



Scottish & Southern
Electricity Networks

BUTE CUMBRAE CABLE INSTALLATION CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

BMC Ref: CB0144-1010

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Amendment Register

Revision	Date	Issued by	Approved by	Amendments
1.0	29/08/2018	Michael Moore	Andrew Kinninmonth	
2.0	19/09/2018	Martin Black	Andrew Kinninmonth	Client comments
3.0	26/09/2018	Martin Black	Andrew Kinninmonth	Client comments
4.0	02/10/2018	Martin Black	Andrew Kinninmonth	Amend PLGR
5.0	05/10/2018	Martin Black	Andrew Kinninmonth	Client comments

Abbreviations

Abbreviation	Definition
BMC	Briggs Marine Contractors – Principal Contractor
BWE	Ballast Water Exchange
BWM	International Convention for the Control and Management of Ships' Ballast Water and Sediments
BWMP	Ballast Water Management Plan
CAR	Controlled Activities Regulations (Scotland)
CEMP	Construction Environmental Management Plan
CFE	Controlled Flow Excavation
CFLO	Company Fisheries Liaison Officer
CiFA	Chartered Institute for Archaeologists
CIRIA	Construction Industry Research and Information Association
CLV	Cable Lay Vessel
COSHH	Care of Substances Hazardous to Health
DDV	Drop Down Video
DPR	Daily Progress Report
DSV	Dive Support Vessel
ECOW	Environmental Clerk of Works
EMF	Electromagnetic fields
EPS	European Protected Species
FIR	Fishing Industry Representative
FLMAP	Fisheries Liaison and Mitigation Action Plan
FMMS	Fisheries Management and Mitigation Strategy
GPP	UK Guidance for Pollution Prevention
GRT	Gross Register Tonnage
HAZID	Hazard Identification
HES	Historic Environment Scotland
HMPA	Historic Marine Protection Area
HSE	Health, Safety and Environment
HVAC	High Voltage Alternating Current
ICPC	International Cable Protection Committee
IMDG	International Maritime Dangerous Goods Code
IMO	International Maritime Organisation
INNMS	Invasive Non-Native Marine Species
ISM	International Safety Management
IUCN	International Union for the Conservation of Nature
JNCC	Joint Nature Conservation Committee
MARPOL	Marine Pollution
MCA	Marine Consultation Area
MGO	Marine Gas Oil
MHWS	Mean High Water Spring
MLWS	Mean Low Water Spring
MMO	Marine Mammal Observer

MMPP	Marine Mammal Protection Plan
MPA	Marine Protected Area
MRCC	Maritime Rescue Coordination Centre
MSDS	Material Safety Data Sheet
MS-LOT	Marine Scotland Licensing Operations Team
NLB	Northern Lighthouse Board
NMP	National Marine Plan
NTM	Notice to Mariners
OoS	Out of Service
OSPAR	The Convention for the Protection of the Marine Environment of the North-East Atlantic
PAM	Passive Acoustic Monitor
PLGR	Pre-Lay Grapple Run
PMF	Priority Marine Feature
ROV	Remotely Operated Vehicle
RPL	Route Position List
SAC	Special Area of Conservation
SEPA	Scottish Environmental Protection Agency
SHE	Safety, Health & Environment
SHEPD	Scottish Hydro Electric Power Distribution
SNH	Scottish National Heritage
SOPEP	Shipboard Oil Pollution Emergency Plan
SPA	Special Protection Area
SPP	Scottish Planning Policy
SSEN	Scottish & Southern Energy Networks - Client and Principle Designer
SSSI	Site of Special Scientific Interest
UKBAP	United Kingdom Biodiversity Action Plan
UKHO	United Kingdom Hydrographic Office
UNCLOS	The United Nations Convention on the Law of the Sea
UNESCO	The United Nations Educational, Scientific and Cultural Organisation
WEWS	Water Environment and Water Services
WFD	Water Framework Directive

1. INTRODUCTION

1.1. Introduction

Briggs Marine Contractors (BMC) have been contracted by Scottish and Southern Electricity Networks (SSEN) to survey, design and install a new cable between the islands of Bute and Great Cumbrae on the west coast of Scotland. Cumbrae is normally fed by two HVAC 11kV submarine cables from the Isle of Bute within the Clyde Estuary. Historically there were three submarine cables, but this was rationalised following the fault of the southern cable.

On the 26th February 2017, the Centre cable (Figure 1.ID 30) faulted leaving the island of Cumbrae supplied solely by the North cable (ID 77). Following cable failure and after fault testing, an ROV inspection was carried out to determine the cause of the failure and overall health of the cable. No point of failure or physical evidence was found during the cable inspection. As the cable had previously faulted and been repaired in 2014, the cause of the failure was concluded to be electrical related and attributed to the age of the circuit.

The remaining operational cable was installed in 1980 at a length of 4.62km and a maximum depth of approximately 100m. As this cable has exceeded SSEN's life expectancy, a decision was made to install a new cable.

