

moray offshore renewables ltd

Environmental Statement

Technical Appendix 1.3 A - Environmental Management Plan

Telford, Stevenson, MacColl Wind Farms
and associated Transmission Infrastructure
Environmental Statement



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moray offshore renewables limited

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Liability



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Liability

Moray Offshore Renewables Limited (MORL) has prepared this document on behalf of the Special Purpose Vehicles (SPVs); MacColl Offshore Wind Farm Limited, Stevenson Offshore Wind Farm Limited, Telford Offshore Wind Farm Limited. It will also be of relevance to the future operator of the offshore wind farm transmission infrastructure, which is being consented and developed by MORL.

In the preparation of this document MORL and the SPVs have made reasonable efforts to ensure that the content is accurate, up to date and complete for the purpose for which it was intended. MORL and the SPVs make no warranty as to the accuracy or completeness of material supplied by the client or their agent.

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Any persons intending to use this document should satisfy themselves as to its applicability for their intended purpose.

The user of this document has the obligation to employ safe working practices for any activities referred to and to adopt specific practices appropriate to local conditions.

Document Control Statement

To ensure this Environmental Management Plan (EMP) and Marine Pollution Contingency Plan (MPCP) is kept up-to-date and that the most recent version is used by staff and contractors, its distribution and revision will be controlled. *John Yorston (EDPR QHSSE Manager)* will:

- Manage the master copy and any other paper or electronic copies of the EMP;
- Keep a summary of updates, versions and dates and distribution lists;
- Ensure EMP updates are distributed to all relevant staff as controlled copies;
- Ensure any uncontrolled copies are marked as uncontrolled copies; and
- Ensure any out-of-date copies are discarded when updates are distributed.

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1. Introduction

This draft Environmental Management Plan (EMP) has been prepared by Moray Offshore Renewables Limited (MORL) on behalf of the Special Purpose Vehicles (SPVs) - MacColl Offshore Wind Farm Limited, Stevenson Offshore Wind Farm Limited, Telford Offshore Wind Farm Limited, and on behalf of any future operator of the transmission infrastructure associated with the wind farms - to cover pre-construction and construction activities associated with the development of the offshore wind farm sites and associated offshore transmission infrastructure. The EMP outlines the approach to environmental management during the pre-construction and construction phases of the projects with the aim of reducing any adverse impacts on sensitive receptors.

At present a single EMP is being used to cover all three sites and the offshore transmission infrastructure. This draft EMP will be revised following consent determination and when more detailed information on construction methodologies becomes available. Upon revision, individual EMPs will be prepared for the MacColl, Stevenson and Telford Wind Farms and the transmission infrastructure. This preliminary document has been prepared early in the project lifetime and therefore there are sections which are indicative of how the SPVs intend to manage environmental matters, which are based on reasonable assumptions at the time of writing.

The EMP is compliant with EDPR UK Environmental Management System (EMS), which is the EMS applicable to MORL's activities. EDPR UK is in the process of developing the EMS and plans to have ISO 14001 accreditation in 2013. The EMP details the minimum environmental management requirements expected of all contractors (a term which is inclusive of sub-contractors and consultants) involved in the development of the MacColl, Telford and Stevenson Wind Farms and the offshore transmission infrastructure. The EMP will also be used to monitor environmental performance during construction. The EMP defines the procedures for achieving the objectives and targets set out in:

- Environmental legislation and regulations;
- Licence, permit and consent conditions;
- The company environmental policy statement;
- The project Environmental Statement; and
- Findings of Appropriate Assessment.

The EMP will include reference to the following:

- An Environmental Mitigation and Monitoring Plan (EMMP), which covers the range of environmental mitigation measures and monitoring to which MORL has committed;
 - Including a Marine Mammal Mitigation Protocol (MMMP);
 - Including a Fisheries Liaison Protocol;
 - Including a Notice to Mariners (NtM) Plan;
 - Including an Archaeological Written Scheme of Investigation (WSI);
- A Marine Pollution Contingency Plan (MPCP); and
- A Scour Management Plan.

In order to ensure that the EMP is being adhered to, all contractors may be subject to audit by the SPVs at any point. Any costs incurred in providing access to personnel or records to satisfy the audits shall be borne by the contractor. In addition, the results of audits carried out by consultants, contractors and sub-contractors relevant to works on the construction of the wind farm sites should be made available to the SPVs.

The EMP is a "live" document that will be updated periodically in relation to the activities of the SPVs. The EMP therefore reflects the project progress and information available at the time of writing. As such consultants, contractors and subcontractors are required to update their own Environmental Management Plans and other relevant documents for the SPV construction activities in accordance with the revisions to this construction EMP, or other

relevant successive documents.

This document will be complementary to the Construction Stage Health and Safety Plan issued in accordance with the Construction (Design and Management) Regulations 2007.

Company Environmental Policy is supported by the evolving EDPR Quality, Health and Safety, and Environment Management Systems.

2. Company, Site and Environment

2.1 Company Description

MacColl Offshore Wind Farm Limited, Stevenson Offshore Wind Farm Limited and Telford Offshore Wind Farm Limited are SPVs established to construct, operate and maintain over their lifetime, the MacColl, Stevenson and Telford Offshore Wind Farms, respectively. An SPV will be established to construct but not own the Offshore Transmission Infrastructure. These assets will be transferred to an Offshore Transmission Operator (OFTO) upon completion of their construction. The OFTO will own and operate this infrastructure.

An illustrative example of a potential project development team scenario is shown in shown in Figure 2.1. This will be updated once details of the construction team(s) have been determined. Each offshore construction team will be coordinated by the Principal Contractor, who will report to the Construction Manager. It is expected that the environmental management team for the sites or for each site (whichever is appropriate) will be supported by a dedicated Offshore Environmental Liaison Officer, Onshore Environmental Liaison Officer, Fisheries Liaison Officer and Project Archaeologist. The team structure will be updated once further details of the construction strategy are available. Contact details for the core team with responsibilities in EMP are presented in Table 2.1.

The construction team(s) would be supported by a number of specialist environmental and engineering contractors who are experienced in the marine environment.

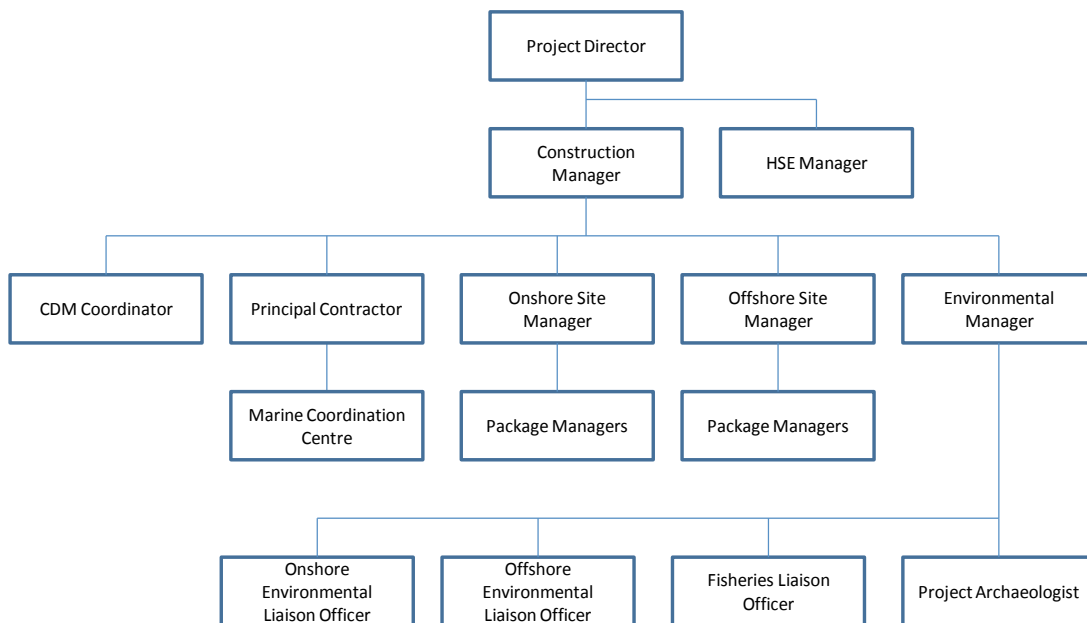


Figure 2.1: Illustrative example of a potential core project team structure.

Table 2.1: Contact details for staff with EMP responsibilities

Contact	Position	Email	Telephone
TBC	Construction Manager	TBC	TBC
TBC	HSE Manager	TBC	TBC
TBC	Principal Contractor	TBC	TBC
TBC	Onshore Site Manager	TBC	TBC
TBC	Offshore Site Manager	TBC	TBC
TBC	Environmental Manager	TBC	TBC
TBC	Onshore Environmental Liaison Officer	TBC	TBC
TBC	Offshore Environmental Liaison Officer	TBC	TBC
TBC	Fisheries Liaison Officer	TBC	TBC
TBC	Project Archaeologist	TBC	TBC

2.2 Project Location

The Telford, Stevenson and MacColl wind farm sites are located within the Eastern Development Area of the Moray Firth Round 3 Zone. The Round 3 Zone is located approximately 22 km off the north-east coast of Scotland on the Smith Bank in the outer Moray Firth. The location of the zone and the three sites are shown in Figure 2.2. Each site will have a maximum capacity of 500 MW, and in total the Round 3 Zone will have a maximum capacity of 1,500 MW. The infrastructure within the wind farm sites will comprise of offshore wind turbine generators with associated substructure and foundations, inter-array cables and platform connector cables. The location of the offshore transmission infrastructure is shown in Figure 2.3, and will include AC substations, DC converter stations and export cables. Onshore infrastructure will include onshore export cables and an onshore substation. Depending on regulatory outcomes from OFGEM, connection to the National Grid could be made via an offshore 'hub' (see Figure 2.3), in which case onshore infrastructure will not be the responsibility of MORL. However details of this scheme, if it were to be approved, are not yet available and therefore it has not been considered in MORLs Environmental Impact Assessment.

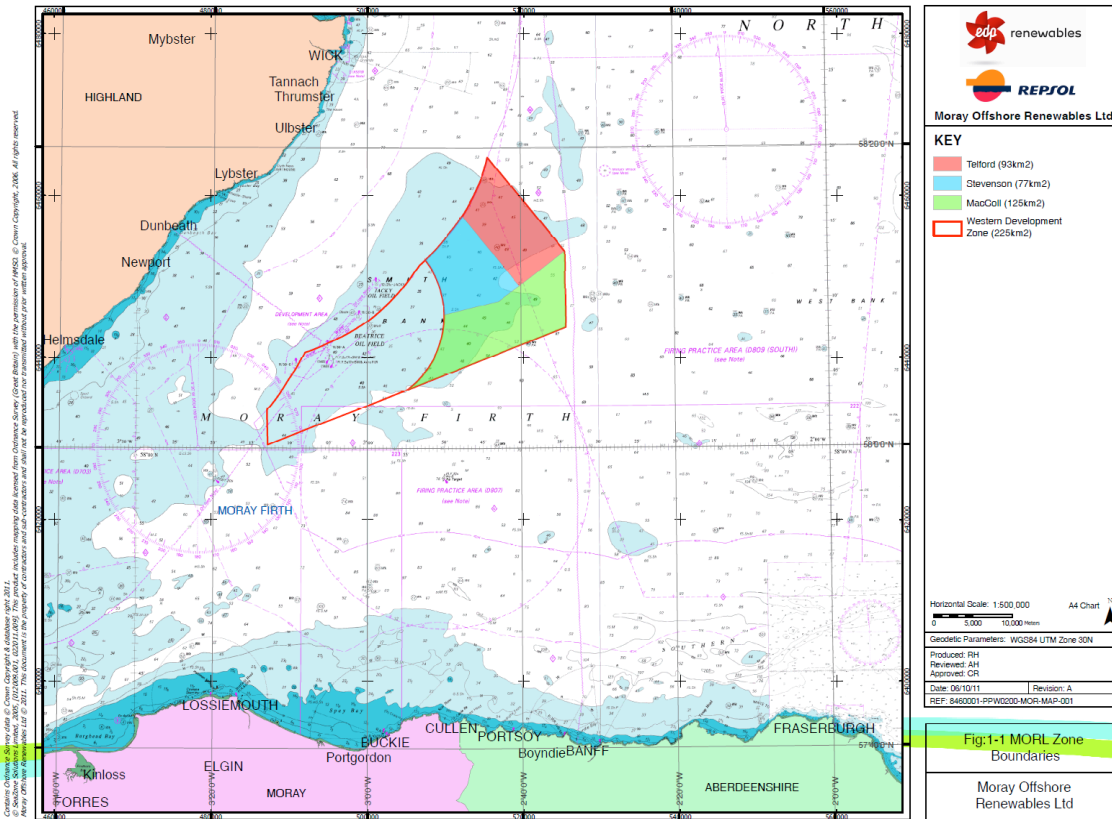


Figure 2.2: Location of Round 3 Zone and Telford, Stevenson and MacColl Wind Farms

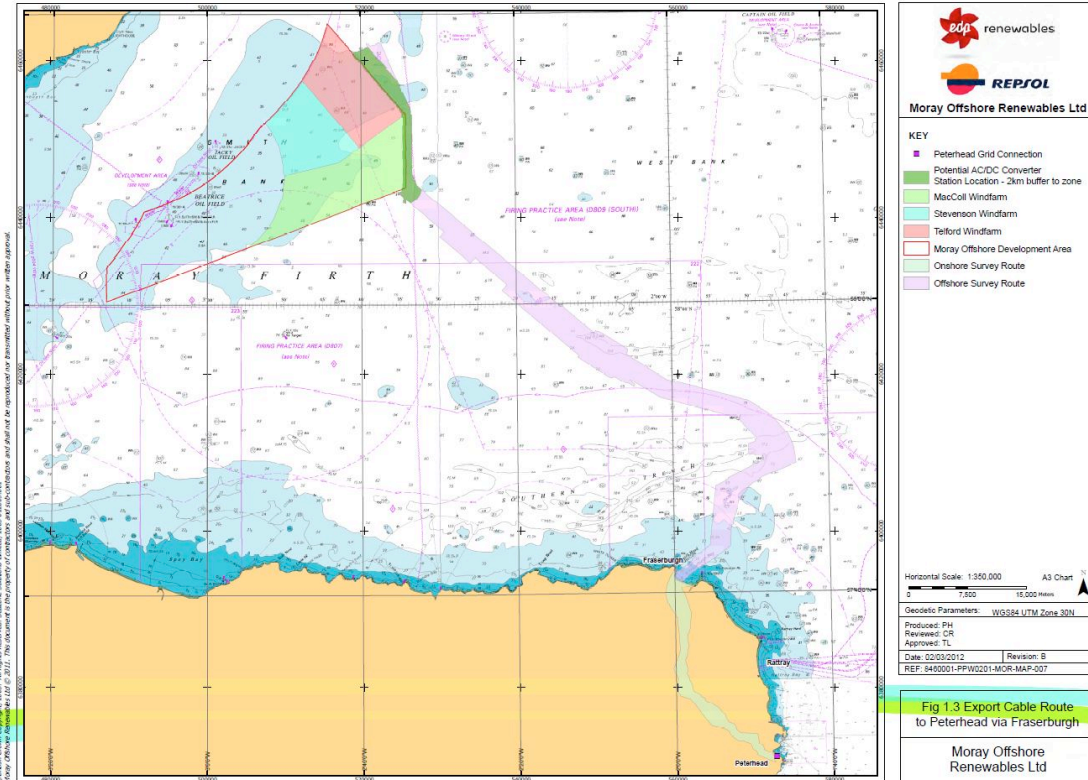


Figure 2.3: Location of Offshore Transmission Infrastructure

2.3 Key Programme Dates

An indicative construction schedule for the three offshore wind farms and the offshore transmission infrastructure is shown in Figure 2.4. The order in which the sites will be constructed has not yet been determined.

