Tarbert Ferry Terminal Upgrade

Construction Environmental Management Document

Document History		
Issue	**Date**	**Reason for Change**
1	29/01/19	Issued to Marine Scotland with Licence Application
2	04/06/19	Sections 6 and 16 updated to address SEPA comments.
3	27/06/19	Section 9 updated to include CnES phone number

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Section Number	1
Section Title	Introduction
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Approved	Fiona Henderson

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Contents

1 Introduction

This Construction Environmental Management Document (CEMD) has been developed to ensure that the Tarbert ferry terminal upgrade works implements the appropriate mitigation to minimise environmental impacts and aligns with the Environmental Impact Assessment Report (Affric Limited, 2019) and Marine Licences. It sets out the various mitigation, guidance and policy requirements of the project, both from the Schedule of Mitigation and with reference to and incorporation of the Principal Contractor's environmental management systems.

Specific mitigation protocols designed for the Tarbert Ferry Terminal Upgrade include:

- The Dust Management Plan (DMP);
- The Protocol for Archaeological Discoveries (Manap & Voulvoulis);
- The Dredging for Sea Disposal Protocol; and
- The Marine Mammal and Basking Shark Species Protection Plan (MMSPP).

1.1 Implementation

The implementation of the CEMD will be through risk assessed method statements (RAMS), the construction contractor's environmental management system, and the direct application of Construction Environmental Management Plans (CEMPs) identified within this document.

1.2 Updates

The CEMD is a live document and will be regularly updated as discussed in Section 4. There will be a review prior to the start of each new phase of construction to ensure the document remains fit for purpose.

Construction Environmental Management Document	
Section Number	2
Section Title	Background
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2 Background

2.1 Licensing

The Tarbert ferry terminal upgrade is subject to two marine licences under the Marine (Scotland) Act 2010 these are:

- A dredge and sea disposal licence – to allow dredging at the Tarbert ferry terminal site and disposal of dredged spoil at the Stornoway disposal site, reference HE035.
- A construction licence – to facilitate construction works carried out below the Mean High-Water Spring.

Works above the Mean Low Water Spring (MLWS) is consented via existing powers under the East Loch Tarbert Pier Order 1873 ('1873 Order'), the 1984 Order and through the Harbour Revision Order.

The contractor should have a European Protected Species (EPS) licence for disturbance to cetaceans prior to piling works being undertaken.

2.2 Basis

The main aspects of the CEMD have been extracted from the Tarbert Ferry Terminal Upgrade Environmental Impact Assessment Report (EIAR) (Affric Limited, 2019) produced to support the marine licence applications and HRO. Further detail, including the basis and reasoning behind the mitigation outlined in this document, is provided in the EIAR.

Mitigation to avoid and minimise potential environmental impacts associated with the Tarbert Upgrade aligns to current industry best practice and the following guidance documents:

1. Construction Environmental Management Process for Large Scale Projects (The Highland Council, 2010);
2. PPG 1: Understanding your Environmental Responsibilities – Good Environmental Practice (NIEA, SEPA, & Environment Agency, 2013);
3. GPP 5: Works and Maintenance In or Near Water (Environment and Heritage Service, SEPA, & Environment Agency, 2017);
4. PPG 6: Working at Construction and Demolition Sites (Environmental Agency, NIEA, & SEPA, 2012);
5. PPG 7: Safe Storage – The Safe Operation of Refuelling Facilities (NIEA, SEPA, & Environment Agency, 2011b);
6. PGG 18: Managing Fire Water and Major Spillages (SEPA, Environment Agency, & Environment and Heritage Service, 2000);
7. GPP 21: Pollution Incident Planning (NIEA, SEPA, & Wales, 2017);
8. PPG 22: Incident Response – Dealing with Spills (NIEA, SEPA, & Natrual Resources Wales, 2011);
9. PPG 26: Safe Storage – Drums and Intermediate Bulk Containers (NIEA, SEPA, & Environment Agency, 2011a);
10. Alien invasive Species and the Oil and Gas Industry Guidance for Prevention and Management (IPIECA & OGP, 2010);
11. Joint Nature Conservation Committee (JNCC), Statutory nature conservation agency protocol for minimising the risk of injury to marine mammals from piling noise (Joint Nature Conservation Committee, 2010);
12. BS EN 5228- 1:3009 + A1 2014: Code of Practice for Noise and Vibration Control on Construction and Open Sites (British Standards Institute, 2014);
13. Guidance on the Assessment of Dust from Demolition and Construction (IAQM, 2014);
14. Guidance on Air Quality Monitoring in the Vicinity of Demolition and Construction Sites (IAQM, 2012);
15. CIRIA: Coastal and Marine Environmental Site Guide (CIRIA, 2015);
16. Guidance Note: Controlling Light Pollution and Reducing Lightning Energy Consumption (Scottish Executive, 2007); and
17. Planning for Transport: Planning Advice Note – PAN 75 (Scottish Executive, 2005).

2.3 References

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Joint Nature Conservation Committee. (2010). *Statutory Nature Conservation Agency Protocol for Minimising the Risk of Injury to Marine Mammals from Piling Noise*. Retrieved from http://jncc.defra.gov.uk/pdf/JNCC_Guidelines_Piling%20protocol_August%202010.pdf

Manap, N., & Voulvoulis, N. (2016). Data analysis for environmental impact of dredging. *Journal of Cleaner Production, 137*, 394-404. doi:https://doi.org/10.1016/j.jclepro.2016.07.109

NIEA, SEPA, & Environment Agency. (2011a). PPG 26: Deums and intermediate bulk containers. In (pp. 20).

NIEA, SEPA, & Environment Agency. (2011b). The safe operation of refuelling facilities: PPG7. In (pp. 1-30): NIEA, SEPA and Environment Agency.

NIEA, SEPA, & Environment Agency. (2013). Pollution Prevention Guidelines: PPG1 - Understanding your Environmental Responsibilities - Good Environmental Practices. In (pp. 1-10): NIEA, SEPA and Environment Agency.

NIEA, SEPA, & Natrual Resources Wales. (2011). PPG 22: Dealing with spills. In (pp. 31).

NIEA, SEPA, & Wales, N. R. (2017). GPP 21: Pollution Incident Response Plans. In (pp. 25).

Scottish Executive. (2005). Planning for Transport - Planning Advice Note - PAN 75. In (pp. 42): Scottish Executive.

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The Highland Council. (2010). Construction Environmental Management Process for Large Scale Projects.

Construction Environmental Management Document	
Section Number	3
Section Title	Roles and Responsibilities
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3 Roles and Responsibilities

3.1 Environmental Management Structure

It is important to define roles with regard to environmental management to ensure that it is clear to all involved who is responsible for what, and that all issues are covered. Figure 3.1 provides an overview of the interactions between the various parties involved in the construction of the Tarbert Upgrade. The ECoW will be employed by CMAL and will work closely with CMAL's Project Manager (PM), Consultant Engineer's Project Manager and Site Supervisor (SS), as well as the Principal Contractor's Site Manager (SM) and Environmental Representative, to ensure that all the elements of the CEMD are being appropriately implemented. Descriptions of the various roles with regard to environmental management and training requirements are provided below.

Due to the timescale of this project it is likely that there will be changes of personnel before the completion of the build. As such this chapter will refer to job titles only, a list of personnel and contact details can be found in Appendix 3.A which will be updated as necessary throughout the project.

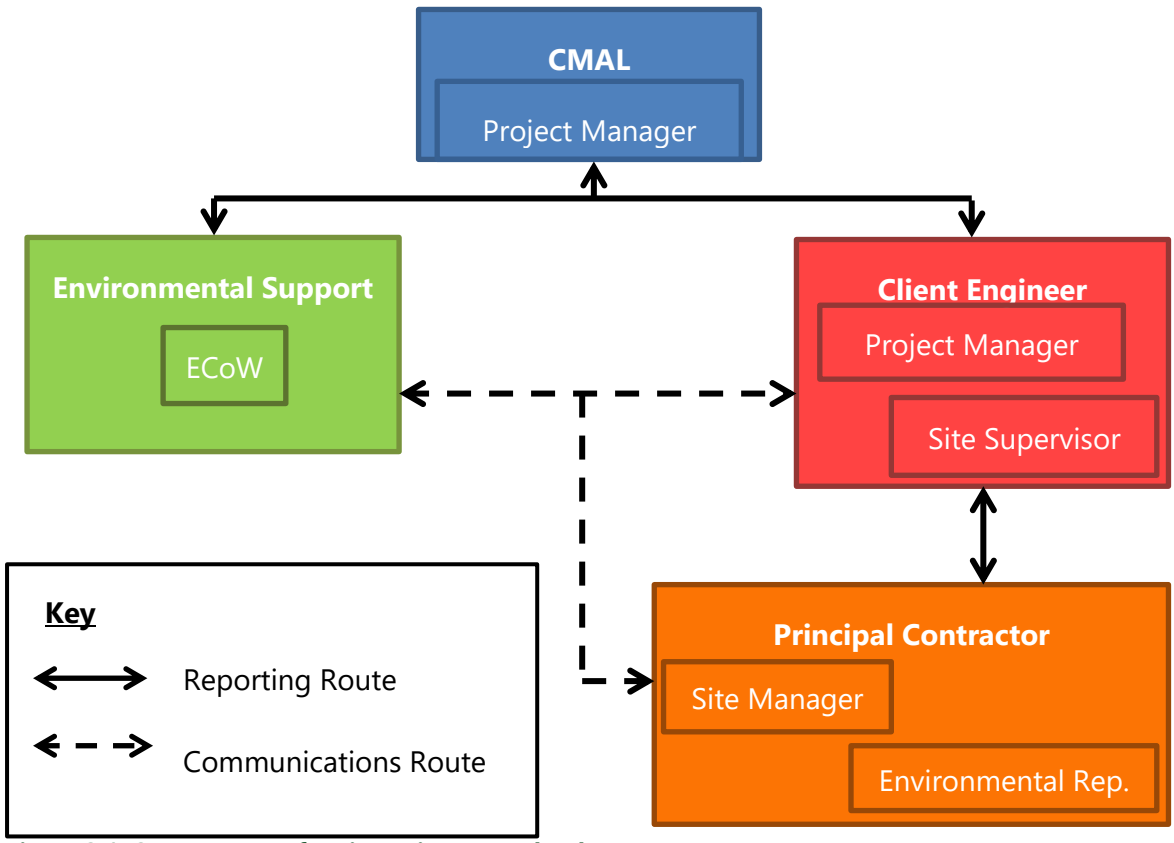

Figure 3.1: Organogram of Main Environmental Roles

3.2 Key Environmental Roles and Responsibilities

3.2.1 CMAL Project Manager

3.2.1.1 Responsibility

The CMAL PM is the representative of the Client organisation commissioning the works and is responsible for appointing the Principal Contractor, Project Manager and Site Supervisor for the construction contract, and the ECoW.

3.2.1.2 Duties

Specific environmental duties:

- To appoint the ECoW and ensure they are suitably empowered and resourced to carry out works required.
- Work with ECoW to ensure the CEMD is kept up to date.
- Have overall responsibility for ensuring that all licences are in place and their requirements are being met.
- Ensure appropriate cumulative working agreements are in place with the Isle of Harris Distillery, if simultaneous construction works are ongoing.

3.2.1.3 Qualification

The CMAL PM should have an appropriate understanding of the licences, legal requirements and the CEMD.

3.2.2 Consultant Engineer Project Manager/Site Supervisor

3.2.2.1 Responsibility

The Consultant Engineer's Project Manager (PM) and Site Supervisor are the main link between CMAL and the ECoW to the Principal Contractor as such they will be responsible for ensuring that the Principal Contractor implements appropriate mitigation, Risk Assessed Method Statements (RAMS), and other requirements as detailed within the CEMD and as requested by the ECoW.

3.2.2.2 Duties

Specific environmental duties include:

- To work with ECoW to update the CEMD as required.
- Ensure environmental matters are included within all regular progress and contract meetings, with minutes distributed to appropriate parties.
- On agreement with ECoW, instruct the Principal Contractor to carry out environmental related tasks as deemed appropriate to implement the CEMD and to address any issues arising.
- To ensure environmental instructions are implemented appropriately by the Principal Contractor.

3.2.2.3 Qualification

The Consultant Engineer's PM and SS should have an appropriate understanding of the licences, legal requirements, the CEMD, and mitigation measures for proposed construction.

3.2.3 Environmental Clerk of Works (ECoW)

3.2.3.1 Responsibility

The ECoW is responsible for ensuring appropriate steps are taken to minimise environmental impacts and risks.

The ECoW will advise the Consultants PM if there are environmental issues or non-compliance, and if they are of a scale that they would advise that works should be stopped, pending the issue or non-compliance being resolved.

3.2.3.2 Duties

The ECoW duties will include:

- Ensuring the CMAL interests are looked after with regard to environmental performance and commitments.
- Working closely with the CMAL PM, Consultant Engineer's PM/SS and Principal Contractor's Environmental Representative to:
    - Ensure that the CEMD is kept up to date.
    - Ensure the requirements of the CEMD are implemented appropriately.
    - Liaise with regulators, stakeholders and other developments in the surrounding area, as appropriate.
- Reviewing RAMS produced by the Principal Contractor to ensure they identify and manage environmental impacts and risks in alignment with the CEMD.
- Ensure that all permits, licences and certificates are in place in advance of any works commencing, with required periodic reviews.
- Ensure that any licensing requirements are appropriately adhered to, implemented and/or closed out.
- Keep up to date in changes in environmental legislation that may affect environmental management during the construction phase.
- Carrying out regular documented inspections/audits of the site to ensure that all work is being carried out in accordance with the CEMD and RAMS.
- To carry regular checks to ensure that no environmental issues are arising, including but not limited to signs of water pollution, fugitive dust, and littering.
- Ensure appropriate inductions, environmental tool box talks, and drills are being implemented by the Principal Contractor.
- Recognise when a topic specific expert is required and call upon them to provide support, ensure their competence, and manage their activities on site.
- Ensure that appropriate Passive Acoustic Monitoring (PAM) equipment is provided, and MMO/PAM resource is available to meet the Marine Mammal Protection Plan requirements laid out in Section 11 and its associated appendixes.
- Carry out MMO/PAM operator duties as required.
- Be ready to assist in implementing the Principal Contractors emergency response plan.

- Ensure the CMAL PM and the Consultant Engineer PM/SS are notified of any environmental incidents.
- Where appropriate, notify statutory authorities of any environmental incident in association with the Principal Contractor.
- Be the Nominated Contact for any archaeological discoveries made during construction.
- Carry out investigations and produce reports regarding any environmental incidents, ensure appropriate corrective/remedial actions are taken, and Learning from Experience (LFE) information is disseminated.
- In conjunction with the Principal Contractor prepare formal monthly report for progress meetings, recording significant events, issues, audits, and forthcoming workloads.
- To maintain an environmental site diary.

3.2.3.3 Qualification & Experience

The ECoW should be qualified to degree level (or equivalent) in an appropriate environmental science or engineering discipline; and be a member of an appropriate Institute. They should have attended a Joint Nature Conservation Committee (JNCC) Marine Mammal Observers course and PAM training and have an appropriate experience in a range of environmental disciplines.

3.2.4 Lead Marine Mammal Observer (MMO)

3.2.4.1 Responsibility

Responsible for conducting visual watches and PAM searches for marine mammals and assist in the implementation of the Marine Mammal & Basking Shark Species Protection Plan (Section 11).

3.2.4.2 Duties

- Conduct pre, during, and post piling/dredge disposal searches for marine mammals and basking sharks.
- Work with the Principal Contractor, to agree when works can be started in line with the Marine Mammal & Basking Shark Species Protection Plan (Section 11).
- Record and report findings of observations.
- Ensure PAM equipment is installed correctly, calibrated, maintained and operational.
- Review historic data and produce reports as required.
- Ensure all marine mammal reporting is appropriately completed.

3.2.4.3 Qualifications

Attend Joint Nature Conservation Committee (JNCC) Marine Mammal Observers course and be trained and experienced in the use of PAM software and hardware and have a detailed understanding of marine mammal acoustics. They should have a minimum of 3 years' field experience observing marine mammals, and practical experience of implementing the JNCC guidelines.

3.2.5 Principal Contractor's Environmental Representative

3.2.5.1 Responsibility

To act as the main point of contact with regard to environmental issues on behalf of the Principal Contractor. To ensure works are planned and executed in accordance with the CEMD.

3.2.5.2 Duties

The Principal Contractor's Environmental Representative's duties will include:

- Working with the ECoW to ensure the CEMD is up to date, and relevant to proposed construction techniques.
- Ensuring RAMS for all works and sections of works include environmental considerations and are agreed with ECoW.
- Support the ECoW in the implementation of all environmental matters.
- Producing, agreeing with the ECoW:
    - Procedures required to implement the CEMD.
    - Emergency Response Procedures.
- Awareness of all potential impacts and associated mitigation detailed in the EIAR.
- Ensure the necessary protection of onsite ecology and biodiversity.
- Ensure environmental mitigation measures are site specific and are complied with.
- Conduct regular environmental audits of the site:
    - Findings should be reported promptly to the project management team including the PM, SS, SM, and ECoW.
    - Work with the ECoW to ensure that any actions identified to improve environmental performance are implemented.
- Ensure environmental licensing/permits are applied for promptly.

3.2.5.3 Qualifications

The Principal Contractor's Environmental Representative should be qualified to at least HND level in an appropriate environmental science or engineering discipline. In addition, they should have a minimum of 5 years construction experience and a sound understanding of a range of environmental issues.

3.2.6 Principal Contractor Site Manager

3.2.6.1 Responsibility

To act as the main point of contact on site, on behalf of the Principal Contractor.

3.2.6.2 Duties

- Ensuring Principal Contractor's staff and resources including sub-contractors and suppliers are briefed in advance of their arrival to site of relevant logistics, parking, access protocols, in addition to other general environmental requirements.

- Ensuring RAMS are provided to CMAL for review in a timely fashion, prior to the start of the relevant works.
- Liaise with and support ECoW in all environmental matters.
- Ensuring implementation of with agreement from the ECoW:
    - Procedures required to implement the CEMD,
    - Emergency response procedures,
    - Environmental site induction training,
    - Environmental Tool Box Talks, and
    - Environmental incident response drills.
- Attendance, participation, and reporting at regular management meetings, including the monthly progress meetings and all associated reporting.
- Organise the supervision of the works to the specified requirements and in particular a good standard of workmanship.
- Ensure all materials are received and inspected.
- Ensure subcontractors comply with the requirements of CEMD.
- Notify the Contracts Manager of non-conforming material.
- Make all necessary arrangements for the correct storage and handling of materials.
- Ensure all necessary walkovers, checks, inspections and tests etc. required by the CEMD are carried out, completed and recorded.
- Ensure that any queries from construction personnel about the quality of work are properly answered.
- Ensure that construction personnel allocated for tasks are those with suitable skills and experience, and recommend operatives for additional training to the Contracts Manager.

3.2.6.3 Qualifications

The Principal Contractors Site Manager should have an appropriate understanding of the CEMD and a basic understanding of how construction activities can affect the environment.

3.3 All Workers

3.3.1.1 Responsibility

Everyone on site should be empowered to raise concerns and if appropriate stop works on environmental grounds until the ECoW can review the situation.

3.3.1.2 Duties

All workers are expected to:

- Read, sign and understand the appropriate RAMS, for the work they are undertaking.
- Raise any queries or concerns with methods or mitigation measures prior to commencing tasks.
- Carry out works in line with the RAMS.
- Report all environmental incidents including spills to the site management team.

- Ensure good housekeeping is maintain on site, especially with regard to prevention of littering.

3.3.1.3 Qualifications

All workers must attend site induction, briefings and tool box talks relevant to the works they are undertaking to ensure understanding of environmental as well as health and safety issues.

3.4 Implementation

In reality there is likely to be more than one person performing the ECoW duties, to ensure appropriate presence on site during environmentally sensitive activities and for holiday cover etc. This will be appropriately managed with a lead ECoW identified with overall responsibility and the use of a handover system, likely to take the format of a short report and/or face to face briefing to ensure that there is awareness of recent activities and any issues arising.

Similarly, with PAM and MMO's, they may be interchangeable if appropriately trained. For other roles any changes will be managed, to ensure consistency.

