 Existing environment

The immediate surrounding area around the Port of Dundee comprises existing industrial premises within the Port of Dundee and residential dwellings approximately 200m north at their closest point along Broughty Ferry Road. The closest human receptors to the proposed piling works are approximately 300m north, located off Kinnordy Terrace.

4.8.2 Potential impacts

4.8.2.1 During construction

Potential impacts on noise and vibration during construction include:

- Installation of piles;
- Installation of beams and deck panels;
- Dredging; and,
- Vessels arriving with construction materials.

The only noisy activity proposed would be the installation of the piles. The proposed piling would be temporary and short term, lasting only for the duration of the piling works, i.e. up to 35 days, during which the piling would not be continuous. Best Practice Measures will be implemented in during construction phase to manage potential noise impacts to human receptors.

Vibration impacts due to piling activities would not affect residential premises due to the separation distance from the Proposed Development, approximately 200m.

4.8.2.2 During operation

Noise levels would not change as a result of the Proposed Development as it would not change the day to day operation of the port.

4.8.3 Summary

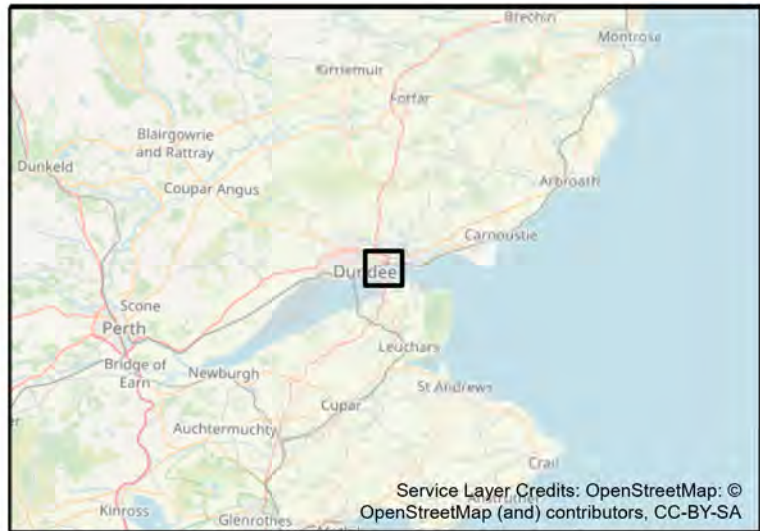
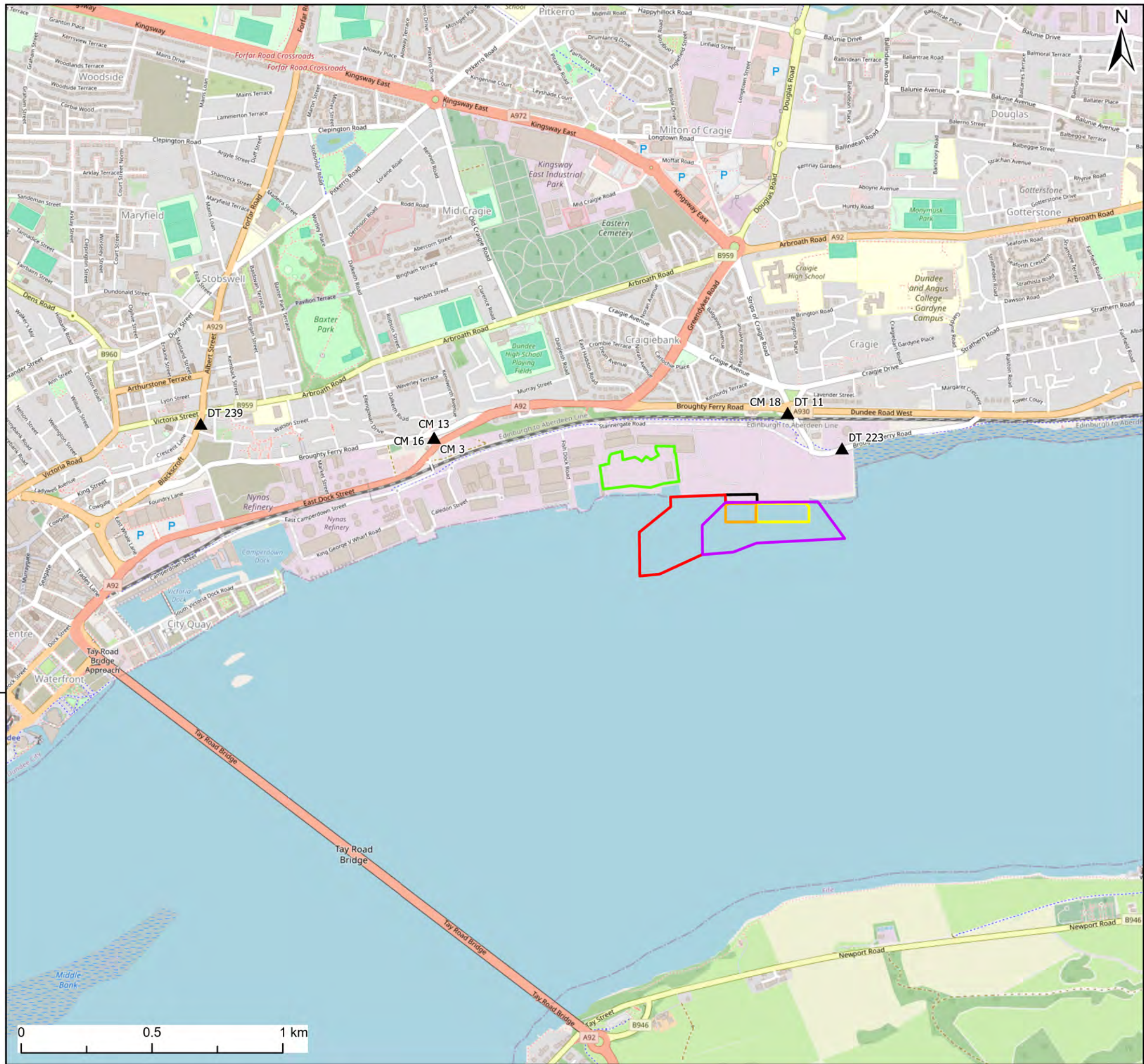
Overall, potential impacts from noise and vibration are not considered to be significant.

4.9 Air quality

4.9.1 Existing environment

DCC declared an air quality management area (AQMA) in 2006 for Nitrogen Dioxide (NO₂) annual Air Quality Objective. In 2010, the AQMA was amended to include the mean Air Quality Objective for particulate matter (PM¹⁰) and again in 2013 to include 1-hour mean for NO₂¹⁰ (**Figure 4-1**).

¹⁰ https://www.dundee.gov.uk/sites/default/files/publications/dcc_apr2023_nov23_final.pdf



- Service Layer Credits: OpenStreetMap: © OpenStreetMap (and) contributors, CC-BY-SA
- Legend:
- Prince Charles Wharf Approach Channel Dredge Area
 - DunEco Quay Approach Channel Dredge Area
 - Proposed Extension to PCW Berth Pocket
 - Existing PCW Berth Pocket
 - Remedial Quay Works
 - Laydown Area
 - Air Quality Monitoring Locations

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Client:	Project:
Port of Dundee Limited	Port of Dundee Capital Dredge and Quay Improvement Works

Title:

DCC Air Quality Monitoring Station

Figure: 4-1 Drawing No: PC6550-RHD-XX-ZZ-DR-Z-0016

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
P01	10/12/2024	GC	RG	A3	1:15,000

Co-ordinate system: British National Grid



Air pollutant concentrations in the surrounding area showed a long-term improvement with no site exceeding the Scottish mean objective in the recorded time period. There are improvements in NO₂ in other areas across the AQMA with no exceedance of the hourly mean objective 60µg/m³ identified in 2020 in any location.

The closest automatic PM₁₀ monitoring site to the Proposed Development is Stannergate (see **Table 4-1**). Although the mean PM₁₀ concentration was recorded higher in 2021 and 2022 than previous years, the levels remained below the Scottish Air Quality Objective level for PM₁₀ annual mean¹¹.

Table 4-1 Monitored concentrations PM₁₀ at Stannergate automatic monitoring site

Year	2015	2016	2017	2018	2019	2020	2021	2022
Stannergate (Osiris monitor) (µg/m ³)	18.8	14.6	9.8	8.3	9.2	8.1	11.5	10.1

Background concentrations of NO₂ and PM₁₀ on and around the Port of Dundee, obtained from the Dundee Local Air Quality Management (LAQM) Annual Progress Report 2023, for 2022 are presented in **Table 4-2** and **Table 4-3**, respectively, compared with air quality standard.

Table 4-2 Annual mean NO₂ air pollutant concentrations for 2022

Monitoring Station	NO ₂ Annual mean, µg m ⁻³
DT 11 Broughty Ferry Rd (141)	23.1
DT 223 Broughty Ferry Rd – Lower (Cycle sign)	8.9
DT 239 Princes St (185)	26.4
Air Quality standard	40

Table 4-3 Annual mean NO₂ air pollutant concentrations for 2022

Monitoring Station	PM ₁₀ Annual mean, µg m ⁻³
CM 3 Broughty Ferry Rd (TEOM/Fidas)	11.8
CM 13 Broughty Ferry Rd (Partisol)	11.5
CM 16 Broughty Ferry Rd (OSIRIS)	11.6
CM 18 Stannergate (OSIRIS)	16.8
Air Quality standard	18

The prevailing wind blows from the west-north-west to south-west (**Figure 4-2**).

¹¹ 50 µg/m³, not to be exceeded more than 7 times a year - 24-hour mean 18 µg/m³ - Annual mean

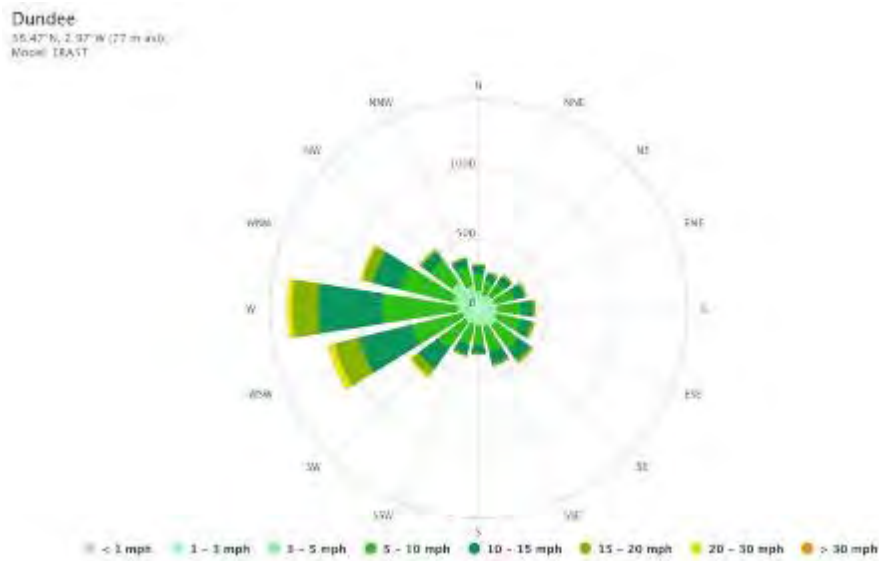


Figure 4-2 Wind rose for Dundee (30 year average)

The closest human receptors to the Proposed Development lie approximately 200m to the north along the A930. Dundee and Angus College and Cragiebarns primary school are located in Craigie approximately 800m to the Northeast.

With regards to ecological receptors, there are a number of national and international designated sites within 1km of the Proposed Development however, none are sensitive to impacts to air quality, given their intertidal nature or that they support breeding and overwintering birds.

4.9.2 Potential impacts

4.9.2.1 During construction

Potential impacts on air quality during construction include:

- Emissions related to construction plant;
- Emissions related to construction related traffic;
- Emissions related to dredge vessels operation; and,
- Construction dust arising from construction works.

Application of the standard dust control and management techniques, as laid out in the Institute of Air Quality Management (IAQM) guidance document¹² would ensure that no significant effects arise in respect of dust or fine particulate matter.

The majority of the materials would be delivered by sea, in order to minimise the road HGV movements to and from the port, which would take place at intervals over the construction period.

Emissions from construction plant, given that emissions are now regulated by The Non-Road Mobile Machinery (Type-Approval and Emission of Gaseous and Particulate Pollutants) Regulations 2018 and the separation distance from sensitive receptors, are not considered to represent a significant effect upon air quality.

¹² <https://iaqm.co.uk/text/guidance/construction-dust-2014.pdf>

Changes as a result of dredge vessels would be a temporary impact restricted to the dredge durations only.

4.9.2.2 During operation

As there are no changes to the day to day operation of the Port of Dundee, there would be no changes to operational air emissions.

4.9.3 Summary

Overall, potential impacts to air quality are not considered to be significant.

4.10 Ornithology

4.10.1 Existing environment

The Proposed Development is in proximity to, and located within, a number of sites designated to protect nationally and internationally important bird populations, including Special Protection Areas (SPAs), Ramsar sites, and Sites of Special Scientific Interest (SSSIs). **Table 4-4** provides details of the species protected within these designations (see **Figure 4-3**). Due to the presence of European and internationally designated sites, a HRA will be undertaken to ensure that these sites and their qualifying features are not significantly affected. Potential impacts and any mitigation will be discussed and agreed with NatureScot.

