

**Ardersier Port (Scotland) Ltd.
Construction Environmental Management Document**



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Ardersier Port (Scotland) Ltd.

Construction Environmental Management Document

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This revision from the approved 2018 CEMD adds the use of a small dredger to the CEMD throughout the year. All other aspects remain as previously approved.

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1 INTRODUCTION

This Construction Environmental Management Document (CEMD) has been produced by EnviroCentre Ltd, on behalf of Ardersier Port (Scotland) Limited (AP), to facilitate environmental management during construction activities associated with quay wall reinstatement and capital dredging as conditioned by Marine Licences and Harbour Revision Orders. This CEMD provides an update to the 2017 CEMD previously approved by Marine Scotland in support of a dredge licence. This CEMD includes detail for capital dredging operations and quay wall construction works. Prior to any works commencing, any contractor specific construction management plans and programme updates will be provided.

The CEMD has been produced in accordance with The Highland Council Guidance Note on Construction Environmental Management Process for Large Scale Projects (August 2010). This Guidance Note sets out a robust Project Environmental Management Process (PEMP) for large scale projects. It describes the CEMD as one of the key management tools to implement the agreed Schedule of Mitigation set out in the Environmental Statement (ES)¹, and to incorporate other requirements from consents and licences.

The Schedule of Mitigation is provided within Appendix A, which includes requirements from the following:

- The Port of Ardersier Harbour Revision Order 2014;
- The Port of Ardersier Harbour Revision (Transfer) Order 2017;
- Marine Scotland (MS) licence 04850/14/0 – Licence for Marine Construction Works and Deposits of Substances or Objects in the Scottish Marine Area, and subsequent licences;
- MS licence 04851/16/0 – Licence for the Act of Dredging and Sea Disposal of Dredged Spoil in the Scottish Marine Area, and subsequent licences; and
- The Highland Council Planning Permission in Principle Decision Notice (reference no: 13/01689/PIP), and subsequent permissions.

The specific requirements of each is summarised within Table 1.1. It should be noted that the above marine licences have been superseded. However, as the above licences defined the content of the approved 2018 CEMD their references are retained in the Table 1.1. The current marine licences still refer to the approved CEMD of 2018.

Approach to Environmental Management

The CEMD contains the following specific mitigation plans:

- Archaeological Reporting Protocol;
- Habitat Management Plan (referred to in Appendix C as the Natural Heritage Management Plan);
- Marine Mammal Protection Plan;
- Pollution Prevention Plan;
- Dust Management Plan;
- Noise & Vibration Plan;
- Site Waste Management Plan; and
- Sediment Transport Monitoring Plan.

The main delivery component of the mitigation identified within these plans will be the production of detailed Construction and Environmental Management Plans (CEMPs) prior to specific elements of construction work commencing. These will relate to particular individual specific site/aspects of the construction work and will

¹ Port of Ardersier Limited (2013). Proposed Offshore Renewables Manufacturing and Port Facility. Environmental Statement Volume 2.

apply the principles of the agreed mitigation to show how the mitigation is implemented effectively down to the specific site/aspect level. An example CEMP template is provided within Appendix J.

Table 1.1: Required contents of the Construction Environmental Management Document (CEMD)

Specified Information	Location within CEMD
The Port of Ardersier Harbour Revision Order 2014 - Article 36 (3)	
a) an updated schedule of mitigation	Appendix A
b) processes to control and action changes from the agreed schedule of mitigation;	Section 1
c) the following specific Construction and Environmental Management Plans: i) habitat management plan; ii) spit habitat protection and enhancement plan; iii) marine mammal protection plan; (iv) pollution prevention plan; (v) dust management plan; (vi) noise and vibration mitigation plan; (vii) site waste management plan; and (viii) sediment transport monitoring plan	Appendix C Appendix C Appendix D Appendix E Appendix F Appendix G Appendix H Appendix I
d) details of the appointment of an appropriately qualified Environmental Clerk of Works with roles and responsibilities;	Section 3
e) methods of monitoring, auditing, reporting and communication of environmental management on site and with the client, Scottish Ministers and other relevant parties;	Section 4 & 5
f) statement of responsibility to 'stop the job or activity' if a potential breach of a mitigation measure or legislation occurs.	Section 3
04851/16/0 LICENCE FOR THE ACT OF DREDGING AND SEA DISPOSAL OF DREDGED SPOIL IN THE SCOTTISH MARINE AREA - Condition 1	
a) Mitigation measures against the introduction of marine non-native species	Appendix C
b) Environmental Method Statements (EMS)	Section 2
c) Pollution prevention and management measures, including air and water pollution	Appendix E
d) A Reporting Protocol which sets out what the Licensee must do on discovering any marine archaeology	Appendix B
e) A Dredging Programme and measures for description of the proposed dredging works, the mitigation to be deployed and how this relates to the sediment transport management plan	Section 2
f) A Marine Mammal Protection Programme (MMPP) including a Vessel Management Programme (VMP) Seal Injury Avoidance Scheme (SIAS).	Appendix D
g) A Marine Mammal Observation Protocol (MMOP)	Appendix D
h) A Marine Mammal Monitoring Programme (MMMP)	Appendix D
i) A Habitat Management Plan (HMP) including a Spit Habitat Protection and Enhancement Plan	Appendix C
j) Definition of the methods to be deployed for the 'Sediment Transport Monitoring Plan'.	Appendix I
04850/14/0 LICENCE FOR MARINE CONSTRUCTION WORKS AND DEPOSITS OF SUBSTANCES OR OBJECTS IN THE SCOTTISH MARINE AREA - Condition 2	
a) Mitigation measures against the introduction of marine non-native species	Appendix C
b) Environmental Method Statements (EMS)	Section 2
c) Pollution prevention and management measures, including air and water pollution	Appendix E
d) A Reporting Protocol which sets out what the Licensee must do on discovering any marine archaeology	Appendix B
e) A Marine Mammal Protection Programme (MMPP) including a Vessel Management Programme (VMP) Seal Injury Avoidance Scheme (SIAS).	Appendix D
f) A Marine Mammal Observation Protocol (MMOP)	Appendix D
g) A Marine Mammal Monitoring Programme (MMMP)	Appendix D
h) A Habitat Management Plan (HMP) including a Spit Habitat Protection and Enhancement Plan	Appendix C
i) Definition of the methods to be deployed for the 'Sediment Transport Monitoring Plan'.	Appendix I
PLANNING PERMISSION IN PRINCIPLE Reference No:13/01689/PIP	
Condition 6	
<ul style="list-style-type: none"> An updated Schedule of Mitigation (SM) including all mitigation proposed in support of the planning application, other relevant agreed mitigation (e.g. as required by agencies) and set out in the relevant planning conditions 	Appendix A

Specified Information	Location within CEMD
<ul style="list-style-type: none"> Processes to control / action changes from the agreed Schedule of Mitigation 	Section 1
<ul style="list-style-type: none"> The following specific Construction and Environmental Management Plans: <ul style="list-style-type: none"> i) habitat management plan; ii) spit habitat protection and enhancement plan; iii) marine mammal protection plan; (iv) pollution prevention plan; (v) dust management plan; (vi) noise and vibration mitigation plan; (vii) site waste management plan; and (viii) sediment transport monitoring plan 	Appendix C Appendix C Appendix D Appendix E Appendix F Appendix G Appendix H Appendix I
<ul style="list-style-type: none"> Details of the appointment of an appropriately qualified Environmental Clerk of Works with roles and responsibilities. 	Section 3
<ul style="list-style-type: none"> Methods of monitoring, auditing, reporting and communication of environmental management on site and with the client, Planning Authority and other relevant parties. 	Section 4 & 5
<ul style="list-style-type: none"> Statement of responsibility to 'stop the job / activity' if in potential breach of a mitigation or legislation occurs. 	Section 3

Change Control

The CEMD and associated plans, as detailed within Table 1.1, will be subject to approval from Statutory Authorities.

The Habitat Management Plan (HMP) (Appendix C), Marine Mammal Protection Programme (MMPP) (Appendix D) and the Sediment Transport Monitoring plan (STMP) (Appendix I) will be updated as the CEMD evolves and reviewed periodically. The findings of the STMP will be used to inform ongoing dredging operations.

This CEMD does not apply to any future maintenance dredging which will be subject to separate licence consent informed by the HMP and STMP.

Document Control

Document control procedures will be implemented to ensure all correspondence, drawings and technical data received are recorded, distributed, filed and archived in an efficient and controlled manner. Document control activities shall include:

- Review of documents and drawings prior to release to ensure that requirements are clearly stated and that they are authorised for issue;
- Identification of documents to be controlled;
- Review and approval of changes to documents and drawings; and
- Control of documents, including approved changes to preclude inadvertent use of obsolete or superseded documents.

Standard methods shall be defined for adding and identifying revisions.

2 PROJECT OVERVIEW

Site Description

The development site is located on the former McDermott Fabrication Yard, which lies some 7.5km to the west of Nairn, 18km northeast of Inverness and 3km northeast of the village of Ardersier centred on grid reference NH812 576.

The site is bounded by the Moray Firth to the north; extensive undeveloped sand and mudflats, known as the Carse of Delnies to the east; Case Wood to the south; and a widespread area of sand dunes and tidal mudflats to the west. To the south west of the site lies the boundary of Fort George owned by the MOD.

The site extends to some 307 hectares, and includes a 1,000 metre long quay which is protected by naturally occurring long sand and shingle spit, salt marsh and dunes.

The spit known as Whiteness Head shelters the main part of the port. The majority of the site was reclaimed using dredged sand that was levelled behind a steel pile retaining wall at approximately 4.5m above ordnance datum (OD).

Access to the site is gained via a dedicated 2.5 km long access road, which links to the B9092 to the south. The B9092 subsequently links with the A96, which is the main transport link between Inverness and Aberdeen.

Following reclamation, the site was developed for industrial use as the McDermott Fabrication Yard, which specialised in the fabrication and construction of off-shore platforms used in the development of the North Sea oil and gas industry. Fabrication activities ceased at the site in 2001 and the site has subsequently been cleared. At its height, the fabrication yard employed approximately 4,500 people.

Works Overview

The construction works relevant to this CEMD are marine works involving a capital dredge and quay wall works as detailed in the 2014 Harbour Revision Order (HRO) (section 4) document and associated drawings. An overview of the HRO works extents and main working areas are provided in Appendix K, with Drawing 167112/22 detailing the capital dredge extent and Drawing 167112/27 detailing the quay wall works. The main difference between the HRO and proposed works for the present construction licence is the reduced extent of quay wall construction works. The HRO quay wall works extent on the seaward side includes a pipe spool quay that is not part of the present proposed works.

Works Programme

Dredging is currently taking place under the MSLOT licence reference MS-00009620.

The current construction licence MSLOT reference 06860/19/0 valid until 31 August 2024 has not yet been activated. The CEMD will be reviewed prior to construction works commencing once a Contractor has been appointed.

The main original restriction on the works programme was the commitment not to undertake dredging operations from November to March inclusive and to put in place restrictions during the month of October, subject to regulatory approval. Following consultation with MSLOT and their statutory consultees in late 2021/early 2022 this restriction was lifted for operation of the small dredger being deployed (see Sections below for details). This small dredger was allowed to operate within the wintering birds season subject to bird

surveys to assess any disturbance to roost sites. Surveys were carried out during March 2022, which confirmed that the small dredger could operate without adverse effects on local bird populations. Survey details were submitted to MSLOT as part of the application to vary the license to remove this condition from the dredging license.

Details in terms of future commencement dates and duration are being advised as they become defined.