Construction Environmental Management Document	
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Section Title	Key Project Personnel
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Appendix 3A – Details of Key Project Personnel

Role	Company	Name	Phone	Email
CMAL Project Manager	TBC	TBC	TBC	TBC
Consultant Engineer Project Manager	TBC	TBC	TBC	TBC
Consultant Engineer Site Supervisor	TBC	TBC	TBC	TBC
ECoW	TBC	TBC	TBC	TBC
Lead MMO	TBC	TBC	TBC	TBC
Principal Contractor Contract Director	TBC	TBC	TBC	TBC
Principal Contractor Contract Manager	TBC	TBC	TBC	TBC
Principal Contractor Asst Contract Manager	TBC	TBC	TBC	TBC
Principal Contractor Site Manager	TBC	TBC	TBC	TBC
Principal Contractor Environmental Rep.	TBC	TBC	TBC	TBC

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Section Number	4
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4 Document Control Process

Each Section of the CEMD includes an issue number and the date of update along with the reason for update on the front of the section. The ECoW will have overall responsibility for the document and will ensure that the most current version is provided in electronic form to:

- CMAL Project Manager
- Consultant Engineer Project Manager
- Consultant Engineer Site Supervisor
- Principal Contractor Environmental Representative
- Principal Contractor Site Manager
- The Harbour Manager

The CEMD, will be updated during the construction phases to take account of additional detail as it becomes available as well as learning from experience. Specifically, updates will be made at the following points:

- Receipt of Marine Licence;
- Appointment of Principal Contractor;
- Receipt of EPS Licence; and
- As required following lessons learned during the construction works.

Any material changes to the content of the CEMD will be discussed and agreed with Marine Scotland, and relevant Statutory Consultees prior to implementation on site.

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5 Auditing

5.1 Introduction

Audits will be carried out by the ECoW to ensure that all tasks are being carried out in line with procedures, the CEMD, Risk Assessed Method Statements, and environmental best practice as identified within the Schedule of Mitigation. The audits will also verify if the mitigation is effective in minimising environmental impacts and risks.

5.2 Audit Programme

The frequency of audits is provided in Table 5.1, the aspects audited align to the aspects identified for each phase of work as discussed in CEMD Section 6. Where two tones are shown in Table 5.1, it indicates that the audit frequency will be reduced with time as the procedures becomes embedded, the reduction in frequency will be determined by the ECoW based on audit performance results.

Audits associated with pollution and waste regulations, will be carried out throughout the construction period irrespective of what tasks are being completed on the site.

It is noted that there will also be a health and safety audit programme; any environmental issues identified during which will be reported to the ECoW.

Table 5.1: Audit Frequency

Aspects	Audit	Reclaim Land up to Linkspan Approach	Construct Concrete Retaining Walls and Backfill	Pontoon Relocation	Dredge	Pontoon Reinstatement	Marshalling Area and Land Reclamation	Establish Temporary Teminimal Building	Demolish Existing Teminal Building	Install Pier Temporary Works	Building Foundation	Existing Pier Demolition	Pier Reconstruction - Piling	Pier Reconstruction - Reinforced Concrete Deck	Fendering System and Furnishings	Cathodic Protection System	Remove Pier Temporary Works	New Terminal Building	Remove Temporary Terminal Building	Complete Landside Works
		Tasks																		
In Air Acoustics	*Monitoring at Receptors*																			
	Working Hours																			
Air Quality: Dust	*Dust Management Plan*																			
	Roads Check																			
Archaeology	*Protocols Implemented*																			
Marine Mammals & Basking Shark	*Protocols Implemented*																			
	Observation Logs																			
Traffic	*Delivery Audit*																			
Water Quality & Pollution	*Sediment Plume Monitoring*																			
	Fuel Storage and Refuelling																			
	Concrete Washout																			
	Material/ Waste Storage																			
	Spill Kits and Emergency																			
Waste	*Dredging Logs*																			
	Littering																			
	Waste Regulations																			

Audit Frequency Key	
	Not required
	Daily
	Weekly
	Monthly
	If Utilised

5.3 Implementation

Audit forms including checklists will be utilised for each audit type to ensure that all items are appropriately checked and that audits are recorded in a systematic manner.

Where audits identify areas of improvement, appropriate steps will be taken to implement these. Improvements requiring immediate action will be immediately raised with the Consultant Engineer's Site Supervisor (SS), to allow for actions to be arranged. If immediate action is not required, then the audit report will be submitted within 24 hours of the audit, to the SS, and actions agreed at the next site management meeting.

In addition to identifying areas for improvement, areas of good practice will be highlighted and fed back to allow appropriate recognition to be given.

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Contents

6 Construction Environment Management Plans

6.1 Introduction

CMAL take their environmental responsibilities very seriously and, as such, will select the Principal Construction Contractors in part based on the strength of their environmental credentials detailed during the tendering process. CMAL have worked closely with Affric Limited from the concept design stage to ensure environmental impacts have been minimised and will appoint an Environmental Clerk of Works (ECoW) to support the construction. Wallace Stone, the Consultant Engineers, will continue to ensure that all environmental mitigation measures required within the design and construction are incorporated. The Principal Contractor will have an ISO14001 (or equivalent) approved Environmental Management System (EMS) and all works associated with the construction of the Tarbert ferry terminal upgrade will be conducted under the provisions of this system.

Within this Construction Environmental Management Plan (CEMP), each stage of the Tarbert Upgrade construction is discussed in turn with respect to each relevant aspect. Where appropriate, references to other sections are provided to avoid the duplication of information.

Table 6.1 provides a summary of the aspects associated with each of the construction tasks. The construction tasks are as described in Chapter 2 of the EIAR. Aspects that require specific mitigation and/or monitoring to minimise impacts are shown in red. Those shown in yellow require general mitigation or monitoring, which has been identified within the other sections of the CEMD.

The input required by the Environmental Clerk of Works (ECoW), Marine Mammal Observer (MMO) and Passive Acoustic Monitoring (PAM) operator is detailed for each task, proportionate to the risk involved at that stage of the project. It should be noted however that all staff have environmental and health and safety responsibilities and will undergo site induction training and task specific environmental training.

Risk Assessed Method Statements (RAMS) will be in place for specific activities to ensure that appropriate environmental protection measures are in place throughout. As discussed in Section 3.2.3, the ECoW role is to ensure appropriate measures are in place and are being adequately implemented.

If the Principal Contractor's proposed construction methods differ from those identified below then this CEMP will be updated accordingly.

Table 6.1: Aspects Associated with Each Task

Aspects	Tasks																		
	Reclaim Land up to Linkspan Approach	Construct Concrete Retaining Walls and Backfill	Pontoon Relocation	Dredge	Pontoon Reinstatement	Marshalling Area and Land Reclamation	Establish Temporary Terminal Building	Demolish Existing Terminal Building	Install Pier Temporary Works	Building Foundation	Existing Pier Demolition	Pier Reconstruction - Piling	Pier Reconstruction - Reinforced Concrete Deck	Fendering System and Furnishings	Cathodic Protection System	Remove Pier Temporary Works	New Terminal Building	Remove Temporary Terminal Building	Complete Landside Works
Air Quality: Dust																			
Archaeology & Cultural Heritage																			
Landscape, Seascape and Visual																			
Marine Mammals & Basking Shark																			
Materials & Waste																			
Navigation																			
Noise (In-air)																			
Noise (Underwater)																			
Traffic and Access																			
Water Quality & Coastal Processes																			

Key

Not Applicable	General Requirements Apply	Specific and General Requirements Apply

6.2 General Requirements

As detailed in Table 6.1 some aspects occur through multiple phases of the project and topic specific mitigation has been identified within other sections of this document. These are general requirements and as such apply to all applicable tasks and hence are not detailed under specific tasks in Sections 6.3 to 6.21 to avoid duplication.

6.2.1 Archaeology

As detailed in Table 6.1 through multiple stages of the project there is a potential for previously unknown archaeological remains to be found. If they are, the Protocol for Archaeological Finds detailed in Section 9 should be followed.

6.2.2 House Keeping

Throughout all stages of the works good housekeeping should be employed to minimise landscape, seascape and visual effects, dust and littering. When equipment and material is no longer required it should be removed from the construction site.

6.2.3 Materials and Waste

Materials should be managed as detailed in Section 10 and the waste hierarchy employed throughout the works in line with Section 8.

6.2.4 Navigation

Ongoing communication with the Harbour Master will be carried out to ensure that works are carried out in accordance with the Harbour Authorities (CMAL's) requirements. All vessels, including vessels under 10m in length, will adhere to the general principles in the Scottish Marine Wildlife Watching Code when undertaking their activities.

6.2.5 Noise (In-air)

All activities will be a source of in-air noise. As such the requirements set out in Section 12 should be adhered to for all activities.

6.2.6 Water Quality - Pollution Prevention

The majority of activities will require materials and wastes to be stored that could give rise to pollution. Hence Section 10: Material Management, Section 8: Waste Management Plan should be complied with throughout the construction works. If an incident does occur the Site Emergency Response laid out in Section 7, should be followed.

There are public sewage outfalls to the east and west of the construction site. The location of these outfalls is to be considered during the production of RAMS. Where works are closer than 10m or have a potential to impact outfalls, specific mitigation to prevent outfall blockage or damage is to be identified in the RAMS and agreed with the ECoW prior to works commencing.

6.3 Reclaim Land up to Linkspan Approach

6.3.1 Air Quality

All vehicles delivering materials to the site will be covered to minimise the spread of dust. In order to meet engineering requirements, the rock used for the revetment construction will be clean, free of debris, and have a low fines content and as such has limited potential for dust emissions. If

materials are being stockpiled, and the weather is particularly dry, then it may be dampened to minimise fugitive dust emissions. Geotextiles and surfacing to be applied promptly to land reclamation to isolate potential dust sources.

Road sweepers will be utilised to minimise the spread of mud and dust on the construction site and surrounding roads.

Further detail is provided in the DMP, Section 14.

6.3.2 Materials & Waste

Rock armour removed from the area between the link span and shore will be reutilised in the land reclamation works. Materials with the potential to give rise to dust should be managed in compliance with Section 10.5.

6.3.3 Traffic & Access

All materials being delivered by road should be delivered from the west along the A868 and through the marshalling area, in accordance with Section 10.6.

6.3.4 Environmental Input

The ECoW will be present for the initial works to ensure that appropriate procedures are in place, after which regular visits will be carried out and audits completed in line with Section 5: Auditing.

6.4 Construct Concrete Retaining Walls and Backfill

6.4.1 Materials & Waste

In situ concrete pours will give rise to cement washing which should be managed in accordance with Section 8.3.

6.4.2 Water Quality

Appropriate shuttering will be installed for the concrete retaining walls and where appropriate sealed with silicon or equivalent prior to pours to ensure that concrete poured does not escape to the marine environment.

If grout filled mattresses are utilised, it will be ensured that the grout filling pipe is sealed into the bag to prevent escape of grout to the marine environment.

6.4.3 Environmental Input

The Principal Contractor's Environmental Representative, the Site Supervisor or ECoW shall check shuttering prior to concrete pours being undertaken. The ECoW shall review the cement washings management arrangements prior to use and carry out routine checks and audits as per Section 5.

6.5 Pontoon Relocation

6.5.1 Navigation

The pontoon owners should be made aware of the timing of the pontoon relocation works at least 4 weeks in advance to allow them to take appropriate steps to vacate the pontoons. Regular communications should be in place to ensure they are aware of any changes to the programme.

Pontoons should be removed as close to the start of dredging as possible. This should be in the winter months.

6.5.2 Environmental Input

The ECoW shall ensure that appropriate communication has been undertaken.

6.6 Dredge

Dredging will be carried out at the construction site in the winter months and will be disposed of at the Stornoway spoil ground. Dredging and sea disposal operations are consented under a separate Marine Licence and supported by a Best Practicable Environmental Options (BPEO) assessment. The Dredging for Sea Disposal protocol is provided in Section 13.

6.6.1 Marine Mammals & Basking Sharks

Injury to marine mammals from spoil disposals are only expected if they are directly under the boat when it discharges and are struck by larger sediments/stones. A Spoil Disposal Marine Mammal & Basking Shark Protocol will be implemented during all disposal operations to ensure animals are not under the vessel at the time of disposal. The protocol is provided in Section 11.2.4.2.

All vessels, including vessels under 10m in length, will adhere to the general principles in the Scottish Marine Wildlife Watching Code when undertaking their activities.

6.6.2 Navigation

Dredging will be carried out in the East Loch Tarbert Harbour Area. Dredge disposal is within the Stornoway Harbour Authorities area. Prior to dredge and disposal there will be discussion with the respective Harbour Masters as laid out in Section 13.

All vessels will display appropriate lights and shapes as per the International Regulations for Prevention of Collisions at Sea (IRPCS). The Harbour Authorities will issue Notices to Mariners and Navigation Warnings as appropriate.

6.6.3 Water Quality: Sedimentation

Dredging activities can give rise to increased solids in the water column which may be observed as sediment plumes. Dredge activities should attempt to minimise the dropping of material back into the water.

Dredge disposal will utilise bottom opening, or split hopper techniques such that the material can drop directly down onto the seabed to minimise the increase in sediments in the water column.

The ECoW will carry out visual checks of the dredging and disposal activities to ensure that sediment plumes are as expected: localised and short lived. If this is not the case, the methods employed will be reviewed.

6.6.4 Environmental Input

During the first 2 days of the dredging works an ECoW will be present on site to ensure all mitigation is in place and that there are no issues arising. For the duration of the dredging works environmental advice will be available by phone 24 hours a day.

MMO (and PAM if required) support will be available for the disposal operations as discussed in CEMD Section 11.2.4.2.

6.7 Pontoon Reinstatement

6.7.1 Navigation

The pontoon owners will be informed as to when the pontoons are likely to be reinstated and kept up to date with any changes in the programme. This is to allow them to bring the pontoons back into use promptly.

Pontoons should be reinstated at the earliest opportunity

6.7.2 Environmental Input

The ECoW shall ensure that appropriate communication has been undertaken.

6.8 Marshalling Area and Land Reclamation

The revetment will be constructed by placing various grades of rock onto the seabed within the footprint previously dredged. Rock armour protection will be placed on the exposed frontage of the revetment along both western and northern extents. It is assumed that the rock and geotextile membrane will be delivered by road, with the materials deposited on site for placement by machinery including long reach excavators.

6.8.1 Air Quality: Dust

All vehicles delivering materials to the site will be covered to minimise the spread of dust. In order to meet engineering requirements, the rock used for the revetment construction will be clean, free of debris, and have a low fines content and as such has limited potential for dust emissions. If materials are being stockpiled, and the weather is particularly dry, then it may be dampened to minimise fugitive dust emissions. Geotextiles and surfacing to be applied promptly to land reclamation to isolate potential dust sources.

Road sweepers will be utilised to minimise the spread of mud and dust on the construction site and surrounding roads.

Further detail is provided in the DMP, Section 14.

6.8.2 Traffic & Access

Approximately 80,000 tonnes of infill materials will be delivered by road, requiring 168 lorry movements per week over a 24 weeks period. Dust covers will be utilised by all aggregate delivery vehicles.

Deliveries will be between 7am and 7pm Monday to Saturday, avoiding ferry arrival and departure times where practicable. In addition, the appointed contractor will liaise with the school in relation to any specific requirements to minimise impacts.

Delivery lorries will be checked for stones trapped between double wheels and in treads prior to departure from the quarry or the development site.

6.8.3 Water Quality

In order to meet engineering requirements, the rock used for the revetment construction will be clean, free of debris, and have a low fines content. This will also reduce the potential to increase water column sediment loading. The ECoW will monitor operations and take appropriate action if excessive sediment plumes are observed.

6.8.4 Environmental Input

The ECoW will be on site during the initial land reclamation works to a carry out noise monitoring in line with Section 12, and sedimentation observations.

As the task is repetitive, once all procedures have been established the ECoW support level will be reduced. However, the ECoW will be on site regularly to carry out appropriate audits and monitoring and be available to provide advice by phone as required.

6.9 Establish Temporary Terminal Building

6.9.1 Landscape, Seascape and Visual

If a crane is required to establish the building, then the crane arm should be lowered when not in use.

6.9.2 Traffic and Access

Deliveries should be westward along the A898 into the marshalling area, wherever practicable. This needs to be timed to avoid ferry arrival/departure times.

6.9.3 Water Quality

The temporary terminal building should be connected into the villages existing foul drainage system.

6.9.4 Environmental Input

The contractors Environmental Representative should ensure the mitigation is appropriately implemented, in line with the CEMD and associated RAMS.

6.10 Demolish Existing Terminal Building

6.10.1 Air Quality

Dust may arise during the demolition works. This should be considered within the RAM and the procedures detailed in Section 14 followed.

6.10.2 Landscape, Seascape and Visual

If a crane is required to establish the building, then the crane arm should be lowered when not in use.

6.10.3 Materials and Waste

Fixtures and furnishings suitable for reuse within the temporary or new terminal building should be removed prior to demolishing works proceeding. Waste should be appropriately segregated to facilitate recycling as detailed in Section 8.

6.10.4 Noise (in-air)

This phase of works is very close to sensitive receptors. As such, the noise barriers should be checked prior to works and compliance with Section 12 ensured.

6.10.5 Environmental Input

The ECoW will be on site regularly during the demolition works measuring noise and carrying out dust checks and audits.

6.11 Install Pier Temporary Works

6.11.1 Landscape, Seascape and Visual

If a crane is required to establish the building, then the crane arm should be lowered when not in use.

6.11.2 Marine Mammals & Basking Sharks

Piling, if required, will give rise to underwater noise, which could cause disturbance and injury to marine mammals and basking sharks. In order to mitigate this risk, visual observations and passive acoustic monitoring will be employed to ensure marine mammals and basking sharks are not within 300m of the piling works when the operations commence. Further detail is provided in Section 11.2.4.1: Piling Marine Mammal & Basking Shark Protocol.

6.11.3 Materials and Waste

Waste arising from the removal of pier infrastructure should be appropriately segregated to facilitate recycling as detailed in Section 8.

6.11.4 Navigation

If there is a potential that works could interfere with ferry operations, then it will be planned around the ferry timetable. If applicable, contingency measures will be identified that will allow the ferry to berth if the works overrun. Ferry diversion to another harbour or cancellation will be a last resort.

6.11.5 Noise (Underwater)

Temporary works may require piling. If this is the case, then it will be conducted using a vibro hammer where ever possible. However, ground conditions are such that an impact hammer may also be required to drive the piles to the required depth.

6.11.6 Environmental Input

Lead MMO and any additional MMO/PAM operators required to implement Marine Mammals and Basking Sharks protocol will be made available to meet construction programme requirements.

The ECOW will be on site for initial works and then regularly to ensure protocols and RAMS are being followed appropriately.

Appropriate communication between the contractor, site supervisor, the harbour master and CalMac Ferry's Ltd will be required, particularly if there is a potential to impact upon ferry operations.

6.12 Building Foundation – Piling and Reinforced Concrete Slab

6.12.1 Landscape, Seascape and Visual

If a crane is required to establish the building, then the crane arm should be lowered when not in use.

6.12.2 Marine Mammals & Basking Sharks

Marine piling, if required, will give rise to underwater noise, which could cause disturbance and injury to marine mammals and basking sharks. In order to mitigate this risk, visual observations and passive acoustic monitoring will be employed to ensure marine mammals and basking sharks are not within 300m of the piling works when the operations commence. Further detail is provided in Section 11.2.4.1: Piling Marine Mammal & Basking Shark Protocol.

6.12.3 Materials and Waste

In situ concrete pours will give rise to cement washing which should be managed in accordance with Section 8.3.

6.12.4 Navigation

If there is a potential that works could interfere with ferry operations, then it will be planned around the ferry timetable. If applicable, contingency measures will be identified that will allow the ferry to berth if the works overrun. Ferry diversion to another harbour or cancellation will be a last resort.

6.12.5 Noise (Underwater)

Building foundation works may require marine piling. If this is the case, then it will be conducted using a vibro hammer where ever possible. However, ground conditions are such that an impact hammer may also be required to drive the piles to the design depth.

6.12.6 Water Quality

Appropriate shuttering will be installed for the concrete slab and where appropriate sealed with silicon or equivalent prior to pours to ensure that concrete poured does not escape to the marine environment.

6.12.7 Environmental Input

Lead MMO and any additional MMO/PAM operators required to implement Marine Mammals and Basking Sharks protocol will be made available to meet construction programme requirements.

The ECOW will be on site for initial works and then regularly to ensure protocols and RAMS are being followed appropriately.

Appropriate communication between the contractor, site supervisor, the harbour master and CalMac Ferry's Ltd will be required, particularly if there is a potential to impact upon ferry operations.

6.13 Existing Pier Demolition

6.13.1 Landscape, Seascape and Visual

If a crane is required to establish the building, then the crane arm should be lowered when not in use.

6.13.2 Marine Mammals & Basking Sharks

The use of the vibro hammer to remove piles will give rise to underwater noise, which could cause disturbance and injury to marine mammals and basking sharks. In order to mitigate this risk, visual observations and passive acoustic monitoring will be employed to ensure marine mammals and basking sharks are not within 300m of the piling works when the operations commence. Further detail is provided in Section 11.2.4.1: Piling Marine Mammal & Basking Shark Protocol.