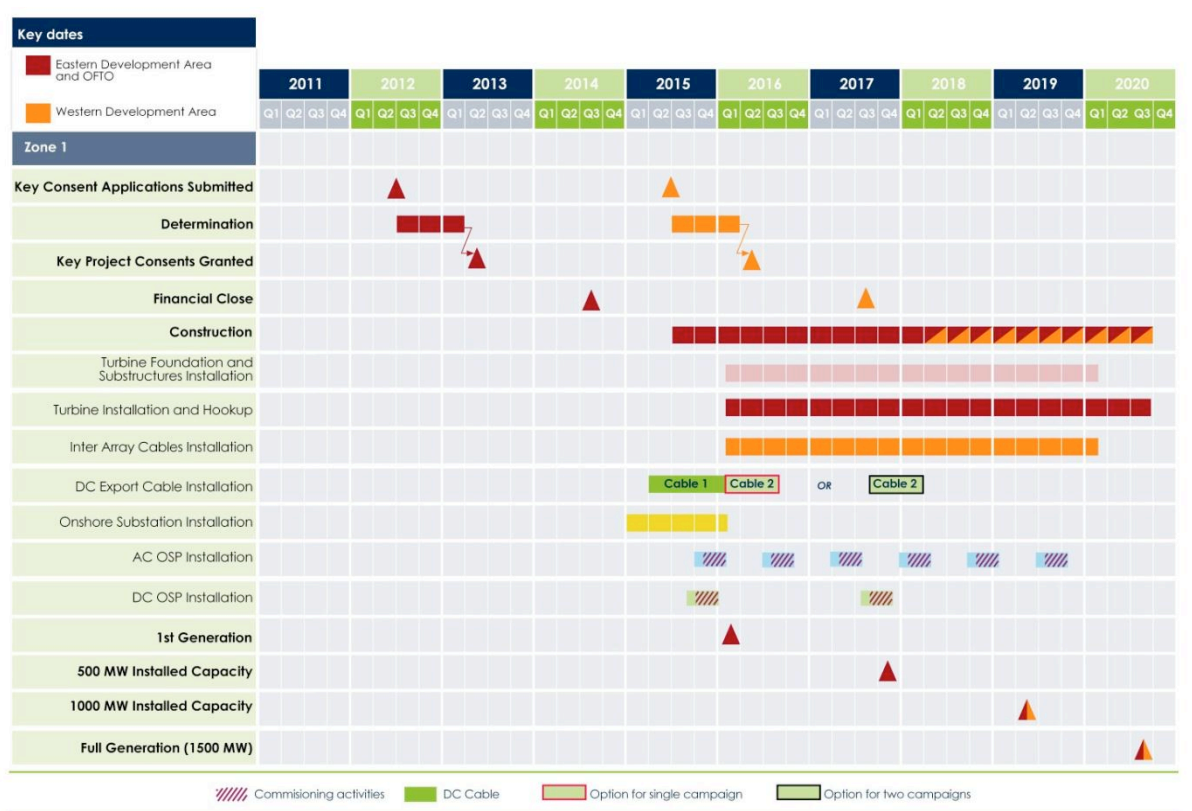


Figure 2.4 Indicative Project Programme

2.4 Environmental Policies

The MORL environmental policy is presented in Appendix 1. The delivery of clean energy through the responsible operation of renewable energy generation assets forms the foundation of the environmental policy for MORL. In future iterations of the EMP, the environmental policy of each SPV will be supplied.

3. EMP Scope and Implementation

3.1 Scope of this EMP

This EMP is for use by those parties involved in the pre-construction and construction activities associated with the offshore wind farm sites and the offshore transmission infrastructure. The following aspects are *not* covered by this EMP:

- Other offshore surveys or works;
- Other onshore surveys or works;
- Any post-construction related activities (excluding environmental monitoring);
- Any operation and maintenance related activities;
- Any decommissioning related activities; and

- Any activity requiring a permit to work (e.g. permit to work in enclosed space).

3.2 Responsibilities for Management and Implementation

The **QHSSE Manager** is responsible for:

- Preparing, updating and disseminating the “live” EMP in conjunction with the Consenting Manager and Environmental Manager;
- Ensuring all relevant HSE consents, licences and permits are obtained by the Principal Contractor and consent condition adhered to; and
- The implementation and auditing of the MPCP requirements.

The **Consenting and Environmental Managers** are responsible for:

- Preparing, updating and disseminating the “live” EMP in conjunction with the QHSSE Manager;
- The implementation and auditing of the environmental monitoring requirements;
- Updating consents and licenses where these are originally obtained by the wind farm companies; and
- The discharge of any conditions of the relevant consents obtained by the wind farm companies.

The **Construction Manager, Onshore Site Manager** and **Offshore Site Manager** are responsible for:

- Ensuring the communication and implementation of the EMP; and
- Ensuring compliance with the EMP on site.

The **Principal Contractor** is responsible for:

- Ensuring the incorporation of the EMP into their, and any sub-contractors, site specific EMP and its implementation;
- Providing support to the <Insert Company Name> QHSSE Manager and Environmental Manager to discharge consent conditions;
- Providing access to documentation and/or personnel for audits conducted by <Insert Company Name>;
- Obtain and comply with any necessary consents, licenses and permits required to comply with legislation, where they are not obtained by the company; and
- Ensuring all contractor staff provided for <Insert Company Name> activities have the correct permits to work and qualifications.

All personnel working on <Insert Company Name> projects are responsible for ensuring that the EMP is adhered to.

3.3 Competence, Training and Awareness

<Insert Company Name> employs staff suitably trained to the manage issues contained within this EMP.

As part of the selection process, <Insert Company Name> will select consultants and contractors which show a good understanding of environmental management and risk within their tenders. It is required that consultants or contractors ensure that sub-contractors have a good understanding of environmental management and risk.

A site induction will be provided to all contractors to ensure familiarisation with site conditions. The form of site induction may include a “kick-off” meeting, workshop, tool box talks or other formats as agreed between <Insert Company Name> and the relevant party.

3.4 Communications

The Construction Manager will be the designated person who is the point of contact within <Insert Company Name> for the Principal Contractor. The Construction Manager will ensure

that regular projects meetings are held (frequency to be agreed with the Principal Contractor). It will be ensured by the Construction Manager that any environmental issues will be discussed and reviewed as required.

The **Environmental Manager** will be responsible for ensuring that the Construction Manager is aware of progress and compliance issues associated with the awarded consents and any known environmental sensitivities and required mitigation that are relevant to the operation being done.

The Environmental Manager will also be responsible for issuing Notices to Mariners (NTM) for environmental surveys. The Principal Contractor will be responsible for issuing NTM for any construction activities. All NTM will be released in accordance with the NTM plan (see Appendix 2).

3.5 Continual Improvement

As part of the MORL EMS, there is a commitment to continual improvement of the EMP and its implementation. The SPVs will prepare and implement an audit plan to assess the effectiveness of and compliance with the EMP. The program will cover the company's own and contractors' implementation of the EMP. Corrective and preventive actions raised during audits (to address non-conformances, non-conformities or other issues) will be tracked and the management will approve action close out. Audits will be organised by the QHSSE Manager with regards to the MPCP and EMP.

Further monitoring and review arrangements will ensure the compliance of activities with applicable laws and authorisations.

The objectives of audits are to ensure:

- Periodic assessments are undertaken to confirm that the <Insert Company Name> EMP processes are being implemented as planned and are effective. This will involve both internal assessments and, where appropriate, external assessments;
- All contractors and sub-contractors are complying with the EMP and with any relevant statutory provisions;
- The EMP standards are appropriate and are being used as intended;
- Line management can identify EMP shortcomings, identify remedies and improvements through effective follow-up procedures;
- An annual management review of the EMP is carried out to identify and implement necessary improvements; and
- The findings and corrective actions from these audits and reviews are prioritized, tracked and used to systematically improve the performance and processes of <Insert Company Name>.

Contractors should ensure that a copy of calibration tests and certificates are presented to <Insert Company Name> where relevant and records of survey results and environmental performance are freely available to <Insert Company Name> when requested.

The timing of environmental audits will be agreed between the **Construction Manager** and the **Principal Contractor**. The Principal Contractor will be responsible for discussing and agreeing the results of the audits with the **QHSSE Manager**, **Environmental Manager**, and **Onshore or Offshore Site Manager**, as relevant, prior to any debrief with the Construction Manager. The contractor will be provided with a written record of the findings of any audit carried out by <Insert Company Name>. A duplicate will be maintained within the <Insert Company Name> database.

The Principal Contractor is required to contact the <To Be Decided> immediately should any environmental incident occur.

3.6 Environmental Targets

MORL's Environmental targets for the project are presented and explained in the MORL Environmental Policy; however the most important commitment is to the goal of zero uncontrolled environmental releases. All employees and contractors are accountable for performing their daily activities in a manner that achieves this.

More detailed environmental performance indicators will be developed for individuals and organisations as their respective roles become defined.

4. Environmental Risks and Controls

4.1 Emergency Preparedness and Response

In order to minimise impacts to the environment, the company policy is to ensure that there is a continuous capability for a rapid and effective response to any emergency occurring during current activities and all future operations.

The potential environmental impacts associated with the construction activities are presented within the Environmental Statement. In summary, the potential risks to the environment include the potential impact to shipping, fisheries, archaeology/cultural heritage, sensitive habitats and species, existing infrastructure, the general public and local residents.

In order to minimise the potential for risk/impacts, the following procedures should be followed:

- The Environmental Mitigation and Monitoring Plan (EMMP), which covers the range of environmental mitigation measures and monitoring to which MORL has committed (Section 5);
 - Including a Marine Mammal Mitigation Protocol (MMMP) (to be developed post-consent);
 - Including a Fisheries Liaison Protocol (Appendix 3);
 - Including a Notice to Mariners (NtM) Plan (Appendix 2);
 - Including an Archaeological Written Scheme of Investigation (WSI) (Appendix 4);
- A Marine Pollution Contingency Plan (MPCP) (Section 6); and
- A Scour Management Plan (to be developed post-consent).

All primary contractors will be expected to submit site specific risk assessments incorporating method statements to <Insert Company Name> for review and approval before works commence. The risk assessments should incorporate the requirements of this EMP.

4.2 Reporting Incidents

MORL is committed, through its Environmental Policy, to quick action and a proactive approach to learning in response to environmental incidents. In order to achieve this, prompt reporting of all environmental incidents is expected from all individuals and organisations. This is in addition to any legal requirements or other recognised industry best-practice.

Depending on the level of potential and/or actual impact, rapid escalation of the incident through the MORL and partner organisations may be required. Formal reporting criteria and guidance will be developed as roles are defined.

5. Environmental Mitigation and Monitoring

This section of the EMP represents the Environmental Mitigation and Monitoring Plan (EMMP) and has been prepared to satisfy compliance with the MORL Environmental Statement and

anticipated consent conditions for the Telford, Stevenson and MacColl offshore wind farms and the related offshore transmission infrastructure.

5.1 Offshore Wind Farms – Requirements

The contractor will be expected to comply with all consent and license conditions awarded for the construction works for the wind farm sites and any other mitigation or monitoring required by the SPVs. Table 5.1 provides a summary of the consents and licenses obtained for the project construction and operation by the SPVs. <Copies of all consents and licenses will be provided in Appendix 7.>

Table 5.2 provides a summary of the documentation to be submitted prior to construction.

Table 5.3 provides a summary of the environmental monitoring required for the project and other mitigation as stated in the ES. It is envisaged that this table will be expanded upon post-consent, with further mitigation and monitoring measures, and detail added to those measures already listed.

Table 5.1: Summary of consents & licenses obtained for the construction works

Consent/License Name	Reference Number	Date of Issue	Project to which awarded
Section 36 of the Electricity Act (including Section 36B declaration)	TBC	TBC	MacColl
	TBC	TBC	Stevenson
	TBC	TBC	Telford
Marine Licence	TBC	TBC	MacColl
	TBC	TBC	Stevenson
	TBC	TBC	Telford
	TBC	TBC	Offshore Transmission Infrastructure
	TBC	TBC	Meteorological Mast
EPS Licence (marine mammals)	TBC	TBC	MacColl
	TBC	TBC	Stevenson
	TBC	TBC	Telford
Dredging and Disposal Licence	TBC	TBC	TBC
Cable crossing / proximity agreements	TBC	TBC	Offshore Transmission Infrastructure

Table 5.2: Documentation to be submitted prior to construction

Document to be submitted	Information required	Submit and approve by:
Detailed schedule of planned construction and monitoring	- Detailed construction works method statement which confirms final choices of materials and volumes to be used	3 months prior to construction works commencing
Transportation audit sheet	- Details of numbers and types of vessels, routes, etc for all aspects of construction	Before construction (timeline to be defined)
Ecotoxicological hazard/risk assessment	- Where chemicals to be used are not on the List of Notified Chemicals (Offshore Chemicals Regulations, 2002)	3 months prior to construction works commencing
Project Environmental Management Plan	- Final EMP including Environmental Mitigation and Monitoring Plan, Marine Pollution Contingency Plan, Scour Management Plan, Marine Mammal Mitigation Plan, Protocol for Archaeological Discoveries and Protocol for Fisheries Liaison	3 months prior to construction works commencing
CV for the Fisheries Liaison Officer (FLO)	- Name and experience of a project dedicated FLO	3 months prior to construction works commencing
CV for the Environmental Liaison Office (ELO)	- Name and experience of a project dedicated ELO	3 months prior to construction works commencing
Notices to Mariners	- Details of vessels and works to be carried out. For a full list of information see Appendix 2	At least 10 days prior to works commencing on the generating site

Table 5.3: A summary of the environmental monitoring required for the Project and other mitigation as stated in the ES**a. Marine Pollution Mitigation**

Project Phase	Measures
During Construction	Storage, handling and transport of fuels, lubricants, chemicals during construction on vessels and equipment should prevent releases to the marine environment (i.e. bunding should be 10% greater than the total volume of all reservoirs, containers of such substances.)
	All protective coatings and paints will be suitable for use in the marine environment and, where necessary, approved by the Health & Safety Executive. The coatings/paints should be utilised in accordance with best environmental practice.

b. Seabed

Project Phase	Measures
Pre-construction	Before construction undertake a side scan sonar survey across the area of development and any vessel access routes from UK local service ports to the construction site. A fisherman's representative should be allowed to attend the survey. Any obstructions to be recorded on a chart.
Post-construction	Removal of any debris or temporary works on completion of construction.
	Before construction undertake a side scan sonar survey across the area of development and any vessel access routes from UK local service ports to the operational site. A fisherman's representative should be allowed to attend the survey. Any obstructions to be recorded on a chart.
	Installed structures will be suitably monitored for unintended exposure and for unwanted scour if exposed above the seabed. Scour protection may be applied to foundations or to sections of cable that would otherwise be exposed at the seabed surface.

c. Underwater noise

Project Phase	Measures
During Construction	In order to validate underwater noise models applied during Environmental Impact Assessment, subsea noise generated during piling will be measured at various frequencies and locations within and around the WTG array. Sample locations will reflect differences in water depths and sediment types within the site.

d. Benthic ecology

Project Phase	Measures
Pre-construction	Monitoring requirements will be confirmed in consultation with the regulatory authorities.
	A protocol to minimise the risk of introducing marine invasive species will be prepared as required by regulatory authorities.
	Micro-siting of the offshore export cables around sensitive Annex I <i>S. spinulosa</i> reef habitats will avoid direct disturbance to these features. The final micro-siting protocol will be based on agreed pre-construction surveys in collaboration with the nature conservation agencies.

e. Fish and shellfish

Project Phase	Measures
Pre-construction	The specific requirements of the surveys and monitoring to be undertaken and, where deemed necessary, the mitigation measures to be implemented, are yet to be defined. Consultation with Marine Scotland will be ongoing post-application for these to be agreed.

f. Marine Mammals

Project Phase	Measures
All Phases	Vessel traffic will be along set routes; thus reducing the area of disturbance and increasing the likelihood of habituation to disturbance.
Pre-construction	Adherence to the Marine Mammal Mitigation Protocol when undertaking piling activities. The MMMP will include visual and acoustic marine mammal monitoring procedures and operational steps to be taken relating to marine mammal activity within close proximity of the foundation installation activity. MMMP to be developed post-consent.
	MORL intends to install a met mast on a 4.5 m monopile foundation within the Stevenson site over a two week period during August and September 2012, and will take the opportunity to participate in surveys designed to reduce some of the conservative assumptions made above with regards to the effects of underwater noise in the MORL ES.
	At least one year pre-construction monitoring using boat based surveys following transects currently in use within the sites and the buffer area. The data collection will follow the same approach used for the EIA surveys. An Ornithological and Marine Mammal Monitoring Plan will need to be agreed prior to this monitoring commencing.
During construction	During construction, monitoring using boat based surveys following transects currently in use within the sites and the buffer area. The transects may be diverted to accommodate construction activities where necessary. The data collection will follow the same approach used for the EIA surveys. An Ornithological and Marine Mammal Monitoring Plan will need to be agreed prior to this monitoring commencing.