Capital Dredge

Summary

The capital dredge involves the dredging of the port entrance to -6.5m Chart Datum (CD). This was originally intended to involve the removal of 2,300,000 m³ of sand by Cutter Suction Dredger (CSD), with the material initially being deposited directly via a discharge pipeline to the inner channel as reinstatement to the inner spit (200,000 m³) and onshore storage at the site (2,100,000 m³). An area of the inner channel was proposed to be dredged to -3mCD and would be carried out by either plough dredging, backhoe dredger or land-based equipment. This element of the proposed dredge was minor and represented 2-3% by volume of the overall dredge.

As the project progressed it was considered by AP that purchase of a small dredger for use at Ardersier Port would be a more effective option for the site. Therefore, currently dredging works are all being carried out by a small CSD, details of which are given below. The dredge method for a large CSD has been retained as it is still possible that such a vessel could be used in future.

Small Dredger Details

The vessel currently dredging at Ardersier Port is the Petrus Plancius, pictured below (Plate 2.1), a cutter suction dredger capable of up to approximately 800m³/hr of dredging.



Plate 2.1 Petrus Plancius dredger

It should be noted that mitigation measures for the operation of this dredger are the same as for the large CSD vessel.

CSD Dredge Details

During the mobilisation phase of the dredging operations, the CSD will sail or be towed to the dredging location. The CSD will operate by being positioned on spuds and anchor wires during dredging operations. The dredging process consists of cutting the seabed (loosening the soil) with the cutter-head, then transporting a mixture of soil and water by the dredge pump through a discharge pipeline to the disposal/storage areas. A typical layout of a CSD is shown in Figure 2.1.

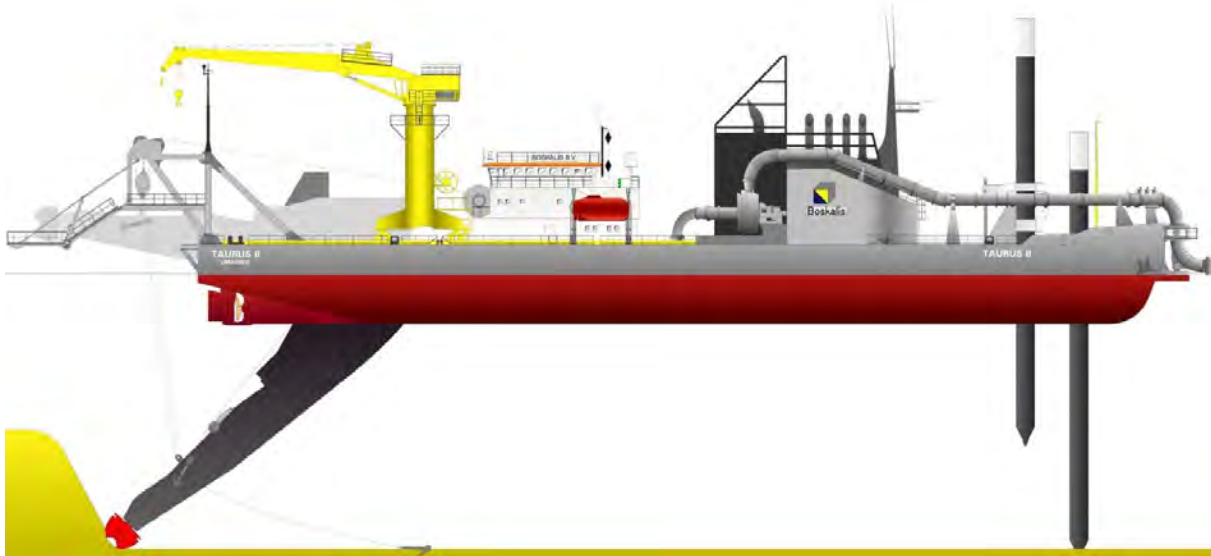


Figure 2.1: General layout of a Cutter Suction Dredger (CSD)

The CSD maintains its position with its spud(s) and the two side wires. The working spud or main spud is dropped onto the seabed securing the stern of the dredger. During dredging, the CSD makes a pivoting movement around the main spud by deploying side anchors on both sides of the cutter ladder; these are connected by steel wires to the side winches on board the CSD. The side anchors will be hanging off the side booms which keeps the anchors close by the dredge. Therefore no anchors have to be placed in the access channel. Because of the shorter distance of the anchors more frequent anchor repositioning is required compared to anchors being positioned further from the dredge. By simultaneously reeling in one side-wire and reeling out the other side-wire the dredger pivots around its spud and can dredge cuts up to 120m wide.

The CSD's spud system consists of 2 spuds. The working, or main, spud is installed within a movable carriage which can move forward and backward relative to the hull. The dredger is pushed forward by hydraulic rams in 'steps' in the order of 1m on either end of the swing. The actual stepping distance depends mainly on the soil conditions; each step allows the CSD to make a new cut. This process is illustrated in Figure 2.2. The auxiliary spud is installed in a static hull mounted arrangement and is kept in raised position during dredging.

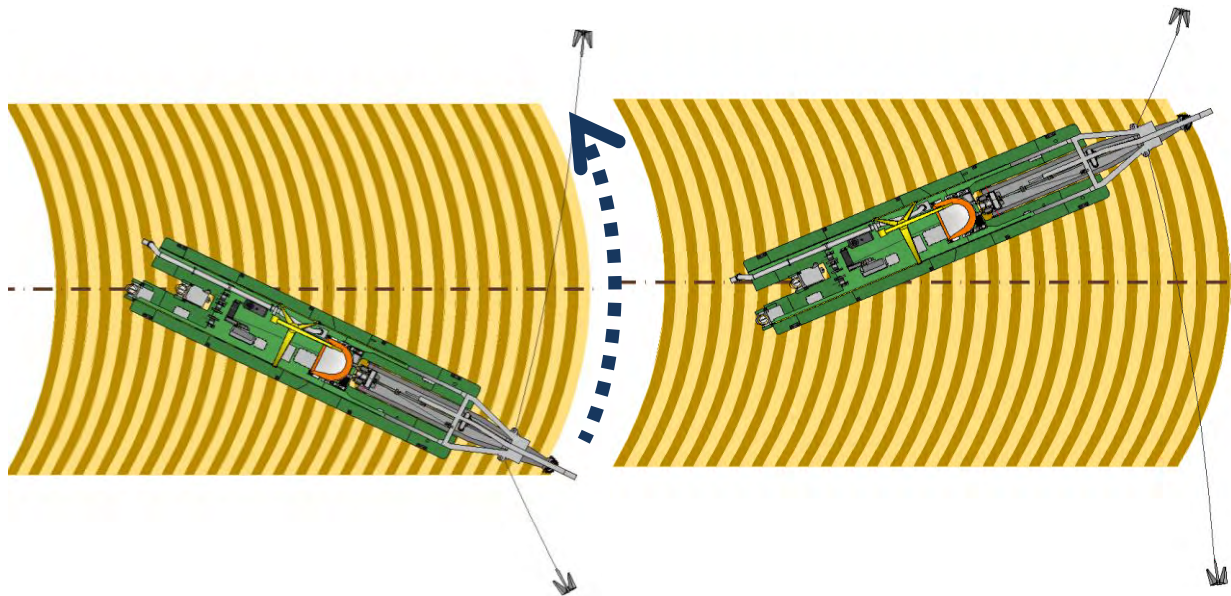


Figure 2.2: a) - CSD start swing to port side b) - CSD completing portside swing

When the working spud ram is fully extended (4 to 6m) the dredger hauls itself to the centre line of the cut. Once in this position, the CSD lowers the auxiliary spud, lifts the working spud and retracts the hydraulic ram, moving the spud carrier forward to the start position. Once in position, the working spud is lowered, the auxiliary spud raised and dredging recommences.

The side anchors are moved forward when the angle between the side wire and the dredger becomes unfavourable for effectively pulling the cutter head from one side to another. The type of anchors and locations are determined on site in order to suit soil and operational conditions. Anchors are handled using a support vessel such as a Multicat or by dry equipment on shore, depending on local conditions.

To begin dredging works the cutter ladder is lowered. The cutter head rotates, loosening the soil which makes up the seabed. The suction inlet is positioned inside the cutter head. The pump lifts a mixture of the loosened soil and water from this inlet through the suction pipe to the pump and out through the discharge system. The mixture flow is schematised in Figure 2.3.

The side slopes of channels or trenches can be dredged by following the side slope angle with the cutter head, or with the more economical method of dredging box-cuts. The stability of side slopes must be considered when dredging channels or trenches. This stability is a function of the seabed's soil characteristics, which must be considered when designing the slope angle. An example of a 'Box-cut' cross-section is shown in Figure 2.4.

Some dredging beyond the design depth may be required to create an additional buffer for siltation. During the dredging operations, regular interim surveys will be carried out to verify the achieved depth and alignment of the works and to calculate the dredged volumes of material.

The CSD is connected by a pipeline to allow the dredge material to be discharged directly to the relevant area. The pipeline consists of floating, submerged and shore section(s). Two different pipeline configurations are schematised in Figure 2.5.

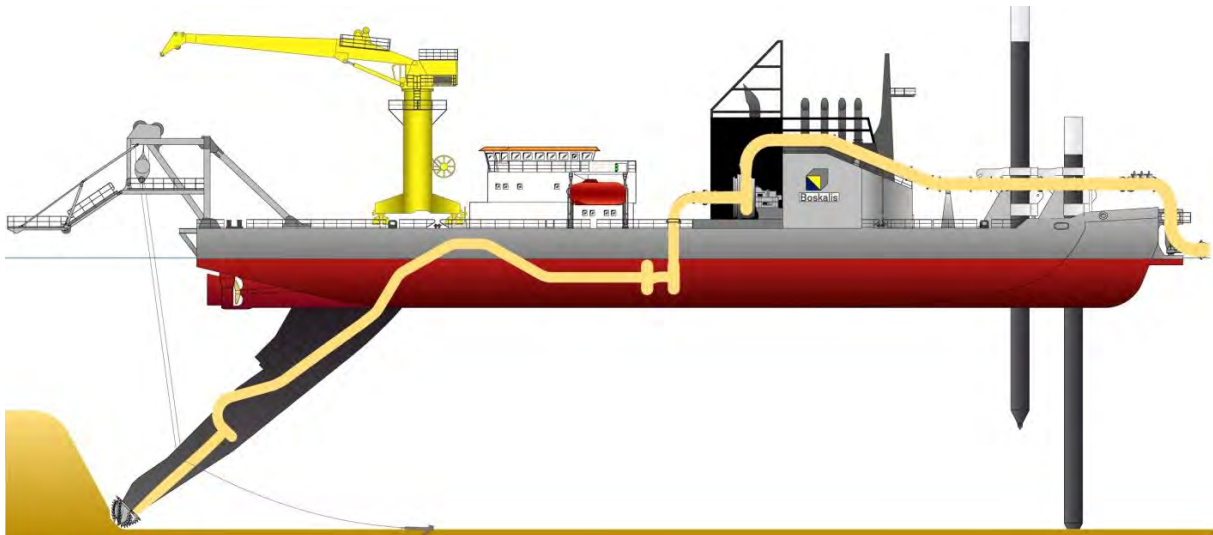


Figure 2.3: Mixture flow through a CSD

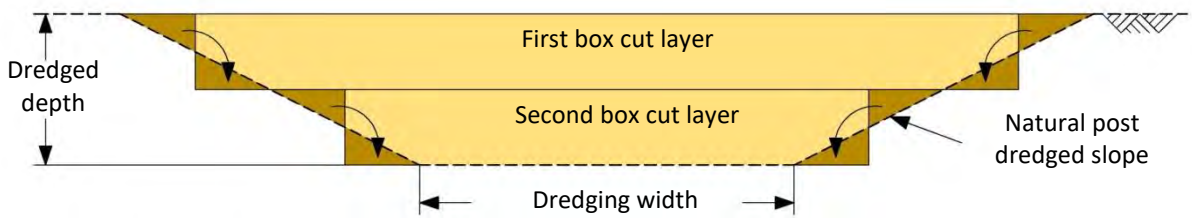


Figure 2.4: Principle of box-cut method (not to scale)