6.13.3 Materials and Waste

Waste arising from the removal of pier infrastructure should be appropriately segregated to facilitate recycling as detailed in Section 8.

6.13.4 Navigation

If there is a potential that works could interfere with ferry operations, then it will be planned around the ferry timetable. If applicable contingency measures will be identified that will allow the ferry to berth if the works overrun. Ferry diversion to another harbour or cancellation will be a last resort.

6.13.5 Environmental Input

Lead MMO and any additional MMO/PAM operators required to implement Marine Mammals and Basking Sharks protocol will be made available to meet construction programme requirements.

The ECOW will be on site for initial works and then regularly to ensure protocols and RAMS are being followed appropriately.

Appropriate communication between the contractor, site supervisor, the harbour master and CalMac Ferry's Ltd will be required, particularly if there is a potential to impact upon ferry operations.

6.14 Pier Reconstruction – Piling

6.14.1 Landscape, Seascape and Visual

If a crane is required to establish the building, then the crane arm should be lowered when not in use.

6.14.2 Marine Mammals & Basking Sharks

Piling will give rise to underwater noise, which could cause disturbance and injury to marine mammals and basking sharks. In order to mitigate this risk, visual observations and passive acoustic monitoring will be employed to ensure marine mammals and basking sharks are not within 300m of the piling works when the operations commence. Further detail is provided in Section 11.2.4.1: Piling Marine Mammal & Basking Shark Protocol.

6.14.3 Navigation

If there is a potential that works could interfere with ferry operations, then it will be planned around the ferry timetable. If applicable contingency measures will be identified that will allow the ferry to berth if the works overrun. Ferry diversion to another harbour or cancellation will be a last resort.

6.14.4 Noise (Underwater)

Piling will be conducted using a vibro hammer where ever possible. However, ground conditions are such that an impact hammer may also be required to drive the piles to the design depth.

6.14.5 Environmental Input

Lead MMO and any additional MMO/PAM operators required to implement Marine Mammals and Basking Sharks protocol will be made available to meet construction programme requirements.

The ECOW will be on site for initial works and then regularly to ensure protocols and RAMS are being followed appropriately.

Appropriate communication between the contractor, site supervisor, the harbour master and CalMac Ferry's Ltd will be required, particularly if there is a potential to impact upon ferry operations.

6.15 Pier Reconstruction – Reinforced Concrete Deck

6.15.1 Materials and Waste

In situ concrete pours will give rise to cement washing which should be managed in accordance with Section 8.3.

6.15.2 Navigation

If there is a potential that works could interfere with ferry operations, then it will be planned around the ferry timetable. If applicable contingency measures will be identified that will allow the ferry to berth if the works overrun. Ferry diversion to another harbour or cancellation will be a last resort.

6.15.3 Water Quality

Appropriate shuttering will be installed for the concrete deck and where appropriate sealed with silicon or equivalent prior to pours, to ensure that concrete poured does not escape to the marine environment.

6.15.4 Environmental Input

The principal contractors Environmental Representative, the Site Supervisor or ECoW shall check shuttering prior to concrete pours being undertaken. The ECoW shall carry out routine checks and audits as per Section 5.

Appropriate communication between the contractor, site supervisor, the harbour master and CalMac Ferry's Ltd will be required, particularly if there is a potential to impact upon ferry operations.

6.16 Fendering System and Furnishings

6.16.1 Navigation

If there is a potential that works could interfere with ferry operations, then it will be planned around the ferry timetable. If applicable contingency measures will be identified that will allow the ferry to berth if the works overrun. Ferry diversion to another harbour or cancellation will be a last resort.

6.16.2 Environmental Input

No specific environmental input is required. However, appropriate communication between the contractor, site supervisor, the harbour master and CalMac Ferry's Ltd will be required, particularly if there is a potential to impact upon ferry operations.

6.17 Cathodic protection System

6.17.1 Navigation

If there is a potential that works could interfere with ferry operations, then it will be planned around the ferry timetable. If applicable contingency measures will be identified that will allow the ferry to berth if the works overrun. Ferry diversion to another harbour or cancellation will be a last resort.

6.17.2 Environmental Input

No specific environmental input required. However, appropriate communication between the contractor, site supervisor, the harbour master and CalMac Ferry's Ltd will be required, particularly if there is a potential to impact upon ferry operations.

6.18 Remove Pier Temporary Works

6.18.1 Landscape, Seascape and Visual

If a crane is required to establish the building, then the crane arm should be lowered when not in use.

6.18.2 Marine Mammals & Basking Sharks

The use of the vibro hammer to remove piles will give rise to underwater noise, which could cause disturbance and injury to marine mammals and basking sharks. In order to mitigate this risk, visual observations and passive acoustic monitoring will be employed to ensure marine mammals and basking sharks are not within 300m of the piling works when the operations commence. Further detail is provided in Section 11.2.4.1: Piling Marine Mammal & Basking Shark Protocol.

6.18.3 Materials and Waste

Waste arising from the removal of the temporary infrastructure should be appropriately segregated to facilitate recycling as detailed in Section 8.

6.18.4 Navigation

If there is a potential that works could interfere with ferry operations, then it will be planned around the ferry timetable. If applicable contingency measures will be identified that will allow the ferry to berth if the works overrun. Ferry diversion to another harbour or cancellation will be a last resort.

6.18.5 Environmental Input

The Lead MMO and any additional MMO/PAM operators required to implement Marine Mammals and Basking Sharks protocol will be made available to meet construction programme requirements.

The ECOW will be on site for initial works and then regularly to ensure protocols and RAMS are being followed appropriately.

Appropriate communication between the contractor, site supervisor, the harbour master and CalMac Ferry's Ltd will be required, particularly if there is a potential to impact upon ferry operations.

6.19 New Terminal Building

6.19.1 Landscape, Seascape and Visual

If a crane is required to establish the building, then the crane arm should be lowered when not in use.

6.19.2 Noise (in-air)

This phase of works is very close to sensitive receptors. As such, the noise barriers should be checked prior to works and compliance with Section 12 ensured.

6.19.3 Environmental Input

ECoW to carry out noise monitoring during noisy activities, in line with Section 12.

6.20 Remove Temporary Terminal Building

6.20.1 Landscape, Seascape and Visual

If a crane is required to establish the building, then the crane arm should be lowered when not in use.

6.20.2 Environmental Input

No specific requirement.

6.21 Complete Landside Works

6.21.1 Air Quality: Dust

Dust sources to be managed in accordance with the Section 10: Material Management and the Dust Management Plan Section 14.

6.21.2 Materials and Waste

If in situ concrete pours will give rise to cement washing these should be managed in accordance with Section 8.3.

6.21.3 Water Quality

If in situ concrete pours are required, appropriate shuttering will be installed and where appropriate sealed with silicon or equivalent prior to pours to ensure that concrete poured does not escape to the drainage system or marine environment.

6.21.4 Environmental Input

Biweekly ECoW visits and audits.

Construction Environmental Management Document	
Section Number	7
Section Title	Site Emergency Response
Issue	1
Issue Date	29/01/19
Author	Jon Ashburner
Approved	Fiona Henderson

Document History		
Issue	Date	Reason for Change
1	29/01/19	Issued to Marine Scotland

Contents

7 Site Emergency Response

7.1 Introduction

Pollution prevention measures have been developed to minimise the risk of an environmental incident occurring during the Tarbert ferry terminal upgrade. These measures combine both the current UK best practice and guidance from the documents listed in Section 2.2. However, in the unlikely event of an environmental incident occurring, it is important to have a comprehensive emergency response plan in place in order to minimise the potential impacts.

7.2 Outline of Procedures

The emergency response plan follows the 'Source – Pathway – Receptor' model as described in PPG1 (NIEA, SEPA, & Environment Agency, 2013). In the event of an environmental incident the following will be prioritised:

- Stop the source of the pollution.
- Interrupt any pathways to the environment.
- Report the incident in as much detail as possible to site management and the ECoW.
- Clean the contaminated area and recover pollutants.
- Analyse the event to prevent further incidents.

The detailed Emergency Response Plan (ERP) can be found in Appendix 7A.

The site manager and ECoW will ensure all site personnel are trained in the ERP through regular toolbox talks, drills, and safety briefs.

7.3 References

NIEA, SEPA, & Environment Agency. (2013). Pollution Prevention Guidelines: PPG1 - Understanding your Environmental Responsibilities - Good Environmental Practices. In (pp. 1-10): NIEA, SEPA and Environment Agency.

Appendix 7A – Emergency Response Plan

PROCEDURE TO BE FOLLOWED IN THE EVENT OF A SPILLAGE:

The following procedures are intended as a guide to dealing with incidents. Staff shall act in accordance with these procedures whilst applying common sense and ensuring their own health & safety and those of others.

1. **If possible, identify the source of the spillage and cut off source, e.g. by closing valve, righting container etc.**

2. **Call of help: Contact Number XTBCXX**

   - Key Information to be provided in a clear and concise manner:
     - What substance was spilled;
     - Approximate volume and time of spillage;
     - Accurate location of spill;
     - Help required i.e. manpower, machinery, expert advice, disposal, etc; and,
     - Whether the spill has reached a drain or watercourse.

3. **Identify where spillage has gone to and/or where it may go to. Contain the spillage using appropriate spill management equipment and absorbents (spill kit); cover any drains which spills could reach.**

4. **If there is a risk of the spill reaching a drain, cover or block drain.**

5. **If there is a risk of the spill flowing into the water – block pathway with boom or other appropriate absorbents.**

6. **If a spill has reached a watercourse the following measures should be applied-**

   - Place flexible absorbent booms around the spillage to minimise the spread;
   - Place absorbent cushions in the affected area inside the booms.
   - Call the SEPA Emergency Hotline Number – 0800 80 70 60

7. **Clean any contaminated surfaces as soon as possible / immediately. All contaminated materials should be placed in sealed polythene bags/containers and store within the designated waste storage area. For spills that have entered the drainage system arrange for the to be pumped out promptly.**

8. **Dispose of contaminated materials appropriately in accordance with the site waste management protocols;**

9. **Fully complete an Incident Report.** Key Information to be provided in a clear and concise manner (as soon as possible, but within 30 minutes of incident):
   - What substance was spilled;
   - Approximate volume and time of spillage;
   - Accurate location of spill;
   - All measures taken;
   - Help required i.e. manpower, machinery, expert advice, disposal, etc; and
   - Whether the spill has reached a watercourse.

Key Contact Information

Construction contractor (TBC) using the emergency procedures; contact details located at the back of the Site Card issued to everyone of site. Contact details are as follows:-

Name	Role	Contact
TBC	TBC	TBC
TBC	TBC	TBC
TBC	TBC	TBC
TBC	TBC	TBC
TBC	TBC	TBC

If the spillage is likely to cause pollution, then the ECoW or a Construction contractor staff member will contact the Scottish Environmental Protection Agency (SEPA) using the emergency hotline number

(0800 80 70 60)

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Section Title	Site Waste Management Plan
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Contents

8 Site Waste Management Plan

8.1 Introduction

The main source of waste during construction works is dredged material, the management of which is covered in Section 13 and as such will not be covered here. Other wastes will also arise during construction, including cement washings, wood utilised for shuttering, off-cuts of rebar metals and packaging materials associated with both constructions works and the welfare facilities.

The waste hierarchy will be employed throughout the construction works.

8.2 Waste Hierarchy Implementation

8.2.1 Reducing Waste

Where practicable, steps will be taken to avoid the production of waste. For example, the use of reusable water bottles, crockery and cutlery in the welfare facilities will prevent the need for single use plastics.

The bulk of material will be delivered in HGV's without packaging and, where practical, requests should be made to suppliers to minimise packaging.

Similarly, ordering the correct quantity and types of materials will prevent unused excess materials being disposed of as waste.

8.2.2 Reuse

Where possible, materials can be reutilised. For example, wood utilised in shuttering can be utilised more than once. Cement wash water can be reutilised to wash equipment once it has been settled out. Rock armour to be removed will be reused in the new revetment.

8.2.3 Recycle

Recycling will be facilitated by the segregation of wastes. Clearly marked and labelled waste receptacles will be provided in designated areas. Wastes suitable for recycling are likely to include wood, metals, glass, paper, plastics and oils.

8.2.4 Dispose

Solid waste not suitable for recycling will be sent to landfill as waste, or special waste, depending on its constitution. A suitable licensed waste contractor will be employed to collect wastes for recycling and disposal.

8.3 Cement Washing

Cement washings will be carried out in a dedicated area. Washing arisings will be collected for onsite treatment. This will include settlement and, if required, pH correction. The liquids will be reused on site as grey water if suitable or taken off site for appropriate disposal. The solids will be disposed of as solid waste.

8.4 Litter

Prior to construction works on site commencing, a litter sweep will be conducted to prevent the escape of existing litter on site into the marine environment.

All personnel working on the project will undertake site induction. This will include a section on waste management and the use of the waste receptacles provided. It will be made clear that littering will not be tolerated. Construction staff will be encouraged to collect any litter they see in the construction areas and, if deemed necessary, litter sweeps will be carried out.

8.5 Waste Management

Waste receptacles (bins and skips) will incorporate lids or covers to protect against vermin gaining access and wind blowing wastes out of skips, giving rise to litter.

The principle contractor will put in place procedures for ensuring that appropriate records are kept for all waste arisings including volumes, categories and waste carriers used, and that waste transfer notes are retained.

8.6 Monitoring

The Environmental Clerk of Works (ECoW) will carry out regular waste compliance audits and review details of waste arisings to identify areas for opportunity to reduce or recycle more wastes in conjunction with the Principle Contractor.

Construction Environmental Management Document	
Section Number	9
Section Title	Protocol for Archaeological Discoveries
Issue	2
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Author	Fiona Henderson
Approved	Innes Beaton

Document History		
Issue	Date	Reason for Change
1	29/01/19	Issued to Marine Scotland
2	27/06/19	Updated to include CnES phone number

Contents

9 Protocol for Archaeological Discoveries

9.1 Introduction

Underwater archaeology was scoped out of the EIA process as there was no evidence of archaeological remains being present in the area. However, if artefacts are present, the activities associated with dredging could impact the historic environment. As such, this procedure based on the Protocol for Archaeological Discoveries (PAD) as established by Wessex Archaeology on behalf of The Crown Estate, will be implemented on site as a precautionary measure.

9.2 Terms

The PAD defines two types of Archaeological discovery:

- *'Finds'* – an object of archaeological potential; this means it has been impacted by people and may reveal something of past lives. Eco-artefacts such as animal and plant remain are also included in finds as they help us to understand the past human landscape. Finds can either be objects on the sea floor or those brought to the surface.
- *'Anomalies'* – are differences in the sea bed (either digital or visual) which could be of archaeological significance and need further investigation. Anomalies should always be treated as significant until determined otherwise.

9.3 Protocol

The bathymetric survey and benthic transects conducted during EIA revealed no archaeological anomalies. No further bathymetry will be conducted during construction so this protocol will only cover archaeological finds brought to the surface during construction works.

The dredge team will be briefed on the significance of archaeological finds and will be instructed to report any discoveries to the Site Manager and ECoW. In the event of a find, any works which may cause further disturbance to the area will be ceased, the find will be documented, photographed and preserved by the ECoW as per instructions in PAD (Appendix 9A). Advice will be sought from an archaeological consultant if required and reports made to Historic Environment Scotland and Comhairle nan Eilean Siar. A summary of the process is provided in Figure 9.1.

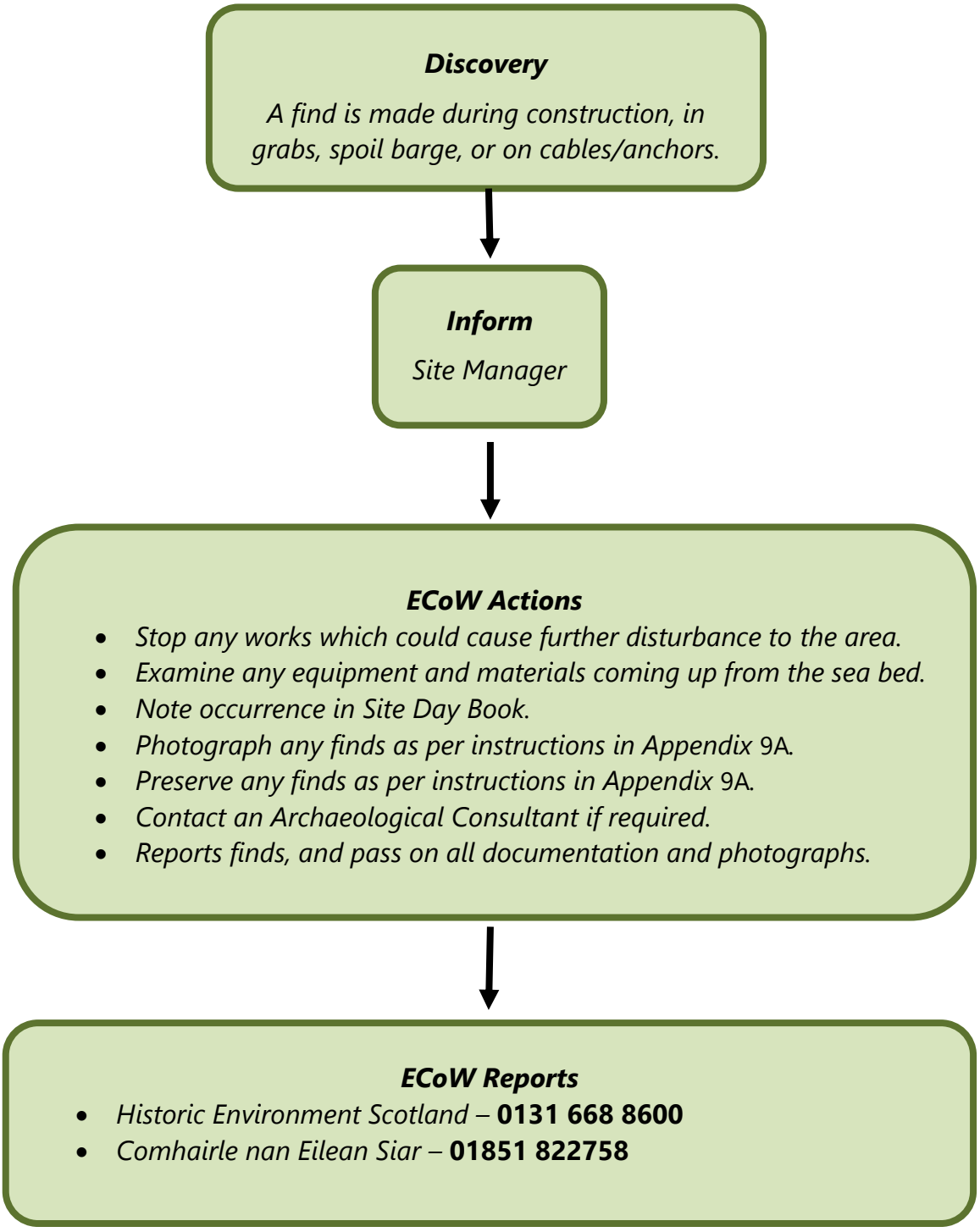

Figure 9.1: Protocol for Archaeological Discoveries

Appendix 9A – Protocol for Archaeological Discoveries

Offshore Renewables Protocol

for Archaeological Discoveries

Handout 1: Introduction

Protocol for Reporting Archaeological Discoveries
Implementation Service and Awareness Programme

The Crown Estate owns around half the foreshore and nearly the entire seabed out to the 12 nautical mile limit, and has the rights to licence areas up to 200 nautical miles offshore for renewable energy. It is anticipated that by 2020 approximately one-third of all UK energy will be produced from offshore renewables.

Following the success of the British Marine Aggregate Producers Association (BMAPA) Protocol for Reporting Finds of Archaeological Interest, The Crown Estate commissioned Wessex Archaeology to establish and implement a protocol for the offshore renewables industry.

The aim of the Protocol for Archaeological Discoveries (PAD) is to provide a system for reporting and investigating archaeological finds encountered during construction and installation work. Activities associated with renewable energy such as: placement of turbines, cable-laying, geophysical surveys and seabed sampling all have the potential to impact on the historic environment.

Process
Under the Protocol, staff who make a discovery report it to a local 'Site Champion' onboard the vessel or on site. The Site Champion then passes this report to the company's 'Nominated Contact', the person identified to deal with PAD within each developer.

Once a find is reported through the secure web-based reporting system, Wessex Archaeology's 'Implementation Service' is automatically alerted to the presence of a new find. Staff investigate every find with the help of specialists from around the country and compile detailed reports. The reports are then sent to the finder and all relevant authorities.

Awareness
To support the Protocol, Wessex Archaeology is conducting an Awareness Programme which includes visits to sites and companies as well as regular newsletters. This programme aims to raise awareness of, and confidence in, the use of the Protocol amongst staff.