Project Phase	Measures
Post-construction	Up to three years of post-construction monitoring using boat based surveys following transects currently in use within the sites and the buffer area. The data collection will follow the same approach used for the EIA surveys. An Ornithological and Marine Mammal Monitoring Plan will need to be agreed prior to this monitoring commencing.

g. Ornithology

Project Phase	Measures
All Phases	Vessel traffic will be along set routes; thus reducing the area of disturbance and increasing the likelihood of habituation to disturbance.
Pre-construction	At least one year pre-construction monitoring using boat based surveys following transects currently in use within the sites and the buffer area. The data collection will follow the same approach used for the EIA surveys. An Ornithological and Marine Mammal Monitoring Plan will need to be agreed prior to this monitoring commencing.
During construction	During construction, monitoring using boat based surveys following transects currently in use within the sites and the buffer area. The transects may be diverted to accommodate construction activities where necessary. The data collection will follow the same approach used for the EIA surveys. An Ornithological and Marine Mammal Monitoring Plan will need to be agreed prior to this monitoring commencing.
Post-construction	Up to three years of post-construction monitoring using boat based surveys following transects currently in use within the sites and the buffer area. The data collection will follow the same approach used for the EIA surveys. An Ornithological and Marine Mammal Monitoring Plan will need to be agreed prior to this monitoring commencing.

h. Commercial fisheries

Project Phase	Measures
All Phases	A Working Group will be formed to facilitate discussion (e.g. on phasing of works and associated safety zones) with commercial fisheries stakeholders.
	Vessel traffic will be along set routes; thus reducing the area of disturbance and increasing the likelihood of habituation to disturbance.
During construction	Application of 500m rolling safety zones around works and unfinished infrastructure.
Post-construction	Application of 50m operational safety zones around structures.

i. Shipping and navigation

Project Phase	Measures
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Project Phase	Measures
All Phases	<p>A number of industry standard mitigation measures will be in place and these are listed below:</p> <p>Marine Aids to Navigation (AtoNs) will be provided in accordance with NLB requirements, which will comply with IALA standard O-139 on the Marking of Offshore Wind Farms (IALA, 2008);</p> <p>Marking of wind farm structures (and cabling) on appropriate scale admiralty charts by the United Kingdom Hydrographic Office (UKHO);</p> <p>Promulgation of information and appropriate liaison. This ensures information on the wind farm projects and special activities is circulated in Notices to Mariners, Navigation Information Broadcasts and other appropriate media to allow vessels to effectively and safely navigate around the proposed sites;</p> <p>The SAR ERCoP will be developed and put in place for the construction, operation and the decommissioning phases of the wind farm developments; and</p> <p>An Active Safety Management System (ASMS) will be developed to ensure the effective co-ordination of emergency response at the proposed sites. It will be designed to ensure that the risks related to marine operations (construction, operation/maintenance and decommissioning) specific to the project are managed carefully and over the long term.</p>
During construction	<p>During the construction phase, Notices to Mariners, Radio Navigational Warnings, NAVTEX and/or broadcast warnings as well as Notices to Airmen will be promulgated in advance of any proposed works, where required. Safety zones will be in place around each turbine and construction vessels during the construction phase in order to minimise disruption to mariners and other users of the sea. These 500 M exclusion zones would be applied for in line with DECC guidance (DECC, 2011.) Guard vessels may be used to monitor passing vessels and warn/record any safety zone infringements.</p>
During operation	<p>During the operational phase of the projects it is expected that a Marine Control/Coordination Centre will be developed to monitor and coordinate marine activities in and around the site. Such a centre will meet the requirements outlined in MGN 371.</p>

j. Aviation

Project Phase	Measures
Pre-construction	Implementation and integration of a technical radar mitigation solution will be agreed prior to construction.
All Phases	Notification of physical obstructions to NATS Aeronautical Information Service (AIS) for addition in to appropriate aviation related documentation and on to aviation mapping. i.e. location of constructed turbines and location/movement and maximum height of construction infrastructure. Mitigation remains in operation whilst any turbines remain operational.
	Update helicopter operators of commissioned turbines. Mitigation remains in operation whilst any turbines remain operational.

k. Archaeology

Project Phase	Measures

All Phases	Where cultural heritage assets (identified in the MORL ES) may potentially be subject to direct or secondary effects, infrastructure will be micro-sited and temporary exclusion zones will be implemented to prevent invasive activities. Exclusion zones of at least 100 m will be established around sites identified as being of high sensitivity while an exclusion zone of a minimum 50 m will be established around those of medium sensitivity.
	In order to mitigate the risk of damage to any previously unrecorded archaeological remains, a Written Scheme of Investigation (WSI) and Protocol for Archaeological Discoveries (PAD) will be prepared for the approval of Historic Scotland and HCHET.

I. Other human activities

Project Phase	Measures
During Construction	Wind farm infrastructure will not be sited within 50m of existing abandoned well heads.
	MORL will ensure that all practicable mitigation measures to minimise the risk of health and safety incidents associated with unexploded ordnance (UXO) are fully developed prior to construction. A UXO site survey will be undertaken prior to construction and site safety instructions will be prepared in the event that an item of UXO is located. All contractors' staff will be given munitions awareness briefings prior to and during the construction work. Should suspected items of UXO be discovered, their location will be accurately mapped and recorded for future assessment and possible removal / disposal or remediation in situ by a specialist contractor.
	Adherence to cable crossing / proximity agreements being secured post-consent which will include detailed crossing conditions and methodology. Faroese Telecom will also be notified of any MORL works within 1,000m of the SHEFA-2 cable.

5.2 Transmission Infrastructure – Requirements

The contractor will be expected to comply with all consent and license conditions awarded for the construction works and any other mitigation or monitoring required by <Insert Company Name>. Table 5.4 provides a summary of the consents and licenses obtained for the construction works by <Insert Company Name>. Copies of all consents and licenses are provided in Appendix 7.

Table 5.5 provides a summary of the documentation to be submitted prior to construction.

Table 5.6 provides a summary of the environmental monitoring specific to transmission infrastructure and other mitigation as stated in the ES (additional to measures presented in Table 5.3 above).

Table 5.4: Summary of consents & licenses obtained for the construction works

Consent/License Name	Reference Number	Date of Issue
Marine License	TBC	TBC
Town & Country Planning Permission	TBC	TBC

TBC - EPS License (marine mammals)	TBC	TBC
TBC - EPS License (other species)	TBC	TBC
Controlled Activities Regulations License	TBC	TBC
Other – TBC		

Table 5.5: Documentation to be submitted prior to construction

Document to be submitted	Information required	Submit and approve by:
Detailed schedule of planned construction and monitoring	- Detailed construction works method statement which confirms final choices of materials to be used	3 months prior to construction works commencing
Transportation audit sheet	- Details of numbers and types of vessels, routes, etc for all aspects of construction	Before construction (timeline to be defined)
Ecotoxicological hazard/risk assessment	- Where chemicals to be used are not on the List of Notified Chemicals (Offshore Chemicals Regulations, 2002)	3 months prior to construction works commencing
Project Environmental Management Plan	- Final PEMP including Marine Pollution Contingency Plan, Scour Management Plan, Marine Mammal Mitigation Plan, Protocol for Archaeological Discoveries, Protocol for Fisheries Incidents and Waste Management Plan	3 months prior to construction works commencing
CV for the Fisheries Liaison Officer	- Name and experience of a project dedicated FLO	3 months prior to construction works commencing
CV for the Ecological Clerk of Works	- Name and experience of a project dedicated ECoW	3 months prior to construction works commencing
CV for the Environmental Liaison Officer	- Name and experience of a project dedicated ELO	3 months prior to construction works commencing
Notices to Mariners	- Details of vessels and works to be carried out. For a full list of information see Appendix 2	At least 10 days prior to works commencing on the generating site

Document to be submitted	Information required	Submit and approve by:
A site waste management plan (onshore)	- Details of waste minimisation (e.g. peat and soils, contaminated materials), reuse of materials where possible (i.e. re-use of agricultural and clean soils from trench excavation for backfill), segregation of wastes (e.g. keep potentially contaminated soils separate from others) and storage facilities to ensure risk of pollution from runoff/spillage is minimised	3 months prior to construction works commencing

Table 5.6: A summary of the environmental monitoring required for the transmission infrastructure and other mitigation as stated in the ES (in addition to Table 5.3)

a. Onshore noise

Project Phase	Measures
During Construction	Detail to be confirmed. Application of good practice measures to minimise and manage noise during construction works in line with key legislation, PAN 1/2011 Planning and Noise guidance, and various British Standards.

b. Terrestrial ecology

Project Phase	Measures
Pre-construction	Survey of corridor to identify the locations of protected species, which will include relevant bird species, badger, otter, bats and fresh water pearl mussel, will be done at a suitable time before works are commenced. The bat surveys, to be undertaken during May-September, will include roost searches, Anabat surveys, commuting surveys and control surveys.
During construction	An Ecological Clerk of Works (ECoW) will be present during construction works.
	Infrastructure will be micro-sited to avoid sensitive features (e.g. badger setts) where possible.
	Habitat protection: Delimitation of working areas to minimise the potential zone of influence and therefore area susceptible to potential impact. Prompt restoration of areas of habitat to undergo reinstatement such as road batters, areas around pylon bases, and site compounds, thus minimising any potential effects due to exposure and erosion of substrates thus optimising successful uptake by vegetated turves. Timing of works to avoid heavy rainfall when the risk of fine sediment being transported from earth works is significantly increased.

Project Phase	Measures
	<p>Pink footed goose mitigation: Avoid designated refuge and feeding areas during sensitive periods in (late March and April and mid-September and October). Minimise construction activity and vehicle access near refuge and feeding areas. Avoid having vehicle movements and construction activity during dawn and dusk works near refuge and feeding areas. Do not leave machinery lying across construction area.</p> <p>Breeding and wintering coastal and terrestrial birds: Timescale constraints: avoid breeding season if nesting sites are found during pre-construction surveys by an Ecological Clerk of Works. With regards to corn bunting, food sources to be minimised within immediate cable route corridor during winter.</p> <p>Where works are in proximity to areas used by otter: Where possible, all trenches, trial pits, excavation and pipelines will be covered when not in use to prevent animals entering these areas. Where such excavations cannot be closed or filled on a nightly basis, provision of a method of escape (e.g. a plank) will be used. Night working should be avoided where at all possible. Where this is not possible, lighting will be focussed on the works area(s) and directed away from watercourses using beam-deflectors (if necessary). Lighting will be kept to an absolute minimum of 100 m from holts or other identified resting places. Works within 100 m of holts or other resting places will finish one hour before dusk and commence one hour after dawn to ensure minimum disturbance during otters' main activity times. Safe storage of chemicals and fuels away from watercourses in appropriately banded and secured containers. Vehicle speeds will be restricted to 20 mph across site in order to minimise the risk of collision with animals. This should be reduced to 15 mph within 25 m either side of any mammal paths identified by the ECoW which as likely to be used by otters and which cross watercourses.</p>

Project Phase	Measures
	<p>Where works are in proximity to areas used by badgers: No work will be carried out within 30 m from any setts without a license from SNH. No sett destruction without a license from SNH. Excavations of more than 0.5 m deep will be fenced or covered overnight. Large diameter pipes will be capped at the end of each working day to reduce the potential for badgers and other animals to enter them and become trapped. Protection zones of 30 m from badger setts will be marked with brightly coloured tape. High activity areas will be cordoned off to ensure these are kept fully intact and with minimal interference from construction. Speed restrictions on site will be kept to a maximum of 15 mph for all vehicles. Night working should be avoided where at all possible. Where this is not possible, lighting will be focussed on the works area(s) and directed away from badger setts and areas of potential badger foraging habitat (e.g. rough grassland and woodland) using beam-deflectors. Lighting will be kept to an absolute minimum of 100 m from each sett. Works within 100 m of sett will finish one hour before dusk and commence one hour after dawn to ensure minimum disturbance during badger's main activity times. Toolbox talks will be given to construction staff.</p> <p>Where works are in proximity to areas used by bats: Avoid dawn, dusk and overnight works.</p> <p>Where works are in proximity to areas in which freshwater pearl mussel are found: A 50 m buffer of undisturbed streamside vegetation should be maintained to prevent erosion. Works will only be undertaken during daylight hours.</p>
Post-construction	Habitats restoration where required.

c. Hydrology

Project Phase	Measures
Pre-construction	<p>Site investigation and risk assessment where land has a potential contamination risk.</p> <p>A site investigation strategy together with any additional research to further augment the conceptual site model will be developed for each individual site of potential land contamination along the route. The strategy for each will be discussed with the Contaminated Land Officer at Aberdeenshire Council to give them an early opportunity to comment on the investigations proposed.</p> <p>After implementation of the site investigation, detailed risk assessments would be necessary in order to understand the hazards posed by subsurface contamination if present. In some instances, the hazards may be such that remedial works may be necessary to address the hazards prior to construction.</p> <p>The site investigations will also investigate ground water and surface water sources in the vicinity of the works.</p> <p>A surface water monitoring network in relation to the final route selection will be established a minimum of six months prior to construction works. The monitoring network should consist of control monitoring points upstream of construction works as well as monitoring points downstream.</p> <p>During construction works, the following monitoring will be carried out: surface water monitoring, regular visual inspection of surface water management features such as drainage pipes and receiving watercourses to establish whether there are increased levels of suspended sediment, erosion or deposition. Where required, debris will be removed to ensure they continue to function as designed.</p>
During construction	<p>Storage: All equipment, materials and chemicals will be stored in designated locations at an appropriate distance from watercourses. Chemical, fuel and oil stores will be sited on impervious bases within a secured bund.</p> <p>Vehicles and refuelling: Standing machinery will have drip trays placed underneath to prevent oil and fuel leaks causing pollution. Where practicable, refuelling of vehicles and machinery will be carried out in designated areas, on an impermeable surface, and well away from any watercourse.</p> <p>Maintenance will be undertaken in a designated area within the construction compounds, where possible, unless vehicles have broken down necessitating maintenance at the point of breakdown, where special precautions should be taken to control spillages/leaks.</p> <p>Welfare facilities: On-site welfare facilities should be adequately designed and maintained to ensure all sewage is disposed of appropriately.</p> <p>Security: Delimitation of working areas to minimise the potential zone of influence and therefore area susceptible to potential impact, which will also help prevent theft or vandalism that may result in a pollution incident (e.g. lockable valves/trigger guns on fuel pipework).</p>

Project Phase	Measures
	<p>Cement, concrete and bentonite: Fresh concrete and cement are very alkaline and corrosive and can be lethal to aquatic life. The use of wet concrete in and around watercourses should be avoided or where essential carefully controlled by provision of an agreed construction methodology plan prior to construction.</p> <p>An emergency contingency plan should be developed in relation to the potential for breakout of bentonite into watercourses during directional drilling.</p>
	<p>Drainage: An adequate drainage system to be implemented prior and during the construction activities. The drainage system will adopt sustainable drainage system (SUDS) principles as set out in best-practice guidance documents (Masters-Williams et al., 2001; Murnane et al., 2006; Water Research Centre et al., 2007; Woods Ballard, 2007).</p> <p>The drainage system also provides measures to reduce erosion and prevent sediment laden runoff entering surface water. For example, adequately sized settlement lagoons should be constructed to allow settlement of sediments prior to discharge to groundwater or surface water.</p> <p>It is envisaged that the drainage system will incorporate some or all of the following components:</p> <ul style="list-style-type: none"> • Diversion or cut-off drains to direct nearby runoff away from the construction area; • Drainage ditches, swales, infiltration areas etc to capture runoff; • Distribute discharge points and drainage outfalls (surface water or groundwater) to reduce flow rates and volumes; • Check dams at regular intervals along ditches on a gradient to prevent high flow rates; • Settlement lagoons and sediment traps to prevent water pollution and act as a buffer area in case of pollution incidents; and • Temporary access track drainage to prevent surface water flooding. <p>For the proposed substation site, a permanent sustainable drainage system will be installed to ensure flood risk within the site and elsewhere is not increased. This drainage system will also provide adequate levels of water treatment to minimise any impact on water quality of receiving surface water or groundwater bodies.</p>
	<p>Silt control: Measures to control silt generation and run-off so as to minimise the amount of exposed ground and subsoil. Techniques may include the use of silt traps and choice of location of stockpiles of excavated materials. Silt traps and sediment settlement tanks will be inspected and cleared regularly to ensure they remain fully operational and effective.</p>