Following assessment of the existing and alternative landing points by SSEN, the decision was made to relocate the replacement cable route further north. The new landing points are Kerrylamont Bay on Bute and Bell Bay on Cumbrae.

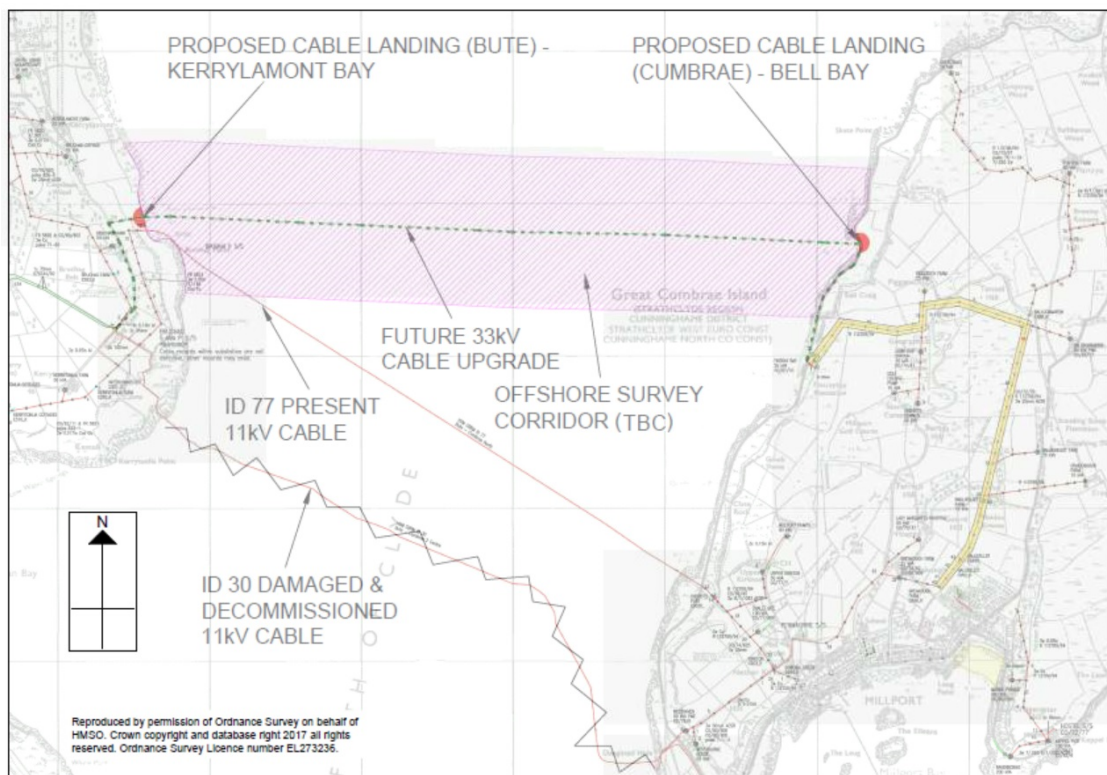


Figure 1- Location of Proposed Cable Route

1.2. Purpose

A CEMP sets out the controls and processes that are to be adopted to mitigate environmental impacts throughout the construction phase of a project and measures set out to comply with consent conditions. The CEMP is an iterative document that develops throughout the construction phase of a project.

This CEMP outlines the mitigation measures, monitoring and reporting procedures that have been incorporated into the design and installation of the replacement cable to prevent or reduce adverse environmental effects as much as possible. It covers all potential effects associated with installation of the cable and all works at the landfall occurring below Mean High Water Spring (MHWS). Given that the cable will be installed across the shore, management of potential impacts on the shore have also been considered.

The Marine Licence contains a variety of conditions that must be discharged through approval by Scottish Ministers prior to the commencement of any works covered by the Marine Licence. This includes the preparation, and approval of a CEMP, the purpose of which is to provide the overarching framework for on-site environmental management during the installation of the replacement cable. In addition, the cable will be installed considering the following:

- Relevant legislation;
- Relevant policies in the Scottish Marine Plan and pilot Clyde Marine Spatial Plan
- SSEN policies and procedures; and
- Findings of the assessments undertaken to support the Marine Licence application.

This CEMP sets out the proposed environmental management framework and procedures that will be followed by BMC during installation of the cable. This CEMP also provides an overview of, and cross references to, other relevant documents that require preparation and approval as a condition of the Marine Licence, such as the (Fisheries) Liaison and Mitigation Action Plan (FLMAP) and the Marine Mammal Protection Plan (MMPP).

1.3. CEMP Document Management

The CEMP will be a controlled document and will be formally issued to SHEPD's cable installation team and BMC. Live copies of the CEMP will be held at the following locations:

- SSEN Scottish head office;
- BMC head office
- All site offices dealing with marine operations;
- Onboard all principal vessels involved in offshore activities;
- With SHEPDs Supervisor for Offshore Works; and
- With SHEPDs Marine Consents Manager.