This pack contains advice and guidance in support of the Protocol Implementation Service.

It includes:
Handout 1 – Introduction
Handout 2 – What are 'finds'?
Handout 3 – Reporting
Handout 4 – Photographing finds
Handout 5 – Conservation & Storage
Handout 6 – Prehistoric Finds
Handout 7 – Metalwork & Concretions
Handout 8 – Munitions & Ordnance

If any of these are missing, or you would like further copies, please contact the Protocol Team at Wessex Archaeology.

For further information please contact:
Toby Gane (Project Manager)

Wessex Archaeology
Portway House
Old Sarum Park
Salisbury, SP4 6EB
Tel: 01722 326867
Fax: 01722 337562
info@wessexarch.co.uk

Or visit Wessex Archaeology's Protocol pages on the website:
http://www.wessexarch.co.uk/projects/marine/tcerenewables

Nominated Contacts should report discoveries through the secure reporting website:
http://net.wessexarch.co.uk/orpad

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Offshore Renewables Protocol

for Archaeological Discoveries

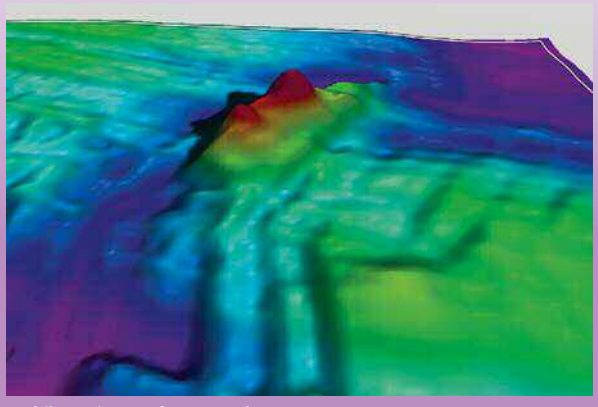
What are finds? Why should they be reported?

Finds

A 'find' is an object with archaeological potential; this means that it has been impacted by people and may be able to tell us about their past lives. A find can include objects on the seafloor as well as those brought to the surface. We include eco-artefacts as finds; these are remains of animals and plants, such as mammoth and peat, which help us to understand the past human landscape.

Anomalies

Anomalies are a little different from finds in that they are not automatically recognised as archaeological. Instead, anomalies are visual or digital differences that need to be further investigated. Anomalies should always be considered as possibly important archaeological sites until it has been determined otherwise.



Multibeam image of an anomaly

Importance

Archaeological finds are important because they can shed light on past human use of the landscape, sea and seabed. The information that discoveries provide can help archaeologists to understand the human past and protect it for future generations.

Example

The discovery of 28 handaxes with other flint implements and mammoth teeth from the seabed was described as the 'single most important find of Ice Age material from below the North Sea'. The handaxes are between 200,000-300,000 years old and their discovery is incredibly important as they indicate areas where prehistoric humans lived and worked. This example proved that evidence from the last Ice Age has survived underwater and can be found intact.

Selection of handaxes, mammoth teeth and tusk

Offshore Renewables Protocol

for Archaeological Discoveries

The reporting process

On land

Discoveries found in the intertidal zone
A find is made during construction

Discoveries found after work on site
A find or anomaly is discovered during sample analysis or while reviewing geophysical data

At sea

Discoveries made on board a vessel
A find is made on board the vessel, in grabs or attached to anchors and cables

Discoveries found on the seabed
An anomaly indicates that an object or structure has been encountered on the seabed

Project Staff
Inform Site Champion

Site Champion

Avoid further disturbance work in this area (if found during works)

Note the occurrence, in a daybook, or site log

Photograph any find(s) recovered (see Handout 4)

Arrange for any recovered find to be immersed in seawater (if waterlogged) or in a suitable, clean, covered container as appropriate (see Handout 5)

Inform the Nominated Contact and pass on all available information, including a copy of the Preliminary Record and copies of any photographs, drawings or data files

Site Champion

Cease work that may impact the seabed in that area, or move to a new location

Examine any gear, such as grapnels or ploughs, coming up from the seafloor

Note the occurrence in the vessel's log

Mark the area on navigational/survey software

Photograph any find(s) recovered (see Handout 4)

Arrange for any recovered find to be immersed in seawater (if waterlogged) or in a suitable, clean, covered container as appropriate (see Handout 5)

Inform the Nominated Contact and pass on all available information, including a copy of the Preliminary Record and copies of any photographs, drawings or data files

Report to
Nominated Contact

Photographing finds

What is the photograph for?

The photographs that we receive of new discoveries are very important. They provide a lot of information about each object and can be sent to specialists around the country.

Tips

Make sure there is a scale in the photo – if you do not have the scale sheet provided you can use a ruler or known object, such as a coin or biro, to help show the size of the find.

Biro scale

To avoid light spots in the photo make sure any excess water is wiped off.

Make sure the photo is sharp.

Do not include too many objects in one shot.

Take photographs at different angles; the more photographs and views, the easier it is to interpret the artefact.

Take additional close-up pictures of markings or features that you think are unusual.


Detail shot

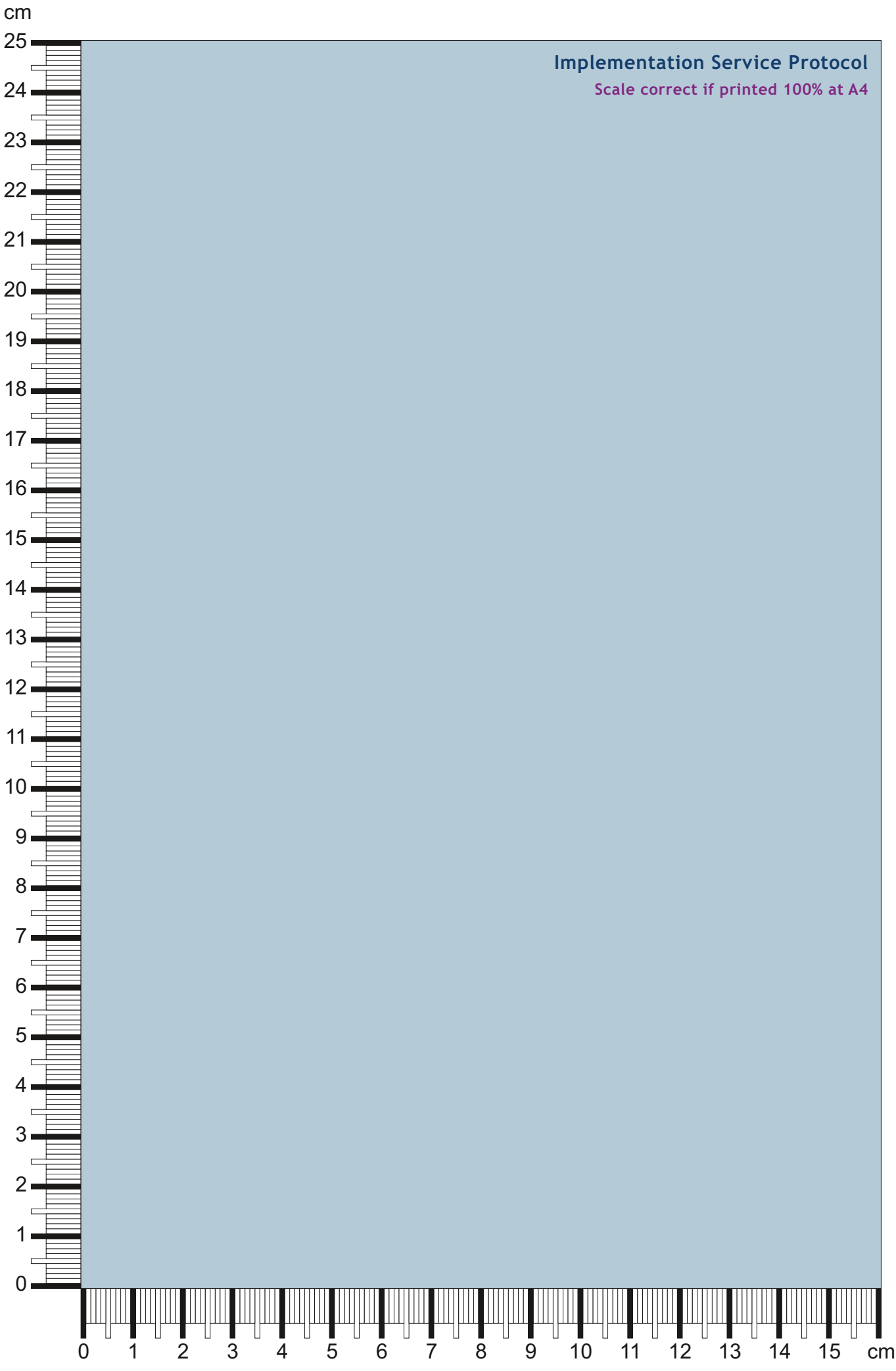
Checklist

Can someone tell from the photos:

What size the object is.
What shape it is.
What type of object it is.
What it is made of.
Whether it has any unusual markings.


Good use of scale sheet


Take photos from different angles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Offshore Renewables Protocol

for Archaeological Discoveries

Conservation and Storage

Marine finds are very fragile and can dry out quickly. Don't be fooled; even seemingly robust objects such as cannonballs can quickly degrade if they are not treated correctly.

What do I do with a wet find?

1 – Place the find into a plastic container and completely cover with seawater. If the find is large, cover as much as possible with seawater and wrap the rest in wet fabric or polythene.

2 – Label the container or wrapping and store in a cool dark area.

Example: ***Developer_0001 Nail from [Name] Offshore Windfarm Zone Discovered by J.Bloggs 01/12/2010***

3 – Check the condition of the find regularly. Change the seawater when necessary and note any cracks or flaking.

The detrimental effects of rapid drying on iron shot

What do I do with a dry find?

If a find is dry do not to place it back into water. But it is still important to label it and place in a dark, cool place.

Further advice

Advice on conservation can be sought from the Portable Antiquities Scheme (PAS) which has a network of regional archaeologists (Finds Liaison Officers or FLOs). FLOs are responsible for recording finds reported by the public and providing advice. Contact details for your local officer can be found on the PAS website:

http://www.finds.org.uk/involved/contacts.php

Three rules

- Wet – Keep the object wet by covering with water in an appropriately sized container.
- Cool – The hotter something is the more likely it will corrode so place the artefact somewhere cool.
- Dark – Place the artefact away from direct contact with light, such as in a drawer or cupboard.

Things to avoid

- Supermarket bags – they contain harmful chemicals
- Drying – when wet finds dry quickly they crack and disintegrate
- Tissue paper – tissue will degrade in water
- Bubblewrap – textured wrapping can leave impressions on soft finds
- Placing different finds together – some types of material can be affected by contact with others
- Metal containers – metal can cause problems such as corrosion
- Glue – Some glues are harmful; if a find breaks don't fix it

Offshore Renewables Protocol

for Archaeological Discoveries

Prehistoric finds

Some of the first things that spring to mind when you think of underwater archaeology are shipwrecks and aircraft wrecks. Whilst shipwrecks are important, there is a huge range of other exciting and significant artefacts that can be found under the sea.

Some of the most important finds from the seabed are stone tools. Stone tools are the oldest known technology used by man. These implements were first used in Africa 2.5 million years ago and until metal was discovered, stone was the primary resource for making tools.

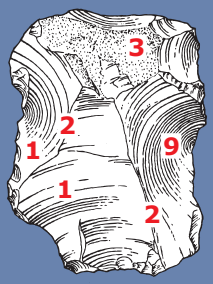
Whilst a large majority of tools are made from flint, in places where this was not available other stones were used instead.

It is not only the tools which are of interest to archaeologists, flint-knapping produces piles of waste flakes. Archaeologists examine the flakes to see what sort of tools were being made.

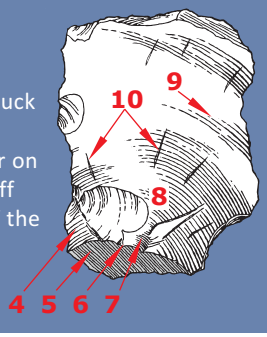
See below for some examples of handaxes, arrowheads and flakes.

How to recognise stone tools and flakes

Stone tools and flakes have recognisable features and shapes that indicate they were made by humans. The **negative flake scars** and **bulb of percussion** are some of the easiest to find.



The **bulb of percussion** is a curved raised lump left behind when a flake is struck off. The **negative scar** is a concave cone-shaped scar on the flake where it came off the core - the opposite of the bulb of percussion.



1 Negative Flake Scars
2 Ridges
3 Cortex
4 Bulb Scar
5 Butt
6 Point of Percussion
7 Cone of Percusion
8 Bulb of Percussion
9 Conical Ripples
10 Fissures

Offshore Renewables Protocol

for Archaeological Discoveries

Metalwork and Concretions

What is a concretion?

Concretions are dense clumps of hard material that develop on the surface of iron or other ferrous metals as they corrode. A concretion can form one clump around an object or become large sections on iron shipwrecks. Within a concretion the object gradually corrodes away, sometimes leaving only a hollow space. It is easy to see if a concretion has been freshly pulled off an iron object as it has a bright orange rust colour.

Why are concretions important?

Concretions can easily hide the shape of an object, making them impossible to identify. However you should not assume that concretions are unimportant; x-rays can sometimes reveal what lies underneath the concretion, or injecting filler can make a mould of the hollow shape.

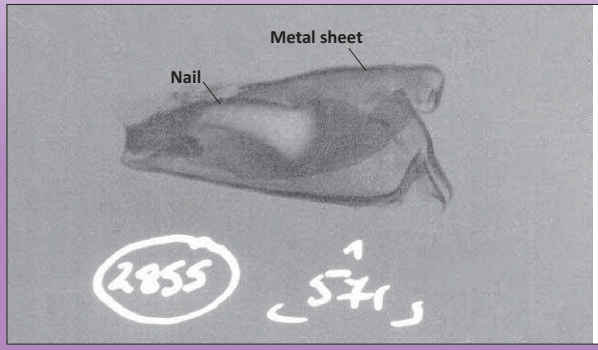
Recording

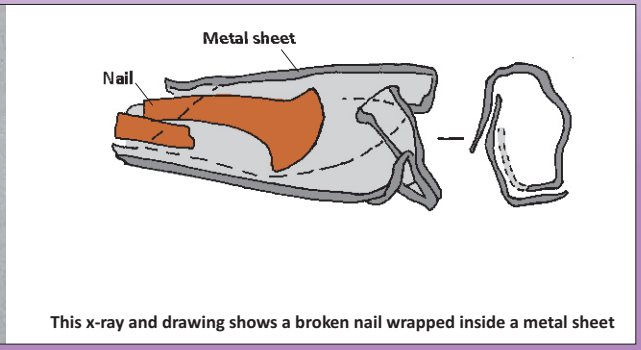
As with other types of artefacts, the more information we have the better. When recording concretions useful information includes length, width, diameter and thickness of concretion, where possible.

Keep your eyes peeled

Some people miss concretions as they can look like rocks from the seafloor. If you find something you're not sure about, report it.

A concretion can look like a rock





This x-ray and drawing shows a broken nail wrapped inside a metal sheet

Offshore Renewables Protocol

for Archaeological Discoveries

Munitions and Ordnance

Always follow Company Guidelines on the
SAFE TREATMENT OF MUNITIONS
when they are discovered

Despite long periods spent underwater munitions can still be extremely dangerous and should always be treated with caution. The appropriate response when dealing with munitions is to report them to the police, coastguard or Ministry of Defence in line with your company policy.

How common are munitions?

Up to 10% of the bombs that fell on and around the UK during WWII failed to function and so far only a fraction of these have been recovered. In addition to these 'blind' munitions, ordnance from both world wars was dumped at sea and munitions on board sunken vessels are rarely salvaged.

Fuse cap

Reporting munitions

Always follow safe working procedures when dealing with munitions. Before reporting munitions via the PAD they must be made safe or identified as inert by the police or a military Explosive Ordnance Disposal Officer (EOD). Once the items have been confirmed as safe and suitable for handling they should be reported as normal through the protocol. If you have any queries regarding the reporting of munitions please contact a member of the Implementation Service team.

Vis or Random pistol

German WWII machine gun

Ammunition

Construction Environmental Management Document	
Section Number	10
Section Title	Materials Management Plan
Issue	1
Issue Date	29/01/19
Author	Jon Ashburner
Approved	Fiona Henderson

Document History		
Issue	Date	Reason for Change
1	29/01/2019	Issued to Marine Scotland

Contents

10 Materials Management Plan

10.1 Introduction

Due to the scale of the area being reclaimed, there is a need for large volumes of material to be utilised in the construction of Tarbert ferry terminal upgrade. Hence it is essential that they are appropriately managed, and volumes of material stored minimised due to space constraints. As such a 'just in time' delivery plan will be utilised.

10.2 Material Requirements

The estimated quantities of the main materials associated with the construction of the Tarbert project are provided below:

- Steel (1,060t) for reinforcement, piling, spigots, fender sleeves, fenders, platforms, ladders, fences and furnishings;
- Timber for timber copes (10m^3);
- Concrete (3,150m^3) for pier deck, building foundation, retaining walls, bankseat beam, toe beam, scour mattresses and miscellaneous;
- Aluminium (10m^3) for new sacrificial anode CP system;
- Plastic/Synthetic (70t) for fender units, fender facing panels, ducting and pipework, separator tanks and geotextiles;
- Rockfill, sand, cobbles and boulders (85,755t) for land reclamation;
- Bituminous surfacing material (2,300t) for road and marshalling area surfacing;
- Miscellaneous inert materials – including furnishings, electrical cabling etc, delivered and stored on site till required; and
- Miscellaneous hazardous materials – resins, fuel etc.

The rock armour will be selected to match the existing colour and texture of the rock armour currently in place. Material sourcing shall take account of the intrinsic and transport carbon cost.

10.3 Fuel Storage

Where fuel is stored and plant is refuelled the following will apply.

- A suitable double skinned bowser or tank (or bunded tank) will be utilised for fuel storage.
- The bowser or tank will be situated at least 10m from the water or nearest drain and protected from collision risks.
- The distribution hose will be fitted with a shut off type filling nozzle.
- The filling nozzle will be fitted with a security lock to prevent unauthorised use.
- A drip tray will be provided below the distribution hose and nozzle when not in use.
- A fuel accountancy system will be employed.
- All refuelling will be carried out in accordance with site procedures by trained personnel in a designated area.

10.4 Hazardous Material Storage

All hazardous material will be stored in accordance with COSHH data in the COSHH storage area. Storage cabinets for oil and chemicals will be appropriately bunded. The COSHH store will be locked, access controlled and an inventory of materials stored will be maintained.

Where practicable bio-degradable hydraulic fluids will be utilised in machinery.

10.5 Dusty Material Storage

All dusty material on site will be appropriately stored, managed and monitored to prevent the generation of dust as discussed in Section 14: Dust Management Plan.

10.6 Transport

Materials delivered by road will be appropriately contained for transport, and dust covers utilised for aggregate movements. Deliveries will be between 7am and 7pm Monday to Saturday and, where practicable, ferry arrival and departure times will be avoided. In addition, the appointed contractor will liaise with the local primary school in relation to any specific requirements to minimise impacts.

Two-way communications with local residents and Comhairle nan Eilean Siar (CnES), throughout the construction works to ensure appropriate any transport issues arising are resolved promptly.

Local sourcing of material is preferred to minimise greenhouse gas emissions associated with their transfer.

Construction staff will be encouraged to car share, use organised company transport or public transport.

Construction Environmental Management Document	
Section Number	11
Section Title	Habitat and Species Protection Plan's
Issue	1
Issue Date	29/01/19
Author	Jon Ashburner
Approved	Fiona Henderson

Document History		
Issue	Date	Reason for Change
1	29/01/19	Issued to Marine Scotland

Contents

11 Habitat and Species Protection Plans

11.1 Introduction

There are a number of ecologically designated areas in and around the Tarbert Development as detailed in Table 11.1.

Table 11.1: List of Relevant Designated Sites

Designation	Name	Location Relative to Tarbert	Relevant Qualifying Features
Candidate Special Area of Conservation (cSAC)	Inner Hebrides & the Minches	8km SE	Harbour Porpoise
Special Area of Conservation (SAC)	Ascrib Isay, & Dunvegan	36km SE	Common Seals
Proposed Marine Protected Area (pMPA)	Sea of Hebrides	40km SW	Minke Whale Basking Shark
Proposed Marine Protected Area (pMPA)	North-East Lewis	45km NE	Risso's Dolphin

A Habitat and Species Protection Plan has been identified for marine mammals and basking sharks, to ensure that all concerned are aware of the specific issues associated with the species of concern. All mitigation is included within Section 16: Schedule of Mitigation, to aid implementation within the CEMPs detailed in Section 6.