Project Phase	Measures
	<p>Contaminated soils: Methodology for handling contaminated soils. This should include minimising hazards to workers (e.g. control of exposure by direct contact), monitoring for soil gases, control of dusts from contaminated materials and cleaning of excavation equipment in contact with contaminated soils prior to moving onto 'clean' sections of the route corridor. Earthworks, groundwater controls and temporary surface water drainage measures within sections of the route which have land contamination should be kept separate from adjacent sections of the route so that contaminated materials are contained and to prevent lateral migration pathways along the corridor for contaminated runoff/ groundwater.</p> <p>Details of disposal and treatment of contaminated run off to be provided. Where required, remediation of contaminated land or gas protection measures to be installed.</p>
	<p>Watercourse crossings not using HDD: To mitigate the disturbance to small watercourses as part of the construction of crossings, the following working methods will be adopted:</p> <ul style="list-style-type: none"> • Minimise the duration over which watercourses are dammed to prevent backing up of flows and drying up of downstream channels; • Overpump flow where construction requires more than 1 day or where flows are significant; • Excavate cable trenches as narrow as possible across the river bed; • Restore river beds and banks using original soils and gravels where possible; and • Provide additional scour and erosion protection to mitigate the risk of bare soils. <p>As part of the detailed design of the cable route, site specific crossing methods will be developed to take into account local issues and risks. For large rivers, if working within the floodplain cannot be avoided, construction will be undertaken during periods of low flow only.</p>
	<p>Coastal floodplain protection: If the outfall location is situated within the developed area in Fraserburgh, a detailed construction method should be developed to ensure that at no point in time the defence level is reduced below the level currently provided.</p>
	<p>Contingency plans: Should ensure that emergency equipment will be available on-site i.e. spill kits and absorbent materials, advice is available on action to be taken and who should be informed in the event of a pollution incident.</p> <p>Additional contingency plans should also be in place to deal with unexpected findings (e.g. areas not known to have contamination) and if disturbance/leakage occurs from confined contaminated materials (e.g. damage of buried drums or pipes containing liquid waste).</p>

d. Archaeology

Project Phase	Measures
During construction	All sites of cultural heritage interest (identified in the MORL ES) will be avoided where possible. Where cultural heritage assets may potentially be subject to direct or secondary impacts, infrastructure will be micro-sited and temporary exclusion zones will be implemented to prevent invasive activities. Exclusion zones of at least 100 m will be established around sites identified as being of high sensitivity while an exclusion zone of a minimum 50 m will be established around those of medium sensitivity.
	All recorded cultural heritage assets will be avoided where possible. This may not be possible in the case of all undesignated assets and there is clear potential for previously unrecorded assets to be present within the construction footprint. Effects upon assets affected by construction will be addressed through a programme of archaeological works comprising: Evaluation trenching of previously recorded archaeological assets within the construction footprint in order to establish character, extent and condition. Where deposits of palaeoenvironmental interest are affected cores will be recovered and examined. Further work will be undertaken as appropriate; Archaeological monitoring of topsoil stripping, followed by excavation and recording as appropriate; and Reporting, and publication where appropriate, of results.

e. Traffic and transport

Project Phase	Measures
All Phases	Mitigation of construction noise will be provided in so far as is reasonably practicable by adopting the principles of <i>Best Practicable Means</i> as defined in the Control of Pollution Act (CoPA) (1974). The mitigation measures set out in this chapter will be included in the Construction Environmental Management Plan (CEMP) along with any site specific measures required by Aberdeenshire Council.
	Management of programme of works: <ul style="list-style-type: none"> • Deliveries should be programmed to arrive during daytime hours only; • Care should be taken when unloading vehicles to minimise noise; • Delivery vehicles should be routed so as to minimise disturbance to local residents; • Delivery vehicles should be prohibited from waiting within or close to the site with their engines running, where possible; and • Audible reverse alarms should not be used near to residential areas outwith normal working hours, except where this has been approved by the Local Authority or where required for over-riding safety purposes.

Project Phase	Measures
	<p>Working methods:</p> <ul style="list-style-type: none"> • Care should be taken when erecting or striking scaffolds to minimise effect noise from banging steel. All operatives undertaking such activities should be instructed on the importance of handling the scaffolds to reduce noise to a minimum; • Plant which is known to emit noise strongly in one direction should be orientated in such a way that noise is directed away from noise-sensitive areas; • Acoustic covers to engines must be kept closed when engines are in use and idling; • Plant and equipment should be inspected on a daily basis for defects prior to the start of works and under no circumstances should defective plant be used • Shouting and raised voices should be kept to a minimum; and • Radios (other than two-way radios used for communications relating to the works) and other forms of audio equipment with loudspeakers should not be operated on any work site. <p>Plant and equipment:</p> <ul style="list-style-type: none"> • Modern, silenced and well maintained plant fitted with effective attenuators, mufflers or acoustic covers, where appropriate, should be used wherever practicable; • Any compressors or generators brought on to site should be silenced or sound reduced models fitted with acoustic enclosures; • All pneumatic tools should be fitted with silencers or mufflers; • All plant items should be properly maintained and operated according to manufacturers' recommendations in such a manner as to avoid causing excessive noise; • All plant should be sited so that the noise effect at nearby properties is minimized; • Semi-static plant should be sited and oriented as far as is reasonably practicable away from occupied buildings; localised screening should be considered where necessary; • Noisy plant or processes should be replaced with less noisy alternatives; • Machines should be shut-down or throttled-back to a minimum when not in use; machines shall not be left running unnecessarily; • Engine compartments should be closed when equipment is in use; and • There should be a general presumption towards the screening / enclosure of mobile and fixed plant as a simple and effective means of containing the noise at source, where required.

Project Phase	Measures
	<p>Training for contractors: The following should be implemented to ensure that sufficient training and information is provided to appropriate personnel:</p> <ul style="list-style-type: none"> • Toolbox talks to raise awareness of unnecessary nuisance, including noise, should be delivered to appropriate personnel; • Operatives should be trained to employ appropriate techniques to keep site noise to a minimum, and should be effectively supervised to ensure that BPM is implemented. All employees should be advised regularly of the following, as part of their training: <ul style="list-style-type: none"> o the proper use and maintenance of tools and equipment; o the positioning of machinery on site to reduce the emission of noise to the neighbourhood and to site personnel; o the avoidance of unnecessary noise when carrying out manual operations and when operating plant and equipment; o the protection of persons against noise; and o special attention should be given to the use and maintenance of sound-reduction equipment fitted to power tools and machines.

5.3 Authorisations to be Obtained by the Contractor

The contractor will be responsible for obtaining any other authorisations required under relevant legislation or best practice. This includes relevant specialist qualifications/training for contractor and sub-contractor staff and research vessel derogations where required. The costs of obtaining any authorisations or qualifications shall be borne by the contractor.

6. Marine Pollution Contingency Plan

6.1 Overview and Scope

This section of the EMP is the Marine Pollution Contingency Plan (MPCP) and has been prepared to satisfy the relevant legislation and ensure good environmental practice with regards to the construction of the Telford, Stevenson and MacColl offshore wind farms and the related offshore transmission infrastructure. This may become a separate document in its own right during the construction phase.

This document will:

- Define key construction activities, vessels that will be deployed, and control measures being adopted to minimise potential pollution incidents from occurring;
- Define roles and responsibilities; and
- Define the marine pollution contingency plan to be applied during the construction phases of the aforementioned projects.

The MPCP is designed to minimise environmental impacts in response to an oil spill or other marine pollution event (e.g. grout or chemical spillage) associated with the project. The plan also covers the management of environmental risks related to spills and objects lost overboard from vessels, and the relevant authorities to contact in case of an emergency.

In accordance with Marine and Coastguard Agency (MCA) guidelines, during construction the focus will be on prevention and avoidance of contingency situations through risk identification and management, and through stringent controls being put into place (e.g. where refuelling at sea has to take place, this shall be done according to industry standards).

However, if an incident occurs the emphasis will shift to marine pollution control to minimise the discharge and to mitigate its effects. There will be products, systems or services for controlling, clean up and minimising marine pollution, e.g. oil absorbents and booms, pollution prevention training, monitoring and clean up services.

The primary aim of this response strategy is to:

- Ensure personnel safety and integrity of the vessels;
- Minimise potential environmental and socio-economic impact and ensure a fast recovery to affected resources;
- Where practicable, utilise the prevailing environmental conditions to complement the response; and
- Utilise pre-planned actions to previously identified incident situations.

The following documents are included in the appendices section:

- Pollution incident Report Form (Appendix 8);
- Contacts List (Appendix 9); and
- Roles of Statutory Bodies in response to a marine pollution incident (Appendix 10).

6.2 Legislative Compliance Requirements

The following pieces of legislation are relevant to this plan (this is indicative and not a complete list):

- International Convention on Oil Pollution Preparedness, Response and Co-operation 1990 (the "OPRC Convention");
- Merchant Shipping (Oil Pollution Preparedness, Response and Co-operation Convention) Regulations 1998;
- Merchant Shipping (Prevention of Pollution: Substances Other than Oil) (Intervention) Order 1997;
- Civil Contingencies Act 2004;
- Merchant Shipping Act 1995;
- Prevention of Oil Pollution Act 1971;
- Food and Environment Protection Act (FEPA) 1985;
- Coast Protection Act 1949;
- MARPOL 73/78; and
- Offshore Installations (Emergency Pollution Control) Regulations 2002, made under section 3 of The Pollution Prevention and Control Act 1999.

6.3 Construction Activities

Table 6.1 provides an indication of the potential vessels and activities that will be involved in construction of the wind farm. Where an appropriate and approved Shipboard Oil Pollution Emergency Plan (SOPEP) is required for a vessel this is indicated by a Yes in the SOPEP column.

Table 6.1: Potential vessels and activities that may be involved in the construction phase.

Organisation	Role	Vessels	SOPEP
Principal Contractor (PC)	<p>Overall responsibility for construction of the wind farm:</p> <ul style="list-style-type: none"> • Coordinating all project marine operations; • Issuing Notices to Mariners (including details of safety zones) as required for construction activities (excluding Environmental Monitoring works); • Liaising with stakeholders with regards to construction works; and • Coordinating emergency procedures with relevant authorities and the EDPR QHSSE manager. 	None	No
Company A	Transportation to site and installation of substructures.	TBC	Yes
Company B	Transportation to site and installation of transition pieces.	TBC	Yes
Company C	Transportation to site and installation of WTGs.	TBC	Yes
Company D	Transportation to site and installation of WTGs.	TBC	Yes
Company E	Transportation of components from Europe to the construction port.	TBC	Yes
Company F	Transportation of components from Europe to the construction port.	TBC	Yes
Company G	Cable installation.	TBC	Yes
Company H	Workboats moving people from port to site and back.	Various	No

Organisation	Role	Vessels	SOPEP
Company I	Dive support vessel.	TBC	Yes
Company J	Emergency response vessel.	TBC	No
Company K	Guard vessels.	TBC	TBC

6.4 Construction Phases – by Vessel

<Once a more detailed design is available this section will be updated to reflect the various structures, construction sequences and vessels involved.>

6.5 Commissioning

<Once a more detailed design is available this section will be updated to reflect how commissioning will be carried out.>

6.6 Collision Prevention

Multiple construction vessels may be active concurrently within the boundaries of the wind farm during construction. Wind turbines and substructures are designed to withstand vessel impact up to a certain level (specific details tbc once design is chosen).

To prevent collision by other vessels straying into the wind farm the following actions may be taken:

- Marking of site with Cardinal Buoys*;
- Aid to navigation lighting places on significant and intermediate peripheral structures*;
- Marking of incomplete structures*;
- Notices to Mariners;
- Use of guard vessels;
- Appointment of Fisheries Liaison Officer (FLO) to communicate with industry;
- Implementation of a 500 m safety zone around wind farm sites when activity in progress;
- Implementation of a 50 m (or greater where floating substructures are used) safety zone around completed structures (e.g. turbines and offshore substation platforms); and
- Set up of a marine coordination centre.

*Where markings and lighting are proposed, these would be in line with Recommendation O-139 0 The Marking of Man-Made Offshore Structures (IALA, 2008) and subject to consent from the Northern Lighthouse Board, to which a statutory sanction application would be submitted.

6.7 Safety Zones

<Insert company name> will apply for a site safety zone for the construction (including commissioning) phase of the project. <Insert company name> may apply for safety zones around turbines and offshore substation platforms for the operational phase of the projects. The purpose of the safety zone is to keep vessels at a safe distance from all related activities in order to avoid collisions.

A 500 m zone may be in place during construction and up to operation. Once the

infrastructure becomes operational, safety zones of 50 m may be applied around specific structures (subject to application).

During the construction phases, the duty of monitoring the offshore site will be appointed to specific vessel(s) and any vessels observed to stray into the safety zone will be contacted by VHF radio and warned of their position. They will be instructed to divert their course out of the safety zone. Vessels which ignore this warning and are considered to be causing a potential danger will be further requested and then the details of the vessel reported to the MCA.

6.8 Maritime Aid to Navigation Requirements for the Construction Phases

Prior to construction, cardinal buoys may be in place to clearly identify the boundaries of the wind farm. They may be left in place until relevant navigation lighting is installed.

Diagram to demonstrate layout will be inserted when available.

There may be a period during the construction phase where the wind turbine substructures could possibly be installed and left without transition pieces, posing a hazard to vessels. Such structures will be within the construction safety zone, which will itself be clearly marked (as agreed with the Northern Lighthouse Board).

6.9 Notices to Mariners

Communication of maritime hazards related to the construction of the wind farm will be issued before the start and at regular intervals throughout the construction phase.

6.10 Fishing Liaison Officer

An FLO will be employed and managed by the Environmental Manager. Their roles and responsibilities will be as follows:

- Meeting arrangements with local fishermen's groups;
- Meeting and liaison with Marine Scotland and Marine Management Organisation (if required);
- Meeting and liaison with the fisheries industry bodies (e.g. Scottish Fishermen's Federation, Scallop Association) and the Inshore Fisheries Groups;
- Direct line of contact for the fishing industry pre and during construction;
- Planning assistance for offshore movements and works, this to include near shore transit route and work routes, and site working zones;
- Liaison between contractors and fishermen with regards to fisheries issues; and
- Dispute assistance with regards to damaged fishing gear (where the damage is associated with construction works) and pre start up activity assessment, such as assessment of fishing activity on the site and along the export cable routes.

6.11 Potential Sources of Pollution

This plan recognises the different types of pollution incidents that can occur and the response will vary depending on the type of incident, and where it occurs. To date there are two types of pollution incidents which have been identified on the project.

- Oil and Chemical Spills; and
- Objects Lost Overboard.

The MCA has a three tiered approach (Table 6.2) to describing the scale of an incident under their National Contingency Plan (which this plan follows). These tiers are not given generic quantification, assessments are made based on potential risks in specific areas and responses are planned accordingly, therefore the quantities noted below must be considered as indicative only. The incident response applicable to each tier is defined in

Table 6.3.

Table 6.2: Three tiered approach defined by the MCA for describing the scale of an incident.

Tier 1	A small operational spill employing local (i.e. in house) resources during any clean up (e.g. <1,000 litres).
Tier 2	A medium sized spill, requiring external assistance and resources, which may include regional resources (e.g. ≥1,000-<150,000 litres).
Tier 3	A major spill requiring national assistance and resource. The National Contingency Plan will be activated in this case (e.g. ≥150,000 litres).

Table 6.3: Incident Response system to Spillages Originating from Offshore Wind Farm equipment

Tier	Response Team	Function
1	Onsite Support Vessel	<p>Small spills where events can be controlled by onsite resources.</p> <p>A tier 1 spill is not likely to require intervention by an external incident response organisation or external authorities.</p> <p>The United Kingdom Hydrographic Office (UKHO) will be notified.</p> <p>The MCA will be notified.</p>
2	Onsite Support Vessel Emergency Response Contractor (ERC)	<p>Medium sized spills that are required to be handled by the ERC or other external assistance as nominated within this plan.</p> <p>The MCA will be notified and the MCA and Local Authorities may be required to assist them.</p> <p>The ERC will be in overall control of the response.</p> <p>Where the MCA or Local Authorities are required to be involved the ERC will coordinate their response with that of the MCA and Local Authorities as appropriate.</p>
3	Onsite Support Vessel ERC MCA Local Authorities	<p>Large sized spills that require the invocation of the National Contingency Plan and Local Authority Emergency Response Plans (e.g. involving a vessel colliding with a Wind Farm Structure).</p> <p>The ERC will coordinate their response with that of the MCA local Authorities and the Secretary of State's Representative for Maritime Salvage and Intervention (SOSREP).</p>

This plan defines the response applicable to pollution incidents occurring in the following locations:

- In harbour;

- During transit to and from the offshore site and involving vessels at the offshore site; and
- Fully or partly installed wind farm structures, offshore substations and associated equipment.

The main potential sources of pollution have been identified as construction vessels, wind farm structures and offshore substation platforms as detailed below:

6.11.1 Construction Vessels

The potential for major spills is most likely to come from the construction vessels themselves, and as such are covered under the MARPOL Convention 1978 regulations.

Each vessel will have its own SOPEP approved by the MCA or their international equivalent.

It will be a requirement that all refuelling at sea is minimised and performed according to industry standards.

6.11.2 Wind Turbine Generators and Offshore Substation Platforms

The relevant license will require this plan to include provision for safeguarding against fugitive releases of oil from the turbine nacelles into the sea.