Table 4-4 Nature conservation designations within 2km for which birds are a reason for designation

Site name and designation	Distance from the proposed development	Site features
Outer Firth of Forth and St Andrews Bay Complex SPA	0km from Port of Dundee	Annex 1 populations of European importance, non-breeding: - Red-throated diver (<i>Gavia stellata</i>) - Slavonian grebe (<i>Podiceps auritus</i>) - Little gull (<i>Larus minutus</i>) Annex 1 populations of European importance, breeding: - Common tern (<i>Sterna hirundo</i>) - Arctic tern (<i>Sterna paradisaea</i>)
	0km from Lady Shoal	Migratory waterfowl populations of European importance, non-breeding: - Eider - Waterfowl assemblage (long-tailed duck, common scoter, velvet scoter, goldeneye, red-breasted merganser) Migratory seabird populations of European importance, breeding: - Shag (<i>Phalacrocorax aristotelis</i>) - Gannet (<i>Morus bassanus</i>) - Seabird assemblage, breeding (puffin (<i>Fratercula arctica</i>), kittiwake (<i>Rissa tridactyla</i>), Manx shearwater (<i>Puffinus puffinus</i>), guillemot (<i>Uria aalge</i>), herring gull (<i>Larus argentatus</i>)) Seabird assemblage during the non-breeding season, including: Black-headed gull (<i>Chroicocephalus ridibundus</i>), common gull (<i>Larus canus</i>), herring gull, guillemot, shag, kittiwake, razorbill

Site name and designation	Distance from the proposed development	Site features
Firth of Tay and Eden Estuary SPA	2.9km from Port of Dundee 10km from Lady Shoal	The Firth of Tay and Eden Estuary SPA qualifies under Article 4.1 by regularly supporting populations of European importance of the Annex I species: • Bar-tailed godwit (<i>Limosa lapponica</i>) (winter) • Little tern (<i>Sternula albifrons</i>) (breeding) • Marsh harrier (<i>Circus aeruginosus</i>) (breeding) The Firth of Tay and Eden Estuary SPA further qualifies under Article 4.2 by regularly supporting populations of European importance of the migratory species: • Redshank (<i>Tringa tetanus</i>) • Greylag goose (<i>Anser anser</i>) • Pink-footed goose (<i>Anser brachyrhynchus</i>) The Firth of Tay and Eden Estuary SPA also qualifies under Article 4.2 by regularly supporting in excess of 20,000 individual waterfowl populations including nationally important populations of the following species: • Black-tailed godwit (<i>Limosa limosa islandica</i>) • Common scoter (<i>Melanitta nigra</i>) • Cormorant (<i>Phalacrocorax carbo</i>) • Dunlin <i>Calidris (alpina alpina)</i> • Eider (<i>Somateria mollissima</i>) • Goldeneye (<i>Bucephala clangula</i>) • Goosander (<i>Mergus merganser</i>) • Grey plover (<i>Pluvialis squatarola</i>) • Long-tailed duck (<i>Clangula hyemalis</i>) • Oystercatcher (<i>Haematopus ostralegus</i>) • Red-breasted merganser (<i>Mergus serrator</i>) • Sanderling (<i>Calidris Alba</i>) • Shelduck (<i>Tadorna tadorna</i>) • Velvet scoter (<i>Melanitta fusca</i>)
Firth of Tay and Eden Estuary Ramsar site	2.9km from Port of Dundee 10km from Lady Shoal	Qualifying interest features: Ramsar criterion 5: • Assemblages of international importance: Species with peak counts in winter: 27,028 waterfowl Ramsar criterion 6: • Species / populations occurring at levels of international importance. Qualifying Species/populations with peak counts in winter: pink-footed goose; greylag goose; bar-tailed godwit
Tayport – Tentsmuir Coast SSSI	0km from Port of Dundee 0km from Lady Shoal	Non-breeding • Bar-tailed godwit • Common scoter • Eider • Goosander • Pink-footed goose • Long-tailed duck • Red-breasted merganser
Inner Tay Estuary SSSI	3.9km from Port of Dundee 9km from Lady Shoal	Breeding • Bearded tit • Marsh harrier • Water rail • Breeding bird assemblage Non-breeding • Greylag goose • Pink-footed goose • Cormorant • Goldeneye

An overwintering bird survey was carried out at the Port of Dundee in November and December 2013, January, April and May 2014, and February 2018 (see **Figure 4-4**). During these surveys, 11 species of waterfowl were recorded: black-headed gull, cormorant, eider, goosander, great black-backed gull, grey heron, herring gull mute swan, oystercatcher, red-breasted merganser, and turnstone. Of the species observed black-headed gull and herring gull were the most abundant with counts of 60 and 260 in 2018 (BSG, 2020).

Most species rarely made use of rocky shore habitat, with oystercatchers on occasion using the foreshore for foraging and resting. Black-headed gulls were found to traverse the coastline, with common gull observed only in flight. Cormorants were present throughout the year in low numbers, recorded flying up and down the estuary or foraging >50m from the vantage point shown in **Figure 4-4**. Peak levels of Goosander recorded 43 individuals at rest in the estuary in January. Greylag and pink-footed geese were recorded flying high over the vantage point. Eider was recorded resting on the water >50m from the vantage point. Guillemot including juvenile birds were recorded resting on the water <50m from the vantage point. Two red-throated divers were recorded within 50m of the vantage point before moving further into the estuary. A single shag was observed in close proximity to the vantage point. Red-breasted merganser was observed at rest within the estuary, never coming closer than 100m from the vantage point.

4.10.2 Potential impacts

4.10.2.1 During construction

Potential impacts on ornithology during construction include:

- Disturbance (noise and visual) to breeding and non-breeding birds. Sources of disturbance are likely to include construction related noise (including piling), lighting, presence of people and plant / machinery and construction-related vehicular / shipping traffic, both onshore and offshore;
- Water quality impacts affecting prey availability due to the potential release of contaminants, sediment plume, and increased turbidity;
- Noise and visual disturbance at the disposal site as a result of increased number of disposal vessels during the disposal of dredge material; and,
- Displacement of prey species due to underwater noise.

Impacts during construction are expected to be short-term and temporary, limited to the construction phase only. Given the site is an operational port, it is considered that any birds present in the vicinity would be acclimatised to some degree to the activities of a port such as vessel movements and human activity. A HRA will be undertaken to determine the potential impacts on European and Ramsar sites, and to determine if any mitigation is required to minimise these. No additional effects to the SSSI would be predicted that would not be addressed by the HRA. The HRA will ensure that potential impacts are avoided or mitigated and therefore no significant effects are anticipated.

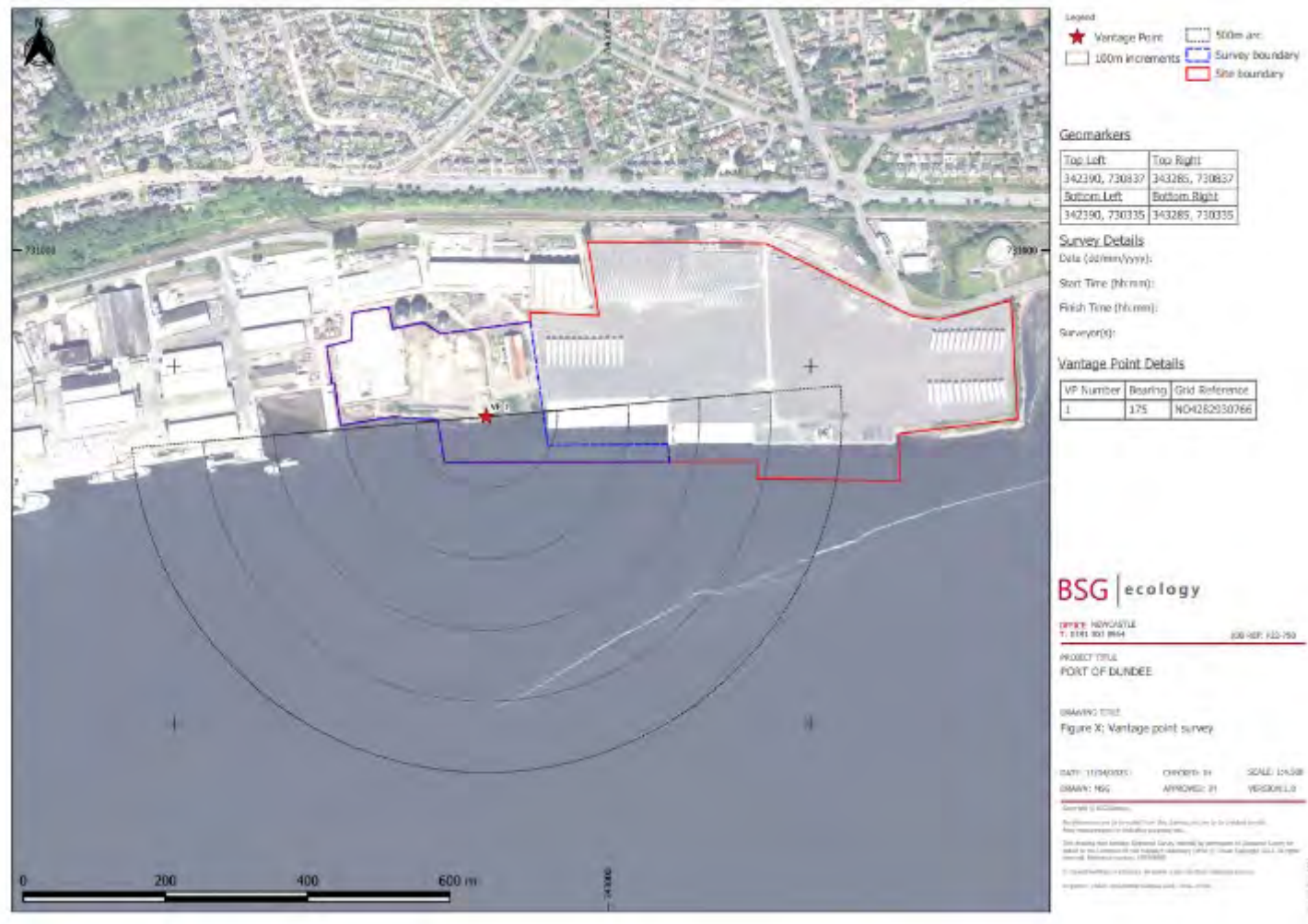


Figure 4-4 BSG survey location plan

4.10.2.2 During operation

The Port of Dundee is an operational port which would not change as a result of the Proposed Development. There is therefore no operational change that is considered likely to impact on ornithology. The use of the laydown area would be undertaken in a way that is consistent with the Port of Dundee's current operations, and though there could be a minor change in maintenance dredge requirements, this would be limited to within the existing maintenance dredge footprint at the Port of Dundee; therefore there is no substantial change in the existing environment.

It is not yet known whether maintenance dredging would be required to maintain the deepened section of the Lady Shoal approach channel; however, given the fast-flowing currents in this area, this requirement is considered unlikely. Should maintenance dredging be required, the Lady Shoal is an operational approach channel and the potential effects of the presence of maintenance dredge vessels and / or indirect impacts to water quality would be temporary and short term. The HRA will ensure any required mitigation is identified and implemented.

4.10.3 Summary

Overall, potential impacts to ornithology are not considered to be significant.

Potential impacts and any mitigation will be discussed and agreed with NatureScot via the HRA process in order to ensure there are no Likely Significant Effects.

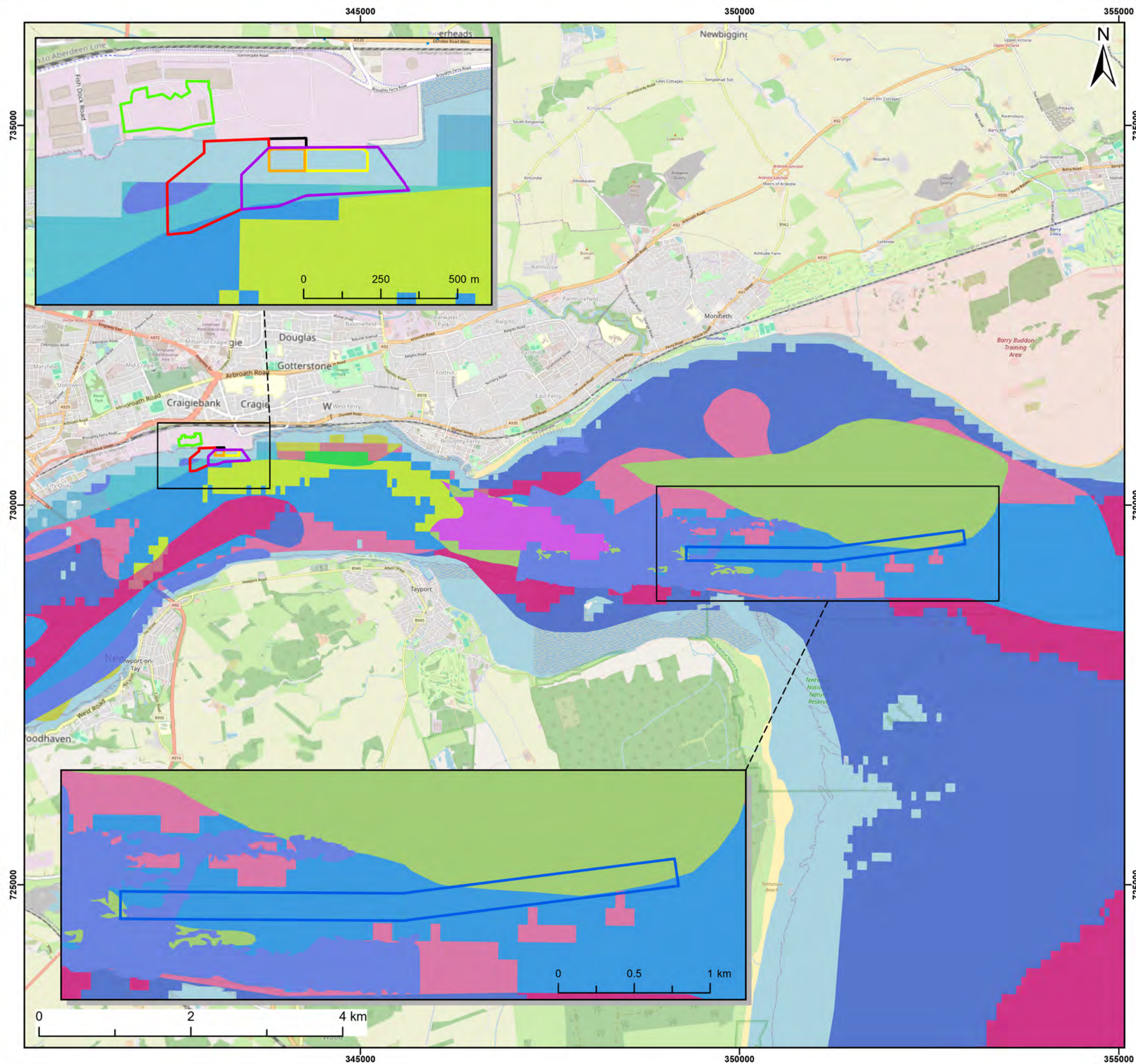
4.11 Marine benthic ecology

4.11.1 Existing environment

The Firth of Tay is encompassed within the Firth of Tay & Eden Estuary Special Area of Conservation (SAC) which qualifies for high quality estuaries, intertidal mudflats and sandflats, and subtidal sandbanks (see **Figure 4-3**). Blue mussels are a Priority Marine Feature of the Firth of Tay, along with seagrass *Zostera sp.* found intertidally. Due to the presence of the SAC, a HRA will be undertaken to ensure that this site and its qualifying features are not significantly affected. Potential impacts and any mitigation will be discussed and agreed with NatureScot.

Admiralty Chart 2006 shows the subtidal environment surrounding the port is approximately -6m CD to -8m CD. EMODnet broad-scale seabed habitat mapping suggests that the seabed within the DunEco and PCW approaches comprises circalittoral mixed sediment with several patches of infralittoral rock and biogenic reef (i.e. blue mussel beds) (**Figure 4-5**). Bates *et al.* (2004) found that just off the northern shores, out of the path of the strongest currents, the sediments become muddy sands with richer infauna dominated by oligochaete and polychaete worms.