In addition to the protection of specific species, the management of Marine Non-Native Species has been included in Section 11.3.

11.2 Marine Mammal & Basking Shark Species Protection Plan

11.2.1 Introduction

Evidence suggests that common seals and harbour porpoises are resident within the zone of influence associated with the Tarbert Ferry Terminal Upgrade project. These species will also be present in the vicinity of the Stornoway spoil ground. Other species including white-beaked dolphins, Risso's dolphins, minke whales, killer whales, and basking sharks are considered occasional visitors, and may also be present within the areas affected by the development.

Marine mammals and basking sharks can be affected by changes in water quality, disturbance and injury from underwater noise, and physical injury though interactions with spoil disposal operations. Water quality will be managed through the CEMPs (Section 6), aligned to the schedule of mitigation (Section 16) and as such is not considered further in this section.

11.2.2 Protection

Whales and dolphins are classed as European Protected Species (EPS) and are fully protected under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended).

The main legislation with regard the protection of seals is The Marine (Scotland) Act 2010, which provides for Scottish Ministers to designate 'seal conservation areas'. Common seals

present in the area are also afforded protection under the Conservation (Natural Habitats, &c.) Regulations 1994, due to connectivity with the Ascrib Isay, & Dunvegan SAC.

Basking sharks are provided full legal protection under Schedule 5 of the Wildlife and Countryside Act 1981, as amended in Scotland by the Nature Conservation (Scotland) Act 2004.

11.2.3 Offences

The following provides a summary of the offences in the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) in relation to whales, dolphins and porpoises in Scottish territorial waters (within 12 nautical miles of land). It is an offence to intentionally or recklessly:

- Kill, injure or capture whales, dolphins or porpoises; and
- Disturb or harass them.

On the 1st February 2011 it became an offence to intentionally or recklessly kill, injure or take a seal at any time of year, except to alleviate suffering or where a licence has been issued to do so by Marine Scotland under the Marine (Scotland) Act 2010. Under the Marine (Scotland) Act 2010 it is also an offence to intentionally or recklessly harass seals at significant haul-out sites. The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) prohibits certain methods of catching or killing seals.

The Wildlife and Countryside Act 1981, together with the Nature Conservation (Scotland) Act 2004 makes it an offence to intentionally or recklessly kill, injure, harass or disturb basking sharks.

11.2.4 Mitigation

During construction a number of noisy activities will be undertaken, the most notable of which is piling, which has the potential to cause injury and disturbance to marine mammals. Basking sharks are less sensitive to underwater noise than marine mammals and the predicted noise emissions do not have the potential to cause injury in this species. However, the underwater noise emissions may still result in disturbance. As such, a Piling Marine Mammal & Basking Shark Protocol has been developed to reduce the risk of causing injury to marine mammals and disturbance of basking sharks (Section 11.2.4.1).

There is also the potential for marine mammals and basking sharks to be injured through interactions with falling debris during dredged spoil disposal operations. In order to mitigate this, a Spoil Disposal Marine Mammal & Basking Shark Protocol has been developed to reduce the risk of a marine mammal or basking shark being underneath the disposal vessel when the spoil is released (Section 11.2.4.2).

11.2.4.1 Piling Marine Mammal & Basking Shark Protocol

General Provisions

All marine mammal observers (MMOs) and passive acoustic monitoring (PAM) technicians will be trained to Joint Nature Conservation Committee (JNCC) standards. Both MMOs and PAM technicians shall have the power to delay piling operations should marine mammals be present in the mitigation zone. The mitigation zone for piling operations shall extend 300m from the piling barge.

A formal log shall be maintained by the MMOs and PAM technicians whether marine mammals or basking sharks are present or not. The forms used will be the standard JNCC MMO forms, modified to suit pile driving operations (Appendix 11A). Paper forms should be provided to the ECoW for collation on a regular basis. All data will be stored electronically and provided to Marine Scotland at the end of the piling campaign. The details recorded will include but are not limited to:

- Time and location of the disposal operations;
- Mobilisation and demobilisation times of MMO/PAM team;
- Start time of piling;
- Duration of piling;
- Breaks in operations, or times spent at reduced hammer energy;
- Conditions affecting observations including sea state and visibility, throughout surveillance;
- Records of any sightings/acoustic detections and actions taken; and
- Records will also be kept of sightings of other marine species including otters.

Visual MMO watches will be conducted during daylight hours, when sea state is ≤3, and when visibility permits (clear visibility ≥400m). Unless PAM is available, piling operations will not take place during hours of darkness, or if conditions are unsuitable for visual observations.

If available, PAM will be used during hours of darkness, when sea state is ≥4, or if visibility prohibits visual observation. Summaries of both visual and acoustic observation protocols are provided below.

Visual Observation Protocols

Visual marine mammal and basking shark observations will be conducted by an MMO at a set onshore observation post, providing good visibility of the mitigation zone. The observation post will be elevated, in order to maximise detection probability:

1. The MMO should be informed by the site manager or piling foreman of proposed piling start times as soon as possible (at least 1 hour notice, or the night before for a morning start).
2. The MMO will commence the watch using binoculars (minimum characteristics of 8x42) so that at least a 20-minute watch has been conducted prior to the anticipated start time. The MMO should focus their effort on the mitigation zone and advise the site piling foreman if marine mammals or basking sharks are present.
3. If the 300m mitigation zone remains clear of marine mammals and basking sharks during the watch, the MMO will give permission to commence piling.
    - If animals are sighted in the zone, the MMO will track the animals visually, and the start will be delayed until the mitigation zone has been clear for 10min. The MMO will keep the site team up to date with progress.
4. Once piling has commenced, the MMO should be notified. The MMO does not need to continue watching. If marine mammals or basking sharks are observed during piling operations, details should be noted on a recording form.
    - There is no requirement to stop works for marine mammals or basking sharks entering the mitigation zone once piling has commenced, provided piling is continuous.

- Continuous is defined as without a break in operations exceeding 10min in duration.

5. The MMO should be notified of any planned breaks in piling which may exceed 10min in duration, in order to minimise restart time:
    - If a break is greater than 10min in duration, a full 20min pre-watch will be required, unless an MMO is on watch for the duration of the break.
    - If MMO cover is in place, and the mitigation zone remains clear of marine mammals and basking sharks for the entirety of a break up to 30min in duration, piling can recommence with permission from the MMO.
    - If animals are present within the mitigation zone during a break exceeding 10min in duration, then the restart will be delayed by the MMO until the zone is clear for at least 10min.
    - If the break in operations exceeds 30min in duration, a full 20min pre-watch is required before piling can recommence (observations conducted during the down time will be included).
6. Visibility Limits:
    - Must have clear visibility to ≥400m, sufficient light (i.e. daylight hours) and sea state must be ≤3.

A simple flow chart summarising the visual observation protocols is provided in Figure 11.1.

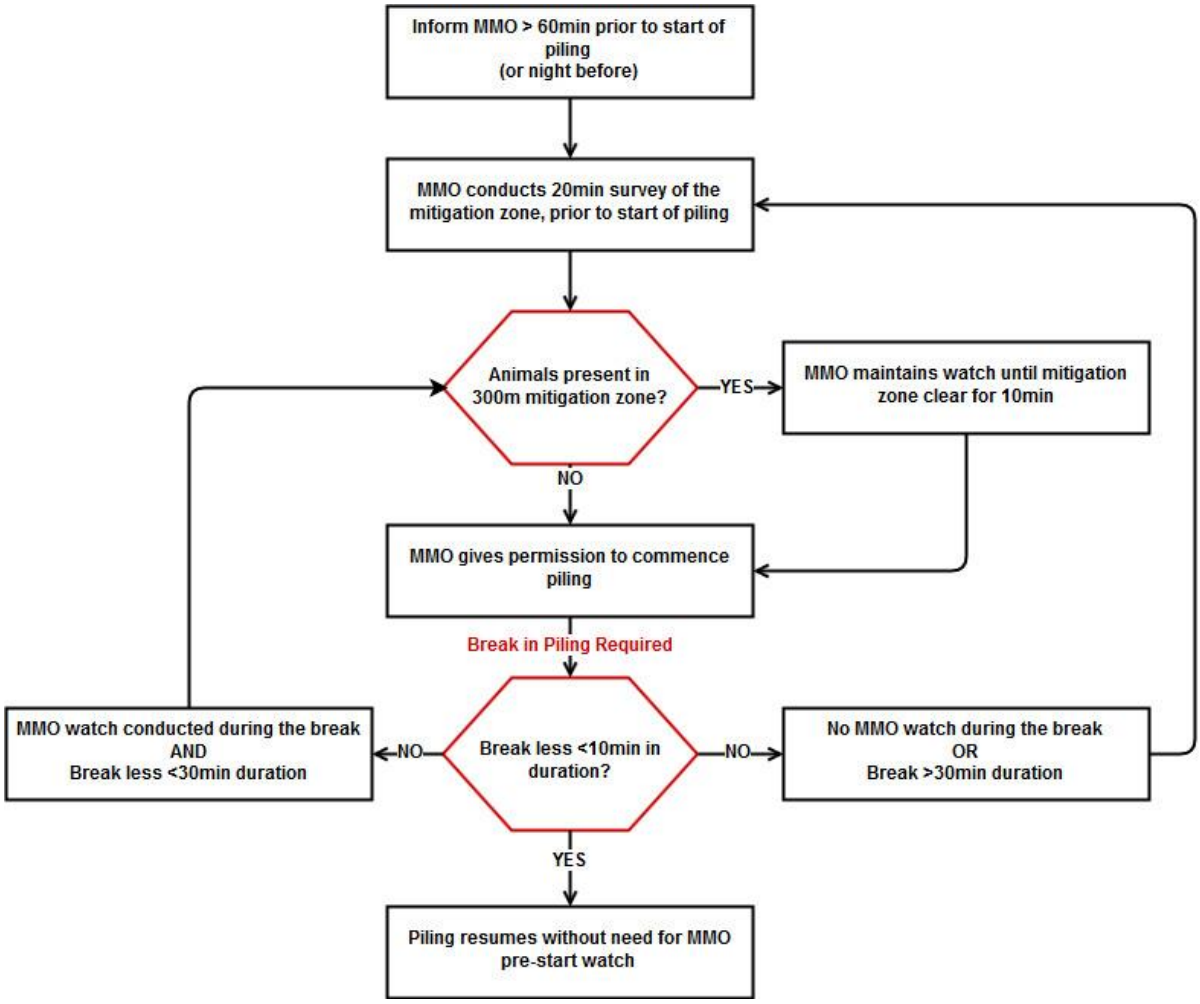


Figure 11.1: Flowchart of Visual Pilling Observation Protocols

Acoustic Monitoring Protocols

During hours of darkness, sea states ≥4, or if visibility falls to below 400m, marine mammal detection will be conducted acoustically using Passive Acoustic Monitoring (PAM). The PAM system will be deployed in a location where the detection ranges outlined above provide sufficient coverage of the piling mitigation zone, allowing detection of vocalising cetaceans in the area. It should be noted that PAM does not provide mitigation for seals, minke whales, or basking sharks, since these species do not vocalise. The following protocol will be used for PAM:

1. The PAM operator should be informed by the site manager or piling foreman of proposed piling start times as soon as possible (at least 1 hour notice or the night before for a morning start).
2. The PAM operator will commence the acoustic observations so that at least a 20-minute watch has been conducted prior to the anticipated start time. The PAM operator should advise the site piling foreman if marine mammals are present.
3. If the 300m mitigation zone remains clear of marine mammals during the watch, the PAM operator will give permission to commence piling.
    - If animals are sighted in the zone, the PAM operator will continue to monitor the animals, and the start will be delayed until the mitigation zone has been clear for 15min. The PAM operator will keep the site team up to date with progress.
4. Once piling has commenced, the PAM operator should be notified. The PAM watch does not need to continue. If marine mammals are detected during piling operations, details should be noted on a recording form.
    - There is no requirement to stop works for marine mammals entering the mitigation zone once piling has commenced, provided piling is continuous.
    - Continuous is defined as without a break in operations exceeding 10min in duration.
5. The PAM operator should be notified of any planned breaks in piling which may exceed 10min in duration, in order to minimise restart time:
    - If a break is greater than 10min in duration, a full 20min pre-watch will be required, unless a PAM watch is conducted for the duration of the break.
    - If a PAM watch is conducted, and the mitigation zone remains clear of marine mammals for the entirety of a break up to 30min in duration, piling can recommence with permission from the PAM operator.
    - If animals are present within the mitigation zone during a break exceeding 10min in duration, then the restart will be delayed by the PAM operator until the zone is clear for 10min.
    - If the break in operations exceeds 30min, a 20min pre-watch is required before piling can recommence (PAM watches conducted during the down time will be included).

A simple flow chart summarising the acoustic piling protocols is provided in Figure 11.2.

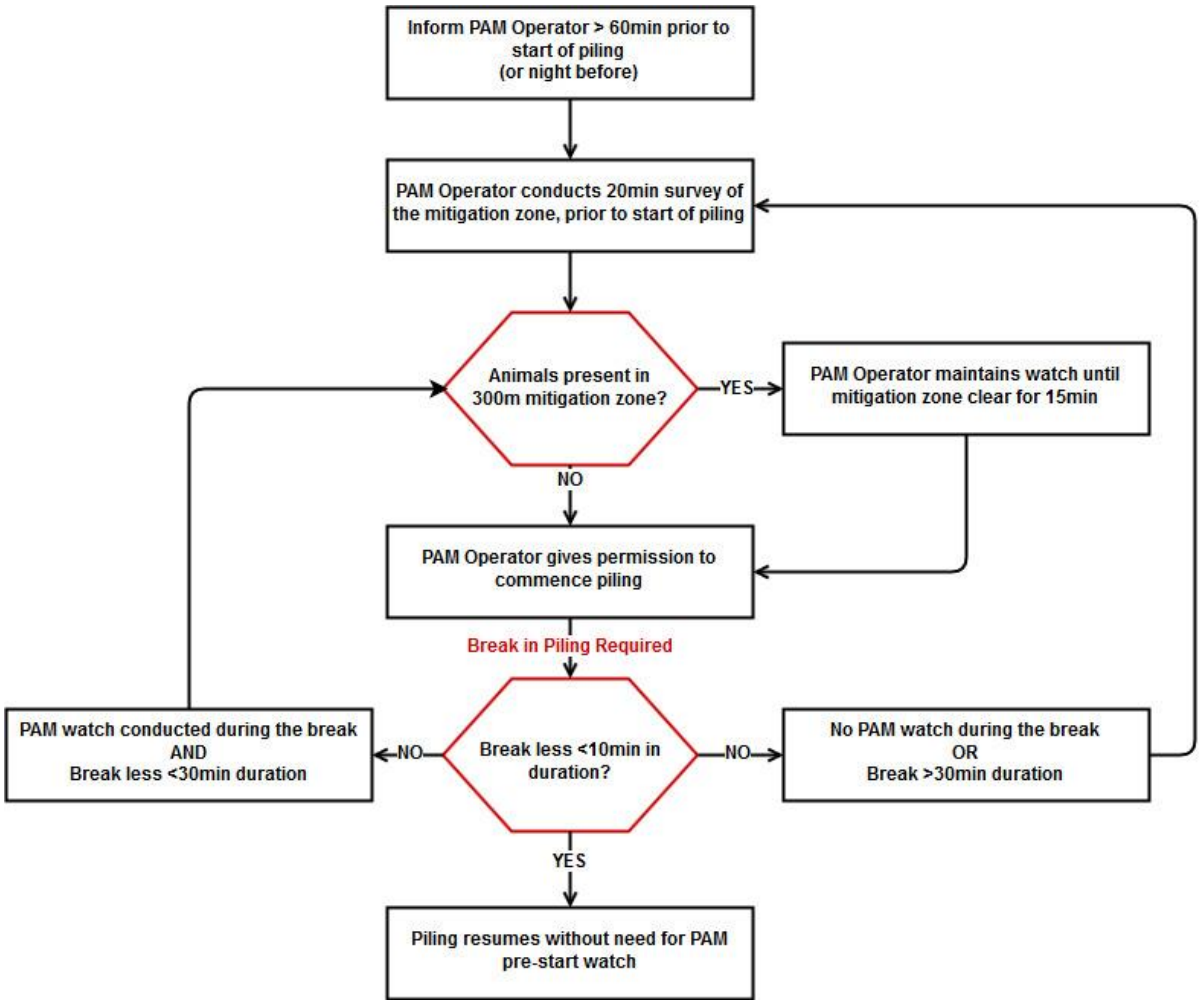


Figure 11.2: Flowchart of Acoustic Piling Observation Protocols

11.2.4.2 Spoil Disposal Marine Mammal & Basking Shark Protocol

General Provisions

All marine mammal observers (MMOs) and passive acoustic monitoring (PAM) technicians will be trained to Joint Nature Conservation Committee (JNCC) standards. Both MMOs and PAM technicians shall have the power to delay disposals should marine mammals or basking sharks be present in the mitigation zone. The mitigation zone for spoil disposals shall extend 200m from the disposal vessel.

A formal log shall be maintained by the MMOs and PAM technicians whether marine mammals or basking sharks are present or not. The forms used will be the standard JNCC MMO forms, modified to suit spoil disposal operations (Appendix 11B). Paper forms should be provided to the ECoW for collation on a regular basis. All data will be stored electronically and provided to Marine Scotland at the end of the dredging campaign. The details recorded will include but are not limited to:

- Time and location of the disposal operations;
- Mobilisation and demobilisation times of MMO/PAM team;
- Start time of disposal;
- Duration of disposal;

- Conditions affecting observations including sea state and visibility, throughout surveillance;
- Records of any sightings/ acoustic detections and actions taken; and
- Records will also be kept of sightings of other marine species including otters.

Visual MMO watches will be conducted during daylight hours, when sea state is ≤3, and when visibility permits (clear visibility past the spoil ground for land-based observations, and ≥300m for vessel based). Unless PAM is available, spoil disposal operations will not take place during hours of darkness, or if conditions are unsuitable for visual observations.

If available, PAM will be used during hours of darkness, when sea state is ≥4, or if visibility prohibits visual observation. Summaries of both visual and acoustic observation protocols are provided below.

It is vital that sufficient advance notice is provided for MMO call out, to allow for early check on sea state and visibility at the Spoil Ground, so that PAM operators may be called out in time to conduct 20-minute PAM survey prior to vessel arrival at the Spoil Ground if conditions require.

Visual Observation Protocols

Visual marine mammal and basking shark observations will be conducted by an MMO at a suitable observation location, either shore based on the Anish Peninsular, or vessel based on the disposal vessel or separate observation vessel. The following protocol will be followed regardless of the MMO location:

1. The MMO should be informed by the dredge spoil disposal vessel via VHF radio or phone once dredging is complete and that the ship is on route to the spoil ground. The vessel must give suitable warning to the MMO observer to allow them to get into position and start a watch at least 20 minutes before the anticipated arrival time.
2. The MMO will commence the watch using binoculars (minimum characteristics of 8x42) so that at least a 20-minute watch has been conducted by the time the ship reaches the spoil ground. The MMO should focus their effort on the spoil ground and advise the ship if marine mammals or basking sharks are present in order to avoid them if possible.
3. Once in the spoil ground the ships officers will ask the MMO if they are clear to commence the disposal. If the 200m mitigation zone is clear, then MMO will give permission to proceed. If marine mammals or basking sharks are present within the mitigation zone, disposal will be delayed until the animals have left the mitigation zone and 5 minutes have passed since an animal was last sighted within the zone.
4. Visibility Limits:
    - Shore based – Must have clear visibility past the Spoil Ground, sufficient light (i.e. daylight hours), and sea state must be ≤3.
    - Vessel based – Must have clear visibility to 300m from the disposal vessel, sufficient light (i.e. daylight hours) and sea state must be ≤3.

A simple flow chart summarising the visual observation protocols is provided in Figure 11.3.