Oil sources within the nacelle will be identified once a model has been selected, however it is intended that these will be in volumes considerably smaller than on the construction vessels.

At this stage the number and design of offshore substation platforms has not been finalised. Once this is done, an accurate measurement of their pollution potential will be possible.

To reduce the potential for pollution incidents arising, the wind farm structures will be designed for containment of spillage. Details will be added when known.

6.12 Coordination

There will be a marine coordination centre (MCC) to coordinate all offshore site construction activities. This will control all vessel movements to, from, and within the wind farm site.

The MCC will be responsible for obtaining information and coordinating all responses within this contingency plan. The MCC will notify the MCA when spillage incidents occur and when the response has been concluded.

The MCC will be responsible for ensuring that the list of construction vessels is up to date.

On behalf of the Principal Contractor (PC), the MCC will issue NTMs as required. NTMs will be issued in the format as outlined in Appendix 2.

MCC contact details can be found in the Appendix 9.

6.13 WTG Emergency Shutdown

During the construction phases the wind turbines may be live tested as part of the installation and commissioning process. There may also be a phased handover of completed installations with some wind turbines being in operation during the construction phase.

In the event of an emergency situation being notified to the MCC during the construction phase at a time when any wind turbines are in the active state, as appropriate the turbines may be shutdown and blades locked in a fixed position until notification from the relevant emergency services that it is safe to resume operation.

6.14 Roles and Responsibilities

6.14.1 Principal Contractor

In the event of an oil or chemical spill from the wind farm during construction the PC will be

responsible for implementing an immediate response proportionate to the size of the spill and in accordance with SOPEP procedures and Marine Pollution Response.

6.14.2 Installation Contractors

The owners and masters of ships and the operators of offshore installations bear the primary responsibility for ensuring they do not pollute the sea.

For vessels and rigs involved in the wind farm construction, in the event of the spill it is the vessel master's responsibility to report the incident to the MCA and MCC and to implement appropriate MARPOL approved SOPEP.

Such plans are approved by a classification society or flag state and is required under regulation 26, Annex 1 of MARPOL 73/78.

6.14.3 Emergency Response Contractor

Prior to construction works commencing there will be an agreement with an accredited Pollution Response Contractor who will become the ERC.

- The PC will advise the ERC of the specific types of pollutants and quantities likely to be involved in a spillage incident and the ERC will agree with the PC the appropriate level of response required, including procedures and methods to be deployed;
- The ERC will agree with the PC the communication procedures to be used during an incident, including responsibility for communicating with the MCA and other authorities at different stages of an incident;
- The ERC is responsible for maintaining and mobilising the response vessels, personnel, equipment, and supplies required to provide an appropriate response when notified by EDPR of an incident;
- The ERC will provide advice for disposal of any waste products generated during the response to an incident. Where the PC's onshore waste disposal activities are used as an agreed part of this process, they must comply with the Site Waste Management Plan;
- The ERC is responsible for ensuring that all licenses, certificates, permissions and approvals are applied for and in place and up to date, for the situation where dispersant sprays may be required to respond to an incident;
- The ERC is responsible for communicating and coordinating their response activities with local authorities and the MCA as required, through an incident command team (or MMC) structure alongside the PC;
- The ERC is responsible to provide any reports required by the authorities relating to the response provided by them to an incident (e.g. for use of chemical dispersants); and
- The ERC will provide a technical advisory service in the event of any spill. In the first instance the MCC should call the ERC and complete the form in Appendix 8.
- Once it has been established that the spill is Tier 2 or 3 the form in Appendix 12 should be completed and sent to the ERC.
- Those authorised to call out the ERC are <To be confirmed.>

16.4.4 Other Third Parties

The procedures detailed in this plan provide guidance for dealing with the pollution aspect of an emergency and assume that it is safe to undertake the spill response operation. Oil drifting towards shore or neighbouring installations may instigate the activation of 3rd party plans.

The following 3rd Party Plans may become involved in the event of a pollution incident:

- Harbour Authorities - Harbour Authorities are responsible for ensuring that their ports operate in a manner that avoids marine pollution and for responding to incidents within their limits.
- Local Authorities - In the event of any incident which may possibly lead to or require shoreline clean-up operations the local authority will be informed. The local authorities activate their own call out procedures in accordance with their own shoreline response plans.
- MCA - The Merchant Shipping (Oil Pollution Preparedness, Response and Co-Operation Convention) Regulations 1998 require all ships, offshore installations, ports and harbours to report all incidents of pollution to the MCA. Major spills including those that threaten the shoreline may require the activation of the MCA's National Contingency Plan. The vessel master will inform the MCA of an incident for which they are responsible. The Principal Contractor's MCC will inform the MCA about an incident arising from wind farm structures. The MCA will then determine whether assistance from other 3rd parties is required.
- National Contingency Plan - The National Contingency Plan is not an operations manual, rather it is a guide to the role of the MCA, agencies and organisation and their responsibilities and involvement in dealing with oil at sea and along the shoreline. The National Contingency Plan also sets out the UK Government's policy for dealing with pollution at sea.
- UKHO - The UKHO has responsibility for producing admiralty charts and issuing Notices to Mariners for UK waters. All objects dropped overboard (including wind farm structure/equipment during the installation process) which could present a hazard to shipping will be notified to UKHO immediately by the Vessel Master for inclusion in Admiralty Charts as applicable. The Vessel Master should also make the MCC aware of dropped objects for future NTMs. Collapse of any wind farm structure that may present a hazard will be notified to the UKHO by MCC.

6.15 Marine Pollution Contingency Procedures

This plan covers pollution incidents arising during construction activities from the spillage of oil/fuel/chemicals into the sea, and objects dropped overboard from vessels.

This plan defines the procedures applicable for the following pollution incidents:

- Incidents occurring on the quayside;
- Incidents during loading/unloading operations, in transit to/from the offshore site, or during installation activities; and
- Incidents involving fixed installed wind farm structures and offshore substation platforms.

In order to familiarise personnel with the use of this plan, the PC will conduct exercises on a regular basis. These will either be paper exercises to verify communication procedures or operational exercises involving deployment of personnel, equipment and materials.

6.15.1 Procedure for Incidents Occurring on the Quayside

This section covers pollution incidents that may arise from infrastructure and equipment located on the quayside prior to loading or subsequent to unloading operations.

Spillage resulting from structures and equipment (e.g. shore based crane) toppling into the water is included in this contingency.

Any such incident will be communicated to the MCC immediately (by the vessel master or

other responsible person) using the 3 tier classification table (see Table 3.2) to classify the scale of the incident.

Recovery/cleanup operations will be the responsibility of the PC and carried out with the local harbour authority and in compliance with the Harbour Authority's pollution/spillage contingency plan.

6.15.2 Procedure for Incidents Occurring During Loading/Unloading, Transit or Installation

This section covers the procedures to be followed in the event of oil/fuel/chemicals spill from a vessel and recovery of objects lost overboard from a vessel. Events occurring in the following situations are covered by this procedure:

- Incidents occurring in the harbour during loading/unloading operations;
- Incidents occurring during transit to/from the offshore site; and
- Incidents occurring during installation activities.

6.15.2.1 Procedure for Oil/Fuel/Chemical Spill from Vessels

This section details the procedures to be followed for spillages arising from vessels during loading/unloading operations, in transit to/from the offshore site, and during installation activities.

This procedure includes the response to any escape of oil/fuel/chemicals arising from objects (including wind farm structures and equipment) lost overboard from vessels during loading/unloading operations, in transit to/from the offshore site, and during installation activities.

Pollution arising due to spills from construction vessels at sea or in harbours is covered under MARPOL convention 1978 regulations.

Each vessel will have its own SOPEP approved by the MCA or international equivalent, including mandatory reporting actions and therefore their incident response is outside the scope of this document.

In addition to enacting mandatory requirements, all oil/fuel/chemical spillages from construction vessels are to be evaluated by the Vessel Master using the three tier classification system as detailed in Table 3.2 and reported to MCC.

In the case of significant spillage of grout during an installation, the Vessel Master will notify the MCA of the location and size of the spillage.

The MCC will complete a Pollution Incident Report for all spillages (see Appendix 8).

6.15.2.2 Procedure for Unintentional Loss of Objects Overboard from Vessels

This section details the procedures to be followed for the unintentional loss of objects overboard from vessels during loading/unloading operations, in transit to/from the site, and during installation operations.

Pollution arising due to unintentional loss of objects overboard from construction vessels at sea or in harbour is covered under MARPOL Convention 1978 regulations.

In addition to enacting mandatory requirements, the GPS position of objects seen to be lost overboard will be taken immediately. Objects lost overboard unseen during transit will be identified by means of a loading/unloading inventory. A seabed survey of the transit route to identify the location of these objects will be undertaken.

Objects lost overboard which constitute a possible hazard to shipping will be immediately notified to UKHO by the Vessel Master. All objects lost overboard which require recovery must be notified to MCC by the Vessel Master. MCC will subsequently notify the Principal

Contractor.

Recovery of objects lost overboard will take place as soon as practicable depending on the nature of the object and the hazard to shipping posed. Risk assessment and a method statement for recovery will be produced including a final method of disposal of the recovered material.

A post-construction seabed survey will be carried out on the construction site to confirm that no unknown construction debris is present which may cause a maritime hazard (see Table 2.3b).

16.15.3 Procedures for incidents involving fixed installed wind farm structures

This section details the procedures to be followed in the event of an escape of oil/fuel/chemicals or other liquid substance from a fully or partly installed wind farm structure or associated equipment.

The PC will adopt the MCA's method of categorising pollution incidents in order to identify the response required.

Where natural dispersion/degradation of any spillage is not an appropriate response the primary objective will be to contain the spill, and remove it using suitable apparatus. The ERC will be responsible for carrying out the removal operation and assisting with temporary storage.

The collection, storage, treatment and disposal of any contaminated waste materials produced during cleanup operations will be managed using waste management procedures of the ERC, Harbour Authorities and PC onshore site waste management plans as applicable.

The ERC will be responsible for identifying and applying an appropriate solution to any spillage incident. Should the use of chemical dispersants/oil treatment products be required the ERC will ensure that all necessary permissions and conditions are complied with prior to usage, and reporting requirements after usage are fulfilled.

16.15.3.1 Procedure for Oil/Fuel/Chemical spill from a Wind Farm Structure

Oil/fuel/chemical or other liquid spillage originating from installed (or partly installed) wind farm equipment will be the responsibility of the PC and will be covered by procedures including those listed below. This includes spillage resulting from collision with a wind farm structure or the collapse of a wind farm structure.

In the event of a spillage sighting originating from a wind farm structure (or equipment) the following actions (also illustrated in Figure 6.1) must be taken:

- All spillage sightings must be reported to the Vessel Master immediately;
- The Vessel Master must notify the MCC identifying the location and giving an initial indication of the size of the spill (based on the 3 Tier system – Table 6.2), source of the spillage if identifiable, and other information as applicable to complete the Pollution Incident Report Form (Appendix 8);
- MCC will direct the onsite support vessel to the location;
- The onsite support vessel will confirm the spillage assessment based on the 3 Tier system and notify MCC;
- The onsite support vessel will commence cleanup/containment operations as applicable;
- MCC will be responsible for completing the initial Pollution Incident Report Form which will be used to notify MCA, UKHO, the PC and other relevant authorities. Subsequent

reports will be submitted on a daily basis until the spillage incident is cleared;

- The responsibility for elevating and incident classification from Tier 1 to Tier 2 lies with the MCC;
- On assessment of a Tier 2/3 incident MCC will immediately mobilise the ERC and notify MCA, and the PC and client Project Directors; and
- For Tier 2/3 responses the ERC will coordinate their activities with the MCA and any local authorities as required.

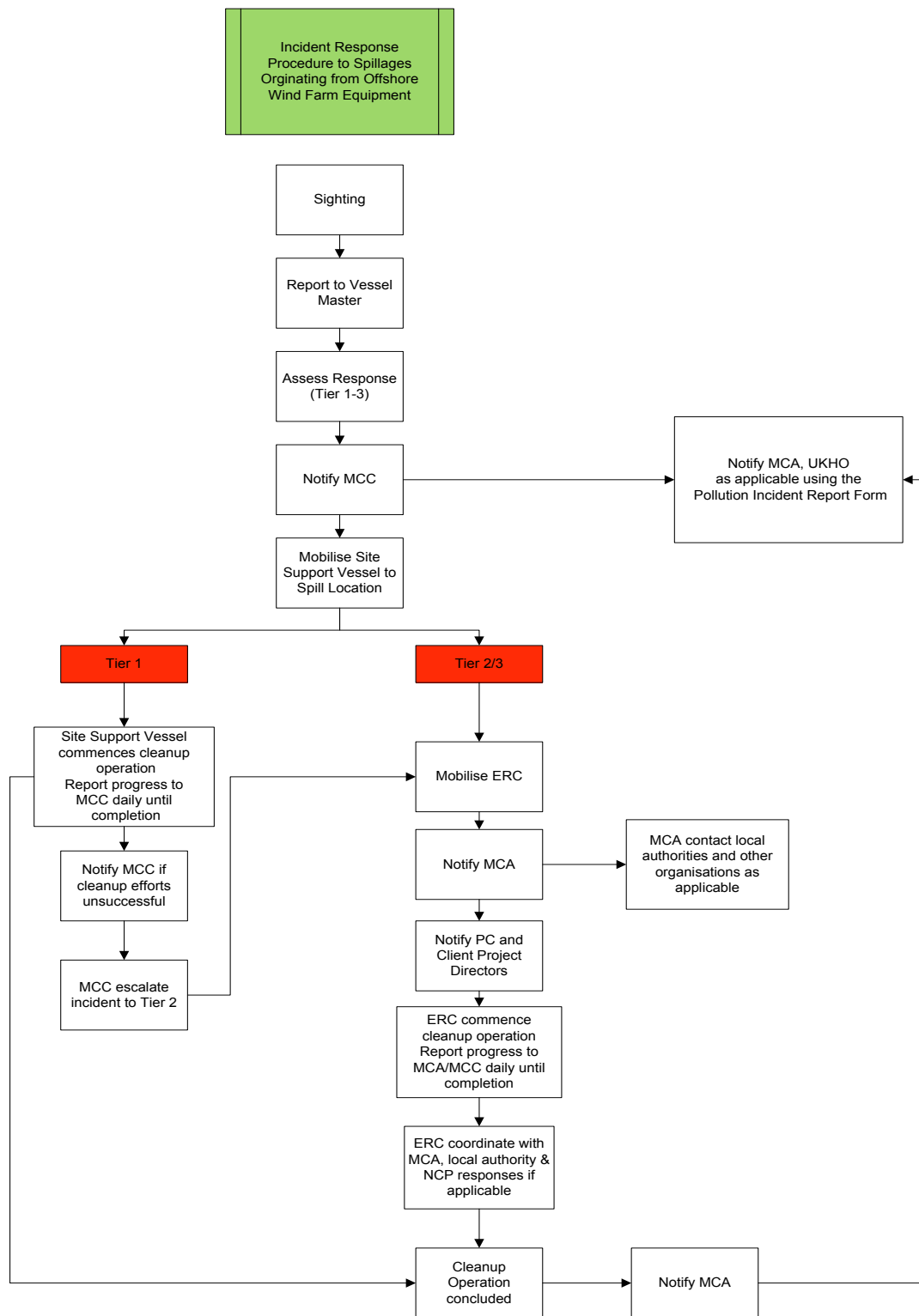


Figure 6.1: Actions to be taken in the event of a spillage sighting originating from a wind farm structure or other equipment

6.15.3.2 Procedure for Collision with a Wind Farm Structure

This section details the procedures to be followed if collision with a wind farm structure occurs that may cause a pollution incident, i.e. an aircraft or large vessel collision (N.B. wind farm structures have been designed to withstand impact from construction vessels during construction activities).

In the event of a significant collision with a wind farm structure the following actions will be undertaken:

- An inspection will be conducted promptly to check the integrity of the structure and equipment for loss or potential loss of oil/fuel/coolants etc;
- Any spillage which is contained within the structure will be cleaned up and disposed of; and
- Any spillage not contained within the structure will be controlled using the procedures described elsewhere in this plan.

6.15.3.3 Procedure for Collapse of a Wind Farm Structure

This section details the procedures to be followed after collapse of a wind farm structure from collision or other causes such that it may cause a pollution incident or a danger to shipping.

Where collapse occurs, the following actions will be taken:

- Exact location to be notified to UKHO;
- Marker buoys placed if required;
- Pollution control will commence as described elsewhere in this plan; and
- Recovery of the structure will be effected as soon as practicable.

Before works commence, the contractors are required to produce risk assessments and method statements for recovery that include the final method of disposal of the recovered material.