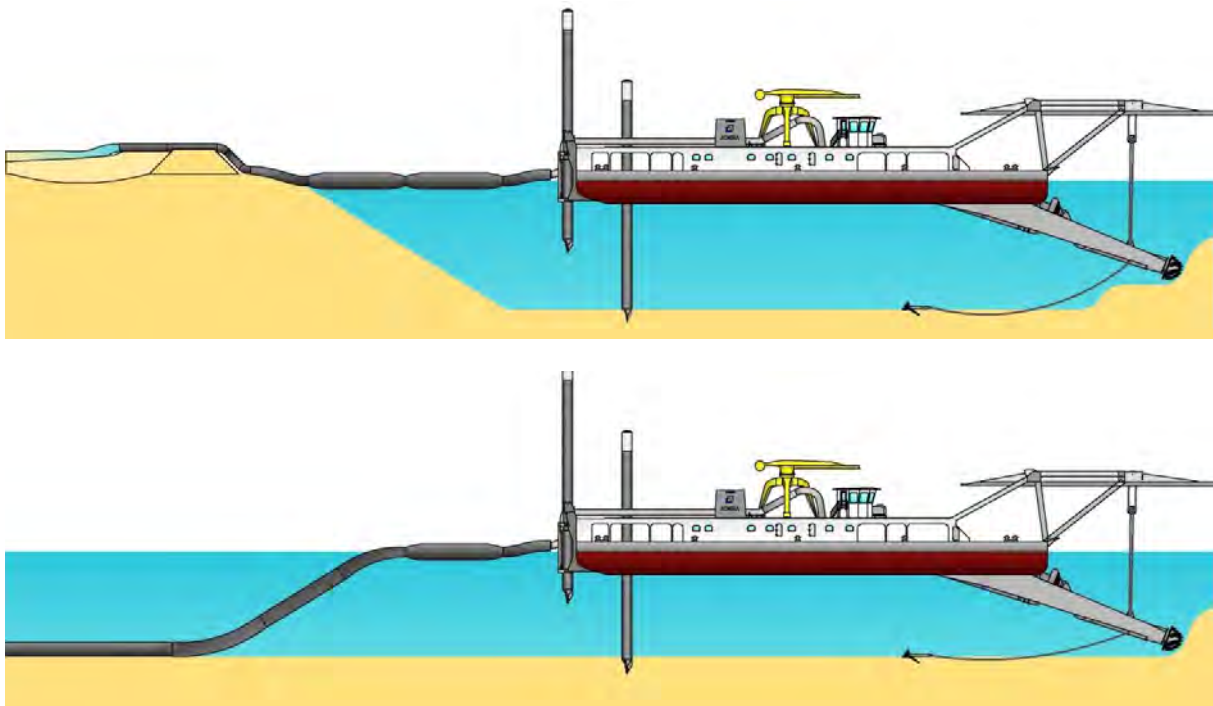


Figure 2.5: CSD discharging onshore, through submerged, floating and shore pipelines

Mitigation during works – water environment

The main mitigation measures when the dredger is active, relate to protection of the water environment. Other mitigation measures in relation to protected species takes into account the timing of the works and suitable buffer zones for the extent of the proposed works.

The site investigation boreholes identified that the dredge material comprises of predominantly sands (75%) and gravels (23%) with a small silt/clay content (2%). Given the nature of the material being dredged, it is considered that the majority of material will not stay in suspension for long and settle relatively quickly. The fines content will stay in suspension longer, but at 2%, is considered to be a small fraction of the material being dredged at any time. Similarly, when the material is deposited in the disposal areas, the plume will be local in extent and short term in duration as the sand will quickly settle.

The sediment plume associated with the dredging will be monitored and suspended sediment samples will be taken in accordance with the Sediment Transport Monitoring Plan.

There are no specific mitigation measures proposed to address the dredge plume during operations, or disposal to the Whiteness Sands B disposal area and the inner channel due to the type of material and the short settlement durations resulting in localised, short term effects.

When the material is placed on land, mitigation measures will be required to control runoff from the deposited material due to the water content in the material pumped ashore. This will be achieved by using bunds to contain the pumped material, formed from dredged arisings, with surplus water allowed to seep back into the surrounding ground or be piped by gravity back to the shore.

Longer term management of runoff from the land based stockpile of material will adopt a similar approach to the active deposition phase, while the risk of windblown sediments being mobilised will be mitigated against by a suppressant system to the surface of the stockpile. These longer term mitigation measures will be organised by Ardersier Port through a separate contract.

Quay Wall

The quay wall works will comprise of a new sheet pile wall either along the line of the existing quayside or as a new alignment. The proposed sequence of works is as shown in Drawing 167112/26 (Appendix K) demonstrating the differences in approach where the existing ground level is above and below MHWS.

Only vibro-piling will be used, there will be no impact piling. In the area of the new extension, a temporary access bund will be placed along the quay wall to allow piles to be driven through this bund. The method of constructing the quay will involve initial construction of bunds but it is envisaged that all this construction would be land based.

At the end of quay construction there will be a requirement to reduce the existing dredge level on the seaward side of the quay to the required dredge depth to allow use of the quay. This would probably be carried out by land based excavator (long reach) and excavated material re-used to backfill against the new quay or taken to the temporary land storage area.

Future Maintenance Dredging

Although not part of the present works, consideration of maintenance dredging is included here as well as in the Habitat Management Plan. Given the location of the Ardersier Port and the surrounding environment, Maintenance Dredging will be an important ongoing consideration during the operational phase of the Port. Based on a review of historical records, maintenance dredging was previously carried out every 18-24 months

with a typical dredge quantity in the order of 100,000-150,000 m³. Note volumes can vary significantly depending on weather events in the intervening period.

Although the projections of the quantities of maintenance dredge volumes are based on previous records and exact volumes cannot be confirmed at this stage, it is possible to set out how best to deal with them in the future, as the following section explains.

Material Reuse Options

The Ardersier Ports environs include sensitive designated sites such as the Inner Moray Firth SPA, the Moray Firth pSPA and the Whiteness Sands SSSI. Ensuring the protection of these sites must be the highest priority when considering operational activities such as Maintenance Dredging. Therefore prior to scheduling a future Maintenance Dredging event the relevant stakeholders will be consulted. They should be given time to review the most recent survey data and reports in order to ensure the dredge arisings are used to complement the needs of the natural environment as the highest priority. See the following extract from the OSPAR Guidelines for Management of Dredged Material at Sea:

7.1 Generally it is preferable to keep the sediment in the aquatic, estuarine, or marine system, however the results of the physical/chemical/biological characterisation will determine the dredged material management options. Examples of management options include beneficial use, unrestricted, open-water deposit, confined aquatic disposal or confined disposal facilities. In some cases the best option may be to leave the material in-situ.

Options for material assessed to be uncontaminated

7.2 There is a wide variety of management options for dredged material depending on the physical and chemical characteristics of the material. Generally, a characterization carried out in accordance with these Guidelines will be sufficient to determine possible management options in water and at the shoreline. Examples include:

- 1. Sustainable Deposit by retaining sediment within the natural sediment system to support sediment-based habitats, shorelines, and infrastructure.*
- 2. Habitat Restoration and Development using direct deposit of dredged material for enhancement or restoration of natural habitat associated with wetlands, other near-shore habitats, coastal features, offshore reefs, fisheries enhancement, etc.*
- 3. Beach Nourishment using dredged material (primarily sandy material) to restore and maintain beaches.*
- 4. Shoreline Stabilization and Protection through the deposit of dredged material with the intent of maintaining or creating erosion protection, dike field maintenance, berm or levee construction, and erosion control.*
- 5. Sea deposit (see Chapter 8)*
- 6. Engineering uses (e.g. as capping material or for land reclamation).*

7.3 Additional information about beneficial uses of dredged material, including case studies, can be found at the Central European Dredging Association's (CEDA) website (<http://www.dredging.org>). PIANC (2009) provides technical information on the assessment of options for beneficial use and recommendations on how to overcome constraints based on "lessons learned" from numerous cases studies in different situations in various countries.

Therefore taking OSPAR Guidelines into account it is vital that the decision making process for future use of Maintenance Dredge materials should prioritise 'retaining sediment within the natural sediment system' and 'habitat restoration and development'.

Also note that any future Maintenance Dredging would be subject to a new Marine Licence Application being submitted and approved by Marine Scotland. Under the exiting guidelines this would also require a Best

Practicable Environmental Option (BPEO) to be carried out to ensure environmental benefits where leading considerations under any new licence application. The BPEO undertaken for the present capital dredge considered management options including: spit replenishment/nourishment; spit restoration; land reclamation; land reinstatement; construction material; spoil ground deposition and offshore deposition.

The decision making process will be informed by the management plans developed by the Port. The Habitat Management Plan includes a Spit Habitat and Enhancement Plan which will use the data collected through the Sediment Transport Monitoring Plan to inform the options for the placement of maintenance dredge material. This will include spatial and volumetric analysis of changes in the coastal environment, which along with other baseline field data will allow the refinement of a coastal model to allow different scenarios for placement of dredged material to be modelled. This will provide greater confidence in the projections of geomorphic change, and subsequent effects on designated features, as a result of the dredging and placement of material.

In addition through this project, the relevant stakeholders through the Ecological Management Group (EMG) will be able to advise the ongoing activities of the port. This will include advising on the baseline survey findings and analysis/reviews as they arise in relation to maintenance dredge planning. This will ensure that the dynamic environment is best protected using adaptive management techniques.

3 ROLES & RESPONSIBILITIES

The CEMD will be updated as appropriate during the progress of the works.

During construction, AP has responsibility for delivering the commitments in the CEMD and associated plans. The contractor is required to provide regular feedback and information to Ardersier Port Limited on the progress and success in delivering all conditions, mitigation and commitments on site. The EMG will advise Ardersier Port through the Environmental Clerk of Works (ECOW).

A mitigation, commitments and conditions tracking register demonstrating progress will be managed by the contractor. AP will regularly monitor works on-site and ensure that all conditions, committed mitigation and identified best practice are delivered in accordance with the CEMD.

Ardersier Port Limited has the authority to halt any activity where environmental commitments are not being successfully delivered, where legal requirements are being breached or where there is a significant risk to the environment.

Any significant deviations from agreed methods of work will be formally agreed with the relevant parties.

Example Roles and Specific Environmental Responsibilities

By defining responsibilities across all levels of the project management team a common goal can be sought, with individuals named to deliver all aspects of the CEMD. Compliance with the CEMD and supporting plans is mandatory and shall be adhered to by all personnel employed on the project to achieve a common approach to environmental control.

Example responsibilities for roles are outlined below, and will be refined during the appointment of a contractor for the main Construction Phase.

Contract/Project Manager

The Contract/Project Manager's specific environmental responsibilities include:

- Demonstrate positive environmental leadership and commitment through actively supporting the initial set-up and sustaining effective environmental management and monitoring measures;
- Ensure adequate provision of competent resources, including appointment of the ECoW, to meet the requirements of the Environmental Management Plan; and
- Ensure all consents and licenses are in place prior to work commencing.

Site Manager / Supervisor

The Site Manager / Supervisor's specific environmental responsibilities include:

- Work with ECoW to ensure CEMD and associated plans are updated and implemented.