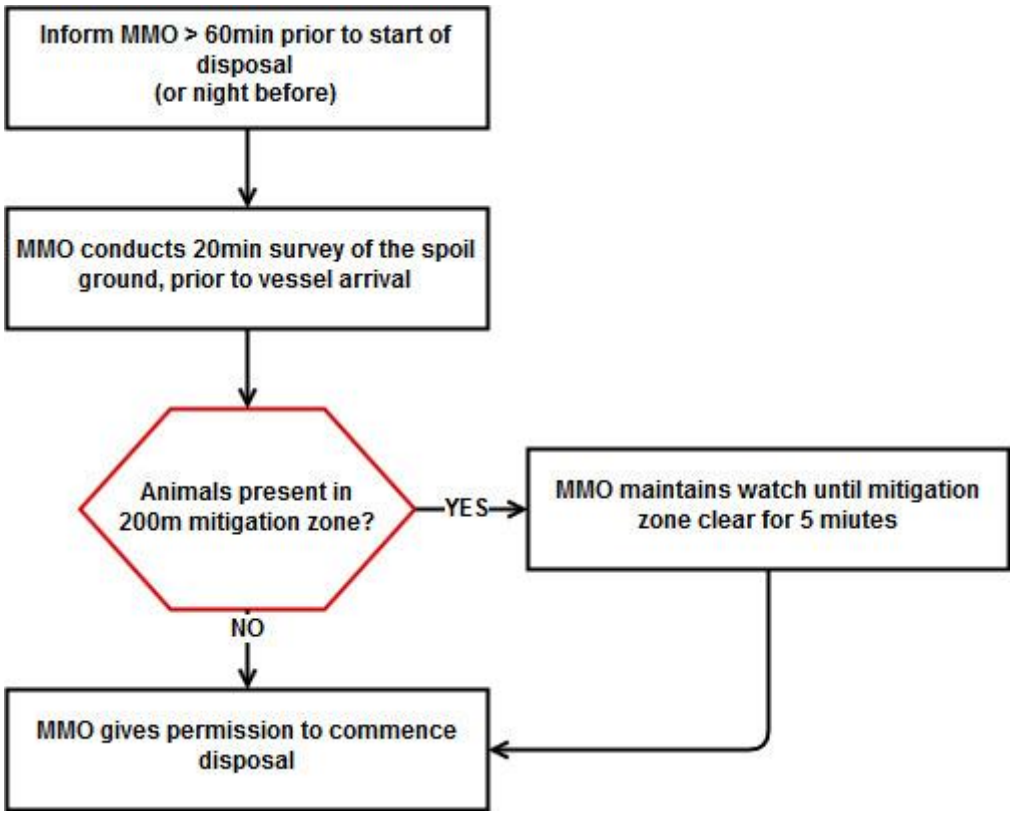


Figure 11.3: Flowchart of Spoil Disposal Visual Observation Protocols

Acoustic Monitoring Protocols

During hours of darkness, sea states ≥4, or if visibility falls to below 300m for vessel-based observation or visibility is not clear past the spoil ground for shore-based observation, marine mammal detection will be conducted acoustically using Passive Acoustic Monitoring (PAM). The PAM system will be either be deployed from the disposal vessel, or buoy mounted in a location where the system provides sufficient coverage of the spoil ground to allow detection of vocalising cetaceans in the area. It should be noted that PAM does not provide mitigation for seals, minke whales, or basking sharks, since these species do not vocalise. The following protocol will be used for PAM:

The PAM technician shall be given a minimum warning of 60 minutes ahead of the intended disposal time, in order to prepare for the watch. The operator will work from the PAM base station where the laptop will receive data from the PAM hydrophones. The base station will be located on the disposal vessel for vessel deployed systems, or on land if the hydrophones are buoy mounted.

The PAM technician should perform a minimum of a 20-minute watch before the vessel reaches the Spoil Ground.

Once the PAM technician is satisfied no marine mammals are present within the 200m mitigation zone, they may advise the crew to commence the disposal. If mammals are detected within the zone, the disposal will be delayed until 10 minutes have passed since last detection within the zone.

A simple flow chart summarising the acoustic monitoring protocols is provided in Figure 11.4.

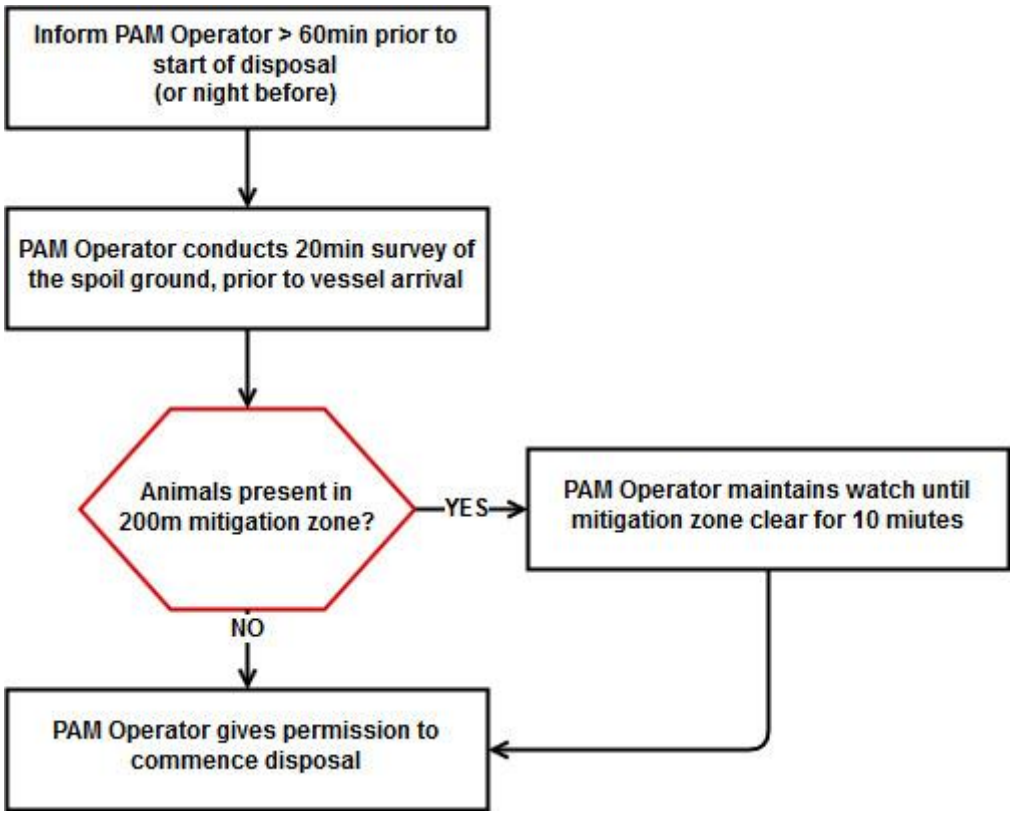


Figure 11.4: Flowchart of Spoil Disposal Acoustic Observation Protocols

11.3 Marine Non-Native Species

11.3.1 Introduction

The consequences of introducing non-native species into the local marine ecosystem include;

- Damage or displacement of indigenous species;
- Disruption of sensitive ecosystem balance;
- The spread of foreign diseases which severely affect native species;
- Damage to buildings and marine infrastructure; and
- Significant economic costs associated with the control and management of invasive species.

11.3.2 Mitigation

All works will be carried out in accordance with The Code of Practice on Non-Native Species (approved by Scottish Parliament 28 June 2012), adopting a precautionary approach to minimise the risk of releasing Marine Non-Native Species (MNNS), using risk assessments relevant to planned activities and seeking advice on best practice whenever necessary, including reporting the presence of non-native species. This guidance will be adopted during the Tarbert Ferry Terminal Upgrade works, to minimise the risks of introducing MNNS into East Loch Tarbert during any marine works.

The implementation of this guidance will be facilitated during induction, Toolbox Talks, the weekly environmental checklist and internal Environmental & Quality audits.

Appropriate measures will be implemented to reduce the risk of MNNS introduction. These will include:

- **Marine Plant (Not Road Transportable):**
  - Vessel employed to support the project will be sourced from within relevant biogeographic boundaries wherever possible i.e. within the North Sea ecosystem; and
  - All vessels working on the project will be compliant with the relevant requirements of the International Maritime Organisation, including adherence to the Ballast Water Management Convention.
- **Road Transportable Equipment (Plant, Vehicles and Small Boats):**
  - All equipment is to be received in an 'as new' standard;
  - Salt water will be drained from every part of the plant, boat or any other item which could transport water from the marine environment, prior to being mobilised to site or demobilised from it;
  - All parts of plant, equipment or boats that come into contact with the water will be thoroughly cleaned before being mobilised to or demobilised from the site, removing any visible algae, fish, shellfish, and soils;
  - Any algae, fish, shellfish or soils removed from plant or equipment during routine cleaning will be disposed of inf a designated bin or skip;
  - Small boat hulls will be cleaned regularly to avoid the risk of transporting MNNS, and anti-fouling applied where appropriate; and
  - Operators will avoid travelling through marine plants and weed where possible, to prevent organic matter becoming entangled in tracks, propellers etc. and transport around the site.
- **Materials:**
  - All materials used during the construction of the Tarbert Ferry Terminal Upgrade will be free from marine organic matter, and sourced from areas free from known MNNS.

In event that invasive species are suspected the relevant authorities will be contacted by the ECoW or Project Manager.

- SEARS (Scottish Environment & Rural Services): 08452 302050
- SNH: non_native_species@snh.gov.uk
- Marine Scotland: marinescotland@scotland.gsi.gov.uk - 01224 876544
- SEPA: http://www.sepa.org.uk/about_us/contacting_sepa.aspx

Appendix 11A – Piling Marine Mammal Observation Forms

PILING OPERATIONS

MARINE MAMMAL RECORDING FORM - OPERATIONS

Regulatory reference number: **Ship/ platform name:**

Complete this form every time piling (vibro and impact) operations commences or ends.
Times should be in UTC, using the 24-hour clock.

Date	**Activity Type** **pv** = vibro piling **pi** = impact piling	**Time soft start/ ramp-up began**	**Start Time of full power**	**Time of reduced output** (if relevant)	**Time Activity Stopped**	**Time pre-activity search began**	**Time search ended**	**Time PAM observation began**	**Time PAM observation ended**	**Was any mitigating action required?** (yes/ no)

PILING OPERATIONS

MARINE MAMMAL RECORDING FORM - EFFORT

Regulatory reference number: **Ship/ platform name**:

Record the following for all watches, even if no marine mammals are seen.

START A NEW LINE IF SOURCE ACTIVITY OR WEATHER CHANGES. ENTER DATA AT LEAST EVERY HOUR.

Date	**Visual watch or PAM** (v/ p)	**Observer's/ operator's name(s)**	**Time of start of section of watch** (UTC, 24hr clock)	**Time of end of section of watch** (UTC, 24hr clock)	**Activity Type** (pv /pi)	**Activity level** (f/ s/ r/ n/ v)	**Position** (latitude and longitude)	**Depth** (m)	**Wind dir'n**	**Wind force** (B'fort scale)	**Sea state** (g/ s/ c/ r)	**Swell** (o/ m/ l)	**Vis.** (visual watch only) (p/ m/ g)	**Sun glare** (visual watch only) (n/ wf/ sf/ vf/ wb/ sb/ vb)	**Precip.** (n/ l/ m/ h/ s)

Visual watch or PAM: v = visual watch; p = PAM
Activity type: pi = impact piling, pv = vibro piling
Activity level: f = full power; s = soft start; r = reduced power (not soft start); n = not active; v = variable (e.g. tests)
Sea state: g = glassy (like mirror); s = slight (no/ few white caps); c = choppy (many white caps); r = rough (big waves, foam, spray)
Swell: o = low (< 2 m); m = medium (2-4 m); l = large (> 4 m)
Visibility: p = poor (< 1 km); m = moderate (1-5 km); g = good (> 5 km)
Sun glare: n = none; wf = weak forward; sf = strong forward; vf = variable forward; wb = weak behind; sb = strong behind; vb = variable behind
Precipitation: n = none; l = light rain; m = moderate rain; h = heavy rain; s = snow

PILING OPERATIONS

MARINE MAMMAL RECORDING FORM - SIGHTINGS

Regulatory reference number	**Ship/ platform name**	**Sighting number** (start at 1 for first sighting of survey)	**Acoustic detection number** (start at 500 for first detection of survey)
Date:		**Time at start of encounter** (UTC, 24hr clock)	**Time at end of encounter** (UTC, 24hr clock)

Were animals detected visually and/ or acoustically?	**How were the animals first detected?**
□ visual □ acoustic □ both	□ visually detected by observer keeping a continuous watch □ visually spotted incidentally by observer or someone else □ acoustically detected by PAM □ both visually and acoustically before operators/ observers informed each other

Observer's/ operator's name	**Position** (latitude and longitude)	**Water depth** (metres)

Species/ species group	**Description** (include features such as overall size; shape of head; colour and pattern; size, shape and position of dorsal fin; height, direction and shape of blow; characteristics of whistles/ clicks)
Bearing to animal (when first seen or heard) (bearing from true north)	**Range to animal** (when first seen or heard) (metres)

Total number	**Number of adults** (visual sightings only)	**Number of juveniles** (visual sightings only)	**Number of calves** (visual sightings only)	**Photograph taken**
				□ yes □ no

Behaviour (visual sightings only)

Direction of travel (relative to site)		**Direction of travel** (compass points)	
□ towards source	□ variable	□ N	□ W
□ away from source	□ milling	□ NE	□ NW
□ crossing perpendicular (in channel swimming E↔W)	□ stationary	□ E	□ variable
	□ other	□ SE	□ stationary
□ unknown		□ S	□ unknown
		□ SW	

Activity Type (pi, pv):

Activity level when animals first detected	**Activity level when animals last detected**	**Time animals entered 500m mitigation zone** (UTC, 24hr clock)	**Time animals left 500m mitigation zone** (UTC, 24hr clock)
□ full power □ not active □ soft start □ reduced power (other than soft start)	□ full power □ not active □ soft start □ reduced power (other than soft start)	**Closest distance of animals from source activity** (metres)	**Time of closest approach** (UTC, 24hr clock)

If seen during soft start give:	**What action was taken?** (according to requirements of guidelines/ regulations in country concerned)	**Length of power-down and/ or shut-down** (if relevant) (length of time until subsequent soft start, in minutes)
First distance **Closest distance** **Last distance** during soft start (metres)	□ none required □ delay start □ shut-down of active source □ power-down of active source □ power-down then shut-down of active source	

Appendix 11B – Spoil Disposal Marine Mammal Observation Forms

SPOIL DISPOSAL OPERATIONS

MARINE MAMMAL RECORDING FORM - OPERATIONS

Regulatory reference number **Ship/ platform name**

Complete this form every time dredging, piling (vibro and impact), revetment removal or revetment construction commences/ends.

Times should be in <u>UTC</u>, using the 24-hour clock.

Date	Activity Type	Time Disposal Start	Time Disposal End	Time pre-disposal search began	Time search ended	Was any mitigating action required? (yes/ no)
	Dredge Disposal					
	Dredge Disposal					
	Dredge Disposal					
	Dredge Disposal					
	Dredge Disposal					
	Dredge Disposal					
	Dredge Disposal					
	Dredge Disposal					
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	Dredge Disposal					
	Dredge Disposal					
	Dredge Disposal					
	Dredge Disposal					
	Dredge Disposal					
	Dredge Disposal					

SPOIL DISPOSAL OPERATIONS

Regulatory reference number **Ship/ platform name**

Record the following for all watches, even if no marine mammals are seen.

START A NEW LINE IF DISPOSAL ACTIVITY OR WEATHER CHANGES. ENTER DATA AT LEAST EVERY HOUR.

Date	**Observer's name(s)**	**Time of start of section of watch** (UTC, 24hr clock)	**Time of end of section of watch** (UTC, 24hr clock)	**Activity Type**	**Disposal in Progress** (Y/N)	**Start Position** (latitude and longitude)	**Start Depth** (m)	**End Position** (latitude and longitude)	**End Depth** (m)	**Vessel Speed** (knots)	**Wind dir'n**	**Wind force** (B'fort scale)	**Sea state** (g/ s/ c/ r)	**Swell** (o/ m/ l)	**Vis.** (visual watch only) (p/ m/ g)	**Sun glare** (visual watch only) (n/ wf/ sf/ vf/ wb/ sb/ vb)	**Precip.** (n/ l/ m/ h/ s)
				Dredge disposal													
				Dredge disposal													
				Dredge disposal													
				Dredge disposal													
				Dredge disposal													
				Dredge disposal													
				Dredge disposal													
				Dredge disposal													
				Dredge disposal													
				Dredge disposal													
				Dredge disposal													
				Dredge disposal													
				Dredge disposal													
				Dredge disposal													

Sea state: g = glassy (like mirror); s = slight (no/ few white caps); c = choppy (many white caps); r = rough (big waves, foam, spray)
Swell: o = low (< 2 m); m = medium (2-4 m); l = large (> 4 m)
Visibility: p = poor (< 1 km); m = moderate (1-5 km); g = good (> 5 km)
Sun glare: n = none; wf = weak forward; sf = strong forward; vf = variable forward; wb = weak behind; sb = strong behind; vb = variable behind
Precipitation: n = none; l = light rain; m = moderate rain; h = heavy rain; s = snow

SPOIL DISPOSAL OPERATIONS

MARINE MAMMAL RECORDING FORM - SIGHTINGS

Regulatory reference number	**Ship/ platform name**	**Sighting number** (start at 1 for first sighting of survey)

Date:	**Time at start of encounter** (UTC, 24hr clock)	**Time at end of encounter** (UTC, 24hr clock)

How were animals detected?

- ☐ Visually
- ☐ Acoustically
- ☐ Both

How were the animals first detected?

- ☐ visually detected by observer keeping a continuous watch
- ☐ visually spotted incidentally by observer or someone else
- ☐ acoustically detected by PAM
- ☐ detected both visually and acoustically before MMO/PAM warned each other.

Observer's name	**Position** (latitude and longitude)	**Water depth** (metres)

Species/ species group	**Description** (include features such as overall size; shape of head; colour and pattern; size, shape and position of dorsal fin; height, direction and shape of blow)

Bearing to animal (when first seen bearing from true north)	**Range to animal** (when first seen metres)

Total number	**Number of adults**	**Number of juveniles**	**Number of calves**	**Photograph taken** ☐ yes ☐ no

Behaviour

Direction of travel (relative to vessel)

- ☐ towards ship
- ☐ away from ship
- ☐ parallel to ship in same direction as ship
- ☐ parallel to opposite direction to ship
- ☐ crossing perpendicular ahead of ship
- ☐ variable
- ☐ milling
- ☐ stationary
- ☐ other
- ☐ unknown

Direction of travel (ANIMAL) (compass points)

- ☐ N
- ☐ NE
- ☐ E
- ☐ SE
- ☐ S
- ☐ SW
- ☐ W
- ☐ NW
- ☐ variable
- ☐ stationary
- ☐ unknown

Activity Type: *Dredging Disposal*

Was the barge disposing when animals first seen?	**Was the barge disposing when animals last seen?**	**Time animals entered 200m mitigation zone** (UTC, 24hr clock)	**Time animals left 200m mitigation zone** (UTC, 24hr clock)
☐ Y ☐ N	☐ Y ☐ N	**Closest distance of animals from vessel** (metres)	**Time of closest approach** (UTC, 24hr clock)

What action was taken?
(according to requirements of guidelines/ regulations in country concerned)

- ☐ None required
- ☐ Delay disposal

Length of delay in disposal? (if relevant)
(length of time until subsequent disposal)

Construction Environmental Management Document	
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Contents

12 In-Air Acoustics

12.1 Introduction

A detailed assessment of in-air noise effects was completed, as detailed in Chapter 10 of the EIAR. It was identified that the Tarbert ferry terminal is very close to residential areas. The construction noise modelling completed for the EIA process identified the need for noise management measures to ensure that significant noise effects do not occur.

12.2 Noise Effects

There are multiple construction activities that could give rise to noise, some of which will be carried out concurrently. The phase of work also determines which receptors are most likely to be affected. Receptors include residential properties on Manse Road, Main Street and the A868, as well as the Community Centre and the Hotel Hebrides. The location of the work will determine which receptors are most likely to be affected. It is therefore essential that mitigation is appropriately implemented to minimise the nuisance effect.

12.3 Mitigation

Works will be carried out primarily during daytime hours as defined by BS5228-1:2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites, and detailed in Table 12.1. In line with the aforementioned guidance, the noise levels during daytime will be ≤70dB $L_{Aeq,t}$ at noise sensitive properties (Table12.1). Any works outwith daytime hours will only be completed if the appropriate noise limits detailed in Table 12.1 are not exceeded at any noise sensitive locations.

Table 12.1: Noise Limits at Nearest Receptors at Various Times of Day

Period	Times (Hrs)	Noise Limits dB $L_{Aeq,t}$
Daytime	07:00 – 19:00 Weekdays 07:00 – 13:00 Saturdays Excluding Bank Holidays	70
Evenings and Weekends	19:00 – 23:00 Weekdays 13:00 – 23:00 Saturdays 07:00 – 23:00 Sundays Bank Holidays	60
Night-time	23:00 – 07:00	50

Work creating noise levels exceeding these limits shall only be carried out where absolutely necessary (for example, in emergency situations, where there is an absolute need to work at a particular expected tide or where work needs to be completed to avoid disruption to a scheduled ferry service). The Principal Contractor may take the decision to apply to the Comhairle nan Eilean Siar (CnES) for consent to conduct potentially noisy construction activities, under Section 61 of the Control of Pollution Act 1974 (as amended).