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APPENDICES

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Appendix 1 MORL Environmental Policy

1.3 A

APPENDIX

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MORL POLICY DESCRIPTION

SUBJECT: ENVIRONMENTAL POLICY STATEMENT**DATE: JULY OF 2010**

The delivery of clean energy through the responsible operation of renewable energy generation assets forms the foundation of the environmental policy for Moray Offshore Renewables Ltd (MORL).

The company recognises the importance of environmental stewardship as a fundamental principle of its activities. As a result, the company will ensure that it takes responsibility for environmental risks associated with its business – identify, manage and control those risks – all in accordance with applicable legislation, approved codes and/or practices, guidance notes and industry body reference material both applicable to the onshore and offshore environment.

PRINCIPLES

MORL is committed to the following principles:

- We are committed to a goal of zero (0) uncontrolled releases to the environment and we will strive to develop and implement the best practices and standards that are protective of our environment and of the communities in which we shall reside;
- When an environmental incident occurs, we will act quickly and proactively to learn through "root cause" analysis and execute corrective actions company-wide;
- Environmental lessons learned will be clearly communicated to all operations worldwide and other industry bodies as applicable;
- All employees and contractors are accountable for performing their daily activities in a manner that meets our environmental policy as a condition of employment;
- Minimising the environmental impact of all our business activities through:
 - Sustainability in all practices
 - Promoting and integrating biodiversity issues
 - Preventing contamination
 - Minimising pollution throughout operations
 - Promoting reduce, reuse and recycle waste management practices
 - Minimising energy consumption and use of green tariffs

- Ensuring compliance with environmental laws and legislation;
- Participating in initiatives that contribute to environmental conservation;
- Promoting a culture of environmental awareness and respect within the company, contractors and partners; and
- Extending the use of environmental criteria across the whole value chain.

OUR BELIEF

Our ability to ensure environmental stewardship must demonstrate continual improvement in the following ways:

- We will meet and where practicable, exceed compliance with all relevant legislation from international to local levels;
- We will meet and where practicable, exceed regulatory requirements and codes of practice;
- We will set targets for the continual improvement of environmental stewardship standards and performance within the office, onshore and offshore environments;
- We will follow up environmental policies efficiently and effectively as well as the other duties assumed voluntarily by the company;
- We will develop and ensure our environmental strategy through training and awareness of employees, outsourcers, our supply chain and final consumers;
- Our commitment to environmental stewardship will be communicated to those we work with through releasing this policy to both internal and external parties;
- We are committed to making compliance with the MORL environmental policies and practices a contractual obligation of all parties when partaking in any MORL activity;
- We will ensure that suppliers standards are compliant with those of MORL through review of policies/practices, resumes and certifications, method statements and risk assessments and audits; and
- We will ensure sufficient resources for effective implementation of this policy.

These commitments will be revised periodically by the MORL Senior Management Team and Board of Directors and will be implemented and developed through specific objectives, goals and action plans.

Moray Offshore Renewables Limited is a responsible corporate organisation committed to environmental protection. We firmly believe this commitment adds value to our employees, customers and stakeholders.



Mr João Paulo Costeira
COO EDP Renováveis
Chairman of the Board MORAY Offshore Renewables



Mr. Joel Staadecker
CEO SeaEnergy Renewables
Member of the Board MORAY Offshore Renewables

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Appendix 2 Notice to Mariners Plan

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Distribution List:

The UKHO	hdcfiles@ukho.gov.uk
The UKHO	guy.beale@ukho.gov.uk
Northern Lighthouse Board	navigation@nlb.org.uk
Kingfisher	kingfisher@seafish.co.uk
MCA	
Marine Laboratory (Aberdeen)	F.Thompson@MARLAB.AC.UK
Coast Guard Office	
Local Lifeboat Association	
SFF	J.Watt@sff.co.uk
SFF	M.Sutherland@sff.co.uk
Scrabster Fisheries Office	
Buckie Fisheries Office	
Moray Inshore Fisheries Group	N_Lake@scotlandifg.co.uk
Peterhead Harbour	jewallace@peterheadport.co.uk
Fraserburgh Harbour	ian@fraserburgh-harbour.co.uk
Scrabster Harbour	
Lossiemouth Harbour	
Buckie Harbour	
Aberdeen Harbour	
Invergordon Harbour	kengray@cfpa.co.uk
Inverness Harbour	murdo@invernessharbour.co.uk
Wick Harbour	malcolm.bremner@wickharbour.co.uk
Moray Offshore Renewables	Clare.Lavelle@edprenovaveis.com
Osiris	operations@osirisprojects.co.uk

Notice to Mariners Protocol

Consultants/contractors undertaking offshore survey work are required to release a Notice to Mariners (NtM), over and above any relevant consent conditions. The NtM must be released in the Kingfisher Bulletin and to other consultees (as listed below) at least 14 days prior to undertaking offshore surveys works.

Distribution List:

Group	Name	Contact
SFF	Michael Sutherland	m.sutherland@sff.co.uk
	John Watt	J.Watt@sff.co.uk
	Malcolm Morrison	M.Morrison@sff.co.uk
MORL FIR	John Hermse	fish.info@btconnect.com
	Jay McKay	jaymackay@halkirk.fsnet.co.uk
	Ronald Milne	ronald.milne4@btinternet.com
Moray Inshore Fisheries Group	Nick Lake	Nick@scotlandifg.co.uk
Wick Harbour	Malcolm Bremner	malcolm.bremner@wickharbour.co.uk
Peterhead Harbour	John Wallace	jewallace@peterheadport.co.uk
Fraserburgh Harbour	Ian Ironside	Andrew@fraserburgh-harbour.co.uk
Scrabster Harbour	-	harbour@scrabster.co.uk
Lossiemouth Harbour	-	harbourmaster@lossiemarina.fsnet.co.uk
Buckie Harbour	Keith Stratton	keith.stratton@edp.moray.gov.uk
Aberdeen Harbour	-	info@aberdeen-harbour.co.uk
Moray Council Harbour	-	harbours@moray.gov.uk
Scrabster Fisheries Office	Derek Yuille	fo.scrabster@scotland.gsi.gov.uk
Buckie Fisheries Office	-	fo.buckie@scotland.gsi.gov.uk
Invergordon Harbour	Ken Gray	kengray@cfpa.co.uk
	-	georged@cfpa.co.uk
Inverness Harbour	Murdo McLeod	murdo@invernessharbour.co.uk
	Ken McLean	ken@invernessharbour.co.uk
UKHO	Mailing List	hdcfiles@ukho.gov.uk
	Guy Beale	navwarnings@btconnect.com
		noticetomariners@ukho.gov.uk
NLB	Carol Hughes	navigation@nlb.org.uk
Coastguard office	Watch Manager	Aberdeen.coastguard@mcga.gov.uk

Marine Scotland	Licensing and Operations Team	ms.marinelicensing@scotland.gsi.gov.uk
Kingfisher	-	kingfisher@seafish.co.uk
Local Lifeboats	Invergordon	info@invergordonlifeboat.org
	Wick	wick@mli.org.uk
	Buckie	Commercial Rd, Buckie, AB56 1TX
	Kessock	Craigton Point, North Kessock, Inverness, IV1 3YQ
	Fraserburgh	Shore Road, Fraserburgh, AB43 9BR
	Peterhead	Lodge Walk, Peterhead, AB42 1DE
	Thurso	Ferry Pier, Scrabster, Thurso, KW14 7UJ
Scallop Association	John Hermse	Scallop@btinternet.com
MacDuff Harbour	John West	john.west@aberdeenshire.gov.uk
	Aberdeen Council	roads@aberdeenshire.gov.uk
Brown and May (FLO)	Josephine Henniker-Major	josephine@brownmay.com
	Stephen Appleby	stephen@brownmay.com
Partrac	Judy McKay	SAthey@Partrac.com
	Sam Athey	JMckay@Partrac.com
Natural Power Consultancy	Chris Pendlebury	chrisp@naturalpower.com
	Richard Walls	richardw@naturalpower.com
PA Resources	Jon Lucas	jlucas@paresources.uk.com
	Anna Morton	AnnaM@metoc.co.uk
University of Aberdeen	Prof Paul Thompson	lighthouse@abdn.ac.uk
	Dr Kate Brooks	k.brookes@abdn.ac.uk
	Timothy Barton	t.r.barton@abdn.ac.uk
Caithness Petroleum	Paul Chamberlain	paul.chamberlain@caithnesspetroleum.com
Ithaca	Stewart Scott	sscott@ithacaenergy.com
The Crown Estate	Dorothy Shepherd	Dorothy.Shepherd@thecrownestate.co.uk
Moray Offshore Renewables	Clare Lavelle	clare.lavelle@edprenovaveis.com
	John Reddish	john.reddish@seaenergyrenewables.com
Beatrice Offshore Wind	Stephen Kerr	stephen.Kerr@seaenergyrenewables.com
	Bronagh Byrne	bronagh.byrne@sserenewables.com
EMU	Paul English	paul.english@emulimited.com
CA	General	office@cruising.org.uk
	Ted Osborn	OsbornTed@aol.com

Timings of Kingfisher releases can be determined from:

<http://www.seafishmarineservices.com/Kingfisher.htm>

Please be aware that the Kingfisher is released every two weeks, and adequate time must be given to allow for a publication date that is a minimum of 14 days prior to commencing the survey.

An example Notice to Mariners is presented on the following page. As a minimum the NTM must provide the following detail:

- A short description of the survey activities
- The duration and period over which the survey will take place
- Co-ordinates bounding the survey area
- Vessel details and call sign

The format of the Notice to Mariner must be agreed with MORL and the company's Fishing Liaison Officer (FLO), Brown and May.

Updated NTMs should be circulated if the survey details change significantly. However, it is preferred that the number of NTM circulations is minimised. Please approve any additional circulations with the company FLO.

Evidence of NTM circulation must be provided to MORL for record keeping purposes.

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Appendix 3 Fisheries Liaison and Response Plan

1.3 A

APPENDIX

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Offshore Fisheries Liaison Officer (OFLO) Accident & Incident Reporting Procedure

In the event of conflict with fishing gears or fishing vessels, the OFLO should:

- Take instructions from the skipper
- Ensure that he is a safe distance away from activities to free the gear
- Contact the designated onshore liaison contacts and inform them of the situation
- **The OFLO should not, in any circumstance, get involved in dealing with the situation. This is the responsibility of the skipper and his crew**
- The OFLO should make note of the position of the incident/ accident and record any additional information that may be relevant

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Offshore Surveyor Procedures for Fisheries Liaison

DAILY PROCEDURES

The skipper should broadcast the following information in the morning, evening and at other times, as required, on the relevant VHF and MF frequencies specifically used by fishing vessel skippers:

- Name and call sign of the vessel
- Course, speed and details of the vessel
- Vessel VHF working frequency and mobile number
- If required, warning to fishing vessels to keep clear
 - Area astern, ahead and abreast of the vessel where operations are taking place
 - Any equipment that is being deployed or towed
 - Safe distance from the vessel
 - A warning to fishing vessels of any exclusion zones which have been established

FISHING VESSELS/GEAR ENCOUNTERED DURING OFFSHORE SURVEY WORK

Please note down the details of fishing vessels observed during the course of the survey using the fishing vessel observation log provided.

VESSELS OPERATING STATIC GEAR:

In the event that static gear vessels, or set gear such as pots or nets, are encountered during offshore survey works, all appropriate measures should be taken to avoid interaction with gear.

VESSELS OPERATING TOWED GEAR:

In the event that fishing vessels towing submerged gear are encountered, the skipper should immediately notify the vessel of his presence and ensure that the appropriate distance is kept from the vessel at all times. It should be noted that submerged towed gear typically extends to a distance of up to 5-6 times water depth. Furthermore, beam trawlers may be towing two nets from outrigger beams.

ACCIDENT AND INCIDENT REPORTING PROCEDURES

In the event of conflict with fishing gears or fishing vessels:

- Immediately contact the personnel listed below
- Make note of the position of the incident/ accident and record any additional information that may be relevant

CONTACT DETAILS

Please use the following contact details:

SFF SERVICES: Michael Sutherland: M.Sutherland@sff.co.uk: 07803894733: John Watt: J.Watt@sff.co.uk: 07876450496

FISHING INDUSTRY REP: FIR to be filled in on a site by site basis

COMPANY LIAISON OFFICER: Brown and May Marine Ltd: Josephine@brownmay.com: 07715994134

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Guidelines for an Offshore Fisheries Liaison Officer (OFLO)

General

- An onboard FLO should be familiar with all fishing methods employed in the local area and have experience of fishing in the area.
- The onboard FLO is required to have valid offshore medical and sea survival certificates.

The onboard FLO will be directed by the developer representative onboard/ CFLO as to his duties onboard the vessel. The duties should include, but may not necessarily be restricted to the information listed below.

Provision of information

The onboard FLO should broadcast in the morning, evening and at other times, as required, on the relevant VHF and MF frequencies specifically used by fishing vessel skippers the following information:

- Name and call sign of the vessel
- Course, speed and details of the vessel
- Vessel VHF working frequency and mobile number
- If required, warning to fishing vessels to keep clear
 - Area astern, ahead and abreast of the vessel where operations are taking place
 - Any equipment that is being deployed or towed
 - Safe distance from the vessel
 - A warning to fishing vessels of any exclusion zones which have been established

Log maintenance

The onboard FLO should maintain a log of all contacts made with fishing vessels observed in the area of operations. The log should include:

- Date and time
- Name of the vessel
- Vessel registration number
- Latitude and longitude of the vessel on which the onboard FLO is positioned
- The distance and bearing of the sighted vessel from the vessel on which the onboard FLO is positioned
- The type of fishing being pursued
- Accurate record of all communications between the onboard FLO and sighted vessel
- Photographs of the sighted vessel should be taken where possible

The onboard FLO should also maintain a log of gear markers observed in the area of operations. The log should include:

- Date and time
- Latitude and longitude of the vessel which the onboard FLO is on

- The distance and bearing of the gear marker from the vessel on which the onboard FLO is positioned
- Description of the gear marker e.g. dhan with single black flag
- Type of fishing being pursued, if known
- Who owns the gear, if known
- Photographs of the gear marker should be taken where possible

Regular reporting

The onboard FLO should report immediately to the developer representative onboard and CFLO the name of any fishing vessel not cooperating with or adhering to the onboard FLO's instructions or advice. The name of the vessel and other details mentioned above should also be logged. During communications with the vessel in question the onboard FLO should remain professional at all times.

Confidentiality

The onboard FLO should ensure that the confidentiality of ongoing operations is maintained and that only sufficient information regarding the operation is passed to fishing vessel skippers.

Liability

The onboard FLO should not admit any liability on behalf of the developer in respect to any claim for compensation made by a fishing vessel skipper for whatever reason. Any claim should be reported to the developer representative onboard and CFLO at the earliest opportunity.

Fishing Liaison

Liaise with any fishermen that have gear (e.g. pots, nets or other static gear) in the area of operations and, if required, advise them in sufficient time to allow them to recover their gear. The date and time, advice, and details of the gear recovered should be logged. Any gear observed in the path of the contractor's vessel should be reported immediately to the contractor vessel skipper, developer representative onboard, CFLO and attempts should be made to contact the fishing vessel to which the gear belongs.

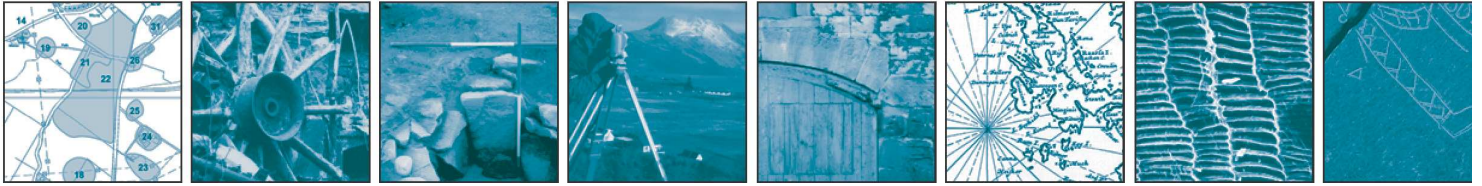
Other

- Establish a good rapport/ working relationship with the personnel onboard the contractor's vessel and other vessel being used in the operation.
- Establish a reporting relationship with all parties so ensuring the accurate exchange of information.
- Minimise the time spent on VHF and other methods of communication by ensuring the efficient exchange of information.
- Log everything!
- Report any problems encountered to the developer representative onboard and CFLO at the earliest opportunity.

Appendix 4 Archaeology Written Scheme of Investigation

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Client: Moray Offshore Renewables Ltd.
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Headland Project Code: MAOW10
Date: September 2010



MORAY ZONE OFFSHORE WIND FARM

GEOTECHNICAL & SAMPLING GUIDANCE AND PROTOCOL FOR ARCHAEOLOGICAL DISCOVERIES

DRAFTv.1

TERMS & DEFINITIONS IN THE GEOTECHNICAL GUIDANCE AND FINDS PROTOCOL

MORL: The Development Project Client.