SHEPD will ensure that MS-LOT are provided with the most up to date copy of the CEMP.

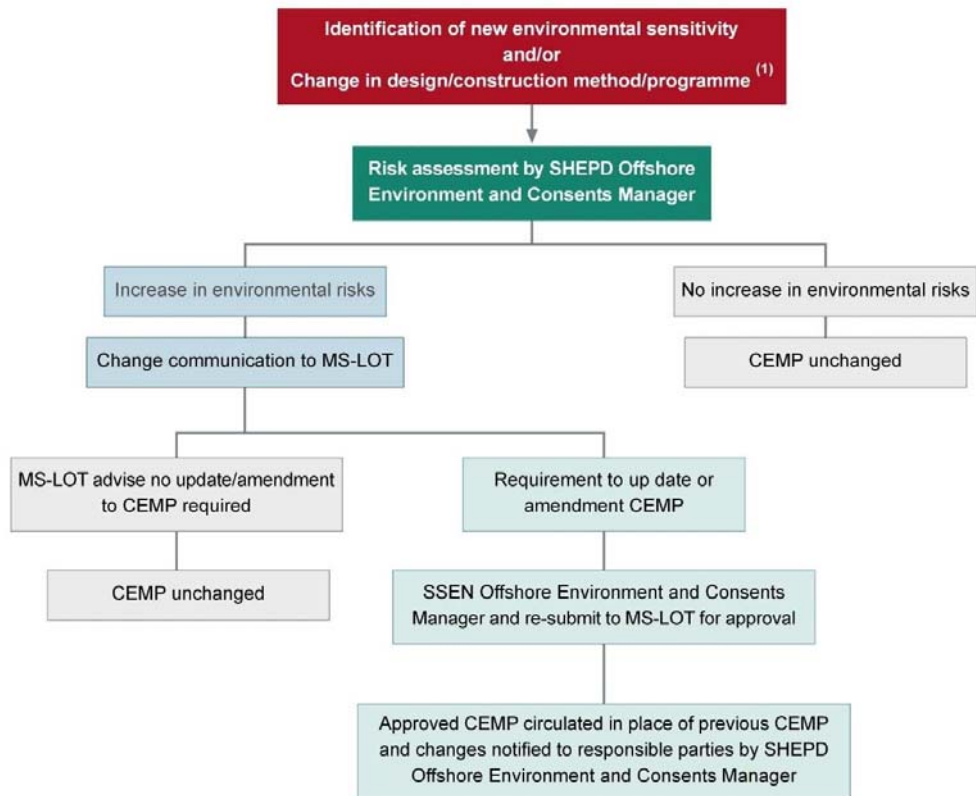
A register of document versions and issue dates will be maintained by BMC.

1.4. Document Control

If there are changes to the proposed installation methodology (e.g. that require additional management or mitigation measures or changes to measures already proposed), identification of new environmental sensitivities, or emergence of new guidance or legislative requirements etc. it may be necessary to update the CEMP.

Where updates to the CEMP are required, BMC will notify SHEPD of the proposed changes, and receive approval for the proposed changes from SHEPD, at least six weeks prior to the change event occurring. This is necessary to allow enough time for SHEPD to communicate the proposed changes to Scottish Ministers, amend the CEMP accordingly, seek further approval for the necessary amendments or updates, and disseminate the approved changes/amendments to responsible parties.

All changes to the CEMP will be managed through the change management process set out in Figure 2.



Note (1) - including a change in commitment that is lesser than that stated or could have an impact whether perceived or real, or a stakeholder or environmental feature

Figure 2: CEMP Change Management work flow

1.5. Document Linkages

This CEMP document sets out the proposed overarching environmental management framework to be applied during the project and forms part of a suite of approved documents that will provide the framework for environmental management of the project.

BMC will be aware of and comply with the following SSE documentation:

- Sustainability Policy (PO-COR-033);
- Environment and Climate Change Policy (PO-COR-054);
- Safety Health and Environmental Organisation Standard (MS-SHE-001);
- Business Unit SHE Requirements (SP-PS-LT-901);
- Safety, Health & Environment (SHE) Requirements Specification for Contracts (SP-SHE-009001 SSE);
- Responsible Procurement Charter (REF-PRS-004);
- Incident Reporting Management and Investigation Standard (MS-SHE-010); and
- SHE Communication, Reporting of SHE Incidents (REF-PS-SHE-COM-015).

BMC will manage project specific documentation through the Master Document Register (MDR) (CB0144-1001).

2. PROJECT DESCRIPTION

A new distribution submarine electricity cable is proposed to be laid on the seabed between MLWS on the Bute and Cumbrae coasts. The new cable will be laid along the route corridor utilising the best route for cable integrity over the life of the cable and to account for environmental and archaeological considerations. The new cable will have an outer diameter of 127 mm and will be installed from a Cable Lay Vessel (CLV). It will be installed within a consented corridor, which allows for any unforeseen difficulties that may arise during installation, to enable more scope for in-situ micro-routing during installation and to avoid sensitive environmental habitats or potential marine archaeology.