All Site Personnel

All personnel working on the project are responsible for the environmental control of their own work and shall perform their duties in accordance with the requirements of this CEMD and in compliance with the plans and

procedures referenced therein. No deviations are permitted without the written authority of the Project Manager.

All site personnel shall:

- Implement control measures described within the CEMD and associated plans; and
- 'Stop the job / activity' if a potential breach of a mitigation or legislation occurs.

Environmental Clerk of Works (ECoW) Role and Responsibilities

The Association of Environmental and Ecological Clerks of Works (AEECW) defines the Environmental Clerk of Works as "An environmental or construction professional with direct responsibility for monitoring compliance with planning consents, environmental permits, legislation and mitigation."² The ECoW will: be independent (i.e. an independent consultant who, through professional membership, is obliged to follow a professional code of conduct); have the relevant construction and natural environment qualifications and experience; be able to influence decisions on site (by educating the relevant site staff and acting as direct liaison between the developer/client and the consenting bodies/regulators); and be multi-disciplinary.

The ECoW will be aware of his/her responsibility in designing and delivering safe mitigation measures in relation to the Construction (Design and Management) Regulations 2015 (CDM).

As outlined in the Marine Scotland Licence Number 04851/16/0 – *Licence for the Act of Dredging and Sea Disposal of Dredged Spoil in the Scottish Marine Area* – Section 3, paragraphs 2 and 3:

2) Prior to Commencement of the Works, the Licensee must, at their own expense, appoint an Environmental Clerk of Works (ECoW) who will ensure delivery of the CEMD. The ECoW shall be on site during all construction and dredging works and shall have authority to halt works if necessary. The ECoW shall also be responsible for ensuring that monitoring of the SPA for shorebird usage, in particular at Whiteness Sands, is undertaken.

3) Prior to the Commencement of the Works, the Licensee must establish, implement and organise an Ecological Management Group co-ordinated by an Ecological Clerk of Works. The Group will advise the Statutory Harbour Authority in delivering the implementation of mitigation measures set out in the CEMD and OEMD during the construction and operation of the Port. The Group is to comprise representation as appropriate from regulatory and statutory bodies, including SNH and SEPA, the Ardersier and Petty Community Council, the Sea Mammal Research Unit, the RSPB, Whale and Dolphin Conservation, MOD and any other parties or successor organisations as may be deemed to require consultation by the Licensing Authority in agreeing the final CEMD/OEMD. The Ecological Management Group will support the Statutory Harbour Authority in its requirement to establish, implement and organise the delivery of the CEMD and OEMD.

Once appointed, and in line with the licence conditions, the ECoW will be responsible for co-ordinating the EMG, and overseeing the implementation and organisation of the CEMD (and OEMD) on a day-to-day basis. These tasks shall include, but not be limited to:

- Attendance of the EMG meetings;
- Ensuring general environmental good practice is followed across the entire construction site at all times, by all personnel (Construction Phase);
- Delivery of toolbox talks for the education of all site staff and construction personnel (Construction Phase);

² Burns, O and Jackson-Matthews, S. (2016). Environmental Clerks of Works: Good Practice Guidance. Version 1 Final – January 2016.

- The emergency contact for any environmental or ecological issues that arise on the construction site (Construction Phase);
- Organisation of all site visits and monitoring programmes listed within the CEMD, including being on site during all construction and dredging works and will have the authority to halt works if necessary;
- To oversee (and act as the EMG point of contact with) the Marine Mammal Observer (MMO) in the implementation of the Marine Mammal Protection Plan (Appendix D), at all times, but specifically during dredging and piling activities;
- Attendance of all relevant Contractor meetings;
- Incident reporting will be provided, as and when required. All emergencies will be reported immediately to Ardersier Port and then to the consenting body within 24 hours. All instances of suspected environmental crime will be reported immediately to the Police;
- Weekly reporting to Ardersier Port using a standard form and a traffic light prioritisation system. The reports will document the advice given, the actions taken and the ultimate outcome in relation to the planning condition, the mitigation or the legislative requirements.
- Monthly reporting of environmental and ecological monitoring to the EMG; and
- Reporting, as required, to the Licensee, and other stakeholders.

In order to comply with the legislation protecting, and to minimise the potential impacts on wintering and breeding birds, the ECoW, through the EMG will also be responsible for the monitoring and review of the Habitat Management Plan, and the implementation of management measures proposed therein. These include, but are not limited to:

- Organisation and implementation of tern raft production and installation on the lagoon;
- Organisation of the invasive, non-native New Zealand pygmyweed removal;
- Organisation of vegetation surveys, and the pinpointing and setting out of vegetation enhancement areas;
- Organisation of all bird monitoring throughout the year, and the authority, in agreement with the EMG, to implement appropriate mitigation as, and if, required in order to safeguard the breeding and wintering populations, specifically those that are features of the adjacent European designated (or proposed for designation) sites;
- Implementation of measures for species specific buffer zones for active nests to avoid damage, and to avoid disturbance to sensitive species;
- Implementation of measures to discourage birds from breeding in construction areas;
- Implementation of measures to ensure that works commence at times of year, times of day, or states of tide, which minimise any potential disturbance to breeding, roosting or foraging birds, seal haulouts, or, in association with the MMO, cetacean movements within the mitigation zone;
- Organisation and implementation of access management measures (fencing, signage, etc);
- Organisation and implementation of habitat enhancement measures (new roost creation, tree planting, transplanting flora, cutting vegetation, etc).

ECoW Presence on Site (Timing)

The original permission as outlined in the Marine Scotland Licence Number 04851/16/0 – *Licence for the Act of Dredging and Sea Disposal of Dredged Spoil in the Scottish Marine Area* – Section 3, paragraph 2 notes that:

'The ECoW shall be on site during all construction and dredging works and shall have authority to halt works if necessary'.

The ECoW for the current dredging activities shall be present during all stage of dredging and shall be present on site one day a week to completion of the licenced activity.

The frequency of ECoW attendance during construction Works will be determined and agreed prior to any construction Works commencing. The frequency of attendance will be dependent on the Contractors methods and programmed activities.

Marine Mammal Observer (MMO)

The Marine Mammal Observer Association (MMOA) describes the role of the MMO as “to be present during offshore operations and to act immediately to protect species of concern should they enter an exclusion zone prior to and sometimes during operations. MMOs will advise personnel onboard to delay or shutdown operations until the animals are at a safe distance and also to record behaviour and sightings at other times. Monitoring and management measures may be set out by a regulatory authority or follow industry best practice. The MMO will work with the client and contractor to ensure requirements are adhered to and provide clarification advice”.

At Ardersier, the main role of the MMO is to ensure, working closely with the ECoW, that dredging and piling works do not disturb marine mammal activity within the Moray Firth. The MMO will undertake visual monitoring from the highest available platform on the dredging vessel, and on land. They will use binoculars and scan for cetacean activity.

Principally for the construction phase, should a cetacean be observed within the mitigation zone, communication between the MMO and the ECoW will occur, and suitable mitigation measures will be implemented to ensure safe passage through the mitigation zone for the cetaceans. These measures will be standard protocol, and will be agreed with the EMG, and Ardersier Port Limited ahead of any MMO work being commenced. In addition to the observation tasks, the MMO will also be responsible for the following:

- Delivery of toolbox talks for the education of all relevant site staff and dredger crew;
- The first call emergency contact for any environmental or ecological issues that arise during dredging or piling;
- Organisation of all MMO programmes listed within the Marine Mammal Protection Plan (MMPP), including being active through all dredging and piling works;
- Having the authority to halt dredging or piling works when necessary;
- Daily reporting to the ECoW using a standard form and a traffic light prioritisation system. The reports will document the advice given, the actions taken and the ultimate outcome in relation to the planning condition, the mitigation or the legislative requirements.
- Monthly reporting of environmental and ecological monitoring to the EMG; and
- Reporting, as required, to the Licensee, and other stakeholders.

Ecological Management Group

The EMG will advise AP in delivering the implementation of mitigation measures set out in the CEMD and Operation Environmental Management Document (OEMD) during construction and operation of the Port. As dictated by the *Port of Ardersier Harbour Revision Order (2014), Paragraphs 35 (1) – (9)*, the CEMD and OEMD are required to be signed off by Scottish Ministers ahead of commencement of development or operation of the Port. The EMG will comprise representation from the following regulatory and statutory bodies, and other relevant organisations:

- Ardersier Port Limited;
- NatureScot (Scottish Natural Heritage (SNH));
- Scottish Environment Protection Agency (SEPA);
- The Royal Society for the Protection of Birds (RSPB);
- Whale and Dolphin Conservation (WDC);
- Ardersier and Petty Community Council (APCC); and

- The Ministry of Defence (MOD).

Key Contacts

Ardersier Port (Scotland) Limited
4 Charlotte Street
Fraserburgh
Aberdeenshire
Scotland
AB43 9JE

4 ENVIRONMENTAL COMMUNICATION

An Environmental Communication and Training plan will be developed by the contractor to ensure all staff employed in the execution of the works fully understand all environmental requirements and are properly equipped to implement these requirements.

The contractor should provide reports as required to Ardersier Port Limited confirming the status of the project, implementation of environmental requirements, environmental audits, monitoring and any environmental incidents. The structure of these reports should be included in the environmental communication and training plan.

Ardersier Port Limited will act as the primary contact with all statutory bodies.

The Environmental Communication and Training Plan will aim to cover all aspects of communicating environmental management of the site that exists between the contractor and Ardersier Port Limited; the ECoW/EMG and the contractor; the ECoW/EMG and Ardersier Port Limited; and all sub-contractors; and all site staff.

All site staff (of all levels) must adhere to the Environmental Policy, the CEMD, and receive an induction and toolbox talk prior to the commencement of works on site. The toolbox talk may be given by the ECoW, or by an Environmental Manager or Site Manager employed by Ardersier Port Limited. Environmental sensitivities and policy may also be effectively communicated, where appropriate, through posters on site, information literature (leaflets, cards), video, and digital or online applications. Any environmental communications on environmental compliance or pollution prevention measures must be delivered face to face by the ECoW, Environmental Manager or Site Manager.

The role of the ECoW is described in Section 3, above.

The Environmental Manager or Site Manager will be responsible for issuing monthly reports to Ardersier Port Limited, which should include, but not be limited to:

- Details of any non-compliance identified on site;
- Monitoring information relating to the significant environmental aspects on site;
- Preventative action reports; and
- External environmental communication reports.

The Environmental Communication and Training Plan will provide the details of key individuals working on site, their job roles and contact details. This document will also clarify the communication channels that should be followed by all site staff, including who has responsibility for informing other parties on site, and how to respond in the event of an environmental incident.

For Third Party persons or groups affected by the environmental performance of Ardersier Port Limited; the site; or site staff, all communication will be recorded by the Environmental Manager or Site Manager, including the date of correspondence, the actions required, any non-compliance report, or non-compliance event, and whether there was any deviation from the Environmental Policy. Any serious or sustained breach of Environmental Policy may result in a fine, claim or sanction, and be communicated to Ardersier Port Limited with immediate effect.

The Environmental Manager or Site Manager is required to manage and maintain documentation in line with the appropriate Environmental Management System to ensure that the aims of Environmental Policy are followed. These may include, but not be limited to:

- Statements of policy, objectives and targets;

- Information on significant environmental pressures;
- Procedures;
- Process information;
- Organisational charts;
- Internal and external standards;
- Site emergency plans; and
- Records of events.

Waste management policy can be found in the Site Waste Management Plan (Appendix H within this CEMD).

5 AUDITING AND MONITORING

Environmental monitoring and auditing is an essential tool to ensure all project environmental requirements are fully implemented and environmental performance is continually improved.