Site Champion: The Site Champion is the Contractor's senior representative accompanying each works vessel.

Nominated Contact: The Nominated Contact is the scheme representative nominated by MORL.

Archaeological Consultant: The nominated archaeological consultant is Headland Archaeology Ltd who is retained by MORL.

Contractor: The main contractor responsible for any intrusive pre-installation survey or installation of the scheme.

Preliminary Record: the Preliminary Record provides a record of the occurrence for archaeological discoveries on the seabed, and on the deck of the vessel.

Sub-sea equipment: This includes all equipment used at all stages of a development such as geotechnical survey equipment and those used during construction activities.

Historic Scotland: is the statutory body for archaeology and heritage within Scotland including marine archaeology in territorial waters adjacent to the Scottish coast up to the mean high water mark and to 200nm as advisors to Marine Scotland as the licensing body for marine development adjacent to Scottish waters.

Royal Commission on the Ancient Historic Monuments of Scotland (RCAHMS): The Royal Commission on the Ancient and Historical Monuments of Scotland has a leading national role in developing and promoting understanding of the archaeological, built and maritime heritage of Scotland, as the originator, curator and supplier of authoritative information for individual, corporate and governmental decision makers, researchers, and the general public.

Receiver of Wreck: the Receiver of Wreck has become a centralised function, dealing with all reports of wreck from around the UK. It is based within the Maritime and Coastguard Agency headquarters in Southampton, with assistance from Coastguard personnel around the coast.

SUMMARY

The following document has been presented to Moray Offshore Renewables Ltd. by Headland Archaeology (UK) Ltd. as the retained marine archaeological advisor in connection with the Moray Zone Offshore Wind Farm. The document aims to provide:

1) Guidance for geotechnical and sample storage as a result of pre-development survey works in connection with archaeological assessment and sampling; and

2) a draft Protocol for Archaeological Discoveries (PAD) setting out best practice in the reporting of finds of archaeological interest during all stages of the development. It is understood that the PAD is presented as a 'working' draft and will be reviewed and developed during the course of the development, particularly in light of the Crown Estate's (TCE) Protocol document currently in its final draft (as of September 2010).

1 GEOTECHNICAL AND SAMPLE STORAGE GUIDANCE NOTES

1.1 INTRODUCTION

1.1.1 The following document is designed to provide guidance for the taking of borehole and benthic “grab” samples during the proposed Moray Zone Offshore Wind Farm sedimentological investigations in the Moray Firth. It is intended to raise awareness of the types of materials which may be recovered during sampling and the importance of these to palaeoenvironmental and archaeological studies. The document also provides supporting information on how to correctly store materials of archaeological and palaeoenvironmental interest, in accordance to guidelines produced by English Heritage (2002, 2010).

1.1.2 It is possible that during coring and benthic sampling a range of archaeological and palaeoenvironmental materials may be recovered. Palaeoenvironmental materials may include waterlogged organics from deposits of peat to large wooden timbers such as former trees now present as submerged forests. These deposits and materials are important as they offer us an opportunity for the reconstruction of former terrestrial (peats) environments through the analysis of microfossil (e.g. pollen and spores) and macrofossil (e.g. seeds and insect analysis) evidence. Waterlogged wood from former trees (e.g. submerged forests) offer a unique opportunity to analyse the *original* woodland from thousands of years ago through analyses such as tree species identification and dendrochronology (the study of tree-rings). The importance of such deposits and materials for palaeoenvironmental study is well recognised (English Heritage, 2002, 2007).

1.1.3 Materials of a more artefactual and hence archaeological nature may also be recovered from benthic sampling including: lithic artefacts (e.g. flint tools) and pottery fragments, together with potential ship timbers. The recovery and subsequent analysis of such items will be able to inform us of potentially previously unknown archaeological sites such as ship wrecks and prehistoric occupation sites. The latter is of particular interest in areas of drowned landscapes (former terrestrial areas now covered from relative sea-level rise) with sampling of this nature representing one of the few ways for the recovery of materials from and hence discovery of such sites. This is particularly pertinent in light of recent work done in submerged landscapes such as that of the prehistoric site of Doggerland (e.g. Gaffney *et al*, 2009).

1.1.4 Faunal and human bone may also be found during benthic sampling. Any recovered bone fragments (burnt and unburnt) have the potential to inform us about former populations who inhabited the area. The analysis of human bone (oste archaeology) can provide detail on sex, age and any trauma suffered by the individual. Isotopic analysis of bone and in particular teeth can also provide information on the diet and movement of the individual during their lifetime. Any human bone recovered will be recorded in accordance with English Heritage guidelines (English Heritage, 2004). Animal bone can also be analysed enabling us to glean information on the species present and whether they may also show evidence for butchery or gnawing, which can give data on how they may have died and/or how their remains were used. Any animal bone recovered will be also be recorded in accordance with English Heritage guidelines (English Heritage, 2002).

1.1.5 A full list of materials which may be of archaeological significance is provided in Appendix B.

1.1.6 In terms of this study we will be aiming to ultimately synthesise the results of any material recovered and recorded from the benthic sampling with the results of the borehole

study. The geoarchaeological study of the borehole samples (including sedimentological and pollen data) will enable the reconstruction of former landscape change of the study area and will thus provide an environmental context for any archaeological materials recovered. The borehole data will also enable us to comment on changes to relative sea-level from this area, which can then be compared and contrasted against more regional studies (e.g. Haggart, 1987).

1.2 GUIDANCE NOTES

1.2.1 The below section offers some further information on the correct storage of core samples together with waterlogged wood samples and are in accordance with English Heritage guidelines (2002, 2010).

Sample storage for collected core samples:

- Make sure all samples are correctly labelled with: location, borehole number, sample depth and top and bottom.
- Make sure all samples if opened (presuming sleeved samples have been taken) are wrapped using cling film.
- Make sure all samples are stored either in a cool dark room, preferably a cold room or refrigerator (or chest freezer if possible).

1.2.2 Any wooden objects or timbers recovered should be treated as samples until their provenance can be verified by a relevant specialist. Such objects may include timbers of unknown ship wrecks, wooden fish traps, and worked wood from trackways together with individual wooden objects. Therefore the following guidelines should be carried out in relation to the recovery of such objects in accordance with those set-out by English Heritage (2010).

Sample storage for waterlogged wood finds:

- The co-ordinates of any worked wood found should be recorded so that it can be related back to the location of any potential archaeological feature, such as a wreck, a trackway or possible occupation site.
- For worked wood a worked wood recording sheet should also be completed to glean as much information as possible in the field – this can be completed by the Environmental Archaeologist following recovery.
- The wood should be wrapped in cling film and placed into a sample/zip-locked bag with water, to stop the wood from drying out.
- The sample bag should be clearly labeled with *wood sample* together with location, sample number and depth recorded (e.g. 5cm).
- Any particularly fragile wooden objects should be placed into bags, which are then stored in rigid plastic boxes to prevent damage.
- Any timbers recovered which are too large to be placed in bags should be wrapped in cling film, labeled and placed into a large plastic tub filled with water, which will act as a wood tank.
- It is imperative that all wood is kept wet and not allowed to dry out to prevent shrinkage, warping and degradation of the wood.
- All wood should then be stored in a cool, dark area or ideally a cold room or fridge.
- All waterlogged wood samples should be recorded on a sample register to maintain an archive for the collected artefacts.

REFERENCES

English Heritage (2002) *Centre for Archaeological Guidelines: Environmental Archaeology a guide to the theory and practice of methods, from sampling and recovery to post-excavation*. English Heritage.

English Heritage (2004) *Centre for Archaeological Guidelines: Environmental Human bones from archaeological sites guidelines for producing assessment documents and analytical reports*. English Heritage.

English Heritage (2007) *Geoarchaeology. Using earth sciences to understand the archaeological record*. English Heritage.

English Heritage (2010) *Waterlogged wood. Guidelines on the recording, sampling, conservation and curation of waterlogged wood*. English Heritage.

Gaffney V. Fitch S. and Smith D. (2009) *Europe's lost word: the rediscovery of Doggerland*. Council for British Archaeology Research Reports.

Haggart B.A. (1987) Relative sea-level changes in the Moray Firth area, Scotland, in Tooley M.J. and Shennan L. (eds.) *Sea-level Changes*. Blackwell, Oxford. 67-108

Wish list for what the Geoarchaeologist / Environmental Archaeologist will need during the study

- Location of borehole transects
- Number of boreholes to be taken
- Maximum number of samples we are likely to be able to take.
- Up to date access to borehole logs/records/recording sheets and sample registers.

2 PROTOCOL FOR ARCHAEOLOGICAL DISCOVERIES

2.1 SCOPE

5.1.1 The Protocol for Archaeological Discoveries (PAD) sets out best practice in the reporting of finds of archaeological interest based on TCE's current draft document (Crown Estate 2010) and Aggregates Levy Sustainability Fund (ALSF) guidance prepared for the aggregates industry (Wessex Archaeology 2005). The principles that are set out here are intended to address archaeological mitigation measures in connection with all intrusive activity at all stages of the development including pre-development geotechnical survey (eg. coring and benthic sampling).

2.1.2 The responsibility for implementing this PAD rests with MORL and their appointed contractors. MORL will also be responsible for drawing third party attention to the requirements of this PAD, where their operations are undertaken externally to the main scheme contract. In these instances, the Contractor in charge is encouraged to ensure third party compliance with the requirements of the PAD, so far as is possible under the specific contractual arrangements in place.

2.2 TYPES OF FIND

2.2.1 'Finds' are considered here to mean all forms of artefact that can be found on the seabed. To be an artefact, the item must have been made, modified, used or transported by people; i.e. their presence on the seabed is 'artificial' or 'cultural' rather than 'natural'. In addition, a find may also include deposits of potential palaeoenvironmental interest recovered during intrusive geotechnical survey operations. This material may help to establish the nature of past environments our predecessors inhabited. Guidelines on the identification of finds of archaeological interest are presented in Appendix B.

2.2.2 For sites or finds of archaeological interest discovered in UK waters (12 nautical miles to 200nm), principles of 'best practice' for the protection of archaeological remains should apply in line with international legislation and guidance such as:

- the United Nations Convention on the Law of the Sea 1982 (UNCLOS 1982) which provides international protection of archaeological and historical objects located on the seabed (ratified by the UK in 1997);
- the ICOMOS Charter (1996) on the Protection and Management of Underwater Cultural Heritage, which aims to encourage the protection and management of underwater cultural heritage in inland, nearshore and offshore waters. The Charter provides decision makers, such as curators, and archaeologists with criteria for the management of archaeological projects and is important as a statement of international 'best practice' for the investigation of underwater cultural heritage;
- the Valletta Convention which was ratified by the UK Government in 2000 and came into force in 2001. The convention binds the UK to implement protective measures for the archaeological heritage within the jurisdiction of each party, including marine areas. Insofar as the UK exerts jurisdiction over the Continental Shelf, then it would appear that the provisions of the Valletta Convention apply to that jurisdiction; and
- the UNESCO Convention on the Protection of the Underwater Cultural Heritage 2001 (UNESCO 2001) provides an international legal framework to regulate underwater cultural heritage in domestic and international waters. The Convention is not currently ratified by the UK Government, but the Annex outlining rules and standards for

conducting archaeological investigations is accepted by UK Government as 'best practice'

2.3 CIRCUMSTANCES OF DISCOVERY

2.3.1 This Protocol addresses finds of archaeological interest made in the following circumstances:

- **Discoveries on the seabed during sea-bed inspections, seabed clearance or scheme installation**

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

- **Discoveries on board**

A find of archaeological interest is made on a works vessel, for example wreck or objects caught in equipment such as grapnels, anchors, ploughs or recovered to the deck as part of geotechnical sampling.

2.4 ROLES & PROCEDURES

2.4.1 This Protocol anticipates discoveries being made by Project Staff, who report to the **Site Champion** (Client Representative appointed by MORL), who then reports to the **Nominated Contact** (nominated by MORL). The **Nominated Contact** will liaise with an appointed **Archaeological Consultant** (Headland Archaeology (UK) Ltd.) to offer advice and determine the nature of appropriate action and whether to contact **Historic Scotland**. The archaeological consultant will also brief the **Site Champion** on the types of archaeological finds and features.

NB/ It is noted here that once the Implementation Service (IS) has been established the IS will undertake their duties in liaison with the Archaeological Consultant (and Nominated Contact for the Development Client) throughout the process.

2.4.2 MORL will draw the attention of all relevant staff to the potential for archaeological material to be found in the course of any geotechnical survey or scheme installation activities, and inform them of the possible importance of such finds. Key operational staff will be briefed on the operation of the PAD.

- **SITE CHAMPIONS**

The **Nominated Contact** will, for any vessel involved in intrusive survey activities or during construction identify a **Site Champion** to act as a first point of contact for staff, and to liaise with the **Nominated Contact** in respect of the operation of the PAD at that site. It is proposed that the **Site Champion** will be the Client Representative (or the contractor's senior representative) on board the works vessel. **Site Champions** will be issued with a series of **Flow Charts** (see Appendix A) setting out the actions to be taken when they are told about a discovery either on the seabed or on the deck of the vessel.

- **NOMINATED CONTACT**

A representative from MORL will provide the point of contact for all communications regarding archaeological discoveries, and will be referred to as the **Nominated Contact**. The **Nominated Contact** will be issued with a copy of this document.

- **ARCHAEOLOGICAL CONSULTANT**

The nominated **Archaeological Consultant** (Headland Archaeology Ltd.) will be the initial point of contact for MORL's **Nominated Contact**. They shall:

- Brief the **Site Champion** on the nature of archaeological finds and features and appropriate measures for interim conservation and safe storage;
- Advise on the identification of finds and features and, if possible, the character of their seabed locations;
- Advise on material conservation of any recovered finds;

NB/ As noted above, once the IS has been established the IS will undertake their duties in liaison with the Archaeological Consultant (and Nominated Contact for the Development Client) throughout the process.

- **HISTORIC SCOTLAND**

Historic Scotland is the statutory body for archaeology and heritage within Scotland including marine archaeology in territorial waters adjacent to the Scottish coast up to the mean high water mark and out to 200 nautical miles in UK waters. In the event that the **Archaeological Consultant** considers it necessary, **Historic Scotland** will be informed. Historic Scotland will:

- Liaise with other relevant archaeological authorities;
- Advise on proposals to further evaluate any finds;
- Advise on proposals to mitigate the effects of works activities upon any finds.

2.5 DISCOVERIES ON THE SEABED AND ON THE DECK OF A WORKS VESSEL

2.5.1 The following presents the actions to be taken in the event of an archaeological discovery during all stages of the development. Actions are also presented in the event of an archaeological discovery made on the deck of a works vessel after the retrieval of sub-sea equipment (including geotechnical sampling equipment). The Preliminary Record Sheets and Flow Charts illustrating the actions to be followed are presented in Appendix A.

- **ACTIONS BY PROJECT STAFF**

If a find or anomaly indicates that an object or structure has been encountered on the seabed or on the deck of a vessel, the **Site Champion** (senior representative of the Contractor) will be informed by project staff. The **Site Champion** will arrange for sub-sea gear to be examined as soon as possible to see if any archaeological material is recovered with it.

- **ACTIONS BY THE SITE CHAMPION**

Where it is possible to identify the position from which the find originated, the **Site Champion** will arrange for a **Temporary Exclusion Zone (TEZ)** in which construction activities will cease temporarily in the vicinity of the location, or move to an alternate location, until the advice of the **Archaeological Consultant** has been obtained. The feedback and advice of the **Archaeological Consultant** will be provided within a suitable timescale to fit the nature of the development activity.

The **Site Champion** shall note the occurrence as soon as possible in the Daily Progress Report or vessel log together with the time and exact vessel position. Where possible, the report entry should include a close approximation of the original position of the anomaly on the seabed. Additionally, the **Site Champion** shall ensure that the area, if possible, shall be marked on navigational software / site drawings / surveys. The **Site Champion** shall compile a **Preliminary Record** of the occurrence both for discoveries on the seabed and on the deck of the vessel.

The **Site Champion** shall inform the **Nominated Contact** of the occurrence as soon as possible and pass on all available information, including a copy of the **Preliminary Record** and copies of any photographs, drawings or other records that have been made. If any finds have been recovered, the **Site Champion** shall arrange for them to be immersed in seawater in a suitable clean container, which should be covered. Any rust, concretion or marine growth should not be removed. The flow charts in Appendix A present the procedures to be followed in the event of a discovery.