Before cable laying operations commence, it will be necessary to ensure that the route is free from obstructions such as discarded fishing gear and out of service cables. A suitably equipped vessel will complete a pre-lay grapnel run (PLGR) to remove such debris to ensure the safety of the installation team, the new subsea cable and other sea users.

During cable lay activities additional smaller support vessels will be required at each of the shallower shore locations; this is likely to be a multicat/DSV. This may require an anchoring system to be laid out prior to and during works in the nearshore region. In this instance, an anchor handling vessel may be required to lay out the anchors. A guard vessel is also likely to be used during the cable lay operations to ensure other vessels remain outside the area of operations to reduce collision risk.

Initially, the proposed submarine cable will be surface laid on the seabed across the length of the route. BMC plan to bury the cable along the entirety of the cable route utilising a controlled flow excavation technique protect the cable from anchor strikes and other third-party damage. A cable stability assessment was undertaken to provide information on cable stability throughout the proposed route with a view to minimising the number of rock bags or mattresses required to pin the cable whilst ensuring cable stability following the installation. Mattresses and rock bags would only be utilised where insufficient overburden of material exists for end to end burial. The risk of installing the rock bags directly onto the cable could cause subsequent damage from point loading dependent on the seabed and lay of the cable. A post lay inspection of the cable after it is installed will identify the potential risk to placement of the rock filter bag directly onto the cable and confirm exact locations.



Figure 3: Overview of the Shore at Bell Bay, Cumbrae



Figure 4: Overview of the Shore at Kerrylamont Bay, Bute

3. ENVIRONMENTAL MANGEMENT FRAMEWORK

3.1. Introduction

This section sets out the environmental management framework for the Project, under the following areas:

- CEMP - roles & responsibilities
- CEMP – staff competency and training
- CEMP – communications and reporting.

This section sets out the roles and responsibilities of all relevant Project personnel in relation to the delivery of this CEMP. All Project personnel have a responsibility to comply with the requirements of the CEMP, however the key roles relevant to the delivery and implementation of the CEMP are:

- BMC Project Manager
- SHEPD Project Manager
- SHEPD Group SHE Manager
- SHEPD Supervisor for Offshore Works
- SHEPD Marine Consents Manager
- Retained Archaeologist;
- Company Fisheries Liaison Officer (CFLO)
- Fisheries Industry Representative (FIR);
- Marine Mammal Observer (MMO) and PAM operator
- Environmental Clerk of Works (ECOW)
- BMC HSE Advisor

3.2. BMC Project Manager

Amongst others is responsible for ensuring that the project is in compliance with any Consent, licence or associated information and identifying any breach or potential breach to SHEPD Marine Consents Manager. Specific responsibilities include:

- Facilitate dissemination of environmental requirements to the Project Team
- Ensure and be responsible for compliance with all permits, licences and consents, and to report any deviations or breaches
- Oversee the implementation and review of environmental procedures throughout the Project
- Monitor the environmental performance of the Project through maintaining an overview of incidents, inspections and audits
- Ensure that environmental considerations form an integral part of Design and Implementation of the Works and include environmental reviews as part of regular Project meetings
- Review environmental matters with the BMC HSE Advisor on a regular basis and as per project requirements
- Liaise with the BMC HSE Advisor on all environmental issues as appropriate;
- Ensure that all environmental incidents are reported to the BMC HSE Advisor according to agreed procedures
- Nominate individual Project Team members to support SHEPD in public relations and community liaison activities, including local community meetings.

3.3. BMC HSE Advisor

The BMC HSE Advisor will be responsible for overseeing the monitoring of environmental and licence compliance during works. The BMC HSE Advisor will be based at BMCs site office and be in close contact with BMC ECoW, Site Manager & BMC Project Manager. The BMC HSE Advisor shall be responsible for:

- Maintaining a full-time presence on site
- Understanding and implementing all environmental procedures ensuring that site operations function in compliance
- Ensuring toolbox talks are carried out as necessary on relevant environmental topics and records maintained
- Preparation, implementation and undertaking reviews of environmental plans in accordance with Employer and Contractor requirements and procedures and current legislation
- Maintaining current environmental legislation register, reviewing as per relevant new developments;
- Providing the necessary updates and reports to Project Team and SHEPD
- Interfacing with site staff and subcontracted companies on environmental issues
- Ensuring the Project specific CEMP is implemented, ensuring compliance with procedures and legislation
- Checking all documents for Duty of Care requirements
- In conjunction with SHEPD, liaising with government departments, local authorities and other statutory authorities on environmental matters, as per project needs
- Reviewing Method Statements against environmental issues
- In the event of an environmental incident, the BMC HSE Advisor will be contacted by the onsite ECoW and will communicate incidents as per the emergency response procedures.

3.4. Employer Project Manager

Amongst others is responsible for ensuring that the project is in compliance with any Consent, licence or associated information and identifying and breach or potential breach to the Marine Consents Manager.