The contractor must provide a contract specific audit and monitoring plan covering the following:

- The contractor's own Environmental Management System;
- The CEMD, CEMP, schedule of mitigation register, relevant legislation and industry good practice;
- All project activity;
- Roles and responsibilities for those undertaking audits and monitoring;
- Frequency of inspection activities (i.e. daily, weekly, monthly);
- Process to deal with corrective actions/non-compliance; and
- Reporting procedures (including non-compliance).

Ardersier Port Limited shall undertake a planned programme of compliance monitoring to verify the effectiveness of the project's environmental management.

Any Monitoring Plan will follow guidance within the CEMPs, adhering to all conditions stated in the relevant licences and consents for the site. Data collected during monitoring activities will be analysed by the ECoW, Environmental Manager or Site Manager, to obtain information relevant to the environmental performance of the site. This information may then be used to implement corrective and preventative action if required. Any measuring equipment required will be calibrated and verified in line with the manufacturers' standards, or European measurement standards. All monitoring will be overseen by the Environmental Manager or Site Manager, but each specific task will be undertaken by the staff member or contractor named in the individual CEMPs, before reporting results of the monitoring activity to the Environmental Manager or Site Manager.

The Environmental Manager or Site Manager must ensure that any schedules or records of actions taken to ensure environmental compliance are kept within a suitable Environmental Management System, and all decisions were made in line with relevant licence and consent conditions and the Environmental Policy.

Non-compliance will be recorded when procedures and protocol stated in the Environmental Policy are not followed, which may include, but not be limited to:

- A failure to carry out the required checks on oil or chemical storage facilities;
- A severe pollution incident due to the failure of a containment facility; or
- A reckless act of disturbance or causing harm to a protected species or nesting bird.

Actions taken to correct a non-compliance will be dependent on the nature of the specific incident. The Environmental Manager or Site Manager has responsibility for making decisions regarding actions to take in the case of a non-compliance, but in the case of a serious incidents, this must be decided in consultation with Ardersier Port Limited.

Where a non-compliance relates to a pollution incident, the Incident Response Plan must be followed in the first instance, before additional actions are taken. Preventative actions relate to the measures set out within the CEMD for the protection of the environment, environmental receptors, and the prevention of pollution.

Environmental records that may be retained by the Environmental Manager or Site Manager to evidence compliance with the requirements of the Environmental Policy may include, but are not limited to:

- Training records;

- Process monitoring records;
- Inspection, maintenance and calibration records;
- Pertinent contractor and supplier records;
- Incident reports;
- Records of tests for emergency response;
- Audit results;
- Management review results;
- Decisions relating to external communications;
- Records of applicable legal requirements;
- Records of significant environmental aspects;
- Records of environmental meetings;
- Environmental performance information;
- Legal compliance records; and
- Communication with Third Parties.

Internal audits will be conducted by Ardersier Port Limited, and will be conducted by personnel who are competent and in a position to conduct the audits impartially and objectively. Regular internal audits of the site will be conducted during the construction phase.

Any confidential information will be saved or stored in an appropriate manner, away from the public domain.

Management reviews will be conducted by Ardersier Port Limited, and will assess the suitability and efficiency of the environmental performance of the site staff and the site, including the management of environmental issues and impacts, operational controls, non-compliances and any corrective actions undertaken.

Environmental objectives laid out in the Environmental Policy will be reviewed with the Environmental Manager or Site Manager, in order to ensure these are effectively improving the environmental progress of site, and delivering continual improvement.

6 TRAINING

Environmental training will be undertaken to ensure all site personnel have the appropriate knowledge to successfully implement the Construction Method Statement (CMS), CEMD, CEMP and the environmental requirements of the project.

The training section of the environmental communication and training plan should be developed by the contractor and shall incorporate the following:

- General induction/awareness training for all site personnel should be provided. This should include waste management, working in or near watercourses, surface water pollution and control, ecology, dust management and noise management;
- Emergency preparedness and response;
- Weekly sessions to cover specific relevant issues appropriate to the work being undertaken at the time;
- Any specific training requirements for key, identified roles. Specific training for key, identified roles should include any training that will be required to comply with specific commitments/mitigations and general good practice contained within this document; and
- Records of all training required and provided to all employees should be maintained and made available to Ardersier Port Limited for inspection.

7 EMERGENCY RESPONSE

A site-specific Emergency Response Plan will be developed by the contractor, and will detail the response to any environmental incidents on site. Emergency response to environmental incidents shall be included in all Construction and Environmental Management Plans (CEMPs).

The Emergency Response Plan shall, as a minimum, include:

- A Site Plan showing:
 - layout and access details;
 - schematic representation of the site drainage arrangements;
 - layout/location of any buildings including temp facilities;
 - access routes and meeting points for emergency services;
 - areas used to store raw materials, products and wastes;
 - bunded areas, with details of products stored and estimated retention capacity;
 - location of hydrants, 'fireboxes' and pollution prevention equipment and materials;
 - any watercourse, spring, borehole or well located within or near the site;
 - areas of porous or unmade ground; and
 - site drainage – foul, surface and trade effluent drainage systems.
- A risk screening assessment;
- A site chemical, product and waste inventory with location and quantities;
- An inventory of on site equipment and materials to deal with pollution incidents; and
- Details of the Emergency Response team with clearly defined roles and responsibilities:
The contractor shall include provision for an emergency response team to be available during works. The Emergency Response team shall consist of an appropriate number of members plus appropriate equipment to deal with all incidents identified in the Emergency Response Plan. The team shall be on standby during working hours and be capable of attending an incident within 60 minutes of receiving notice. An out of hours standby system should be identified and detailed in the Emergency Response plan;
- Procedure for responding to pollution incidents;
- Details of how waste associated with any incidents shall be managed; and
- Procedure for reporting incidents.

Emergency Response Training

Relevant site personnel shall be trained in the use of pollution control equipment.

8 REFERENCE DOCUMENTS

Mitigation to avoid and reduce potential environmental impacts due to construction have been developed from UK best practice and the following guidance documents:

- British Standards Institution. *British Standard 5228: Code of practice for noise and vibration control on construction and open sites. BS 5228-1:2009+A1:2014: Noise. BS 5228-2:2009+A1:2014: Vibration*
- Scottish Government (2012) *Duty of Care - A Code of Practice*
- Scottish Government (2013) *Guidance on Applying the Waste Hierarchy*
- SEPA (2006) *Is it waste? Understanding the definition of waste guidance note.*
- SEPA (2013) *Pollution Prevention Guidelines, PPG1. Understanding Your Environmental Responsibilities - Good Environmental Practices*
- SEPA (2017) *Guidance for Pollution Prevention, GPP5. Works and maintenance in or near water.*
- SEPA (2012) *Pollution Prevention Guidelines, PPG6. Working at Construction and Demolition Sites.*
- SEPA (2011) *Pollution Prevention Guidelines, PPG7. The safe operation of refuelling facilities.*
- Joint Nature Conservation Committee (JNCC) (2010) *Statutory nature conservation agency protocol for minimising the risk of injury to marine mammals from piling noise.*
- SNH (2012) *Guidance for Staff Advising on the Potential Risk of Corkscrew Injuries.*
- The Highland Council (2010) *Construction Environmental Management Process for Large Scale Projects*
- The Crown Estate (2014) *Protocol for Archaeological Discoveries: Offshore Renewables Projects.* Published by Wessex Archaeology, Salisbury, on behalf of The Crown Estate.
- Construction Industry Research and Information Association (CIRIA) *Coastal and Marine Environmental Site Guide (C584) 2003.*

APPENDICES

A SCHEDULE OF MITIGATION

Mitigation Ref.	Mitigation Measure	Location in CEMD	Lead
1	Prepare and maintain a Construction Environmental Management Document (CEMD), subject to approval from the appropriate Statutory Authorities.	CEMD	Ardersier Port Ltd
2	Maintain updated schedule of mitigation to include all mitigation proposed in support of the HRO, marine licenses and planning conditions.	Schedule of Mitigation (Appendix A)	Ardersier Port Ltd
3	Appoint an Environmental Clerk of Works (ECoW).	CEMD Section 3	Ardersier Port Ltd
4	Establish an Ecological Management Group (EMG) to advise and support the design and implementation of mitigation measures and to undertake ongoing monitoring of designated sites and protected species. Composition of the group is as stated in the Statutory Approvals.	CEMD Section 3	Ardersier Port Ltd
5	Develop and implement a Reporting Protocol which sets out what the Licensee must do on discovering any marine archaeology. Mitigation within the Reporting Protocol includes: a) All site personnel will be briefed on the significance of archaeological finds and anomalies; b) All finds will be immediately reported to the Site Manager and EcoW; c) In the event of a find, all relevant works will halt and the ECoW process the find in accordance with The Crown Estate's <i>Protocol for Archaeological Discoveries: Offshore Renewables Projects</i> .	Archaeological Reporting Protocol (Appendix B)	Ardersier Port Ltd
6	Prepare a Habitat Management Plan	Habitat Management Plan (Appendix C)	Ardersier Port Ltd

Mitigation Ref.	Mitigation Measure	Location in CEMD	Lead
7	<p>Implement habitat enhancement measures appropriate to the stage of the development such as:</p> <ul style="list-style-type: none"> a) New buildings will be constructed on site, which provide new opportunities for nesting birds and roosting bats through the provision of bird and bat boxes; b) Spit Habitat Protection and Enhancement; c) New scrub and dry heathland planting incorporated into the proposed development; d) Tern rafts to be provided at the eastern end of the inner channel to create additional nesting opportunities for Common and Arctic Tern (<i>Sterna paradisaea</i>); e) Retain drainage ditch along the southern site boundary to allow any potential otter access; f) Removal of New Zealand pygmyweed and any other non-native species from the terrestrial lagoon; g) Avoid transgress by construction plant in the area of the spit; h) No dredging to take place during October to March to avoid the wintering birds season. If dredging is required in October this is only to occur with the approval of MS in consultation with SNH. 	Habitat Management Plan (Appendix C)	Ardersier Port Ltd
8	<p>Mitigation measures against the introduction of non-native species include:</p> <ul style="list-style-type: none"> a) Remove any visible plant, fish, animal matter and mud from the vessel, in particular the hulls should be cleaned regularly; b) Safely dispose of any plant and animal material removed from the vessel; c) Toolbox talks will be given and posters to aid identification of non-native species will be disseminated to all members of staff involved in the project. These will aid on the management and control of marine non-native species; d) Ideally, all equipment and vessels required will be from within biogeographic regions where possible, and all have undergone the necessary inspections (and certification) prior to arriving on site; and e) Should marine non-native species be identified on site, this should be reported to the relevant authority. 	Habitat Management Plan (Appendix C)	Ardersier Port Limited

Mitigation Ref.	Mitigation Measure	Location in CEMD	Lead
9	<p>General Ecological Mitigation Measures:</p> <ul style="list-style-type: none"> a) An Environmental Clerk of Works (ECoW) will be appointed to ensure delivery of the CEMD; b) Monitoring of vegetation (including lichen) and mammal activity will be undertaken during construction; c) Any changes to mitigation and habitat enhancement as a result of monitoring activity can be co-ordinated through the EMG; and d) A planting scheme and measures to enhance the general biodiversity and vegetation across the site will be developed. 	Habitat Management Plan (Appendix C)	Ardersier Port Limited
10	Prepare a Marine Mammal Protection Plan (MMPP)	Marine Mammal Protection Plan (Appendix D)	Ardersier Port Ltd
11	<p>Prepare and implement a Seal Injury Avoidance Scheme ("SIAS")</p> <p>Mitigation measures identified within the SIAS includes:</p> <ul style="list-style-type: none"> a) Have a Marine Mammal Observer Present during all dredging and overwater piling activities to ensure that no seals enter the area during the operations, in particular during the seal breeding season (July – August); b) Employ a soft start approach to activities to allow any marine mammals present to vacate the area; and c) Develop and implement a Vessel Management Plan. 	Marine Mammal Protection Plan (Appendix D)	Ardersier Port Ltd