2.6 ACTIONS FOLLOWING DISCOVERIES

The following presents the actions to be taken following any archaeological discoveries.

- **ACTIONS BY NOMINATED CONTACT & SITE CHAMPION**

Once informed of a find by a **Site Champion**, the **Nominated Contact** will confirm with the **Site Champion** that all the details set out in the **Preliminary Record** are comprehensive and correct. The **Nominated Contact** shall ensure that any find is appropriately assessed and documented by the **Archaeological Consultant** and if deemed necessary reported to **Historic Scotland**.

- **CONTACT ARCHAEOLOGICAL CONSULTANT**

The **Nominated Contact** will approach the **Archaeological Consultant (in lieu of the IS)** who will offer advice on the nature of any discoveries and appropriate action to be taken.

- **CONTACT HISTORIC SCOTLAND**

In the event that the **Archaeological Consultant** considers it necessary, **Historic Scotland** will be informed by the **Archaeological Consultant** for further advice. All available information relating to the circumstances of the occurrence, including a copy of the **Preliminary Record** and copies of any photographs, drawings or other records that have been made will be made available to **Historic Scotland**.

Historic Scotland should be contacted through its Marine Inspector, as follows:

Senior Inspector of Marine Archaeology

Historic Scotland
Longmore House
Salisbury Place
Edinburgh
Tel: 0131 668 8843
E-mail: philip.robertson@scotland.gsi.gov.uk

- **ADVISE OTHER TEAMS/VESSELS WORKING ON THE SITE**

Where relevant, the **Site Champion** shall inform other vessels working in the area from which the find is thought to have been recovered. Such other vessels shall be advised by the **Nominated Contact** to keep a particular watch for anomalies and finds.

- **FINDS RECOVERED BEYOND THE 12 NAUTICAL MILE LIMIT**

In line with 'best practice' for the reporting of any archaeological discoveries the same procedure for reporting any archaeological discoveries should be followed outwith the 12 nautical mile limit to 200 nautical miles (Continental Shelf).

3 REPORTING AND ARCHIVING

3.1.1 Each element of work will give rise to one or more reports. On completion of installation, a final archaeological report will also be prepared to synthesise the results of the various investigations. The final archaeological report will address the following themes:

- Maritime sites and finds;
- Palaeo-environmental and prehistoric archaeology; and

3.1.2 If significant archaeological sites and finds are recorded then this final report will be preceded by an assessment report that establishes the value of the recorded archaeology and provides a costing for analysis, publication and archiving (including deposition of archive). Decisions regarding the level of publication required will be taken following consultation with Historic Scotland.

3.1.3 Reference to all archeological assessment work will be made in the summary report which will consolidate the key results of the archaeological assessment undertaken upon completion of the project.

4 FEFERENCES

Crown Estate 2010 *Round 3 Offshore Renewables Projects Protocol for Archaeological Discoveries (Draft Document Ref. 73830.03)*

Wessex Archaeology 2005 *Protocol for reporting finds of archaeological interest* BMPA, English Heritage

APPENDIX A: PRELIMINARY RECORD SHEETS & FLOW CHARTS

Example of Preliminary Record sheet for discoveries on the seabed and on board

Discoveries on the Seabed / Onboard: Preliminary Record

Vessel Name:

Working Area:

Date:

Time of compiling information:

Name of compiler (Site Champion):

Name of Officer on Watch:

Name of finder (if different to above):

Time at which anomaly encountered:

Vessel position at time when anomaly was encountered:

Original position of the anomaly on the seabed:

Notes on likely accuracy of original position stated above:

Description of the find/anomaly:

Apparent extent of the anomaly:

Details of examination of gear:

Details of any find(s) recovered:

Details of photographs taken of the find(s):

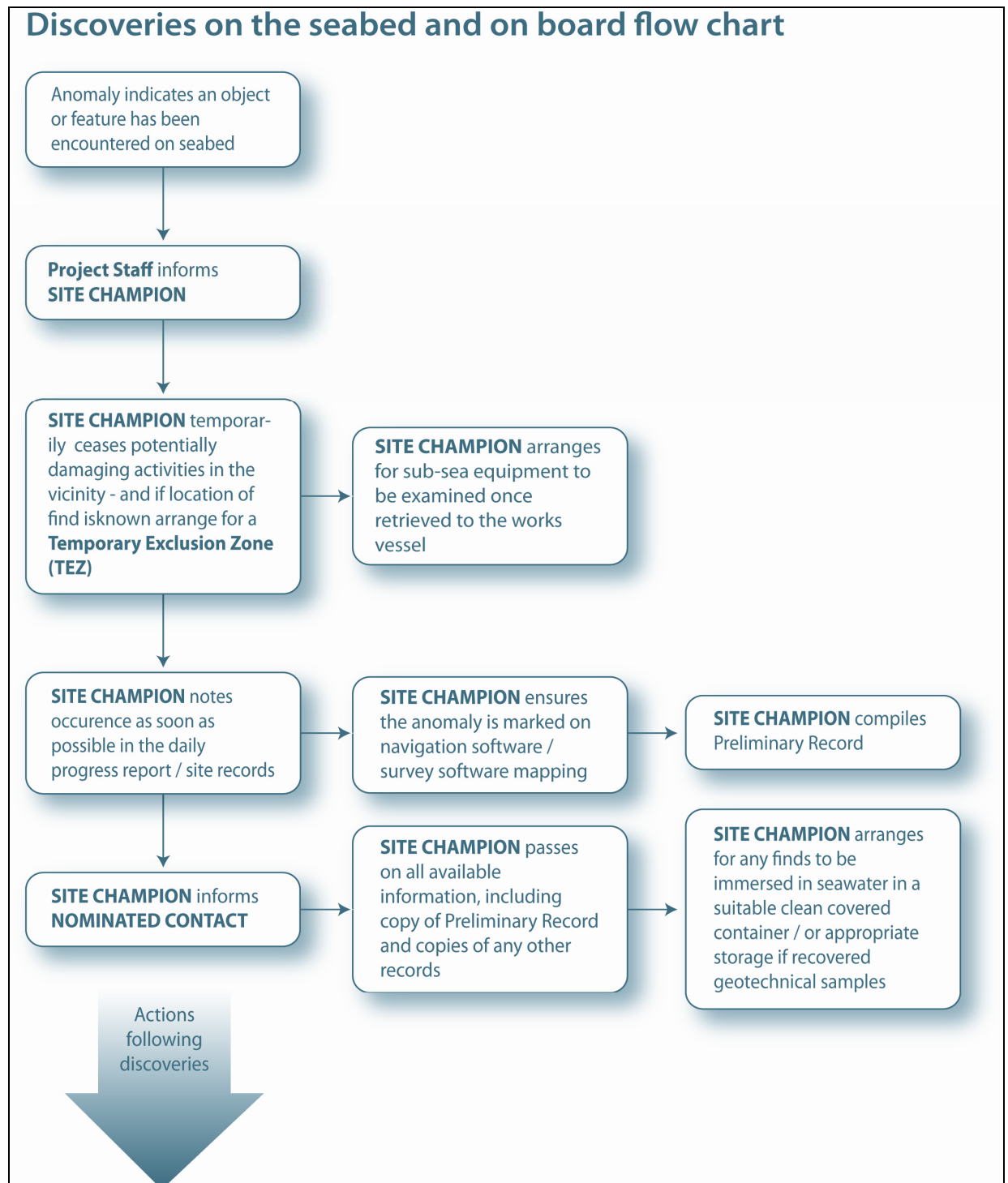
Details of any drawings or other records made of the find(s):

Details of treatment given to any recovered find(s):

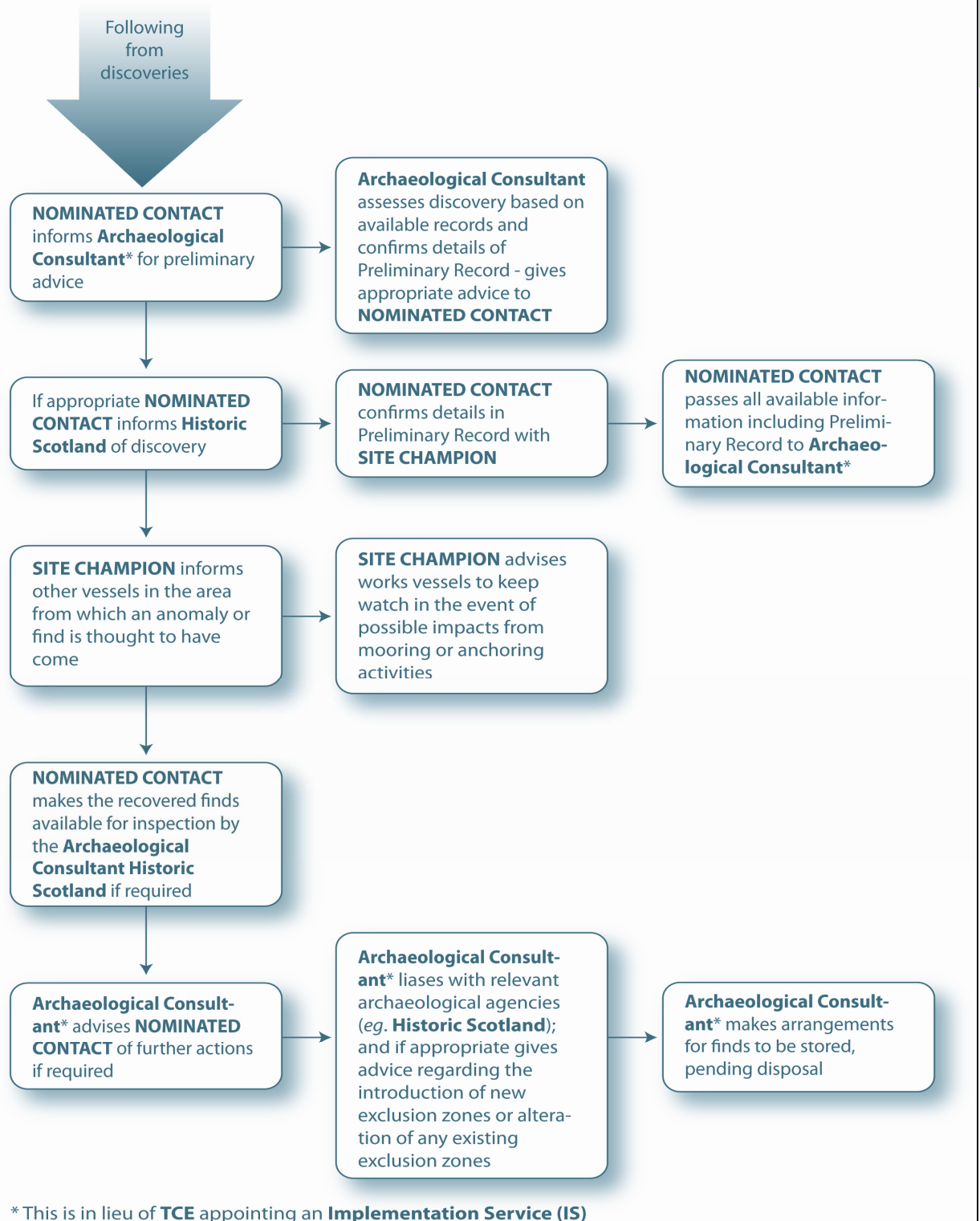
Any other notes:

Date and time at which Nominated Contact informed:

The flow charts below present the procedures to be followed for discoveries on the seabed and on the deck of a vessel; and actions following discoveries.



Actions following discoveries flow chart



APPENDIX B: GUIDELINES FOR IDENTIFYING FINDS OF ARCHAEOLOGICAL INTEREST (from the Crown Estates (draft Ref. 73830.03) and ALSF finds protocol and guidelines)

RUBBER, PLASTIC ETC.

In most cases, rubber, plastic, bakelite and similar modern materials are not of archaeological interest and can be disregarded. One exception is where such materials are found in the same area as aluminium objects and structures, which may indicate aircraft wreckage from World War Two. Such material should be reported.

IRON AND STEEL

The potential range and date of iron and steel objects is so wide that it is difficult to provide general guidance. In broad terms, iron and steel objects which are covered by a thick amorphous concrete-like coating ('concretion') are likely to be of archaeological interest and should be reported. Pieces of metal sheet and structure may indicate a wreck and should be reported. A Munitions Code of Practice applies in respect of ordnance (cannonballs, bullets, shells) which should take precedence over archaeological requirements. However, discoveries of ordnance may be of archaeological interest, and they should be reported.

OTHER METALS

Items made of thin, tinned or painted metal sheet are unlikely to be of archaeological interest. Aluminum objects may indicate aircraft wreckage from World War Two, especially if two or more pieces of aluminum are fixed together by rivets. All occurrences should be reported. Copper and copper alloy (bronze, brass) objects might indicate a wreck, or they may be very old. All occurrences should be reported. Precious metal objects and coins are definitely of archaeological interest because they are relatively easy to date. All occurrences should be reported.



A variety of metal objects such as a coin and brooches

BONE

Occasional discoveries of animal bone, teeth and tusks are of archaeological interest because they may date to periods when the seabed formed dry land, and should be reported. Such bones, teeth, tusks etc. may have signs of damage, breaking or cutting that can be directly attributed to human activity. Large quantities of animal bone may indicate a wreck (the remains of cargo or provisions) and should be reported. Human bone is definitely of

archaeological interest, and is also subject to special legal requirements under the Burial Act 1857. Any suspected human bone should be reported, and treated with discretion and respect. Objects made out of bone – such as combs, harpoon points or decorative items – can be very old and are definitely of archaeological interest. All occurrences should be reported.



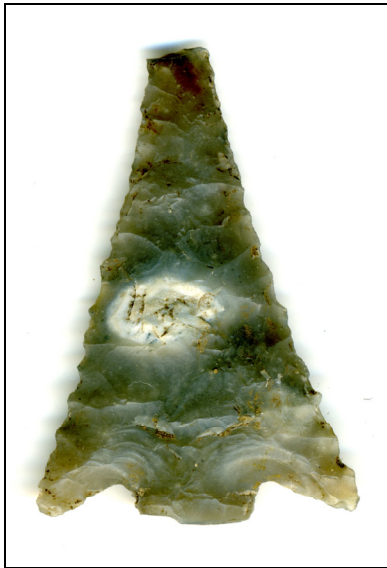
Assortment of animal bone fragments

WOOD

Light coloured wood, or wood that floats easily, is probably modern and is unlikely to be of archaeological interest. 'Roundwood' with bark – such as branches – is unlikely to be of archaeological interest. However, roundwood that has clearly been shaped or made into a point should be reported. Pieces of wood that have been shaped or jointed may be of archaeological interest, especially if fixed with wooden pegs, bolts or nails. All occurrences should be reported. Objects made out of dark, waterlogged wood – such as bowls, handles, shafts and so on – can be very old and are definitely of archaeological interest. All occurrences should be reported.

STONE

Small to medium sized stones that are shaped, polished and/or pierced may be prehistoric axes. All occurrences should be reported. Objects such as axe heads or knife blades made from flint are of prehistoric date and should be reported. Large blocks of stone that have been pierced or shaped may have been used as anchors or weights for fishing nets. All occurrences should be reported. The recovery of numerous stones may indicate the ballast mound of a wreck, or a navigational cairn. All occurrences should be reported.



Flint arrowhead



Polished stone axe

POTTERY

Any fragment of pottery is potentially of interest, especially if it is a large fragment. Items which look like modern crockery can be discarded, but if the item has an unusual shape, glaze or fabric it should be reported.



Ginger beer bottles

BRICK

Bricks with modern proportions and v-shaped hollows ('frogs') are of no archaeological interest. Unfrogged, 'small', 'thin' or otherwise unusual bricks may date back to medieval or even Roman times and should be reported.



Brick with mortar attached

PEAT & CLAY DEPOSITS

Peat is black or brown fibrous soil that formed when sea level was so low that the seabed formed marshy land, on the banks of a river or estuary for example. The peat is made up of plant remains, and also contains microscopic remains that can provide information about the environment at the time it was formed. This information helps us to understand the kind of landscape that our predecessors inhabited, and about how their landscape changed. It can also provide information about rising sea-level and coastline change, which are important to understanding processes that are affecting us today. Prehistoric structures (such as wooden trackways) and artefacts are often found within or near peat, because our predecessors used the many resources that these marshy areas contained. As these areas were waterlogged, and have continued to be waterlogged because the sea has risen, 'organic' artefacts made of wood, leather, textile and so on often survive together with the stone and pottery which are found on 'dry' sites.

Fine-grained sediments such as silts and clays are often found at the same places as peat. These fine-grained sediments also contain the microscopic remains that can provide information about past environments and sea level change. Any discoveries of such material would be of archaeological interest, and their occurrence should be reported.

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