3.5. Group She Manager

The Group SHE Manager shall ensure that:

- Incidents are thoroughly investigated and reported throughout the Company
- Assistance is provided, when appropriate, during investigations
- Investigation levels are appropriate to the actual or potential severity of the incident
- Incidents are reported in compliance with statutory requirements.

3.6. Employer Supervisor for Offshore Works

SHEPD Supervisor for Offshore Works shall be responsible for ensuring that SHEPDs requirement under the contract with BMC are met. They shall be responsible for identifying and raising any defects or breaches against the contract, licences or supporting information. These defects and breaches shall be detailed in the Daily Project Report (DPR).

3.7. Employer Marine Consents Manager

SHEPD Marine Consents Manager shall be responsible for:

- Obtaining, Marine Licences, Marine Works Licences and Marine EPS Licences (as appropriate) for the works;
- Review and acceptance of Contractor documentation;
- Conducting vessel inspections and pre-works briefings where they relate to licence conditions or Consent compliance and
- Working alongside with the external stakeholder engagement team in developing relationships, including Marine Scotland and The Crown Estate Scotland, to ensure that the project information is communicated as and when appropriate, to build consensus around project decision making.

They shall be in direct communication with SHEPD Project Manager and SHEPD Supervisor for Offshore Works.

3.8. Retained Archaeologist

Offshore and onshore archaeological surveys have been undertaken by SHEPD over the works area. Any environmental constraints or mitigation requirements will be provided by SHEPD.

3.9. Company Fisheries Liaison Officer (CFLO)

The primary responsibilities of the CFLO are to establish and maintain effective communications between Employer, Contractor and legitimate sea users during surveys and construction and ensure compliance with best practice guidelines whilst doing so.

The primary responsibilities of the CFLO are described in detail in the Fisheries Liaison Mitigation Action Plan.

3.10. Fisheries Industry Representative (FIR)

The FIR reports to the CFLO and works in conjunction with SHEPD. The primary responsibilities of the FIR are also described in the Fisheries Liaison Mitigation Action Plan.

3.11. Marine Mammal Observer (MMO) and Passive Acoustic Monitor (PAM) Operator

The Marine Mammal Observer (MMO) and Passive Acoustic Monitor (PAM) operator shall be trained and experienced in UK waters and shall implement the requirements set out in any applicable EPS Licence, Marine Mammal Protection Plan (MMPP) or EPS Risk Assessment, along with compliance with any other applicable legislation or guidance such as the JNCC 2017 guidance for seismic survey. They shall be employed by BMC and shall be dedicated to the role on a full-time basis. A minimum of two MMO/PAM operators will be provided for 24 hour works.

- EPS Licence number: MS EPS 20 2018 1
- Basking Shark Licence: MS BS 08 2018 1

3.12. Contractor Environmental Clerk of Works

BMC Environmental Clerk of Works (ECoW) shall be responsible for:

- Carrying out regular environmental checks keeping records as appropriate as delegated by the BMC Project Manager

- Review success of environmental protection measures
- Advise and instruct Project Team personnel, when necessary, on the correct implementation of environmental mitigation and protection measures as per those set out within this CEMP
- Support the BMC HSE Advisor (and the wider Project Team) in the environmental audits as required and advise on the implementation of environmental mitigation and protection measures
- Provide environmental awareness training relevant to environmental compliance detailed within this document which will be given at appropriate times to Project personnel.

3.13. All Other Project Staff

All other project staff are responsible for ensuring that they adhere to the following:

- Understand and implement procedures relevant to their role as laid out in the CEMP and the associated documentation including FLMAP and MMPP;
- Conduct their work with a view to reducing the environmental impact of the Project and to raise any environmental concerns with their supervisor or BMC Environmental Manager; and
- Report all environmental incidents to their supervisor or BMC Environmental Manager as appropriate.

4. CEMP STAFF COMPETENCE, TRAINING AND AWARENESS

4.1. Introduction

SHEPD will require that all personnel engaged in the Project have adequate experience (defined as minimum of three years relevant experience) to perform the activities executed under their responsibility or in their scope in a safe manner for themselves and others and are adequately supported at all levels. SHEPD will require that BMC has sufficient manpower resources of the required competence to meet the contractual requirements. Safe manning levels for all onshore and offshore activities will be determined by industry guidance and past experience.

SHEPD will ensure that a Project organogram is in place and that the roles and responsibilities of all named personnel are clear and that clear project management procedures are in place for all aspects of the Project, including those related to environmental management measures.

SHEPD has a documented process in place to manage the selection and ongoing performance of BMC to ensure that the SHE risks associated with BMCs' activities are managed effectively.

BMC will have appropriate environmental management procedures in place. As a minimum, BMC will have one full time dedicated site Environmental Clerk of Works (ECOW), one HSE Advisor and an MMO/PAM operator (minimum of two for 24 hours working).

SHEPD (or their appointed representative) will undertake ongoing audit and inspection of Contractor's work to check compliance with SHE requirements.