Mitigation Ref.	Mitigation Measure	Location in CEMD	Lead
12	<p>Prepare and implement a Noise and Vibration Plan.</p> <p>Mitigation measures identified within the Noise and Vibration Plan includes:</p> <ul style="list-style-type: none"> a) Impose appropriate conditions on the appointed contractor to minimise noise and vibration; b) Introduce measures to control noise and vibration during the construction phase; c) Use best practice to reduce emissions throughout the construction period incorporating measures to control noise and vibration; d) Utilise noise control measures such as siting of fixed plant away from noise sensitive receptors, use of properly silenced plant and use of screening and enclosures where appropriate; e) Select inherently quiet plant; f) Site fixed plant away from noise sensitive receptors; g) Use silenced plant, screening and enclosures where appropriate around any noisy fixed plant; h) Adhere to relevant British Standards including, but not limited to, British Standard BS 5228; i) Develop a Construction Traffic Management Plan. <p>Measures relating to on-site vehicle movements could include:</p> <ul style="list-style-type: none"> i. Only vehicles conforming to relevant national or international standards, directives and recommendations on noise and vibration emissions will be used; ii. Personnel will be instructed on best practice measures to reduce noise and vibration as part of their induction including training as required prior to specific work activities; iii. When transporter engines are not required to be running, engines should be turned off; and iv. Where possible, vehicles should be fitted with broadband reversing alarms rather than tonal types. 	Noise & Vibration Mitigation Plan (Appendix G)	Contractor
13	No dredging operations take place during the November to March period.	CEMD Section 2	Ardersier Port Ltd
14	<p>Pollution Prevent Plan mitigation measures include:</p> <ul style="list-style-type: none"> a) CEMPs will consider all possible pollution pathways and be in accordance with relevant SEPA PPG and GPP; b) Regulate use of fires and lights within the harbour and within any vessel within the harbour; and c) Routinely inspect access road to ensure that there are no signs of erosion. 	Pollution Prevention Plan (Appendix E)	Contractor

Mitigation Ref.	Mitigation Measure	Location in CEMD	Lead
15	<p>Dust Management:</p> <ul style="list-style-type: none"> a) Visually monitor dust generation from work areas to ensure that excessive dust is not being produced; b) Maintain all trafficable areas and vehicle manoeuvring areas in or on the premises, in a condition that will minimise the generation, or emission from the premises, of wind blown or traffic generated dust; c) If excessive fugitive dust observed, investigate source and implement/increase suppression measures; and d) Restrict traffic to defined roads and implement a speed limit. 	Dust Management Plan (Appendix F)	Contractor
16	<p>Waste management:</p> <ul style="list-style-type: none"> a) The Contractor will adopt an integrated approach to waste management and minimisation by applying the waste hierarchy; b) A list of clearly defined waste responsibilities will be prepared and implemented; c) Present glass, metal, plastic, paper and card (including cardboard) for separate collection; d) Take steps to maintain the quality of dry recyclables presented for separate collection; e) Take care of the waste to prevent escape; f) Ensure waste is transferred to someone who is authorised to receive it, for example, a registered waste carrier or waste manager with the relevant authorisation; g) Complete a waste transfer note for any transfer of waste, including a full description of the waste, and retain a copy of this note for two years; h) Describe the waste accurately and provide information for the safe handling, transport, treatment, recovery or disposal by subsequent holders; i) Take reasonable measures to ensure that the waste does not cause pollution or harm to human health; j) All movements of special waste must be accompanied by a Special Waste Consignment Note (SWCN). Copies of SCCN must be retained for three years; and k) Monthly waste reports must be provided to Ardersier Port Limited. 	Site Waste Management Plan (Appendix H)	Contractor
17	Construction Traffic Management Plan	(part Appendix G)	Contractor

Mitigation Ref.	Mitigation Measure	Location in CEMD	Lead
18	<p>Formation of the Storage Area Bunds</p> <p>A Permanent bund will be constructed to provide screening of the nearest known coastal roost site. This work would be completed prior to any dredging commencing (see Table 2.1 for programme). Once the permanent bund has been created the temporary bund will be constructed around the remaining coastal perimeter. For more details please refer to drawing as indicated.</p>	<p>Habitat Management Plan (Appendix C) Drawing 670191-018)</p>	Contractor

B ARCHAEOLOGICAL REPORTING PROTOCOL

Underwater archaeology was scoped out of the EIA process, however the following will be adopted to ensure any unexpected archaeological discoveries are reported and investigated. This approach follows guidance detailed within The Crown Estate's Protocol for Archaeological Discoveries (PAD) published by Wessex Archaeology³.

PADs are systems of monitoring for unexpected or incidental finds relating to the historic environment. PADs are intended to apply to development, construction and installation activities where an archaeologist is not present on site and therefore not immediately available, i.e. in those instances where a traditional archaeological scheme of works is not in place (such as a watching brief, evaluation, etc.). PADs address both archaeological 'finds' and 'anomalies'. Finds are defined as an object or site with archaeological potential or significance, where as an anomaly is a signature that could be visual or digital (e.g. geophysical) that indicates a possible find or site which will require further investigation.

Consistent with the Crown Estate's guidance, the following will be implemented:

- a) All site personnel will be briefed on the significance of archaeological finds and anomalies;
- b) All finds will be immediately reported to the Site Manager and ECoW; and
- c) In the event of a find, all works will halt and the ECoW shall process the find in accordance with The Crown Estate's guidance and supporting materials⁴.

³ The Crown Estate (2014). *Protocol for Archaeological Discoveries: Offshore Renewables Projects*. Published by Wessex Archaeology, Salisbury, on behalf of The Crown Estate.

⁴ <http://www.wessexarch.co.uk/projects/marine/tcerenewables/protocol-awareness-programme>

C HABITAT MANAGEMENT PLAN

Contained as Technical Appendix 7.7 to the EIAR Terrestrial Ecology Chapter

D MARINE MAMMAL PROTECTION PLAN

Contained as Technical Appendix 8.2 to the EIAR Marine Ecology Chapter

E POLLUTION PREVENTION PLAN

Detailed Construction and Environmental Management Plans (CEMPs) will be produced prior to specific elements of work commencing and will be agreed with SEPA and NatureScot prior to works starting on site. These will relate to particular individual specific site/aspects of the work and will apply the principles of the agreed mitigation to show how the mitigation is implemented effectively down to the specific site/aspect level. The CEMPs will consider all possible pathways for pollution, and be in accordance with relevant SEPA guidance including:

- Pollution Prevention Guidelines (PPG) 1: Understanding your environmental responsibilities - good environmental practices;
- Guidance for Pollution Prevention (GPP) 5: Guidance for Pollution Prevention Works and maintenance in or near water; and
- PPG 6: Working at construction and demolition sites.

Roles and responsibilities for pollution prevention are outlined within Section 3 of the CEMD.

Oil and Chemical Storage, Use and Disposal

Storage, use and disposal of any chemicals including fuels will be compliant with:

- GPP 2: Above ground oil storage tanks;
- PPG 7: Safe storage - The safe operation of refuelling facilities; and
- PPG 8: Safe storage and disposal of used oils.

This may include:

- Bunds will provide storage of at least 110% of a tank's maximum capacity.
- All fuel and chemicals will be stored at least 10m from nearest watercourse and avoid wetland areas and bogs.
- Fuelling trigger must be locked shut when not in use and the sight gauge should have an automatic closing cut-off valve. The fuelling trigger, hose and site gauge should be within the bund. Refuelling must only take place at least 10m from any surface water.
- Any chemicals entering the site will be accompanied by the relevant COSHH data sheets. A copy of these sheets will be filed by the Site Manager and kept at hand. Handling and storage measures will be incorporated into the CEMP as required. The relevant COSHH data sheets will be relayed to the work force who may be required to handle or deal with any such chemicals or equipment.
- Appropriate emergency spill kits will be located at relevant work areas.
- Regular inspection and maintenance of vehicles, tanks and bunds will be undertaken. Any leaks identified must be stopped, contained and repaired.
- Fuelling and maintenance of vehicles and machinery, and cleaning of tools, will be carried out in a designated area. Fuel deliveries will fill portable bunded bowsers at the compound on a designated impermeable and bunded area. Machinery will be refuelled from the compound where possible.

Compounds and Hardstanding Areas

Drainage from compounds and hardstanding areas will be designed to prevent pollution through use appropriate local scale Sustainable Drainage Systems (SuDS) such as those detailed in the CIRIA SuDS Manual.

Sewage

Welfare facilities will include a flushing toilet which will be connected to a closed tank. This will be routinely serviced to remove sewage off site by a suitably licensed contractor.

Air

Dust will be managed in accordance with the Dust Management Plan (CEMD Appendix F).

To reduce emissions, the movement of all vehicles around the site will be kept to a minimum with all vehicles and plant switched off when not in use.

No fires will be permitted on site.

Noise

Airborne noise and vibration will be managed in accordance with the Noise & Vibration Plan (CEMD Appendix G).

Underwater noise will be managed in accordance with the Marine Mammal Protection Plan (CEMD Appendix D).

Lighting

Temporary lights should be fitted with shades to prevent light spillage outside the working area.

Lighting used will be the minimum amount required for safety, and switched off when not required.

Emergency Response

A site-specific Emergency Response Plan will be implemented as detailed within Section 7 of the CEMD.

F DUST MANAGEMENT PLAN

Introduction

The aims of the Dust Management Plan (DMP) is to ensure that dust and exhaust emissions of plant and equipment are controlled to an acceptable level. This DMP provides a strategy for dust control, and how measures are implemented and monitored.

Mitigation

Dust shall be considered within the detailed, activity-specific CEMPs. Mitigation measures may include:

- Visually monitor dust generation from work areas to ensure that excessive dust is not being produced;
- Maintain all trafficable areas and vehicle manoeuvring areas in or on the premises, in a condition that will minimise the generation, or emission from the premises, of wind blown or traffic generated dust;
- Provision of dust suppression measures;
- If excessive fugitive dust is observed:
 - investigate source;
 - implement suppression measures if not present;
 - implement further suppression measures;
- Restrict traffic to defined roads and implement a speed limit.

G NOISE & VIBRATION PLAN

Introduction

The Noise & Vibration Plan details the approach to be adopted to manage and monitor noise and vibration on site. Information is provided on the assessments undertaken within the Environmental Statement⁵, the control measures to be employed to minimise potential impacts and the reporting procedures to be adopted.

Noise emissions from the site shall at all times be managed in such a manner as to ensure that noise from such operations, when assessed in accordance with current policy and guidance notes where applicable, shall not be determined as indicating that complaints or disturbance are likely to occur.

The scope of this Noise and Vibration Plan is limited to dredging and quay wall construction activities.

The proposed hours of operation are as follows:

- Capital dredging work – continuous 24/7 for dredge period of approximately eight weeks; and
- Quay wall – mainly daylight hours.

Airborne Noise and Groundborne Vibration

An assessment of potential noise and vibration impacts during construction activities is detailed within Chapter 9 of the Port of Ardersier Proposed Offshore Renewables Manufacturing and Port Facility Environmental Statement (ES) (2013). The approach to the assessment of construction activities was based on the following:

- Identification of noise sensitive receptors within the vicinity of the Site and assess its level of sensitivity;
- Establishment of prevailing baseline noise conditions at selected noise sensitive receptors;
- Noise and vibration assessment of predicted noise levels during construction operations associated with the development;
- Determination of design aims for plant and services to be located on, or within, the proposed new buildings at the site;
- Development of preliminary mitigation proposals, where appropriate; and
- Assessment of the significance of any residual effects.