For each phase of the works, a review of plant requirements will be made against those assumed in the EIAR. If the actual plant requirements are significantly different and could give rise to greater noise emissions to those predicted, the noise assessment will be reviewed and updated to identify any particular issues and associated requirements for mitigation.

To achieve noise levels ≤70dB $L_{Aeq,t}$ at the Hotel Hebrides and Manse Road during noisy activities around the terminal building and pier, the modelling showed that acoustic barriers need to be installed. The barriers should be 2m high located in the locations denoted by the blue dashes shown in Figure 12.1. The barrier height should be increased to 2.5m directly opposite the Hebrides Hotel, shown by the solid blue line in Figure 12.1.

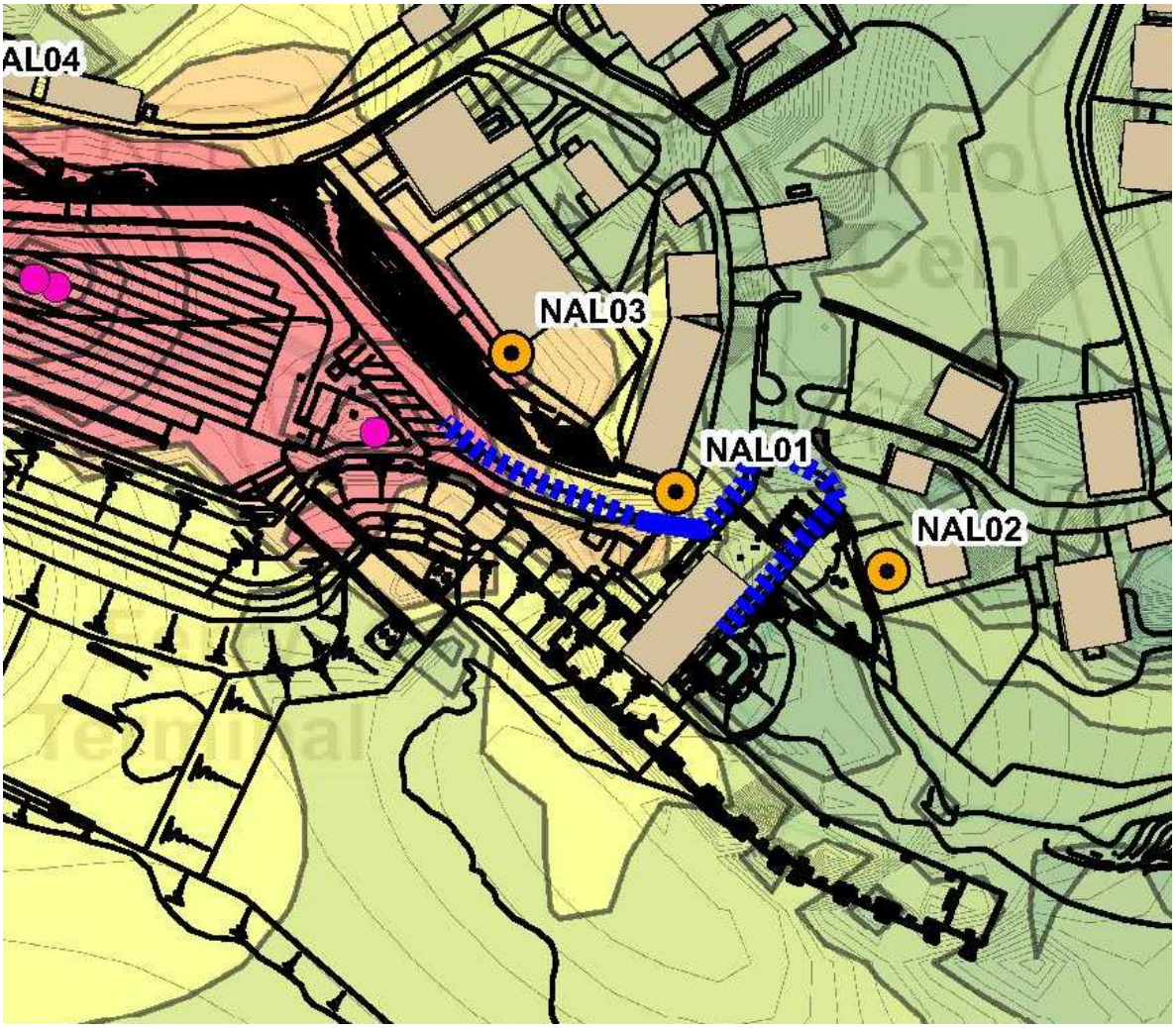

Figure 12.1: Noise Barrier Locations

If the construction contractor's method of working are different from those modelled in the EIAR, and it can be demonstrate that 70dB $L_{Aeq,t}$ will not be exceeded at any receptor without noise barriers, then this mitigation may not be required.

To minimise noise levels generated, good working practices will be employed to keep noise levels down throughout the construction process, this includes:

- Keeping local residents informed of the proposed working schedule, where appropriate, including the times and duration of any abnormally noisy activity that may cause concern;
- Ensuring that haulage vehicles do not arrive at or leave the site between 19.00 and 07.00 hours;

- Ensuring that all vehicles and mechanical plant are fitted with effective exhaust silencers and 'smart' (non-tonal) reversing alarms and be subject to programmed maintenance;
- Inherently quiet plant will be selected where appropriate - all major compressors, pumps and generators will be 'sound reduced' models, fitted with properly lined and sealed acoustic covers, which will be kept closed whenever the machines are in use;
- Ensuring that all ancillary pneumatic percussive tools are fitted with mufflers or silencers of the type recommended by the manufacturers;
- Ensuring equipment and machines are shut down between work periods, or throttled down to a minimum;
- Ensuring regular maintenance of all equipment used on site, including maintenance related to noise emissions;
- Ensuring that vehicles used for material transport are loaded carefully to ensure minimal drop heights, so as to minimise noise during this operation; and
- Ensuring all ancillary plant such as generators and pumps are positioned so as to cause minimum noise disturbance (maximising distances from receptors and taking advantage of opportunistic screens) and, if necessary, temporary acoustic screens or enclosures will be provided.

12.4 Monitoring

At the start of each new phase of potentially noisy work activity, noise checks will be completed. Initial checks will be qualitative, with the ECoW visiting noise sensitive receptors to identify if noise related to the ongoing construction activities is audible at the location. If construction noise is clearly audible, then noise monitoring will be undertaken.

If a noise complaint is received, then noise checks as described above will also be completed.

In event of noise levels exceeding the criteria defined in Table 12.1, an investigation will be carried out to ascertain whether the noise source is associated with the construction operations, and if so the reason behind the breach. This will allow additional targeted mitigation to be identified and implemented.

All noise monitoring will be taken in accordance with BS7445 Description and Measurement of Environmental Noise. The following measurements will be recorded:

- $L_{Aeq,5\ min}$ – equivalent continuous A –weighted sound pressure level in decibels measured over 5 minutes.
- L_{A10} - A-weighted sound pressure level that is exceeded for 10% of the measurement period.
- L_{A90} - A-weighted sound pressure level that is exceeded for 90% of the measurement time.
- L_{Amax} – A weighted highest sound pressure level measured.

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Contents

13 Dredging for Sea Disposal Protocol

13.1 Introduction

50,000 m^3 of material are to be dredged to construct the Tarbert Ferry Terminal Upgrade. Following analysis of the GI results, it was established that none of the dredge spoil will be suitable for reused and as such will require sea disposal at the Stornoway spoil grounds. This document lays out the steps to be taken prior to, during and after dredging.

13.2 Prior to Dredging

Prior to dredging the following should be completed/ in place:

- A meeting is to take place between the dredging vessel master and Tarbert Harbour Master to discuss/agree:
    - Transportation routes and timing, to and from the dredge areas;
    - Communication/Radio Protocols; and
    - Harbour General Directions.
- A meeting is to take place between the dredging vessel master and Stornoway Harbour Master to discuss/agree:
    - Transportation routes and timing, to and from the spoil disposal ground;
    - Communication/Radio Protocols; and
    - Harbour General Directions.
- Notices to Mariners, and/or Navigation Warnings issued as appropriate.
- Marine Scotland to be notified of the date of commencement.
- Vessel master to be provided with a copy of all relevant licences.
- Vessel Master and MMO/PAM operators to be provided with copies of the Spoil Disposal Marine Mammal and Basking Shark Protocols (Section 11.2.4.2).

13.3 During Dredging for Sea Disposal

During dredging operations, the following should be implemented:

- Marine mammal observations to be carried out as detailed in CEMD Section 11.2.4.2.
- No disposals to be made if marine mammals are within 200m of the dredging barge.
- Transportation to utilise routes agreed with the Port Manager.
- All sea disposals to be made at the Stornoway Spoil Ground (HE035).
- Samples to be taken in accordance with Marine Scotland instructions.
- If contamination is suspected material will not be disposed of until appropriate checks have been made.
- Persons authorised by Marine Scotland will be permitted to inspect works.
- The dredger, barges and tugs will exhibit the required lights/shapes at all times.
- Form FEP6 to be completed for each disposal.
- Visual checks of water quality will be carried out to ensure that any visible plumes are localised and disperse quickly.

If increases in sediment loading in the water column are not as predicted the technique will be reviewed to identify areas for improvement.

Disposals will not be carried out in hours of darkness, or when weather or sea conditions are unsuitable for visual observations, unless PAM is provided at the spoil ground as detailed in Section 11.2.4.2.

13.4 Post Dredging

The following will be completed post dredging:

- A written marine mammal report and associated MMO forms shall be submitted to Marine Scotland.
- Spoil samples and completed FEP 6 forms will be provided to Marine Scotland.

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Contents

14 Dust Management Plan

14.1 Introduction

Demolition of the current ferry terminal building, construction of the new ferry terminal building and earthworks, including infilling, all have the potential to give rise to dust, which can become a nuisance and potentially a health hazard, especially in dry and windy conditions. Steps to be taken to minimise and monitor dust effects are detailed within this Dust Management Plan which accompanies the Construction Environmental Management Plans (CEMPs) provided in Section 6.

14.2 Dust Prevention

All delivery vehicles entering and leaving the site will be covered to prevent escape of materials and giving rise to dust on the public roads. Delivery vehicles will also follow a designated route, avoiding unsurfaced roads.

Infill material stored on site will be minimised where practicable by utilising a 'just in time' delivery system. The movement of dusty material, such as infill, will be appropriately planned to minimise the number of times dust emitting material is moved. Any infill materials with the potential to give rise to dust will be kept moist, to avoid dust arisings until they have been covered by geotextiles or surfacing. This is likely to require the use of mobile water bowsers or water sprays in dry weather conditions to damp down infill material. The covering of dust material with geotextiles and surfacing will be conducted promptly.

Waste arising from building demolition will be covered when stored on site, and removed from site promptly.

The ECoW will take note of weather forecasts to ensure that measures are in place prior to periods of dry or windy weather.

Good housekeeping will be employed across the site to prevent dust emissions.

14.3 Minimising Spread and Track-Out

Where it is deemed necessary road sweepers will be employed to minimise the spread of dust through the site, and if needed onto the public road.

14.4 Dust Monitoring

Throughout the construction period, dust will be monitored using passive monitoring (e.g. sticky pads). Two monitoring points will be located on the boundary of the existing marshalling area, one near the entrance and the other closer to the linkspan. The pads will be replaced at appropriate intervals with subsequent laboratory analysis of replaced pads. Monitoring results will be reviewed to ensure mitigation is effective, if not improvements will be made.

Qualitative monitoring surveys of visible dust emissions and surface soiling will also be conducted once each working day within the vicinity of the site boundary (internal and external) with the result of the inspection being recorded.

As detailed in Section 5, audits will be undertaken, with the audit including material storage status; inspection of the access road and local roads; and looking for signs of surface soiling on surfaces around the site. Frequency of audits in periods of dry weather will increase.

Construction Environmental Management Document	
Section Number	15
Section Title	Programming
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Author	Jon Ashburner
Approved	Fiona Henderson

Document History		
Issue	Date	Reason for Change
1	29/01/2019	Issued to Marine Scotland

Contents

15 Programming

15.1 Introduction

This section lays out both the construction programme and the reporting programme for the Tarbert ferry terminal upgrade.

15.2 Construction Programme

The initial construction programme has now been defined and is provided in Appendix 13A. The programme is currently high level but will be refined and updated once the Principal Contractor has been appointed.

15.3 Reporting Programme

Table 15.1 details the environmental reports expected to be produced throughout the project, their timing, who is responsible and the regular distribution. The Project Team includes CMAL, CMAL Consultant Engineers, CMAL Environmental Consultant, and the Principal Contractor. It is acknowledged that Marine Scotland can request copies of any report during the project, however they would not routinely be sent all reports.

Table 15.1: Environmental Reporting Programme

Report	Timing/Frequency	Responsibility	Distribution
Incident / Non-conformance Reports	In event of an incident.	Project Team	Project Team and if relevant Marine Scotland/ SEPA/SNH
Investigation Reports	After an environmental event or incident requiring further investigation.	ECoW	Project Team and if relevant Marine Scotland/ SEPA/SNH
Environmental Audits	Daily/Weekly/ Monthly as per Section 5.	ECoW	Project Team
Dredging Report	Within 28 days of completing dredging.	Principal Contractor Site Supervisor	Project Team Marine Scotland
Waste Management Report	Monthly	Principal Contractor	Project Team
In-air Noise Monitoring Reports	As completed Section 12.	ECoW	Project Team
Marine Mammal Observation Reports	End of Works	ECoW	JNCC Marine Scotland Science

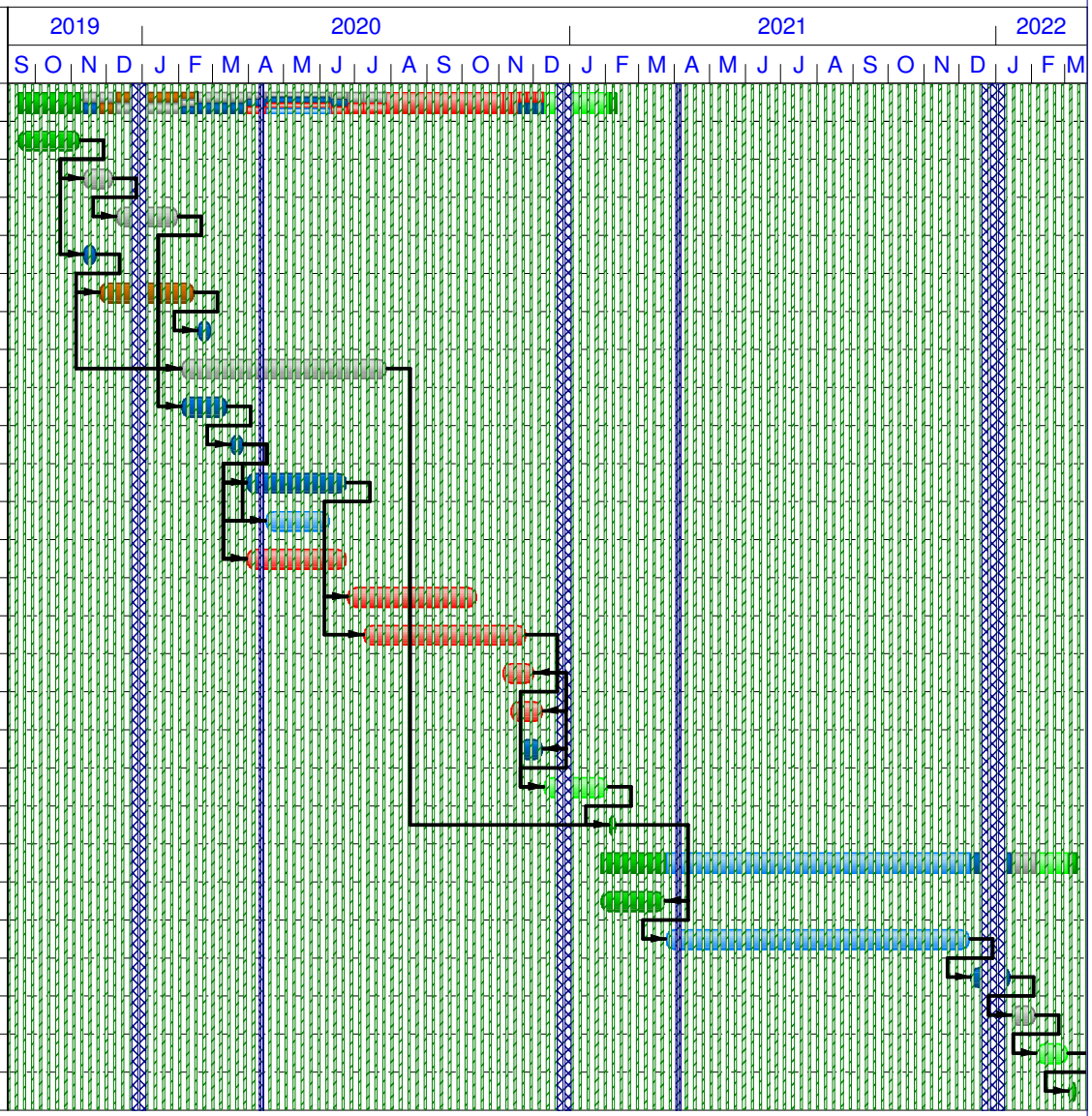
Appendix 15A – Construction Programme

1973 - Tarbert (Harris) Ferry Terminal

Indicative Construction Programme
(Rev B)

10/01/19

ID	Name	Start	Duration	Finish
1	**Marine Civil Works - Site Construction Period**	**16/09/19**	**345d**	**09/02/21**
2	Mobilisation	16/09/19	8w	08/11/19
3	Reclaim Area up to Linkspan Approach	11/11/19	4w	06/12/19
4	Construct RC Walls and Backfill	09/12/19	6w	31/01/20
5	Relocate Pontoons	11/11/19	2w	22/11/19
6	Dredging	25/11/19	10w	14/02/20
7	Reinstall Pontoons	17/02/20	2w	28/02/20
8	Marshalling / Parking Areas	03/02/20	25w	28/07/20
9	Establish Temporary Terminal Building	03/02/20	6w	13/03/20
10	Demolish Existing Terminal Building	16/03/20	2w	27/03/20
11	Install Pier Temporary Works	30/03/20	12w	23/06/20
12	Building Foundation - Piling and RC Slab	15/04/20	8w	09/06/20
13	Existing Pier Demolition	30/03/20	12w	23/06/20
14	Pier Reconstruction - Piling	24/06/20	16w	13/10/20
15	Pier Reconstruction - RC Deck	08/07/20	20w	24/11/20
16	Fendering System	04/11/20	4w	01/12/20
17	Cathodic Protection System	11/11/20	4w	08/12/20
18	Remove Pier Temporary Works	18/11/20	3w	08/12/20
19	Risk Float	09/12/20	6w	02/02/21
20	Demobilisation	03/02/21	1w	09/02/21
21	**Building Works - Site Construction Period**	**27/01/21**	**275d**	**10/03/22**
22	Mobilisation	27/01/21	8w	23/03/21
23	New Terminal Building	24/03/21	37w	09/12/21
24	Remove Temporary Terminal Building	10/12/21	2w	13/01/22
25	Complete Landside Works (Temporary Terminal Building Area)	14/01/22	3w	03/02/22
26	Risk Float	04/02/22	4w	03/03/22
27	Demobilisation	04/03/22	1w	10/03/22



Marshalling Area
Pier Works
Terminal Building
Dredging
Mobilisation / Demobilis
Temporary / Enabling W
Risk

Construction Environmental Management Document	
Section Number	16
Section Title	Schedule of Mitigation
Issue	2
Issue Date	04/06/19
Author	Fiona Henderson
Approved	Jon Ashburner

Document History		
Issue	Date	Reason for Change
1	29/01/2019	Issued to Marine Scotland
2	04/06/2019	Updated to address SEPA comment re sewage outfalls.

Contents

16 Schedule of Mitigation

The Schedule of Mitigation for the Tarbert ferry terminal upgrade, as identified through the EIAR process is provided in Tables 16.1. This will be implemented along with relevant best practice as discussed in Section 2 of this document.