SHEPD will require that all Project personnel attend required inductions including, but not necessarily limited to, matters related to SHEPD's environmental rules and policies, Site Rules, Health and Safety requirements, arrangements for First Aid and Emergency Response (including environmental pollution and emergency spills), Environmental Management, including Consent compliance requirements and Incident Management.

Training and awareness specific to this CEMP will be delivered using the following tools:

- Vessel inductions;
- Toolbox talks; and
- Vessel notice boards / awareness materials.

BMC records of training will be maintained and provided to SHEPD prior to works commencing, then monthly during works (as appropriate). The records will include the content of the training delivered and record of attendance.

4.1. Vessel Inductions

Vessel inductions shall cover environment and consents issues, highlighting the key environmental sensitivities and considerations. This is to ensure that every Project Team member is aware of their duty and the work-related specific hazards. Vessel Inductions are utilised to raise awareness for personnel regarding site/vessel rules, emergency response procedures and environmental protection arrangements.

4.2. Toolbox Talks

A toolbox talk will be held for the all vessel crew as part of the daily briefing to be held before starting the operation. In addition, a toolbox talk will be held for any significant abnormal task or change in operation. These meetings are to address the exact nature of the task and HSE issues specific to the task being performed during a new working day/shift or task change. A list of attendees will be recorded at each

toolbox talk meeting. Toolbox talks are a combination of briefing followed by a consultation with the workforce to check understanding and invite opinion.

If an unusual operation is being performed, a further toolbox talk is undertaken with the specific staff that will undertake the task. It will include a review of the task specific risk assessment and method statement. This is an open meeting where opinion is invited to ensure that each person understands and agrees with the specific environmental requirements.

BMC shall be responsible for delivery of specific training on the purposes, requirements and procedures of the CEMP and associated documentation, through the toolbox talk. The toolbox talk will be designed to convey key points in a clear and concise manner. For example, on pollution prevention measures it would cover key roles and responsibilities, environmental sensitivities in the vicinity of the Project, and procedures to follow in the event of any spill.

Toolbox talks are held on a regular basis and additionally where required by the project progress. Representatives from all parties involved will be expected to participate. During the toolbox talk, all parties are given the opportunity to discuss and hear advice on environmental matters such as waste disposal and handling and storage of hazardous substances. Details of toolbox talks and personnel attending are recorded and maintained on site.

4.3. Vessel Notice Boards / Awareness Materials

In addition to induction and talks, the Marine Consents Manager will be responsible for managing the preparation of a series of awareness materials, which may include training packs, posters, signs and newsletters. For example, posters on specific procedures can be on display on notice boards on the cable installation vessel.

5. CEMP COMMUNICATIONS AND REPORTING

5.1. Vessel Notice Boards / Awareness Materials

The following summarises the lines of communication between the key roles in relation to the implementation of the CEMP:

- The BMC HSE Advisor and ECoW play a key role in the delivery of the CEMP, alongside SHEPD Marine Consents Manager and Supervisor for Offshore Works. In fulfilling this role, the Marine Consents Manager and Supervisor for Offshore
- Works can establish direct contact with SHEPD Project Manager
- The Marine Consents Manager will report directly to MS-LOT on compliance with the CEMP
- The Marine Consents Manager will liaise with MS-LOT and other stakeholders on environmental matters
- The Marine Consents Manager and Supervisor for Offshore Works will maintain direct contact with and report on the CEMP compliance and environmental management issues to SHEPD Project Manager.

During cable installation, daily (or as required) meetings / calls will take place involving SHEPD Project Manager, BMC representatives, the Marine Consents Manager and Supervisor for Offshore Works. The agenda will include a section on consents compliance and environmental management. Any issues or points to note will be recorded in the Daily Progress Report (DPR).

BMC will be required to provide regular written reports to SHEPD on installation activity. BMC reporting will include information on environmental management such as details of environmental incidents (if any), environmental statistics and records of environmental inspections / audits undertaken, and any such other information as may be required for the Marine Consents Manager to complete their reporting responsibilities.

All Project personnel will be required to report any environmental concerns or issues to the BMC HSE Advisor and/or SHEPD Supervisor for Offshore Works immediately.

5.2. External Communications

Table 1 summarises the CEMP external reporting requirements, mechanisms and frequencies.

The relevant returns and notifications as required by the Marine Licence will be collated from information supplied by BMC and SHEPD Project Team where necessary.