In the outer Tay, around the vicinity of the Lady Shoal approach channel dredge area, EMODnet broad-scale seabed habitat mapping suggests the area is dominated by coarser sediments, infralittoral rock and biogenic reef (**Figure 4-5**). Bates *et al.* (2004) found that “*mussels provided an unbroken carpet over extensive areas of the seabed, including within the channel where it shallows at Lady Shoal*”. Initial findings of a benthic survey undertaken by Ocean Ecology in November 2024, confirmed the absence of any blue mussel beds within the Lady Shoal approach channel dredge footprint, and identified a small area of mussels within the dredge footprint at the port (**Figure 4-6**).



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Legend:

- Prince Charles Wharf Approach Channel Dredge Area
- DunEco Quay Approach Channel Dredge Area
- Remedial Quay Works
- Proposed Extension to PCW Berth Pocket
- Existing PCW Berth Pocket
- Lady Shoal Approach Channel Dredge Area
- Laydown Area

EUSEaMap (2023) Habitat Types (EUNIS, 2019)

- A5.13: Infralittoral coarse sediment
- A5.14: Circalittoral coarse sediment
- A5.15: Deep circalittoral coarse sediment
- A5.23 or A5.24: Infralittoral fine sand or Infralittoral muddy sand
- A5.25 or A5.26: Circalittoral fine sand or Circalittoral muddy sand
- A5.27: Deep circalittoral sand
- A5.33: Infralittoral sandy mud
- A5.35: Circalittoral sandy mud
- A5.37: Deep circalittoral mud
- A5.43: Infralittoral mixed sediments
- A5.44: Circalittoral mixed sediments
- A5.45: Deep circalittoral mixed sediments
- A5.625: [Mytilus edulis] beds on sublittoral sediment
- A5.62: Sublittoral mussel beds on sediment
- A5.6: Sublittoral biogenic reefs

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Client:	Project:
Port of Dundee Limited	Port of Dundee Capital Dredge and Quay Improvement Works

Title:

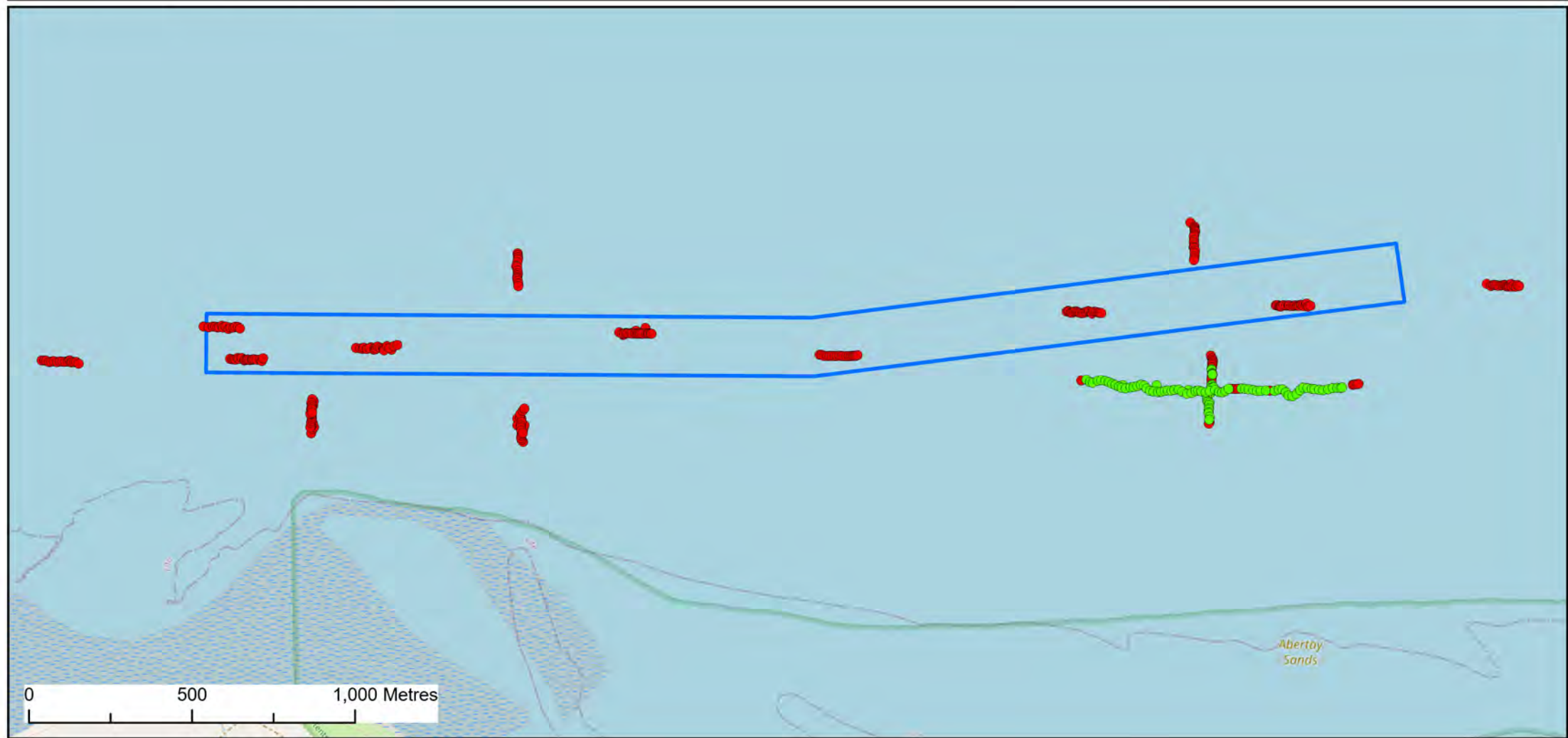
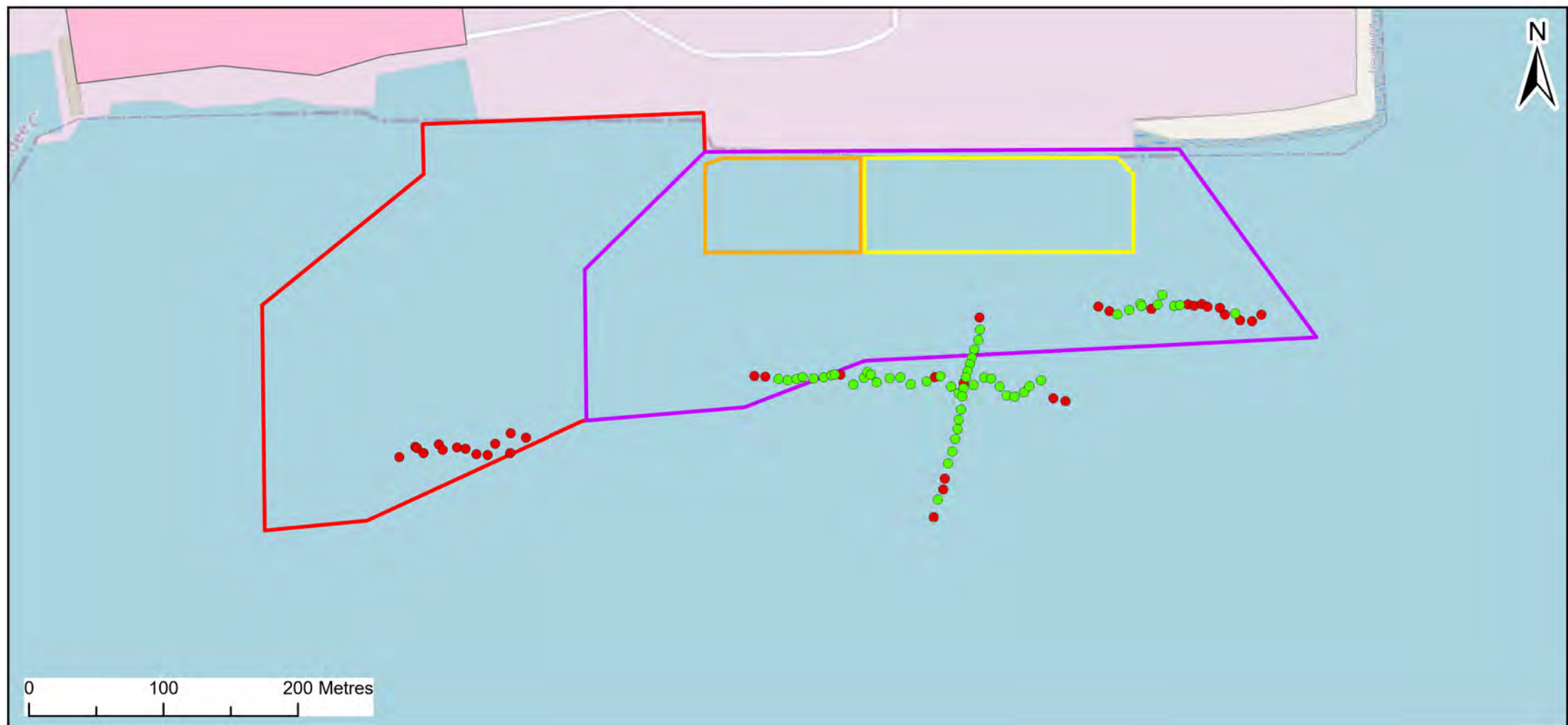
Distribution of Broadscale Habitats in the Vicinity of the Port of Dundee and Prince Charles Wharf Dredge Area

Figure:	4-5	Drawing No:	PC6550-RHD-XX-ZZ-DR-Z-0008
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Revision:	Date:	Drawn:	Checked:	Size:	Scale:
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Co-ordinate system: British National Grid

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- Legend:
- Prince Charles Wharf Approach Channel Dredge Area
 - DunEco Quay Approach Channel Dredge Area
 - Proposed Extension to PCW Berth Pocket
 - Existing PCW Berth Pocket
 - Lady Shoal Approach Channel Dredge Area
- Mussel Data
- Absent
 - Present

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Client:	Project:
Port of Dundee Limited	Port of Dundee Capital Dredge and Quay Improvement Works

Title:
Drop Down Video Mussel Data

Figure: 4-6	Drawing No: PC6550-RHD-XX-ZZ-DR-Z-0014
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Revision:	Date:	Drawn:	Checked:	Size:	Scale:
P01	10/12/2024	GC	GC	A3	

Co-ordinate system: British National Grid



4.11.2 Potential impacts

4.11.2.1 During construction

Potential impacts on marine benthic ecology during construction include:

- Loss of benthic habitat as a result of the proposed dredging;
- Increases in suspended sediment concentrations and smothering of benthic habitats as a result of the proposed dredging;
- Release of contaminants as a result of the proposed dredging; and
- Accidental leaks and spillages.

The proposed dredging would lead to the loss of benthic habitat; however, the majority of the impacted habitat type is common in the Firth of Tay. Whilst the dredging of the approaches to the port would result in the loss of mussel beds, which are a Priority Marine Feature and supporting habitat of the Firth of Tay and Eden Estuary SAC, the area lost is small. Further work will be carried out to determine the actual area of mussel beds that would be lost and this impact would be assessed in detail through the HRA process.

Potential impacts to benthic ecology due to increase in suspended sediment concentrations during dredging would be short term and temporary. The proposed dredging has the potential to release sediment bound contaminants. Sediment sampling and analyses will be undertaken, and compared to MD's Action Levels. In addition, a Best Practicable Environmental Options assessment will be undertaken to determine suitable disposal routes. Accidental spills and leakages are standard construction industry hazards and are commonly and routinely managed using industry standard practices and procedures, which will be implemented throughout the duration of the construction phase of the works.

4.11.2.2 During operation

Potential impacts on benthic ecology during operation include:

- Increases in suspended sediment concentrations and smothering of benthic habitats as a result of maintenance dredging.

Maintenance dredging is an existing activity at the port and as such the benthic habitats surrounding the port are considered to be habituated to dredging related disturbances.

Whilst maintenance dredging is not currently undertaken in the Lady Shoal approach channel, the need to carry out maintenance dredging is considered to be unlikely given the fast flowing currents in this area. A qualitative assessment, using the findings of the numerical modelling, will be undertaken to determine the likely requirement for maintenance dredging.

4.11.3 Summary

In summary, potential impacts to marine benthic ecology are not considered to be significant.

Potential impacts and any mitigation will be discussed and agreed with NatureScot via the HRA process.

4.12 Fish and shellfish ecology

4.12.1 Existing environment

The Firth of Tay supports a diverse range of fish species, and encompasses several areas reported to be spawning and nursery grounds for plaice *Pleuronectes platessa*, lemon sole *Microstomus kitt*, cod *Gadus morhua*, herring *Clupea harengus*, whiting *Merlangius merlangus*, sprat *Sprattus sprattus*, anglerfish *Lophius piscatorius*, sandeels *Ammodytes* spp., blue whiting *Micromesistius poutassou* and saithe *Pollachius virens* (Ellis *et al.*, 2012; Coull *et al.*, 1998).

A number of fish species are seasonally present in the Tay, as they migrate through the firth including Atlantic salmon *Salmo salar*, sea trout *Salmo trutta* and smelt *Osmerus eperlanus* (SNH, 2010; O'Reilly *et al.*, 2021). The European eel *Anguilla anguilla* moves from freshwater to the sea to spawn, and may also pass through the Firth of Tay on its way to spawning grounds in the Sargasso sea (Malcolm *et al.*, 2010).

Atlantic salmon, sea lamprey *Petromyzon marinus*, brook lamprey *Lampetra planeri* and river lamprey *Lampetra fluviatilis* are qualifying feature of the the River Tay SAC.

A range of shellfish species are found in and around the Firth of Tay, including brown shrimp *Crangon crangon*, blue mussels *Mytilus edulis*, king scallop *Pecten maximus*, native clam *Ruditapes decussatus*, cockle *Cerastoderma edule*, brown crab *Cancer pagurus*, lobster *Hommarus gammarus*, Norway lobster *Nephrops norvegicus*, razor clam *Ensis* spp., squid *Loligo* spp, velvet crab *Necora puber* and common whelks *Buccinum undatum* (Shelmerdine and Mouat, 2021). A non-native clam species, known as the sand gaper *Mya arenaria*, has also been recorded in the Firth of Tay (Shelmerdine and Mouat, 2021).

4.12.2 Potential impacts

4.12.2.1 During construction

Potential impacts on fish and shellfish ecology during construction include:

- Underwater noise from piling operations and dredge / disposal activities;
- Changes to water quality (e.g., increased suspended sediment); and,
- Change in habitat quality (e.g. increased sedimentation, loss of habitat).

Piling would be temporary and for a short period only (35 days) not continuous. Potential underwater noise impacts would be managed by the mitigation measures proposed for marine mammals (see **Section 4.13**).

The potential for indirect impacts due to changes in water quality and habitat quality is dependent on assessments undertaken for other relevant sections, including coastal processes (**Section 4.2**), marine water and sediment quality (**Section 4.34.3**) and marine benthic ecology (**Section 4.11**). As discussed in these sections, potential impacts are not considered to be significant, and therefore no significant impacts are anticipated to fish and shellfish ecology.