The Environmental Statement predicted negligible effects for construction noise and vibration however recommended a CEMP, as per standard practice, and provided mitigation measures to control noise and vibration on site.

Mitigation

Mitigation measures to control airborne noise and groundborne vibration include:

- Selecting inherently quiet plant;
- Siting of fixed plant away from noise sensitive receptors;
- Use of properly silenced plant and use of screening and enclosures where appropriate. Using, where necessary and practicable, enclosures and screens around any noisy fixed plant;
- Adhering to relevant British Standards including, but not limited to, British Standard BS 5228;

⁵ Port of Ardersier Limited (2013). Proposed Offshore Renewables Manufacturing and Port Facility. Environmental Statement Volume 2: Environmental Statement.

- Mitigation for building services and fixed plant includes procurement of 'quiet' non-tonal plant, locate plant and air vents away from noise sensitive receptors, acoustic enclosures, in-duct attenuators, acoustic louvers etc.;
- Development and implementation of a Construction Traffic Management Plan to minimise the potential impacts from construction traffic, including:
 - Provision to ensure unloading is carried out on-site rather than on the adjacent roads;
 - Routing of construction vehicles via designated routes, which would be agreed with The Highland Council and other relevant authorities; and
 - Phasing of materials deliveries which would be controlled on a 'just-in-time' basis, wherever possible, minimising travel time and traffic congestion around the site.
- Measures relating to on-site vehicle movements could include:
 - Only vehicles conforming to relevant national or international standards, directives and recommendations on noise and vibration emissions will be used;
 - Site hoarding and screens will provide acoustic screening where necessary where vehicle movements are in close proximity to NSRs;
 - Personnel will be instructed on BPM to reduce noise and vibration as part of their induction including training as required prior to specific work activities;
 - When transporter engines are not required to be running, i.e. other than unloading, engines should be turned off so they do not contribute unnecessarily to the prevailing noise climate; and
 - Where possible, vehicles should be fitted with broadband reversing alarms rather than tonal types.

Monitoring

The requirement for airborne noise monitoring shall be determined within the detailed CEMPs.

Complaints

Ardersier Port Limited shall investigate any noise complaints promptly. If the complaint is considered to be associated with site activities, remedial action shall be undertaken immediately to reduce source of noise and vibration.

If a second complaint is received relating to the same issue, then a series of environmental monitoring shall be undertaken by a competent person in accordance with current policy and guidance notes where applicable at the location of the complaint.

Following monitoring, the CEMP shall be reviewed and remedial measures undertaken as soon as practical.

Any incidents of noise and vibration problems or complaints should be recorded in the site diary.

H SITE WASTE MANAGEMENT PLAN

This Site Waste Management Plan (SWMP) outlines the requirements and guidance necessary for effective waste management. Activity-specific waste will be managed in accordance with this SWMP and captured with specific CEMPs.

The scope of this SWMP is limited to activities associated with dredging and quay wall reinstatement.

Approach to Waste Management

Waste is defined in Article 3 (1) of the Waste Framework Directive (2008/98/EC) and means.... " any substance or object which the holder discards or intends or is required to discard". Further guidance can be found within *Is it waste? Understanding the definition of waste guidance note* (SEPA, 2006).

The project will adhere to the principles of sustainable waste management – where waste generation is avoided, and waste is viewed and used as a resource. This resource-centred approach is summarised in the 5 step waste hierarchy illustrated within Figure H.1. The waste hierarchy ranks waste management options according to the best environmental outcome taking into consideration the lifecycle of the material from-cradle-to-grave. In its simplest form, the waste hierarchy gives top priority to preventing waste. Further guidance on applying the waste hierarchy can be found within *Guidance on Applying the Waste Hierarchy* (Scottish Government, 2013).

The Contractor will adopt an integrated approach to waste management and minimisation by implementing the waste hierarchy.

Duty of Care

Section 34 of the Environmental Protection Act 1990 (as amended) (applicable to Scotland, England and Wales) places a legal duty of care on all those who produce, keep or manage controlled waste, including waste carrier and brokers. The act introduces a system of monitoring, control and recording of the management of waste enroute and at its destination. This duty has no limit and extends until the waste has either been finally disposed of or fully recovered.

To comply with the Duty of Care, the following shall be undertaken:

- Apply the waste hierarchy to the management of waste and promote 'high quality' recycling.
- Present glass, metal, plastic, paper and card (including cardboard) for separate collection.
- Take steps to maintain the quality of dry recyclables presented for separate collection.
- Take care of the waste to prevent escape.
- Ensure waste is transferred to someone who is authorised to receive it, for example, a registered waste carrier or waste manager with the relevant authorisation.
- Complete a waste transfer note for any transfer of waste, including a full description of the waste, and retain a copy of this note for two years.
- Describe the waste accurately and provide information for the safe handling, transport, treatment, recovery or disposal by subsequent holders.
- Take reasonable measures to ensure that the waste does not cause pollution or harm to human health.

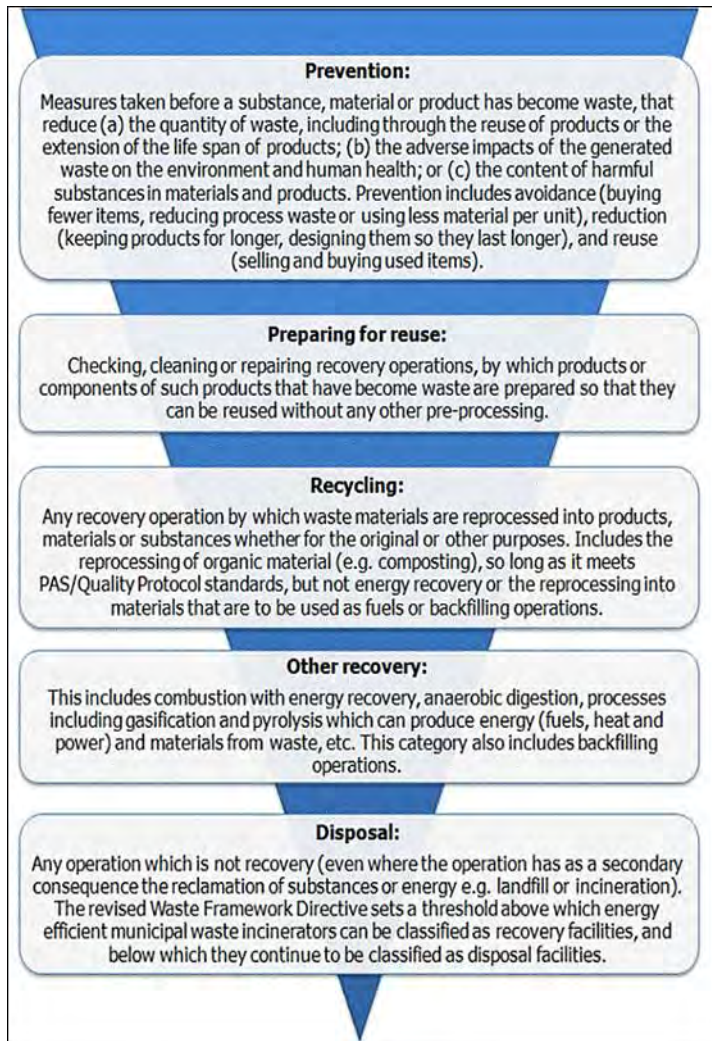


Figure H-8.1: Waste Hierarchy

Waste Transfer

Waste shall only be transferred to licensed waste disposal contractors.

A Waste Transfer Note (WTN) must be completed and signed by both the person handing over the waste and the person receiving it. The WTN must contain enough information about the waste for it to be handled safely and either recovered or disposed of legally. The WTN must include:

- a description of the waste;
- any processes the waste has been through;
- how the waste is contained or packaged;
- the quantity of the waste;
- the place, date and time of transfer;
- the name and address of both parties;
- details of the permit, licence or exemption of the person receiving the waste;
- the appropriate European Waste Catalogue (EWC) code (SEPA: Consolidated version of the EWC); and
- the Standard Industry Code (SIC) of the business (Companies House: Guide to SIC 2007).

Copies of all WTNs must be kept for at least two years.

All movements of special waste must be accompanied by a Special Waste Consignment Note (SWCN). Copies of SCCN must be retained for three years.

Responsibilities

In order to achieve success in waste minimisation and management practices during construction, a list of clearly defined responsibilities will be prepared and implemented. Common responsibilities may include, but is not limited to:

- Management of service provider contracts;
- Compilation of monthly waste data for regulator/corporate reporting;
- Training;
- Completion of waste transfer notes;
- Waste segregation;
- Waste packaging and labelling;
- Record keeping; and
- Auditing and performance review.

Waste Performance Monitoring and Reporting

Monthly waste reports must be provided to Ardersier Port Limited.

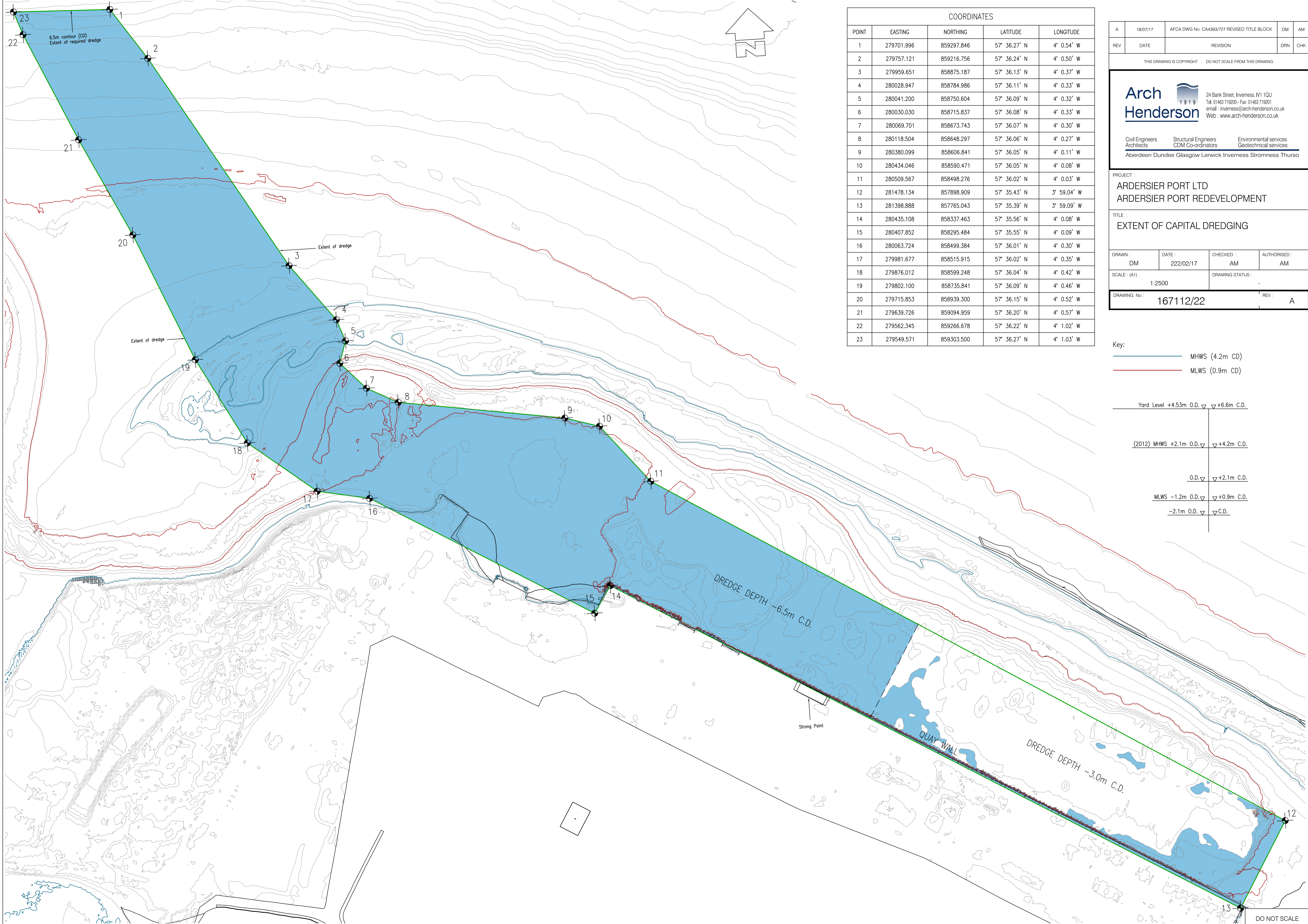
I SEDIMENT TRANSPORT MONITORING PLAN

Contained as Technical Appendix 11.3 to the EIAR Water Environment Chapter

J EXAMPLE CEMP TEMPLATE

K WORKS EXTENT

Drawing 167112/22	Extent of capital dredging
Drawing 167112/27	Works above and below mean high water springs
Drawing 167112/26	Proposed sequence of works