Table 1: CEMP External Communications

Communication type	Responsible party	Proposed frequency	Relevant stakeholders
Pre-installation reporting requirements			
Proposed date of commencement of installation	Marine Consents Manager	No later than 4 weeks prior to commencement of cable installation	MS-LOT
Details of the proposed nature and timescale of the cable installation works	CFLO via Notice to Mariners (NTM)	No later than 1 week prior to commencement of cable installation	All appropriate maritime users
Details of the proposed nature and timescale of the cable installation works	CFLO via NTM	No later than 10 days prior to commencement of cable installation	HM Belfast Maritime Rescue Coordination Centre (MRCC)
Details of the proposed nature (in particular vessel routes, and location of cable lay in the proposed cable corridor) and timescale of the cable installation works	CFLO via NTM	Prior to commencement of cable installation	Kingfisher Fortnightly Bulletin
Details of the proposed nature and timescale of the cable installation works and details to allow for safe fishing activity in the cable corridor	CFLO via NTM	Prior to commencement of cable installation	Fishermen, their representatives and other relevant marine stakeholders
During installation reporting requirements			
Details of the proposed nature and timescale of the cable installation works and details to allow for safe fishing activity in the cable corridor	CFLO via NTM	During cable installation (as / if required)	Fishermen, their representatives and other relevant marine stakeholders
Change to any of the information on which the Marine Licence is based	Project Manager, Marine Consents Manager	As soon as reasonably practical	MS-LOT
Details of any part of the licenced works that has become a danger to navigation or protection of legitimate users of the sea	Marine Consents Manager	As soon as reasonably practical	Maritime and Coastguard Agency (MCA), Northern Lighthouse Board (NLB) and Kingfisher Information Service Offshore Renewables and Cable Awareness (KIS-ORCA)
Environmental or pollution incidents	Marine Consents Manager and Supervisor for offshore works	Should one occur within 24 hrs for minor incidents within 30 mins for major incidents	MS-LOT, MCA
Archaeological discovery	Retained Archaeologist	Following an archaeological discovery	Historic Environment Scotland (HES) and MS-LOT

Communication type	Responsible party	Proposed frequency	Relevant stakeholders
Post installation reporting requirements			
Notification of completion of operations	Project Manager, Marine Consents Manager	Within one week of completion of cable installation	MS-LOT
Nature and quantity of all substances and articles deposited below Mean High Water Springs (MHWS)	Project Manager, Marine Consents Manager	Within four weeks of completion of cable installation	MS-LOT
Copy of Marine Licence and 'As Laid Plan'	Project Manager, Marine Consents Manager	Following completion of cable installation	The Hydrographic Office and notify MS-LOT of the notification at the time it is made
Cable route and a 500 m zone either side of it as a hazardous area for anchoring	Project Manager, Marine Consents Manager	Following completion of cable installation	Maritime and Coastguard Agency (MCA), UK Hydrographic Office (UKHO), Northern Lighthouse Board (NLB), the Kingfisher Information Service Offshore Renewables and Cable Awareness (KIS-ORCA) and the UK International Cable Protection Committees And notify MS-LOT of the notification at the time it is made
Assessment of any risks posed by final subsea cable route, burial depths and untrenched areas where protection measures were used (to ensure that the safety of navigation and other legitimate users of the sea is not compromised)	Project Manager, Marine Consents Manager	Within eight weeks of completion of cable installation	MS-LOT
Marine mammal sightings	Contractor to prepare MMO reports for issue to MS-LOT by the licence holder	Within 4 weeks of completion	MS-LOT, JNCC and SNH

6. ENVIRONMENTAL MANAGEMENT AND MITIGATION OF EFFECTS ON THE SEABED, BENTHIC AND INTERTIDAL ECOLOGY

This section describes the regulatory and policy framework under which SHEPD is required to ensure the protection of the seabed and benthic and intertidal ecology in the Project area. This section then goes on to provide an overview of the key characteristics of the seabed and benthic and intertidal ecology in the Project area and identifies a series of management and mitigation measures that are required to ensure potential impacts on the seabed and benthic and intertidal ecology are avoided and / or minimised.

6.1. Regulatory Requirements & Relevant Policy & Guidance

An integral aspect of the assessment of potential impacts on benthic and intertidal ecology is the identification of habitats and species of conservation importance in the Project area and assessment of potential impacts on these. There are a number of different statutes and guidance that are relevant in this regard with respect to benthic and intertidal areas.

The Habitats (Scotland) Regulations 1994 (as amended) transcribe the requirements of the Habitats Directive in Scotland, on land and in inshore waters (within 12 nm). The Habitats Directive lists 13 marine habitats and eight marine species in Annexes I and II respectively. To meet the requirements outlined in Article 3 of the Habitats Directive, Special Areas of Conservation (SACs) have been designated in UK offshore and Territorial Waters to contribute to the European network of important high-quality conservation sites that will make a significant contribution to conserving these species and habitats outlined in the Directive.

Although there are currently no SACs designated for the presence of benthic or intertidal habitats or species within the vicinity of the Project, there is still potential for the presence of habitats listed under Annex I of the Directive e.g. maerl beds and biogenic reefs.

The Scottish MPA Selection Guidelines identifies a list of 41 MPA search features of which 21 are benthic habitats and five are benthic species with low or limited mobility.

Scottish Natural Heritage (SNH) and the Joint Nature Conservation Committee (JNCC) have been working with Marine Scotland to develop a priority list of marine habitats and species in Scotland's seas, known as Priority Marine Features (PMFs). The list, which comprises 56 PMFs including eight habitats and species groups, 11 individual habitats and 37 species, was developed to help deliver Marine Scotland's vision for marine nature conservation outlined in the Marine Nature Conservation Strategy, acting as a focused list of marine habitats and species to help target future conservation work in Scotland. During 2013, Marine Scotland ran a consultation on the recommended list of PMFs.