4.12.2.2 During operation

Maintenance dredging is an existing activity at the port and as such the benthic habitats surrounding the port are considered to be habituated to dredging related disturbances.

Whilst maintenance dredging is not currently undertaken in the Lady Shoal approach channel, the need to carry out maintenance dredging is considered to be unlikely given the fast flowing currents in this area. Numerical modelling will be undertaken to inform the marine licence application to determine the requirement for maintenance dredging.

4.12.3 Summary

Overall, potential impacts to fish and shellfish ecology are not considered to be significant and can be managed using industry best practice measures.

Potential impacts to the River Tay SAC and any required mitigation measures will be discussed and agreed with NatureScot as part of the HRA process.

4.13 Marine mammals

4.13.1 Existing environment

A number of marine mammal species are found off the east coast of Scotland, with the most common being harbour porpoise *Phocoena phocoena*, bottlenose dolphin *Tursiops truncatus*, grey seal *Halichoerus grypus* and harbour seal *Phoca vitulina* (Paxton *et al.*, 2016; Waggitt *et al.*, 2020; Carter *et al.*, 2022). Other species include minke whale *Balaenoptera acutorostrata*, with increased presence in the summer periods (DECC, 2016; Paxton *et al.*, 2016; Waggitt *et al.*, 2020). Aerial survey sightings have been made of bottlenose dolphin south of the Moray Firth (Gilles *et al.*, 2023). Less common marine mammal species in this area include humpback whale *Megaptera novaeangliae*, killer whale *Orcinus orca*, Atlantic white-sided dolphin *Lagenorhynchus acutus*, Risso's dolphin *Grampus griseus* and long-finned pilot whales *Globicephala melas* (DECC, 2016; Waggitt *et al.*, 2020).

Reported sightings of marine mammal species to the Seawatch Foundation in 2024 (from January to August), near to the Port of Dundee, include mainly bottlenose dolphin, with lower numbers of sightings of minke whale, common dolphin, white-beaked dolphin, and harbour porpoise.

There are a number of marine mammal protected areas along the east coast of Scotland, including:

- Firth of Tay and Eden Estuary SAC, designated for harbour seal - approximately 0km from the Proposed Development;
- Isle of May SAC, designated for grey seal - approximately 39.5km from the Proposed Development;
- Berwickshire and North Northumberland Coast SAC, designated for grey seal – approximately 64km from the Proposed Development;
- Southern Trench Marine Protected Area (MPA), designated for minke whale - approximately 140km from the Proposed Development; and,
- Moray Firth SAC, designated for bottlenose dolphin - approximately 302km from the Proposed Development.

While minke whale are not regularly a common species near to the Port of Dundee, as seen in the latest SCANS survey density estimate of 0.0419 per km² in the NS-D block (Gilles *et al.*, 2023); however, there are reports of higher densities closer to the Southern Trench area, with adjusted densities of up to 10 per km² observed within the Southern Trench MPA area (SNH, 2014). Due to the distance between the MPA and the Proposed Development, there is no potential for direct impacts.

Although the closest designated site for bottlenose dolphins is the Moray Firth SAC, bottlenose dolphins are known to be common along the east coast of Scotland. In recent years, the population of bottlenose dolphin has been extending its range south (Civil *et al.*, 2018). The bottlenose dolphin occurrence is common close to the Firth of Tay, particularly as at the mouth of the river Tay near to Broughty Ferry beach it is a popular place for the public to see bottlenose dolphin sightings (Dundee City Council, 2024).

On the east coast of Scotland, a relatively high number of grey seals breed with numbers continuously increasing each year. The main breeding colonies seen along this coast start from the Firth of Forth and extend south towards Fast Castle, with the total pup production in Firth of Forth being 7,261 in 2019 (SCOS, 2022). No main grey seal breeding colonies were reported within the Firth of Tay (SCOS, 2022). Along the east coast of Scotland (from the English border to Fraserburgh), the number of harbour seals are lower, with approximately 262 individuals in the most recent haul out count in 2021 (SCOS, 2022). Within the East Scotland seal management unit, the harbour seal population is mainly concentrated within the Firth of Tay and Eden Estuary SAC, with the count being 41 individuals in 2021 (SCOS, 2022). Within the Proposed Development area, there are densities of grey seal of up to 1.383 individuals per km², and harbour seal densities up to 0.0378 individuals per km² (Carter *et al.*, 2022).

Within the Firth of Tay, the closest designated seal haul-out site is Craighleith, for grey seal, approximately 55.2km from the Proposed Development. As such, designated seal haul-out sites would not be affected by the Proposed Development.

The marine mammal species most likely to be present within potential impact ranges of the Proposed Development are harbour porpoise, bottlenose dolphin, grey seal, and harbour seal. Other species that may be present, although in lower numbers, are minke whale, white-beaked dolphin, and common dolphin.

4.13.2 Potential impacts

4.13.2.1 During construction

Potential impacts on marine mammals during construction include:

- Underwater noise from piling operations;
- Temporary Threshold Shift and disturbance from underwater noise and presence of vessels;
- Increased collision risk with vessels during construction; and,
- Indirect effects due to changes in water quality and prey availability as a result of the sediment plume (e.g. increased suspended sediment, changes to hydrological regime).

Piling impacts would be temporary and for a short period only. Underwater noise impacts would be managed using standard mitigation measures in line with the Statutory nature conservation agency protocol for minimising the risk of injury to marine mammals from piling noise (JNCC, 2010). This will ensure that the potential effect ranges for instantaneous permanent auditory injury are mitigated for, therefore no significant effects are anticipated.

Vessel good practice measures would reduce the potential for increased disturbance and collision risk. The measures include ensuring that vessel movements, where practicable, will be incorporated into recognised vessel routes and hence to areas where marine mammals are accustomed to vessels, as well as reduced vessel speeds wherever practicable.

4.13.2.2 During operation

There would be no changes to the day to day operation of the port and any increase in maintenance dredging is considered to be minimal, therefore no significant effects during operation are anticipated

4.13.3 Summary

Overall, potential impacts to marine mammals are not considered to be significant and can be managed using industry best practice measures.

Potential impacts to the identified SACs and any required mitigation measures will be discussed and agreed with NatureScot as part of the HRA process.

4.14 Commercial fisheries

4.14.1 Existing environment

The Proposed Development is located within International Council for the Exploration of the Sea (ICES) rectangle 41E7. Fisheries landing data indicated that the fishing activities are within ICES rectangle 40E6 are mainly undertaken by smaller fish vessels of 10m and under in length followed by vessels 2-10m in length. 2022 landings data is presented in **Table 4-5** which shows the area is productive and valuable for the shellfish industry¹³. Commercial fishing boats do not use the Port of Dundee.

Table 4-5 Top 10 Sea fisheries landings in 2022 from ICES rectangle 40E7 by landed weight and value

Species	Landed value (£)	Landed weight (T)
Haddock	136	0.22
Cod	140	0.22
Monks or Anglers	1,068	0.51
Scallops	1361	0.53
Dabs	1	0.53
Mixed Squid and Octopi	11	1.24
Mackerel	2,956	13.60
Crabs - Velvet (Swim)	57,046	37.96
Lobsters	916,580	65.31
Crabs (C.P.Mixed Sexes)	15,2108	75.32
Nephrops (Norway Lobster)	86,2674	380.36
Total	1,994,082	575.81

Data gathered from creel fishers in 2021 indicated that creel fisheries, crab, and lobster pots and nephrops trawls are undertaken on the coast of St Andrews and between Carnoustie and Arbroath with high levels of fish effort displayed effort offshore (see **Figure 4-7**).

¹³ [2022 Scottish Sea Fisheries Statistics - Fishing Effort and Quantity and Value of Landings by ICES Rectangles | Marine Scotland Data Publications](#)

4.14.2 Potential impacts

4.14.2.1 During construction

Potential impacts on commercial fisheries during construction include:

- Displacement or reduction in available fish and shellfish resource; and,
- Displacement of fishing vessels.

Potential impacts to fish and shellfish species can be managed by adherence to standard mitigation measures; therefore, no significant effects are anticipated. The proposed works would be completed within nine months, with the majority of the marine works taking place at the port. Deeping of the section of the Lady Shoal approach channel is expected to only take 30 days and a Notice to Mariners will be issued to manage any risks to navigation.

4.14.2.2 During operation

Maintenance dredging is an existing activity at the port and as such the benthic habitats surrounding the port are considered to be habituated to dredging related disturbances.

Whilst maintenance dredging is not currently undertaken in the Lady Shoal approach channel, the need to carry out maintenance dredging is considered to be unlikely given the fast flowing currents in this area. Numerical modelling will be undertaken to inform the marine licence application to determine the requirement for maintenance dredging.

4.14.3 Summary

Overall, potential impacts to commercial fisheries are not considered to be significant, and can be managed using standard industry best practice measures.

4.15 Commercial and recreational navigation

4.15.1 Existing environment

The Port of Dundee is a major seaport located on the east coast of Scotland. The Dundee Port Authority is the statutory harbour authority for the Port of Dundee, the area limits extend from Invergowrie in the upper Tay estuary to five nautical miles offshore. The port is a large economic generator for City of Dundee and the Tayside region, containing 6 berths, 1,600m of quayside, 150,000T of agripods flat storage, 100,000m³ liquid storage, jack up facilities, RoRo berths and side loading vessels, decommissioning facilities, and offshore wind capability. Handling a wide and diverse range of products the port discharges and loads vessels with cargoes up to 25,000 tonnes. The Port of Dundee is a major grain handling port on the east coast of Scotland and hosts the largest grain drying facility in the country.

The Port of Dundee is generally approached via the Lady Shoal approach channel (shown in **Figure 4-8**), an area of deeper water which runs through the lady bank area between Abertay Sands and Monifieth Sands. Pilotage is compulsory throughout the pilotage area of the Port of Dundee for vessels carrying passengers and tankers carrying hazardous waste.

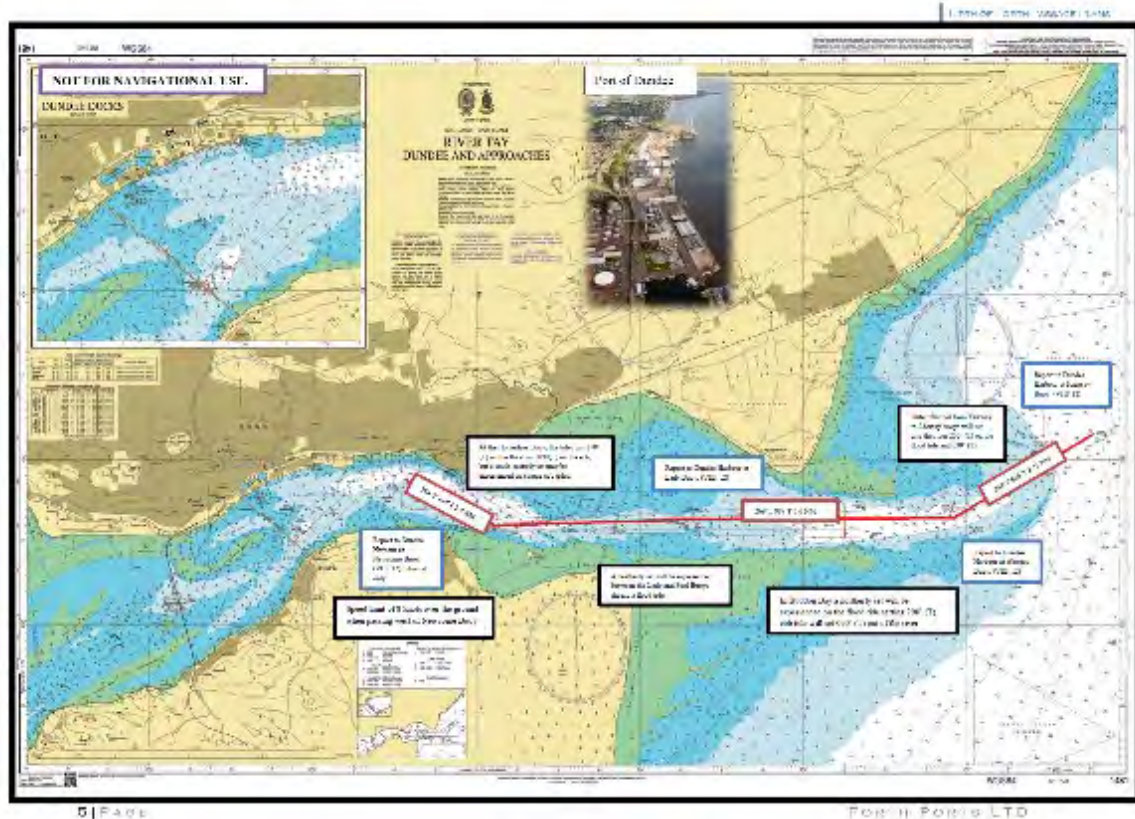


Figure 4-8 Navigation chart of the Firth of Tay¹⁴.

The area comprising the River or Water of Tay from a line constituting the Western limits drawn from the mouth of the Rivulet commonly called the Burnmouth of Invergowrie on the North side of the river to the place where the Monastery of Balmerino was situated on the South side of the River and Eastwards at Buddonness.

Pilotage also applies for vessels not carrying passengers that are vessels of 40m overall length and more and dredger and other crafts of 85m overall length and more. Piloting services are provided by Forth and Tay Navigation Service at the Puter Pilot Station south west of Fairway Buoy and Inner Pilot Station East of North Lady Bouey¹⁵.

The Dundee Port Authority actively and responsibly manage shipping receptors within the Firth of Tay through the Forth and Tay Navigation Service. Vessels navigating within the Firth of Tay are covered by the Forth and Tay Vessel Traffic Service¹⁶.

The majority of the vessels routing to and from the Port of Dundee use the existing approach channel. Vessels using the port include passenger vessels (cruise ships), cargo vessels, tugs, offshore support vessels and for example include facilities for agriculture such as in port grain drying facilities, road salt and aggregate cargos.

¹⁴ [Firth of Forth Passage Plans \(forthports.co.uk\)](https://forthports.co.uk)

¹⁵ <https://forthports.co.uk/wp-content/uploads/2018/03/Dundee-Pilotage-Direction-No3.pdf>

¹⁶ <https://www.forthports.co.uk/wp-content/uploads/2017/10/Mariners-Guide-Forth.pdf>

4.15.1.1 Cruise ships

The Port of Dundee provides facilities for cruise vessels with an average passenger size of 1,200. The port handled 15 cruise ships during 2023.

4.15.1.2 Recreational navigation

Tayport harbour is located approximately 4km southeast of the Port of Dundee. The harbour is operated Tayport Harbour Trust and provides berthing for around 100 boats. Multiple local clubs such as Tay Corinthians Boating club, Royal Tay Yacht Club, Dundee Sailing and Rowing Club and Wormit Boating Club use the facilities, hosting various events throughout the year. **Figure 4-9**Error! Reference source not found.Error! Reference source not found. shows average hourly density per sq km. Higher densities of recreational navigation are recorded around the Newport on Tay and Tayport with the highest density of 25.37 an hour per km² recorded at Tayport. Very low densities of recreational navigation were recorded around the Port of Dundee for 2022-2023 with the average across the port 0.06 an hour per km².