COORDINATES				
POINT	EASTING	NORTHING	LATITUDE	LONGITUDE
1	279701.996	859297.846	57° 36.27' N	4° 0.54' W
2	279757.121	859216.756	57° 36.24' N	4° 0.50' W
3	279959.651	858875.187	57° 36.13' N	4° 0.37' W
4	280028.947	858784.986	57° 36.11' N	4° 0.33' W
5	280041.200	858750.604	57° 36.09' N	4° 0.32' W
6	280030.030	858715.837	57° 36.08' N	4° 0.33' W
7	280069.701	858673.743	57° 36.07' N	4° 0.30' W
8	280118.504	858648.297	57° 36.06' N	4° 0.27' W
9	280380.099	858606.841	57° 36.05' N	4° 0.11' W
10	280434.046	858590.471	57° 36.05' N	4° 0.08' W
11	280509.567	858498.276	57° 36.02' N	4° 0.03' W
12	281478.134	857898.909	57° 35.43' N	3° 59.04' W
13	281398.888	857765.043	57° 35.39' N	3° 59.09' W
14	280435.108	858337.463	57° 35.56' N	4° 0.08' W
15	280407.852	858295.484	57° 35.55' N	4° 0.09' W
16	280063.724	858499.384	57° 36.01' N	4° 0.30' W
17	279981.677	858515.915	57° 36.02' N	4° 0.35' W
18	279876.012	858599.248	57° 36.04' N	4° 0.42' W
19	279802.100	858735.841	57° 36.09' N	4° 0.46' W
20	279715.853	858939.300	57° 36.15' N	4° 0.52' W
21	279639.726	859094.959	57° 36.20' N	4° 0.57' W
22	279562.345	859266.678	57° 36.22' N	4° 1.02' W
23	279549.571	859303.500	57° 36.27' N	4° 1.03' W

A	18/07/17	AFCA DWG No. CA4393/227 REVISED TITLE BLOCK	DM	AM
REV	DATE	REVISION	DRN	CHK

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Civil Engineers Architects
 Structural Engineers CDM Co-ordinators
 Environmental services Geotechnical services
 Aberdeen Dundee Glasgow Lerwick Inverness Stromness Thurso

PROJECT :
ARDERSIER PORT LTD
ARDERSIER PORT REDEVELOPMENT

TITLE :
EXTENT OF CAPITAL DREDGING

DRAWN : DM	DATE : 222/02/17	CHECKED : AM	AUTHORISED : AM
SCALE : (A1) 1:2500		DRAWING STATUS : -	
DRAWING No. : 167112/22			REV. : A

Key:

- MHWS (4.2m CD)
- MLWS (0.9m CD)

Yard Level +4.53m O.D. ▽ +6.6m C.D.

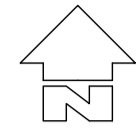
(2012) MHWS +2.1m O.D. ▽ +4.2m C.D.

O.D. ▽ +2.1m C.D.

MLWS -1.2m O.D. ▽ +0.9m C.D.

-2.1m O.D. ▽ C.D.

DO NOT SCALE



LEGEND

- Proposed sequence of works where existing ground level is above MHWS
- Proposed sequence of works where existing ground level is below MHWS

COORDINATES				
POINT	EASTING	NORTHING	LATITUDE	LONGITUDE
1	281768.765	857553.393	57° 35.55' N	3° 58.77' W
2	281402.920	857768.490	57° 35.66' N	3° 59.15' W
3	280433.340	858338.500	57° 35.95' N	4° 0.14' W
4	280407.852	858295.484	57° 35.93' N	4° 0.16' W
5	280369.885	858317.785	57° 35.94' N	4° 0.20' W
6	280208.289	858413.727	57° 35.99' N	4° 0.36' W
7	280218.420	858467.040	57° 36.02' N	4° 0.36' W
8	280180.150	858497.600	57° 36.03' N	4° 0.40' W
9	280063.724	858499.384	57° 36.03' N	4° 0.51' W
10	280028.235	858507.471	57° 36.03' N	4° 0.55' W
11	279813.893	858556.316	57° 36.06' N	4° 0.76' W
12	279844.960	858733.614	57° 36.15' N	4° 0.74' W
13	279805.560	858740.518	57° 36.16' N	4° 0.78' W
14	279774.493	858563.219	57° 36.06' N	4° 0.80' W
15	279703.627	858575.637	57° 36.07' N	4° 0.88' W
16	279687.772	858506.060	57° 36.03' N	4° 0.89' W
17	279914.388	858564.184	57° 36.06' N	4° 0.66' W
18	279901.057	858505.683	57° 36.03' N	4° 0.68' W
19	279959.557	858492.352	57° 36.03' N	4° 0.62' W
20	279972.889	858550.853	57° 36.06' N	4° 0.60' W
21	279860.808	858545.625	57° 36.05' N	4° 0.72' W
22	280752.303	858150.983	57° 35.85' N	3° 59.81' W
23	280832.890	858103.082	57° 35.49' N	3° 59.43' W

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Civil Engineers Architects Structural Engineers CDM Co-ordinators Environmental services Geotechnical services
 Aberdeen Dundee Glasgow Lerwick Inverness Stromness Thurso

PROJECT :
ARDERSIER PORT LTD
ARDERSIER PORT REDEVELOPMENT

TITLE :
WORKS ABOVE AND BELOW
MEAN HIGH WATER SPRINGS

DRAWN : DM DATE : 20/07/18 CHECKED : AM AUTHORISED : AM

SCALE : (A1) NTS DRAWING STATUS :

DRAWING No: 167112/27 REV: E



Key:
 ① Sequence of Works. See Dwg. No. 167112/26 for details

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 Structural Engineers CDM Co-ordinators
 Environmental services Geotechnical services
 Aberdeen Dundee Glasgow Lerwick Inverness Stromness Thurso

PROJECT :
**ARDERSIER PORT LTD
 ARDERSIER PORT REDEVELOPMENT**

TITLE :
PROPOSED SEQUENCE OF WORKS

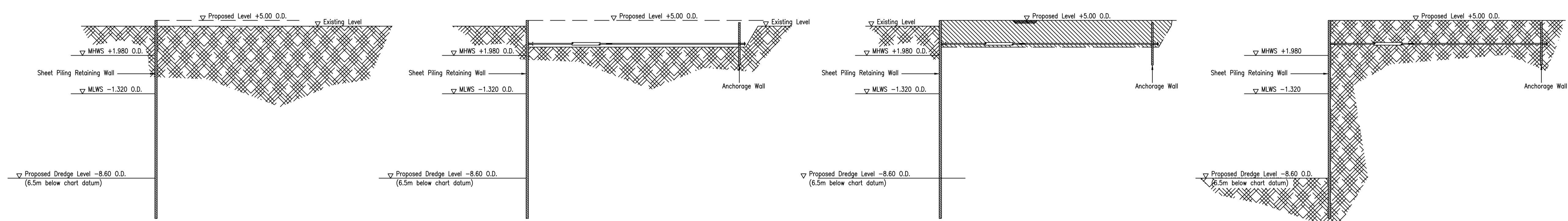
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SCALE : (A1) NTS		DRAWING STATUS : -	
DRAWING No : 167112/26			REV : A

1. Drive piles

2. Area excavated to tie rod (probably above MHWS)

3. Back fill behind wall to finished level

4. Excavate in front of wall to finished dredge level



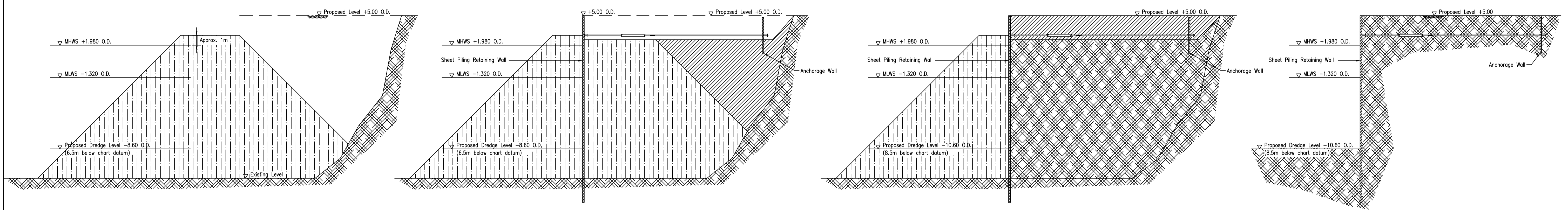
① PROPOSED SEQUENCE OF WORKS WHERE EXISTING GROUND LEVEL IS ABOVE MHWS
 (OUTWITH QUAY AREA)

1. Temporary access bund constructed

2. Piles driven and anchor system installed

3. Backfill behind wall

4. Excavate in front of wall to finished dredge level



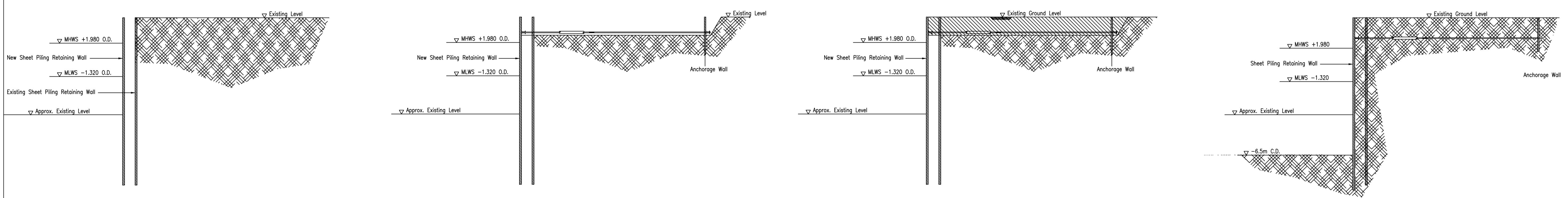
② PROPOSED SEQUENCE OF WORKS WHERE EXISTING GROUND LEVEL IS BELOW MHWS

1. Piled placed along existing quay wall

2. Anchor as required - new wall tied in to existing wall

3. Back fill behind wall to finished level

4. Dredge to required depth



③ PROPOSED SEQUENCE OF WORKS FOR RENEWAL/UPGRADE OF EXISTING QUAY

DO NOT SCALE