Table 16.1: Schedule of Mitigation – Construction Mitigation

Topic	Aspect	Mitigation/Enhancement	Guidance	Source	CEMD Reference
Air Quality	Air Quality - Dust	Dust mitigation plan to be implemented.	Guidance on the assessment of dust from demolition and construction (IAQM, 2014).	EIAR Chapter 5 Section 5.6.1	Section 14
Air Quality	Air Quality - Dust	Appropriate planning to minimise the number of times dust emitting material is moved.		EIAR Chapter 5 Section 5.6.1	Section 14
Air Quality	Air Quality - Dust	Materials stored on site will be minimised where practicable, by utilising a just in time delivery system.		EIAR Chapter 5 Section 5.6.1	Section 10
Air Quality	Air Quality - Dust	Infill materials with the potential to give rise to dust will be kept moist until they have been covered by geotextiles or surfacing.	Guidance on the assessment of dust from demolition and construction (IAQM, 2014).	EIAR Chapter 5 Section 5.6.1	Section 14
Air Quality	Air Quality - Dust	Geotextiles and surfacing will be applied as soon as practicable to prevent dust emissions from infill materials.		EIAR Chapter 5 Section 5.6.1	Section 6
Air Quality	Air Quality - Dust	Good housekeeping employed across the site to prevent dust emissions.		EIAR Chapter 5 Section 5.6.1	Sections 6 & 14
Air Quality	Air Quality - Dust	Vehicles entering and leaving the site will be covered to prevent the escape of materials during transport.		EIAR Chapter 5 Section 5.6.1	Section 14
Air Quality	Air Quality - Dust	Delivery vehicles will follow designated routes, avoiding where possible unsurfaced roads.		EIAR Chapter 5 Section 5.6.1	Section 10

Topic	Aspect	Mitigation/Enhancement	Guidance	Source	CEMD Reference
Air Quality	Air Quality - Dust	Road sweepers will be employed as required to minimise the spread of dust through the site, and if needed onto the public road.		EIAR Chapter 5 Section 5.6.1	Section 14
Air Quality	Air Quality - Dust	Dust monitoring will be included in the Dust Management Plan.	Guidance on Air Quality Monitoring in the Vicinity of Demolition and Construction Sites (IAQM, 2012).	EIAR Chapter 5 Section 5.6.1	Section 14
Air Quality	Air Quality - Dust	Throughout the construction period, dust will be monitored using passive monitoring (e.g. sticky pads). The pads will be replaced at appropriate intervals with subsequent laboratory analysis of replaced pads. Monitoring results will be reviewed to ensure mitigation is effective, if not improvements will be made.	Guidance on Air Quality Monitoring in the Vicinity of Demolition and Construction Sites (IAQM, 2012).	EIAR Chapter 5 Section 5.6.1	Section 14
Air Quality	Air Quality - Dust	Qualitative monitoring surveys of visible dust emissions and surface soiling will be conducted once each working day within the vicinity of the site boundary (internal and external) with the result of the inspection being recorded.	Guidance on Air Quality Monitoring in the Vicinity of Demolition and Construction Sites (IAQM, 2012)	EIAR Chapter 5 Section 5.6.1	Section 14
Air Quality	Air Quality - Dust	Audits will be undertaken, with the audit including material storage status; inspection of the access road and local roads; and looking for signs of surface soiling on surfaces around the site. Frequency of audits in periods of dry weather will increase.		EIAR Chapter 5 Section 5.6.1	Section 14
Air Quality	Air Quality - GHG	Optimisation of material usage through design to reduce GHG emissions.		EIAR Chapter 5 Section 5.6.2	Section 10

Topic	Aspect	Mitigation/Enhancement	Guidance	Source	CEMD Reference
Air Quality	Air Quality - GHG	Sourcing material locally where possible to reduce GHG emissions associated with transport.		EIAR Chapter 5 Section 5.6.2	Section 10.6
Air Quality	Air Quality - GHG	Minimisation of material movements and switching off machinery when not in use to reduce GHG emissions.		EIAR Chapter 5 Section 5.6.2	Sections 12 & 14
Air Quality	Air Quality - GHG	Construction staff to be encouraged to car share or used organised company transport (e.g. minibuses) to reach site.		EIAR Chapter 5 Section 5.6.2	Section 10.6
Archaeology and Cultural Heritage	Archaeology	A protocol for archaeological discoveries will be included within the CEMP to ensure it is utilised in the unlikely event of an archaeological find.		Scoping Report	Section 9
Fish Ecology	Fish Ecology	The marine mammal protocol implemented will also apply to basking sharks.		EIAR Chapter 9 Section 9.6	Section 11
Landscape, Seascape and Visual	Visual impacts	The proposed development will be designed to reflect the materials of existing structures, particularly the colour and texture of the rock armour.		EIAR Chapter 14 Section 14.5.4.1	Section 10
Landscape, Seascape and Visual	Visual impacts	Equipment and materials no longer required on site during construction or operations will be removed promptly.		EIAR Chapter 14 Section 14.7.1	Section 6
Landscape, Seascape and Visual	Visual impacts	Crane arms will be lowered when not in use.		EIAR Chapter 14 Section 14.7.1	Section 6
Landscape, Seascape and Visual	Visual impacts	Good housekeeping practices will be employed during the construction phase.		EIAR Chapter 14 Section 14.7.1	Section 6
Landscape, Seascape and Visual Water Quality	Visual impacts Litter	Waste receptacles will be covered, and littering will not be tolerated.		EIAR Chapter 14 Section 14.7.1	Section 8

Topic	Aspect	Mitigation/Enhancement	Guidance	Source	CEMD Reference
				EIAR Chapter 13 Section 13.6.1.4	
Marine Mammals	Marine Mammals	Marine Mammal and Basking Shark Protection plan to be implemented		EIAR Chapter 7 Section 7.6.1	Section 11

Marine Mammals	Marine Mammals Piling	A Piling Marine Mammal Protocol will be in place:
		• A 300m mitigation zone will be established around the piling rig;
		• Trained marine mammal observers (MMO) will conduct a 20min pre-watch prior to the commencement of piling operations;
		  ○ If the 300m mitigation zone remains clear of marine mammals during the watch, permission will be given to commence piling; but
		  ○ If a marine mammal is sighted within the mitigation zone, piling will be delayed until the zone has been clear of marine mammals for at least 10min.
		• If conditions are unsuitable for visual observations (darkness, fog reducing visibility to <400m, or sea states >Beaufort 4); passive acoustic monitoring (PAM) will be utilised by a trained PAM operator to monitor the mitigation zone;
		  ○ A PAM watch of the mitigation zone will have a minimum duration of 20min;
		  ○ If a marine mammal is detected within the mitigation zone during a PAM watch, disposal will be delayed until the zone has been clear of marine mammals for at least 10min.
			Statutory Nature Conservation Agency Protocol for Minimising the Risk of Injury to Marine Mammals from Piling Noise (Joint Nature Conservation Committee, 2010)	EIAR Chapter 7 Section 7.6.1	Section 11

Topic	Aspect	Mitigation/Enhancement	Guidance	Source	CEMD Reference

		• Once piling has commenced there will be no requirement to stop works if a marine mammal enters the mitigation zone, as long as piling has been continuous, with no breaks exceeding 10min;
		• If a break in piling operations exceeds 10min the following conditions will apply:
		  ○ If an MMO/PAM operator has been on watch during the break, and the mitigation zone remains clear of marine mammals, piling can recommence immediately;
		  ○ If an MMO/PAM operator has been on watch during the break, and a marine mammal is observed within the mitigation, piling will not recommence until the zone has been clear of marine mammals for at least 10min; and
		  ○ If no marine mammal observations have been conducted during a break exceeding 10min, a 20min pre-watch will be conducted before piling can recommence, as detailed above.
		• All MMO/PAM operations will be recorded using the JNCC marine mammal reporting forms template and submitted to Marine Scotland once the works are complete.			

Marine Mammals	Marine Mammals Dredge Disposal	A Dredge Spoil Disposal Marine Mammal Protocol will be in place including: • A 200m mitigation zone will be established around the disposal vessel; • Trained marine mammal observers (MMO) will conduct a 20min pre-watch prior to the commencement of spoil disposal;		EIAR Chapter 7 Section 7.6.2	Section 11

Topic	Aspect	Mitigation/Enhancement	Guidance	Source	CEMD Reference
		○ If the 200m mitigation zone remains clear of marine mammals during the watch, permission will be given to commence disposal; and ○ If a marine mammal is sighted within the mitigation zone, disposal will be delayed until the zone has been clear of marine mammals for at least 5min. • If conditions are unsuitable for visual observations (darkness, fog reducing visibility to <300m, or sea states >Beaufort 4); passive acoustic monitoring (PAM) will be utilised by a trained PAM operator to monitor the mitigation zone; ○ A PAM watch of the mitigation zone will have a minimum duration of 20min; ○ If a marine mammal is detected within the mitigation zone during a PAM watch, disposal will be delayed until the zone has been clear of marine mammals for at least 10min. All MMO/PAM operations will be recorded using the JNCC marine mammal reporting forms template and submitted to Marine Scotland once the works are complete.			
Marine Mammals	Marine Mammals	All vessels to comply with the Scottish Marine Wildlife Watching Code.	Scottish Marine Wildlife Watching Code (SNH, 2017).	EIAR Chapter 7 Section 7.6.3	Section 6.2.4
Materials and Waste	Use of material	Existing built infrastructure will be re-used or upgraded wherever possible		Scoping Report	Section 8.2
Noise and Vibration (In-Air)	In-air noise	Works will be conducted between 7am to 7pm Monday to Saturday.		Scoping Report	Section 12

Topic	Aspect	Mitigation/Enhancement	Guidance	Source	CEMD Reference
Noise and Vibration (In-Air)	Noise Impacts	An appropriate noise mitigation barrier will be installed.		EIAR Chapter 10 Section 10.5.1.7	Section 12
Noise and Vibration (In-Air)	Noise Impacts	Local residents will be informed of the proposed working schedule, where appropriate, including the times and duration of any abnormally noisy activity that may cause concern.		EIAR Chapter 10 Section 10.6.1	Section 12
Noise and Vibration (In-Air)	Noise Impacts	Haulage vehicles will not to arrive or leave the site between 1900 and 0700 hours.		EIAR Chapter 10 Section 10.6.1	Section 10.6
Noise and Vibration (In-Air)	Noise Impacts	All vehicles and mechanical plant to be fitted with effective exhaust silencers and 'smart' reversing alarms and be subject to programmed maintenance.		EIAR Chapter 10 Section 10.6.1	Section 12
Noise and Vibration (In-Air)	Noise Impacts	Inherently quiet plant will be selected where appropriate - all major compressors, pumps and generators to be 'sound reduced' models fitted with properly lined and sealed acoustic covers, which to be kept closed whenever the machines are in use.		EIAR Chapter 10 Section 10.6.1	Section 12
Noise and Vibration (In-Air)	Noise Impacts	All ancillary pneumatic percussive tools will be fitted with mufflers or silencers of the type recommended by the manufacturers.		EIAR Chapter 10 Section 10.6.1	Section 12
Noise and Vibration (In-Air)	Noise Impacts	Machines to be shut down between work periods or throttled down to a minimum.		EIAR Chapter 10 Section 10.6.1	Section 12
Noise and Vibration (In-Air)	Noise Impacts	All equipment on site will be regularly maintained, including maintenance related to noise emissions.		EIAR Chapter 10 Section 10.6.1	Section 12

Topic	Aspect	Mitigation/Enhancement	Guidance	Source	CEMD Reference
Noise and Vibration (In-Air)	Noise Impacts	Vehicles will be loaded carefully to ensure minimal drop heights so as to minimise noise.		EIAR Chapter 10 Section 10.6.1	Section 12
Noise and Vibration (In-Air)	Noise Impacts	All ancillary plant such as generators and pumps to be positioned so as to cause minimum noise disturbance and if necessary, temporary acoustic screens or enclosures should be provided.		EIAR Chapter 10 Section 10.6.1	Section 12
Noise and Vibration (In-Air)	Noise Impacts	Noise monitoring to be undertaken close to the nearest noise sensitive receptors at times when new construction activities occur in order to quantify noise levels and identify if additional mitigation measures are required.		EIAR Chapter 10 Section 10.6.1	Section 12
Noise and Vibration (In-Air)	Noise Impacts	Noise monitoring and noise complaint protocol will be utilised.		EIAR Chapter 10 Section 10.6.1	Section 12
Noise and Vibration (In-Air)	Noise Impacts	Once a main contractor is appointed, careful consideration will be given to the type of plant to be used for each stage of construction as well as construction work schedules.		EIAR Chapter 10 Section 10.6.1	Section 12
Socio-Economics	Local socio-economics benefits.	Employment of a local workforce will be encouraged		Scoping Report	N/A
Traffic, Access and Navigation	Road Safety	Appointed contractor to liaise with the school in relation to any specific requirements for patrol crossing.		EIAR Chapter 12 Section 12.6	Section 10.6
Traffic, Access and Navigation	Road Safety	Monitoring and management of deliveries to avoid ferry arrival times.		EIAR Chapter 12 Section 12.6	Section 10.6
Traffic, Access and Navigation	Local amenity (Parking)	Car sharing will be encouraged.		EIAR Chapter 12 Section 12.6	Section 10.6

Topic	Aspect	Mitigation/Enhancement	Guidance	Source	CEMD Reference
Traffic, Access and Navigation	Navigational Risks	Prior to and during construction CMAL will review the risk assessments and marine activity operating procedures.		EIAR Chapter 12 Section 12.6	
Traffic, Access and Navigation	Ferry Service Delayed	Works will be planned around the ferry timetable.		EIAR Chapter 12 Section 12.6	Section 6
Traffic, Access and Navigation	Ferry Service Delayed	As a contingency measure the ferry can be delayed or diverted to Stornoway to avoid cancellation when practicable.		EIAR Chapter 12 Section 12.6	Section 6
Traffic, Access and Navigation	Ferry Service Delayed	Good communication with passengers to make them aware of the potential inconvenience.		EIAR Chapter 12 Section 12.6	Section 6
Traffic, Access and Navigation	No access to the ferry from the pier.	Good communication with passengers to make them aware of the potential inconvenience.		EIAR Chapter 12 Section 12.6	Section 6
Traffic, Access and Navigation	Pontoons out of service for 14 weeks.	Works to be carried out through winter months when the number of vessels affected will be minimised.		EIAR Chapter 12 Section 12.6	Section 15A
Traffic, Access and Navigation	Pontoons out of service for 14 weeks.	Good communication with the pontoon operator and local vessel owners.		EIAR Chapter 12 Section 12.6	Section 6
Traffic, Access and Navigation	Traffic management.	Ongoing two-way communications with local residents and Comhairle nan Eilean Siar (CnES).		EIAR Chapter 12 Section 12.6.1	Section 10.6

Topic	Aspect	Mitigation/Enhancement	Guidance	Source	CEMD Reference
Underwater Noise	Underwater noise generation	The use of vibro hammers to drive the piles to refusal prior to using impact piling is a preferential.		EIAR Chapter 11 Section 11.6	Section 6
Water Quality and Coastal Processes	Increased sediment loading	The start of each activity that could give rise to increased sediment loading in the water column will be observed, to ensure that any plumes arising are localised and disperse quickly as they occur.		EIAR Chapter 13 Section 13.6.1.1	Section 13
Water Quality and Coastal Processes	Increased sediment loading.	Where increases in sediments are not as predicted, the construction technique will be reviewed to identify areas for improvement to prevent reoccurrence.		EIAR Chapter 13 Section 13.6.1.1	Section 13
Water Quality and Coastal Processes	Potential loss of containment: fuel on site.	Fuel bowsers on site will be under strict management controls incompliance with the requirements of the relevant GBR's.	The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended).	EIAR Chapter 13 Section 13.6.1.2.1	Section 10.3
Water Quality and Coastal Processes	Potential loss of containment: fuel on site.	The fuel bowser will be double skinned, stored in an appropriate area away from watercourses and drains where it cannot be 'crashed into'.	The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended).	EIAR Chapter 13 Section 13.6.1.2.1	Section 10.3
Water Quality and Coastal Processes	Potential loss of containment: fuel on site.	Fuel bowsers on site will be locked when not in use.	The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended).	EIAR Chapter 13 Section 13.6.1.2.1	Section 10.3

Topic	Aspect	Mitigation/Enhancement	Guidance	Source	CEMD Reference
Water Quality and Coastal Processes	Potential loss of containment: fuel on site.	Refuelling will be carried out in designated areas, by trained operatives following site refuelling procedures. The refuelling procedure will take into account best practice. laid out in GPP2 and PPG6.	PG6: Work at Construction and Demolition Sites (Environmental Agency, NIEA, & SEPA, 2012) GPP2: Above Ground Oil Storage Tanks (SEPA, NIEA, & Wales, 2017).	EIAR Chapter 13 Section 13.6.1.2.1	Section 10.3
Water Quality and Coastal Processes	Potential loss of containment: fuel on site.	ECoW will audit compliance with best practice and legislation in relation to storage of fuel on site.		EIAR Chapter 13 Section 13.6.1.2.1	Section 7 & Appendix 7A
Water Quality and Coastal Processes	Potential loss of containment: oils and chemicals on site.	Where practicable, bio-degradable hydraulic fluids will be utilised in machinery during construction.		EIAR Chapter 13 Section 13.6.1.2.1	Section 10.4
Water Quality and Coastal Processes	Potential loss of containment: oils and chemicals on site.	All oils and chemicals will be subject to Control of Substances Hazardous to Health (COSHH) assessments under the COSHH Regulations 2002.		EIAR Chapter 13 Section 13.6.1.2.1	Section 10.4
Water Quality and Coastal Processes	Potential loss of containment: oils and chemicals on site.	All COSHH assessments will include a section on the environment to highlight any precaution or mitigation requirements.		EIAR Chapter 13 Section 13.6.1.2.1	Section 10.4

Topic	Aspect	Mitigation/Enhancement	Guidance	Source	CEMD Reference
Water Quality and Coastal Processes	Potential loss of containment: oils and chemicals on site.	Appropriately bunded oil and chemical storage cabinets will be provided on site. These will be kept locked, with the key under management control to ensure appropriate use and accountability.		EIAR Chapter 13 Section 13.6.1.2.1	Section 10
Water Quality and Coastal Processes	Potential loss of containment: oils and chemicals on site.	ECoW will audit compliance with best practice and legislation in relation to storage of oils and chemicals on site.		EIAR Chapter 13 Section 13.6.1.2.1	Section 5
Water Quality and Coastal Processes	Potential loss of containment: oils and chemicals on site.	Appropriate spill plans aligned to the pollution control hierarchy and spill kits will be in place, construction operatives will be trained in the plans and in the use of spill kits.		EIAR Chapter 13 Section 13.6.1.2.1	Section 3 & Section 7
Water Quality and Coastal Processes	Cement washings.	Cement washings will be carried out in a dedicated area.		EIAR Chapter 13 Section 13.6.1.2.2	Section 8.3
Water Quality and Coastal Processes	Cement washings.	Washing arisings will be collected for onsite treatment. This will include settlement and, if required, pH correction. The liquids will be tankered off site for appropriate disposal. The solids will be disposed of as solid waste.		EIAR Chapter 13 Section 13.6.1.2.2	Section 8.3
Water Quality and Coastal Processes	Cement washings.	ECoW will audit compliance with best practice guidance and legislation in relation to cement washings.		EIAR Chapter 13 Section 13.6.1.2.2	Section 5
Water Quality and Coastal Processes	Introduction of non-native marine species.	Contractors will be required to ensure all plant and equipment brought to site is properly cleaned prior to arrival.		EIAR Chapter 13 Section 13.6.1.3	Section 11
Water Quality and Coastal Processes	Introduction of non-native marine species.	All equipment will be inspected prior to mobilisation on site; any equipment carrying excessive sediment deposits will be returned to the supplier.		EIAR Chapter 13 Section 13.6.1.3	Section 11

Topic	Aspect	Mitigation/Enhancement	Guidance	Source	CEMD Reference
Water Quality and Coastal Processes	Litter	Prior to construction works on site commencing, a litter sweep will be conducted to prevent the escape of existing litter on site into the marine environment.		EIAR Chapter 13 Section 13.6.1.4	Section 8.4
Water Quality and Coastal Processes	Litter	All personnel working on the project will undertake site induction; this will include a section on waste management and the use of the waste receptacles provided.		EIAR Chapter 13 Section 13.6.1.4	Sections 3.7 & 8.4
Water Quality and Coastal Processes	Litter	Waste receptacles will be covered, and littering will not be tolerated.		EIAR Chapter 13 Section 13.6.1.4	Section 8.5
Water Quality and Coastal Processes	Litter	Construction staff will be encouraged to collect any litter they see in the construction areas and, if deemed necessary litter sweeps will be carried out.		EIAR Chapter 13 Section 13.6.1.4	Section 8.4
Water Quality and Coastal Processes	Litter	The use of single use plastics will be discouraged, reusable water bottles supplied to all personnel and reusable crockery and cutlery will be provided in the welfare facilities.		EIAR Chapter 13 Section 13.6.1.4	Section 8.2
Water Quality and Coastal Processes	Litter	All generated waste will be segregated to facilitate appropriate recycling.		EIAR Chapter 13 Section 13.6.1.4	Section 8.2
Water Quality and Coastal Processes	Adjacent infrastructure	Ensure that the public sewage plant outfalls to the north of the pier are not damaged or blocked by any construction activities.		Consultation Response	Section 6.2.6