4.15.1.3 During construction

Potential impacts on commercial and recreational navigation during construction include:

- Restriction or delay of port activities due to the presence of construction vessels; and,
- Reduced visibility of other nearby vessels at night due to construction lighting.

Dundee Port Authority will manage all potential impacts through the issuing of a Notice to Mariners and communication of access to the port through the Forth and Tay Navigation Service.

4.15.1.4 During operation

There is expected be a minor change to the existing maintenance dredge regime at the Port of Dundee.

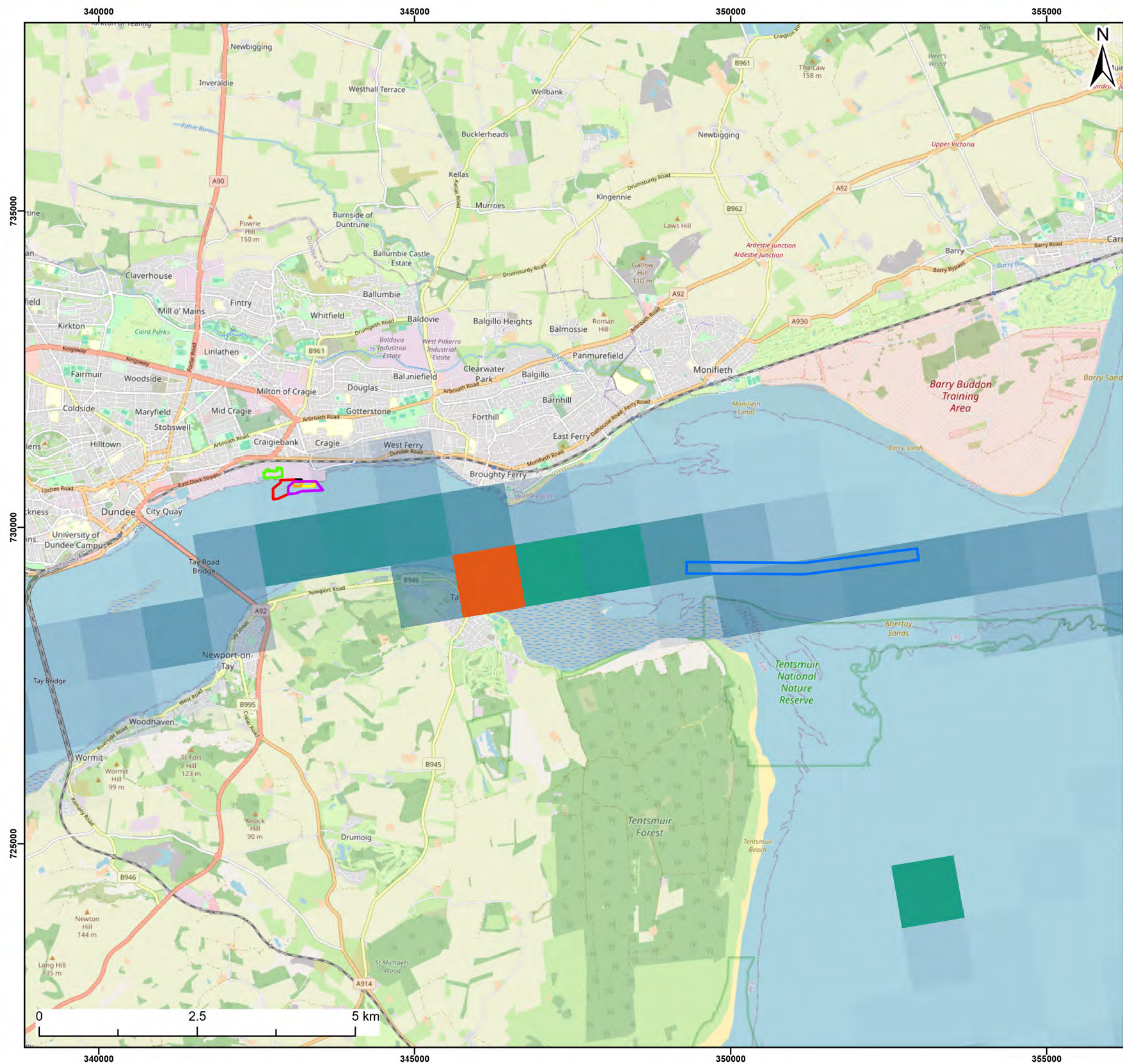
4.15.2 Summary

Overall, potential impacts to commercial and recreational navigation are not considered to be significant.

4.16 Infrastructure and other users

4.16.1 Existing environment

There are no oil and gas blocks identified near the Proposed Development, however, there is a gas pipeline spanning the Firth of Tay, which intersects with the Lady Shoal approach channel. A small (<15,000 PE) wastewater treatment plant is located off the coast of Tayport, approximately 3km from the Port of Dundee and 2km from Lady Shoal approach channel. There are two industrial waste discharges in the port, one for the energy sector and the other manufacturing, other industry, and services. There were no telecommunications pipelines identified in the vicinity of the Proposed Development (see **Figure 4-10**Error! Reference source not found.).



- Legend:
- Prince Charles Wharf Approach Channel Dredge Area
 - DunEco Quay Approach Channel Dredge Area
 - Proposed Extension to PCW Berth Pocket
 - Existing PCW Berth Pocket
 - Lady Shoal Approach Channel Dredge Area
 - Remedial Quay Works
 - Laydown Area
- Pleasure Craft Density**



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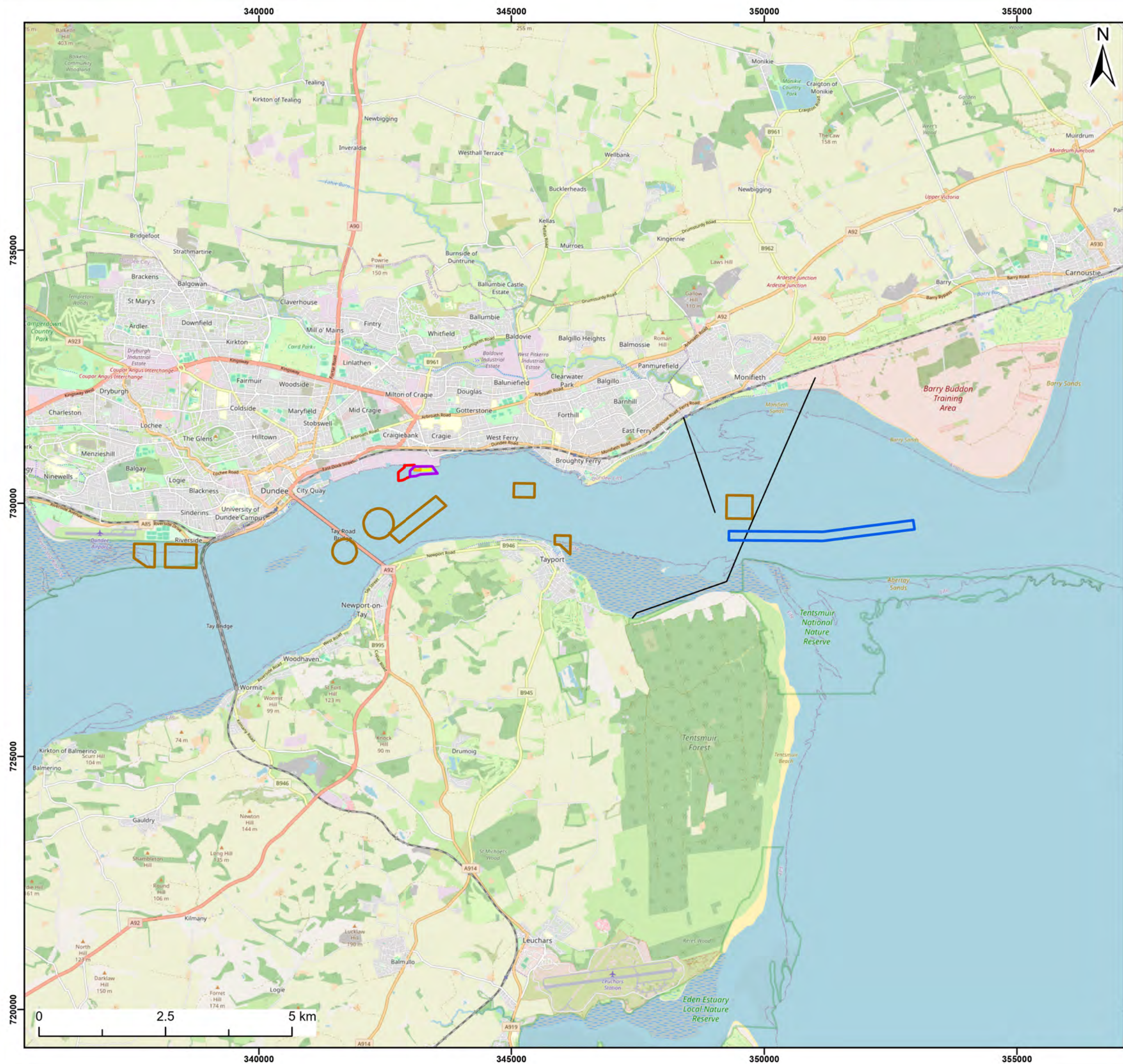
Title:

Vessel Density Annual Averages - Pleasure Craft 2022-23

Figure: 4-9		Drawing No: PC6550-RHD-XX-ZZ-DR-Z-0006			
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Co-ordinate system: British National Grid





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- Legend:
- Prince Charles Wharf Approach Channel Dredge Area
 - DunEco Quay Approach Channel Dredge Area
 - Proposed Extension to PCW Berth Pocket
 - Existing PCW Berth Pocket
 - Lady Shoal Approach Channel Dredge Area
 - Cefas Disposal Sites
 - Pipelines

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Client:	Project:
Port of Dundee Limited	Port of Dundee Capital Dredge and Quay Improvement Works

Title:
Infrastructure and Other Users

Figure: 4-10	Drawing No: PC6550-RHD-XX-ZZ-DR-Z-0009
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Revision:	Date:	Drawn:	Checked:	Size:	Scale:
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Co-ordinate system: British National Grid



There are four disposal sites in the Firth of Tay all within, 3km of the Port of Dundee (**Figure 4-10**Error! Reference source not found.):

- Middle Bank Tay (FO028);
- Firth of Tay E (FO021);
- Newcome Buoy (FO023); and,
- Tay Bridge (FO025).

There are no coastal water abstractions points within 10km of the Proposed Development.

4.16.2 Potential impacts

4.16.2.1 During construction

Potential impacts on infrastructure and other users construction include:

- Impact on gas pipeline during dredging.

The gas pipeline is buried and up to 3m deeper than the proposed dredge depth, so would not be considered that would be any risk of coming into contact with the pipeline.

4.16.2.2 During operation

There would be no impact to infrastructure and other users during operation of the Proposed Development.

4.16.3 Summary

Overall, potential impacts to infrastructure and other users are not considered to be significant.

4.17 Archaeology and cultural heritage

4.17.1 Existing environment

The following sources of data have been searched to inform a description of the existing environment for archaeology and cultural heritage:

- Records of designated heritage assets available from the Historic Environment Scotland (HES) Historic Environment Portal;
- Records of non-designated heritage assets from the National Record of the Historic Environment (NRHE) via Canmore (also accessed via the HES Historic Environment Portal); and,
- Records of wrecks and obstructions recorded by the UK Hydrographic Office (UKHO) from the Admiralty Marine Data Portal.

These were mapped against a study area comprising the Proposed Development boundary plus a 500m buffer in order to identify non-designated historic assets within and in the vicinity of the Proposed Development (see **Figure 4-11**Error! Reference source not found.).

4.17.1.1 Designated Heritage Assets

There are no designated heritage assets within the Port of Dundee or Lady Shoal, nor within the 500m Lady Shoal study area.

Within the 500m Port of Dundee study area there are 10 Listed Buildings. In Scotland, once a building is found to be of special architectural or historic interest, it is then classified under one of three categories according to its relative importance:

- Category A: Buildings of special architectural or historic interest which are outstanding examples of a particular period, style or building type;
- Category B: Buildings of special architectural or historic interest which are major examples of a particular period, style or building type; and,
- Category C: Buildings of special architectural or historic interest which are representative examples of a period, style or building type.

None of the 10 Listed Buildings are classified as Category A. Five of the Listed Buildings are classified as Category B:

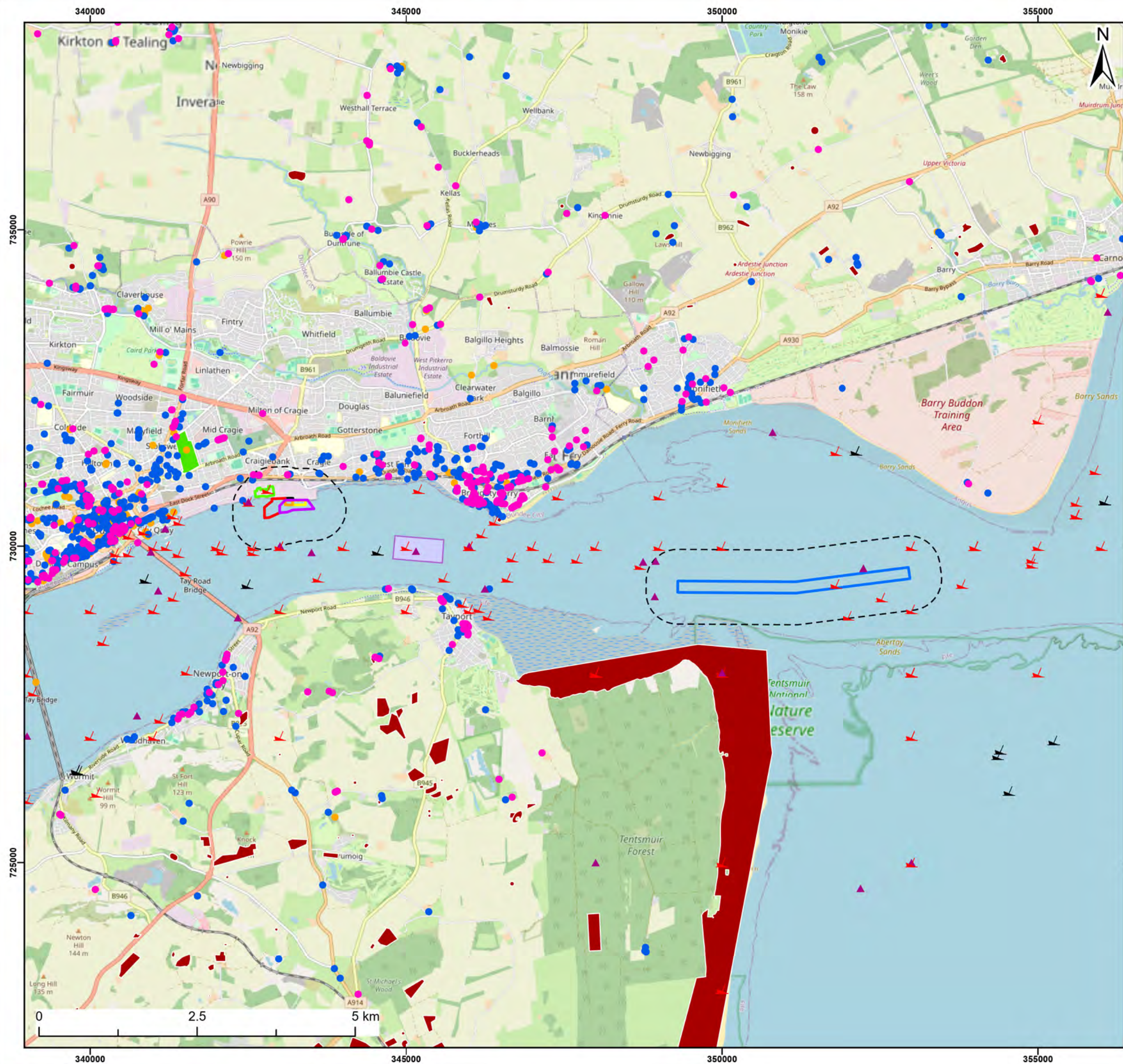
- Eastern Wharf, Stannergate, Dundee Harbour (LB24947);
- Ingleside, 310 Broughty Ferry Road, Dundee (LB25900);
- Orphanage Bridge, Fishdock Road, Stannergate, Dundee (LB25901);
- Garage And Garden Shed, The Wyck, Craigie Drive, Dundee (LB25915); and
- The Wyck, Craigie Drive, Dundee (LB25915).

Five of the Listed Buildings are classified as Category C:

- 230 Broughty Ferry Road, Dundee (LB25049);
- 242 Broughty Ferry Road, Dundee (LB25051);
- 240 Broughty Ferry Road, Dundee (LB25051);
- 308 Broughty Ferry Road, Dundee (LB25899); and,
- 306 Broughty Ferry Road, Dundee (LB25899).

The closest Scheduled Monuments to the study area are:

- Costerton Fort (SM5736) located to the south of the Lady Shoal study area which comprises the remains of an inland promontory fort represented by cropmarks visible on oblique aerial photographs; and,
- Broughty Castle (SM90043) located to the north west of the Lady Shoal study area which comprises a mid-Victorian stronghold built on the site of, and incorporating elements of, the late 16th early 17th century Broughty Castle.



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Legend:

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- Lady Shoal Approach Channel Dredge Area
- Remedial Quay Works
- Laydown Area
- 500m Buffer
- Gardens and Designed Landscapes
- Scheduled Monuments

Listed Buildings by Category

- A
- B
- C
- Wreck Area
- Obstruction
- Wreck
- Casualty

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Title:
Archaeology and Cultural Heritage

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4.17.2 Non-Designated Historic Assets (Canmore)

There are no non-designated heritage assets recorded within the Port of Dundee. There is a single point recorded within the Lady Shoal dredge area which corresponds to the recorded location of two casualties, lost near the entrance to the River Tay, rather than representing an actual wreck site.

There are 22 further maritime records within the wider 500m study area, which include 15 further records of maritime casualties. These are all records of losses rather than known wrecks (i.e. records of losses which were historically documented at Dundee, but for which the actual location of any physical remains is unknown). As these records do not represent actual remains, these provide only an indication of the potential for encountering previously undiscovered remains during the Proposed Development. Although the records indicate a relatively high number of losses, as a result of previous works within the Port of Dundee, the potential for encountering such remains is expected to have been reduced.

Two of the records correspond to 'obstructions' which are recorded in the UKHO wrecks and obstructions data discussed below.

The remaining five records correspond to aircraft losses within the Outer Tay Estuary including a Curtiss H.16 'Large America' Flying Boat (Canmore ID: 315379) and four further seaplanes, two Short Type 184 Seaplanes (Canmore ID: 314982 and 315380) and two Wight Type 840 Seaplanes (Canmore ID: 315381 and 315392). As for the maritime casualties above, these aircraft losses do not correspond to known crash sites, but rather to historic accounts of aircraft lost in the vicinity. As above, the potential for encountering such remains is likely to have been reduced as a result of previous works, including maintenance dredging, at the port.

There are 31 further terrestrial records of monuments within the Port of Dundee 500m study area; however, these are all located above Mean Low Water Springs and not subject to impact from the proposed works.

It is possible that prehistoric deposits of paleoenvironmental interest may be present within the study area although this potential is reduced within the areas which have previously undergone dredging. As described in **Section 4-3 3**, based on previous sampling, the material to be removed within the Port of Dundee study area will be primary sand and silt, although boulder clay may be encountered. Within the Lady Shoal area previous sampling suggests dredged material will be predominantly sand with some silt. Recently deposited sands and silts and glacial clays are not considered to be of palaeo-environmental interest.

4.17.3 Non-Designated Historic Assets (UKHO)

There are no previously recorded UKHO wrecks or obstructions within the Port of Dundee nor the 500m study area. Similarly, there are no previously recorded UKHO wrecks or obstructions within the Lady Shoal approach channel; however, there are four records within the Lady Shoal 500m study area. These comprise two areas marked as 'foul ground', one of which (UKHO ID: 3118) is marked 'dead' (not found during repeated surveys and no longer thought to exist). The second record (UKHO ID: 3105) corresponds to the legend 'foul ground' shown in on Horse Shoe Bank when the chart of the area was first published in 1843 and an update to the record in 2022 describes that nothing was seen in geophysical data acquired in 2021 from the location. These records correspond to the 'obstructions' also recorded in the Canmore maritime data referenced above.

Of the other two records, UKHO ID 99204 is described as a diffuser which is not of archaeological interest. UKHO ID: 99205 is described as an unidentified obstruction, recorded during the 2021 geophysical survey

mentioned above, measuring 5.5m x 5.5m x 1m high. The archaeological interest of this obstruction is uncertain.

4.17.4 Potential impacts

4.17.4.1 During construction

Potential impacts to archaeology and cultural heritage during construction include:

- the potential to uncover or bury archaeological material, as a result of changes to estuarine processes.

As concluded in **Section 4-24.2** above, potential impacts from changes to estuarine processes are not considered to be significant and there would be no pathway for significant impacts to heritage assets as a result. As the dredged material will be disposed of at an existing, licensed disposal sites, there would be no impact associated with the disposal of dredged material.

4.17.4.2 During operation

As concluded in **Section 4-18**^{Error! Reference source not found.}, potential impacts to the landscape and visual setting would not be significant. As such, changes to the setting of heritage assets within the wider area, which could affect their significance, such as the Listed Buildings and Scheduled Monuments would not occur.

4.17.5 Summary

Overall, potential impacts to archaeology and cultural heritage are not considered to be significant.

4.18 Landscape and visual setting

4.18.1 Existing environment

The Port is within an Urban Landscape Character type (LCT)¹⁷ which encompasses Dundee and the coastline from Invergowrie to the west to Monifieth to the east. There are a variety of residential and commercial properties in the surrounding Cragie and Duglous and Angus works. The closest residential property is 200m from the Proposed Development.

The neighbouring Dundee Harbour hosts a mix of residential, retail, leisure, and commercial facilities, as well as hotels and serviced apartments. The Harbour hosts various Museums and Landmarks. At the western end of the Harbour is Dundee Waterfront Gardens and the Royal Research Ship discovery permanently berthed at Discovery Point.

4.18.2 Potential impacts

4.18.2.1 During construction

Potential impacts on landscape and visual setting during construction include:

- Temporary impacts to the local landscape / coastal character and on views from residential, recreational, and commercial areas due to the presence of construction plant and vessels.

¹⁷ <https://www.nature.scot/professional-advice/landscape/landscape-character-assessment/scottish-landscape-character-types-map-and-descriptions>

It is unlikely that the construction plant will be visible to surrounding receptors. Any construction plant that remains visible would be similar to equipment currently used for standard port operations. Standard best practice would be adhered to that would minimise any impacts. Given this and the existing operational port setting, potential impacts to the landscape/coastal character and visual setting during construction would not be significant.

4.18.2.2 During operation

The Proposed Development would not change the day to day activities of the port. The proposed expansion of the laydown area would be located on a currently disused area of the port. From a visual aspect, the development of this area is considered to have a beneficial effect.

4.18.3 Summary

Overall, potential impacts on the landscape and visual setting are not considered to be significant. From a visual aspect, the expansion of the laydown area is considered to have a beneficial effect.

4.19 Waste

4.19.1 Existing environment

The Port of Dundee update their Port Waste Management Plan every three years to manage the disposal of vessel generated wastes in an environmentally sustainable and legally correct manner, in accordance with the requirements of the International Convention on the Prevention of Pollution by Ships (MARPOL 1973/78). The plan is approved by the Marine and Coastguard Agency.

The current maintenance licence for the Port of Dundee permits the disposal of up to 150,000 wet tonnes of dredged material per year at Middle Bank Tay Dredge Spoil Deposit Site (licence MS-00010329 from 2023-2034).

There are four disposal sites in the Firth of Tay all within, 3km of the Port of Dundee (see Error! Reference source not found.):

- Middle Bank Tay (FO028) 600m from the Port of Dundee;
- Firth of Tay E (FO021) 1.2km;
- Newcome Buoy (FO023) 1.4km to the southeast; and
- Tay Bridge (FO025) 2km,

It is proposed to dispose of dredge material from the Port of Dundee and Lady Shoal works in the Middle Bank Tay disposal site.

4.19.2 Potential impacts

4.19.2.1 During construction

Potential impacts on waste during construction includes:

- Disposal of approximately 238,100m³ of dredged material; and,
- Generation of typical construction site related waste (e.g. plastics, food, hazardous, demolition waste).

Waste arising from the construction phase of the works will be managed through standard construction practices. A Best Practicable Environmental Option (BPEO) assessment will be undertaken to identify the

most appropriate disposal option for the dredged material. Given the majority of the material is expected to comprise silty sand, it is anticipated that the material would be required to be disposed of offshore. For landside works, as much material as possible will be recycled and incorporated within the Proposed Development.

4.19.2.2 During operation

Potential impacts on waste during operation include:

- Change in volume of maintenance dredge.

As described in **Section 4.2**, the volume of maintenance dredged material is not anticipated to change substantially.

4.19.3 Summary

Overall, potential impacts from waste are not considered to be significant.

4.20 Accidents and disasters

4.20.1 Existing environment

The only disaster risk to the Proposed Development is associated with flood risk.

4.20.2 Potential impacts

Potential impacts from flooding have been discussed in **Section 4.6**. No potential significant impacts were identified.

4.21 Climate change

4.21.1 Existing environment

In 2022, total Greenhouse Gases (GHG) emissions in Scotland were 39 Mt CO₂e, of which 11.5 Mt were contributed by domestic transport, 5.3 Mt by business activity and 1.5 Mt by aviation and shipping¹⁸.

Within the DCC area, total CO₂ emissions in 2018 were 24,413 t¹⁹. Scotland has pledged to reduce its GHG emissions by 75% by 2030 and to be net-zero by 2045. The ScotWind process will mean more wind farm projects in the future, and a part of that process includes the commitment to 25% of the Offshore Wind Farm industry being local.

In the context of GHG emissions, then the receptor is effectively the global atmosphere. With regard to climate resilience, the receptor is the Proposed Development itself, together with its ancillary infrastructure.

The function of the Proposed Development is to maintain existing operations to allow for the continued support of the offshore renewables industry. The port provides facilities for the transshipment and storage of components such as all WTGs and other parts associated with wind farm projects. It is therefore, intimately

¹⁸ <https://www.gov.scot/publications/scottish-greenhouse-gas-statistics-2022/pages/annex-a-information-required-for-reporting-under-sections-33-and-34-of-the-climate-change-scotland-act-2009/>

¹⁹ <https://www.dundee.gov.uk/performance-indicator/dcc-carbon-footprint-emissions-t-co2>

entwined in the zero-carbon electricity production industry and associated GHG emissions should, therefore, be interpreted and viewed in that specific context²⁰.

4.21.2 Potential impacts

In general, GHG emissions generated by the construction and operation of offshore wind farms are effectively “neutralised” in the early years of the operation of a project, with the remaining years of electricity production being effectively zero-carbon. Emissions associated with the proposed development will be assessed in this context and mitigation measures applied accordingly.

4.21.3 Climate resilience

The design approach and procedures applied for the Proposed Development will result in an ultimate design that will cater for resilience to future changes in climate-related coastal variables, based upon conservative assumptions about future changes.

4.21.4 Summary

Given that the purpose of the Proposed Development is for the continued support of the offshore wind industry, which itself is central to decarbonisation of the Scottish economy, it is concluded that any GHG emissions associated with the project would be subsumed into the overall carbon accounting of the offshore wind generation.

Similarly, climate resilience of the project would be designed into its construction and operation and would therefore not be significant.

4.22 Socio-economics

4.22.1 Existing environment

The Port of Dundee is surrounded by mixed use development comprising of retail leisure and commercial offices, primarily round Dundee Harbour.

4.22.2 Potential impacts

4.22.2.1 During construction

Potential impacts on socio-economics during construction include:

- Temporary construction jobs; and,
- Multiplier and supply chain effects at both a local and regional level.

It is considered that the Proposed Development would result in a short-term temporary benefit to local socio-economics for the duration of the works.

4.22.2.2 During operation

During operation, it is not likely that employment impacts and the economic benefits from the Proposed Development will change, continuing to support well-paid permanent job and career opportunities in a number of activities related to the key target economic sectors of the offshore and marine energy industries.

²⁰

https://www.pure.ed.ac.uk/ws/portalfiles/portal/19730442/Main_Report_Life_Cycle_Costs_and_Carbon_Emissions_of_Offshore_Wind_Power.pdf

In addition, indirect and induced employment opportunities will continue to be supported as a result of the Proposed Development.

4.22.3 Summary

The proposed development is considered to have a significant beneficial impact on local and regional socio-economy.

5 EIA Screening Conclusion

The Proposed Development is considered to be a Schedule 2 EIA development, falling under Schedule 2 10(g) of the EIA Regulations, as:

10 (g) Construction of harbours and port installations, including fishing harbours (unless included in schedule 1) – where the area of works is greater than 1 hectare;

The potential impacts of the Proposed Development have therefore been assessed in accordance with the criteria set out in Schedule 3 of the EIA Regulations, and are concluded as follows:

- The Proposed Development would have a beneficial effect on the local and regional socio-economy, through the continued provision of well-paid permanent jobs and career opportunities, as well as indirect and induced employment opportunities.
- Beneficial impacts on the local visual setting would also arise from the extension of the laydown area, which is currently used for the storage of timber, road salt, North Sea Oil and Gas components.
- No significant impacts have been identified during the operational phase of the Proposed Development, given there would be no changes to the day to day operations of the port. A slight increase in maintenance dredging has been identified; however, the potential impacts of this are not considered to be significant.
- During construction, potential impacts to ornithology and marine mammals could occur; however, these can be managed by standard industry best practice.
- Potential impacts to benthic ecology, ornithology and fish have the potential to occur, due to the proposed dredging. Whilst these are not considered to be significant at this stage, further studies and investigations will be undertaken to inform the marine licence application, the findings of which will be discussed with NatureScot as part of the HRA process.

Given the beneficial impacts that have been identified and the limited potential for the Proposed Development to result in significant environmental impacts, which can be managed using best practice construction methodology and industry standard mitigation measures, it has been concluded by the Port of Dundee Limited and their advisors that **the Proposed Development does not require an EIA** under the Marine Works (EIA) (Scotland) Regulations 2017 (as amended) or The Town and Country Planning (EIA) (Scotland) Regulations 2017 (as amended).

Screening Opinions are requested from DCC and the MD to confirm that an EIA is not required.

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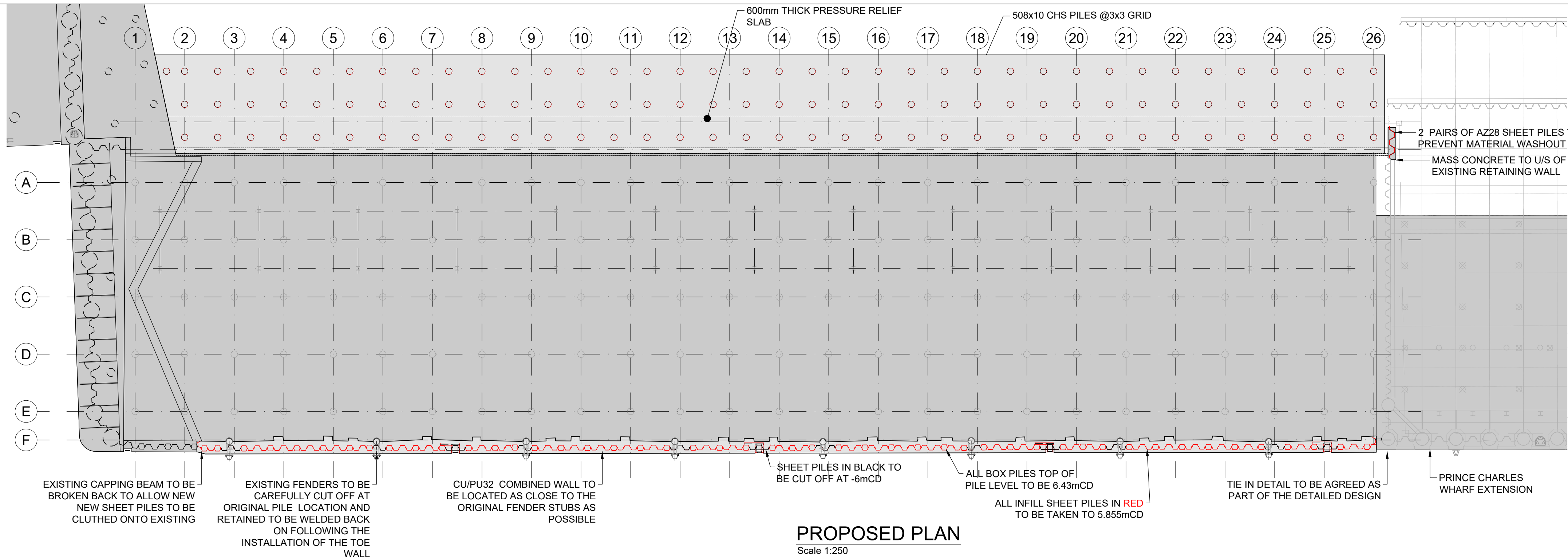
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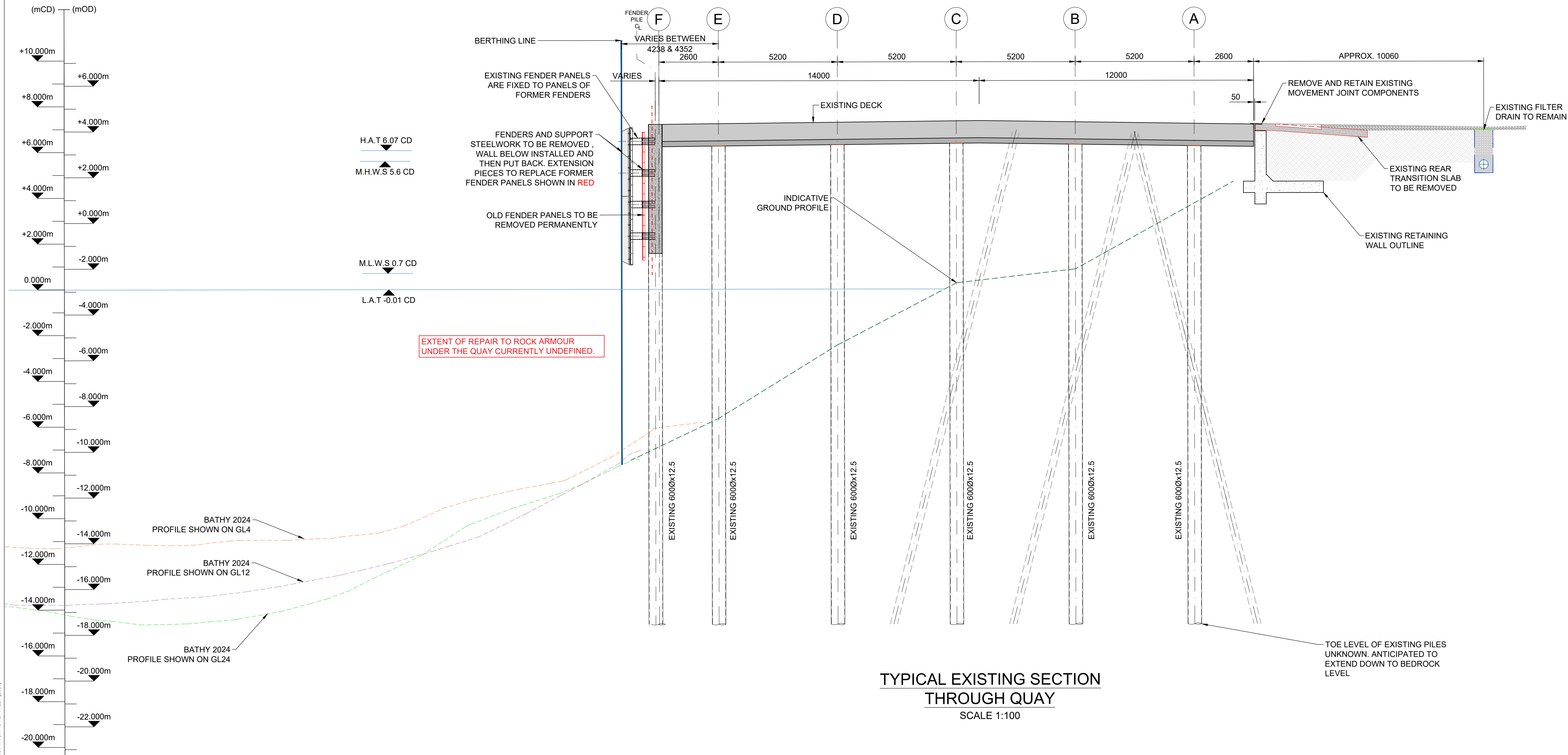
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Appendix A – Plans of Remedial Works to Prince Charles Wharf

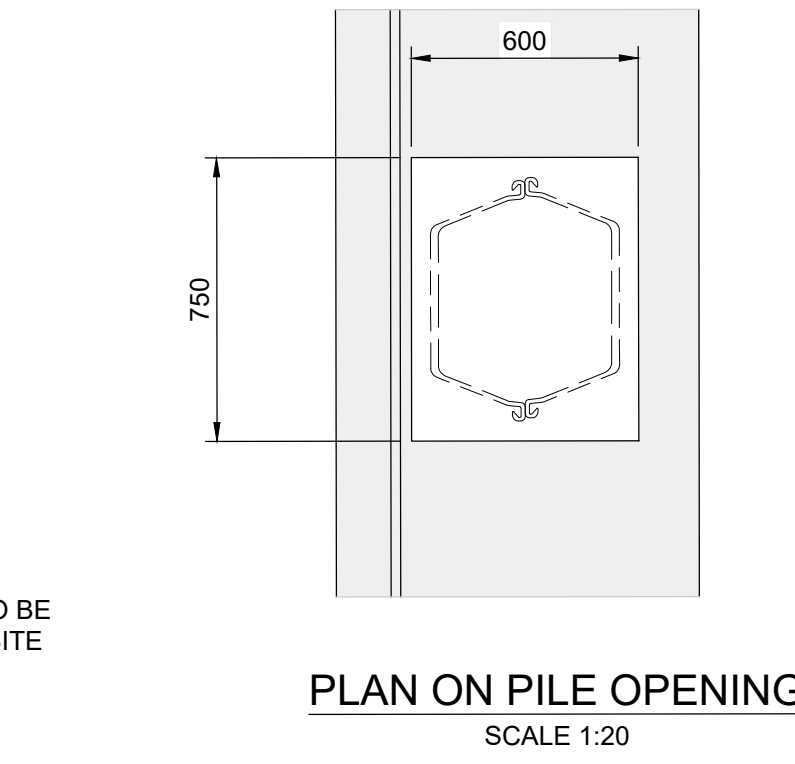
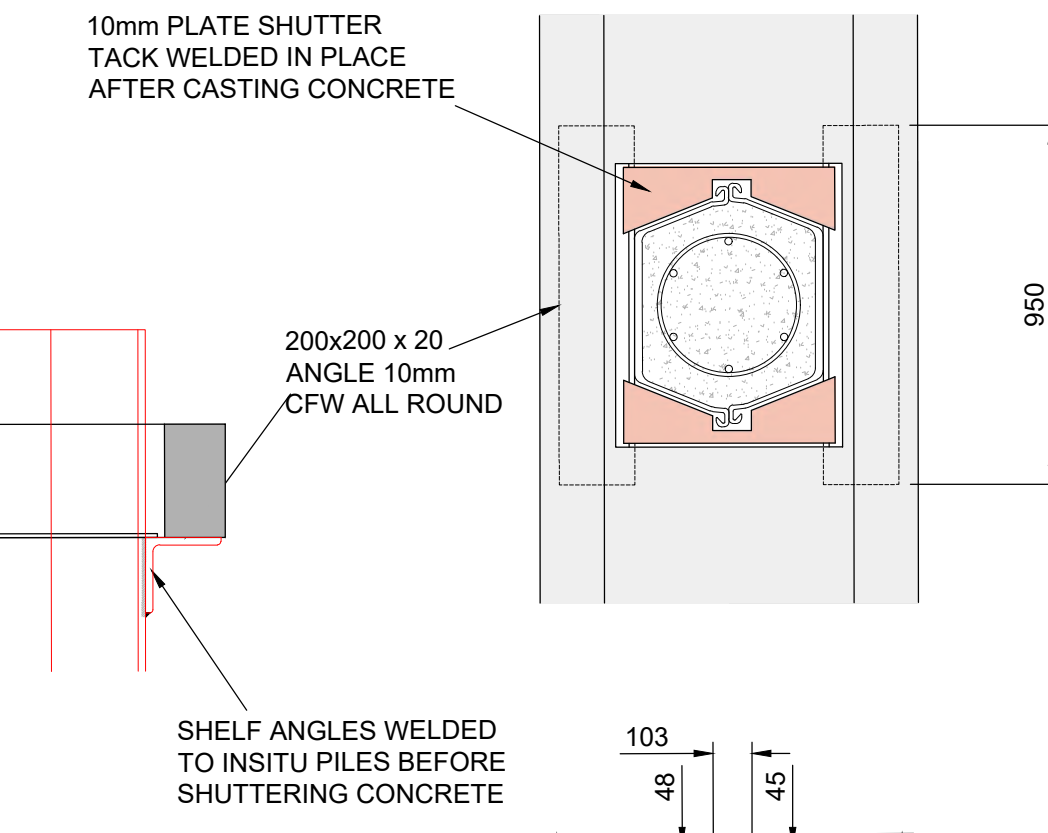
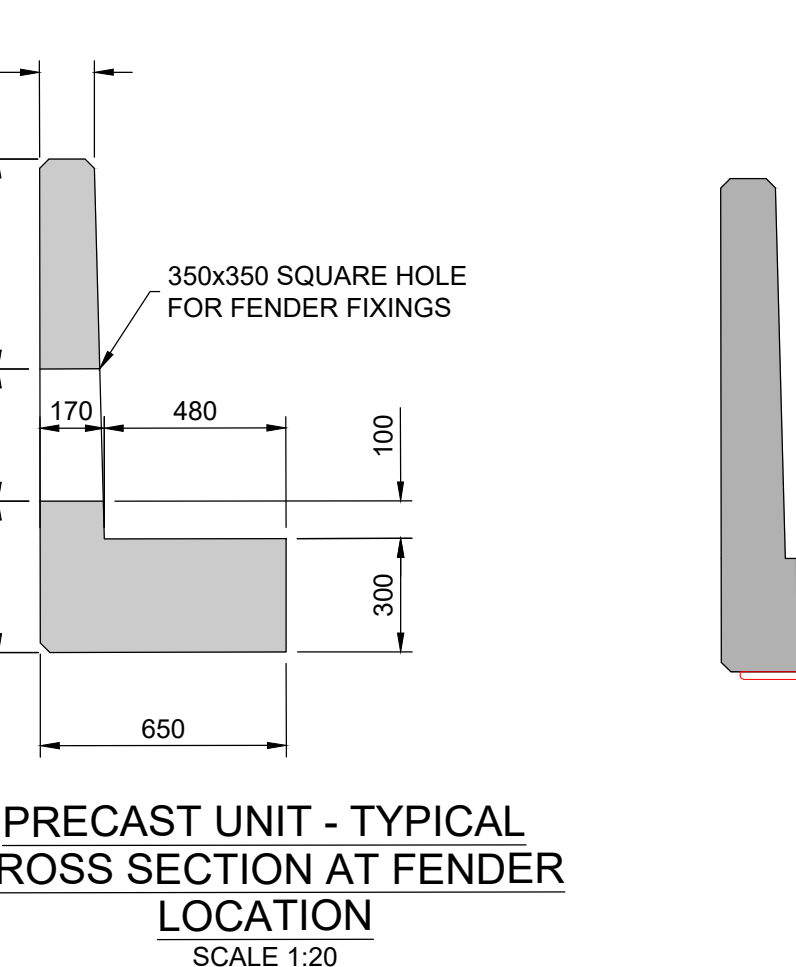
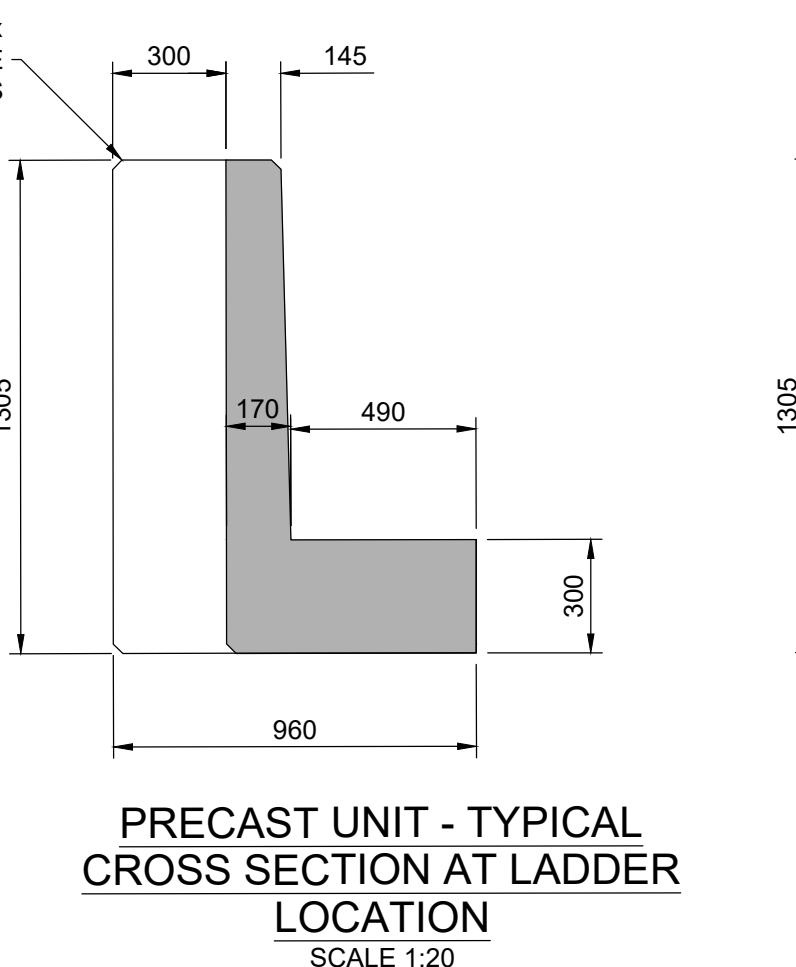
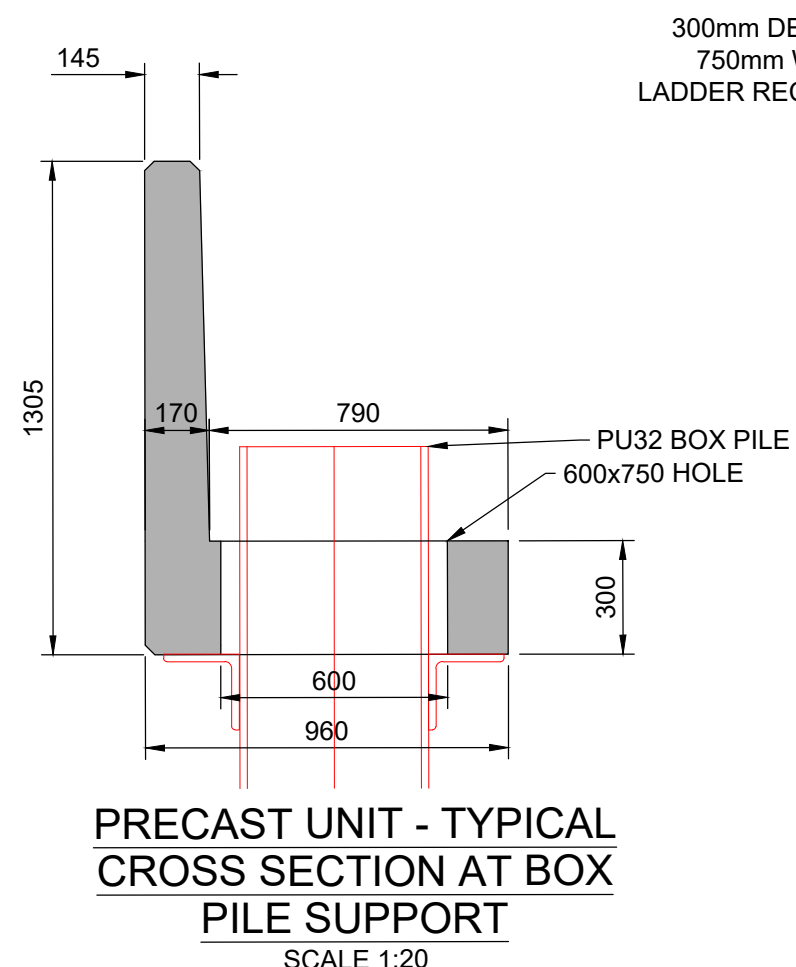
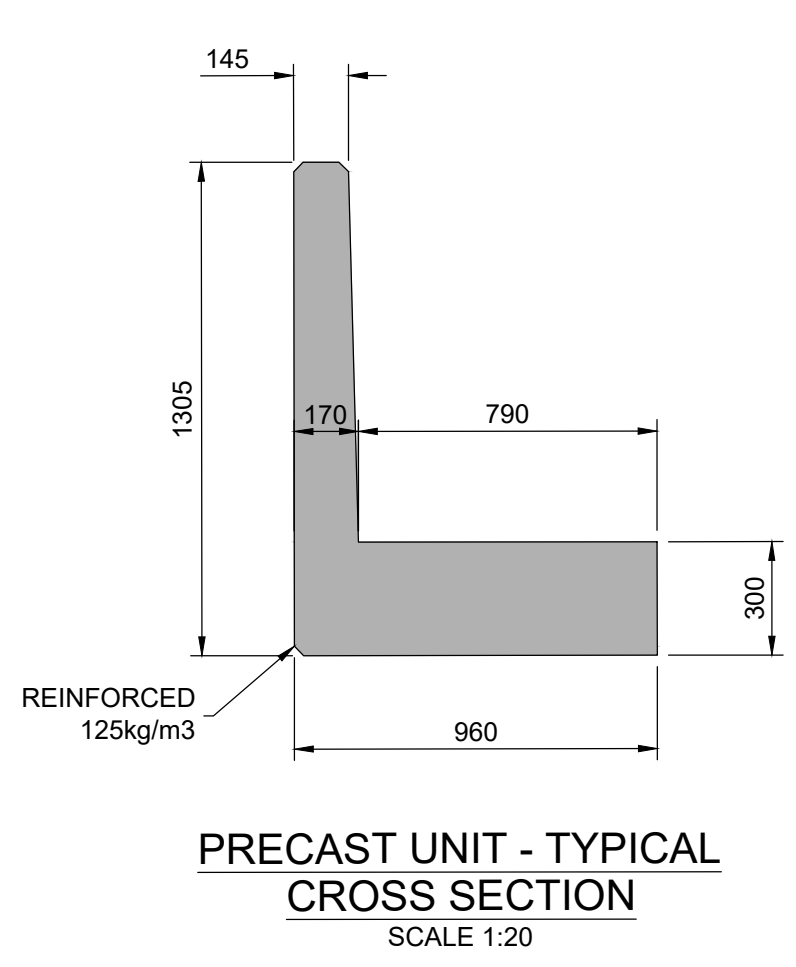
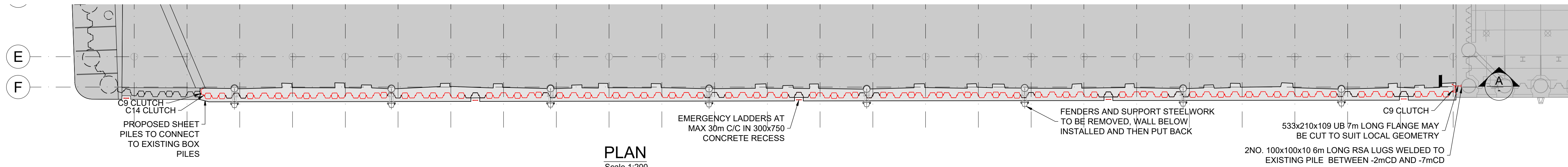
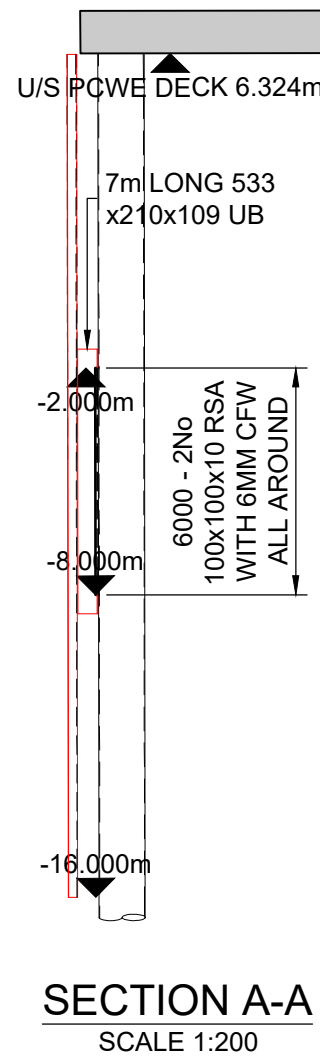
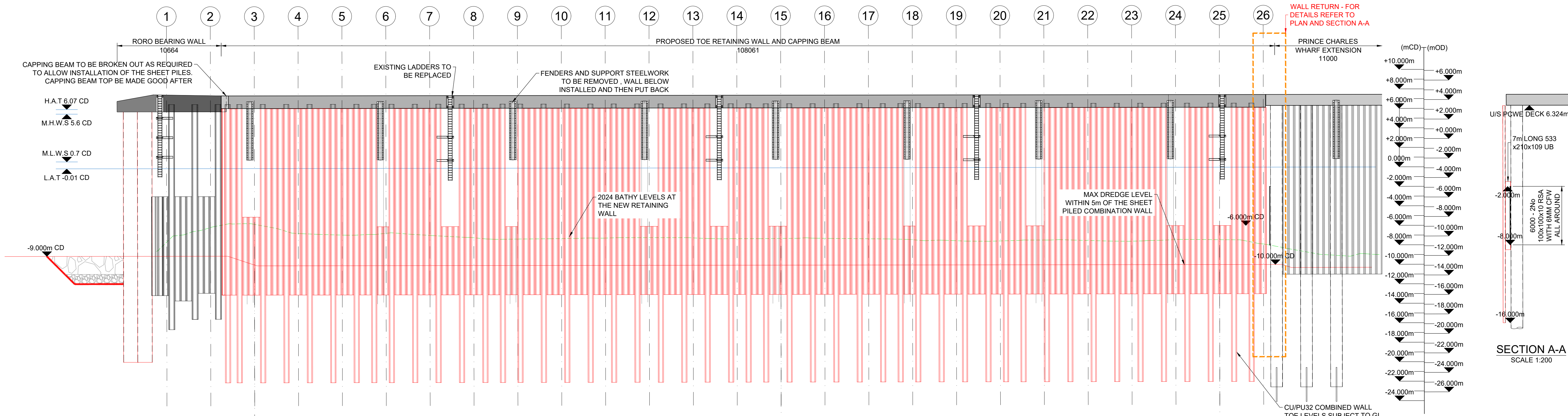


- NOTES
- DO NOT SCALE OFF THIS DRAWING.
 - SHOULD THERE BE ANY CONFLICT BETWEEN THE DETAILS INDICATED ON THIS DRAWING AND THOSE INDICATED ON OTHER DRAWINGS THE ENGINEER SHOULD BE INFORMED PRIOR TO CONSTRUCTION ON SITE.
 - ALL DRAWINGS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
 - IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO EXECUTE THE WORKS AT ALL TIMES IN STRICT ACCORDANCE WITH THE REQUIREMENTS OF THE HEALTH AND SAFETY AT WORK ACT 1974 AND CDM REGULATIONS 2015.
 - THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS.
 - PROPOSED DETAIL DESIGN INCLUDING TRANSFER SLAB TO SUPPORT AN UNFACTORED UNIFORMLY DISTRIBUTED LOAD OF 10T/m².
 - DESIGN LIFE OF PROPOSED NEW ELEMENTS OF THE WORKS TO BE MIN 30 YEARS. DESIGN LIFE OF EXISTING STRUCTURES IS UNAFFECTED BY THE WORKS.



PRELIMINARY

P02	REPLACED RETAINING WALL WITH COMBI WALL	DPS	MDT	MDT	11/12/24
P01	FIRST ISSUE	LC	MDT	PM	05/11/24
REV	DESCRIPTION	BY	CHK	APP	DATE
REVISION TABLE					
HBPW CONSULTING ENGINEERS		43 BRIDGEGATE RET FORD NOTTINGHAMSHIRE DN22 7UX TEL: (01777) 869896 www.hbpw.co.uk			
CONTRACTOR:		CLIENT:			
 FORTH PORTS DUNDEE					
HBPW PROJECT NUMBER: SL08362					
PROJECT: PORT OF DUNDEE EXPANSION PORT OF DUNDEE					
DRAWING: PRINCE CHARLES WHARF PLAN & SECTION					
PROJECT ENGINEER: MDT		DRAWN: LC			
CHECKED: MDT		APPROVED: PM			
DATE: 05/11/2024	SCALE: AS SHOWN	SIZE: A1	SUITABILITY: S4	REVISION: P02	
DOCUMENT REFERENCE NUMBER: 8362-HBPW-XX-XX-DR-C-0101					



- NOTES
- DO NOT SCALE OFF THIS DRAWING.
 - SHOULD THERE BE ANY CONFLICT BETWEEN THE DETAILS INDICATED ON THIS DRAWING AND THOSE INDICATED ON OTHER DRAWINGS THE ENGINEER SHOULD BE INFORMED PRIOR TO CONSTRUCTION ON SITE.
 - ALL DRAWINGS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
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 - THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS.

PRELIMINARY

P02	AMENDED DESIGN TO 82% SOLD WALL	DPS	MDT	MDT	10/1/24
P01	FIRST ISSUE	LC	MDT	PM	21/1/24
REV	DESCRIPTION	BY	CHK	APP	DATE

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HBPW PROJECT NUMBER: **SL08362**

PROJECT: **PORT OF DUNDEE EXPANSION**

PORT OF DUNDEE

DRAWING: **PRINCE CHARLES WHARF ELEVATION ON TOE RETAINING WALL**

PROJECT ENGINEER: PW	DRAWN: LC
CHECKED: MDT	APPROVED: PM
DATE: 21/11/2024	SCALE: AS SHOWN
SIZE: A1	SUITABILITY: S4
REVISION: P02	

DOCUMENT REFERENCE NUMBER: **8362-HBPW-XX-XX-DR-C-0102**