The UK Biodiversity Action Plan (UKBAP) was launched in 1994 as a means of meeting the UK's obligations under the Biodiversity Convention. UK BAP priority species are those identified as being the most threatened and requiring conservation action under the UK BAP. As a result of devolution, and new country-level and international drivers and requirements, much of the work previously carried out by the UK BAP is now focused at a country-level rather than a UK-level, and in July 2012 the UK BAP was succeeded by the UK Post-2010 Biodiversity Framework'. The UK list of priority species, however, remains an important reference source and has been used to help draw up statutory lists of priorities in Scotland.

The Convention for the Protection of the Marine Environment of the North East Atlantic - the OSPAR Convention is the mechanism by which 15 governments of Western Europe work together to protect the marine environment of the North East Atlantic. In 2003, the UK government committed to establishing a well-managed, ecologically coherent network of Marine Protected Areas (known as the OSPAR MPA commitment). A list of 54 habitats and species (including marine and intertidal habitats) are considered to be under threat or in decline within the northeast Atlantic (a number are also Priority Marine Features (PMF)).

The Scottish Government adopted the National Marine Plan in 2015 to provide an overarching framework for marine activity in Scottish waters. The plan is underpinned by a set of general policies which apply across existing and future development and use of the marine environment. Policies of particular reference to this Project and impacts on seabed and intertidal habitats and species aim to:

- Comply with legal requirements for protected areas and protected species;
- Not result in significant impact on the national status of Priority Marine Features (PMF); and
- Protect and, where appropriate, enhance the health of the marine environment.

6.2. Environmental Receptors

An assessment of the potential impacts of the Project on the seabed, benthic and intertidal habitats and species within the Project area was carried out in support of the Marine Licence application. The assessment was based on data collected from a desk study and results from the benthic and drop-down video survey undertaken in summer 2018.

The aim of the survey was to identify and map, habitats and biotopes present along the proposed route of the replacement cable. The survey covered both intertidal and subtidal sections of the cable route. Key findings from the survey and supporting desk study are summarised below. Further details can be found in the Environmental Supporting Information.

Table 2: Key Survey Findings

Environmental Receptor	Potential Impacts	Mitigation
Subtidal Ecology	Direct loss and damage to benthic habitats and species from PLGR, cable installation and CFE	<ul style="list-style-type: none"> • Consider use of midline buoys to minimise chain drag on seabed; • Minimise anchor moves where possible; • Short duration; • Undertake cable installation and PLGR in line with existing best practice guidelines (https://www.iscpc.org/publications/recommendations/).
	Toxic and non-toxic contamination	<ul style="list-style-type: none"> • N/A
	Non-native species introductions	<ul style="list-style-type: none"> • N/A
Intertidal Ecology	Direct loss and damage to benthic habitats and species	<ul style="list-style-type: none"> • Consider use of midline buoys to minimise chain drag on seabed; • Minimise anchor moves where possible; • Undertake cable installation in line with existing best practice guidelines.
	Toxic and non-toxic contamination	<ul style="list-style-type: none"> • N/A
	Non-native species introductions	<ul style="list-style-type: none"> • N/A
Marine Mammals	Physical disturbance	<ul style="list-style-type: none"> • Avoid sensitive sites/ species • Avoid installation during sensitive seasons • Soft starts (where possible) • MMO / PAM • Short duration

	Increased turbidity	<ul style="list-style-type: none"> • Use cable installation methods that minimise sediment re-suspension • Short duration • Carry out work in appropriate tidal conditions to minimise effect
	Collision risk	<ul style="list-style-type: none"> • Design for minimal impact • Avoid particularly sensitive areas – e.g. migration routes, feeding, breeding areas • Do not undertake installation activities at night when birds are more vulnerable to collisions.
	Underwater Noise	<ul style="list-style-type: none"> • Avoid installation during sensitive periods • Soft starts (where possible)
Bathymetry and hydrology	No potential impacts	N/A
Water Quality	<p>Increased suspended sediment in the water column over the short period of the underwater activities resulting from cable installation activities where trenching may occur in the intertidal areas.</p> <p>Risk from accidental pollution e.g. from oil seepage, hydraulic fluid release, vessel fuel release.</p>	<ul style="list-style-type: none"> • No potential for significant impacts on water quality, due to: • Cable burial activities will be temporary (approximately 2 days) and any increase in suspended sediments will quickly revert back to background levels; and • All cable landfall works undertaken in line with standard best practice and general environmental management plans provided by SHEPD.
Birds	Collision risk	<ul style="list-style-type: none"> • Avoid particularly sensitive areas – e.g. migration routes, feeding, breeding areas

The distribution of habitats along the proposed route of the replacement cable are illustrated in Figure 5.

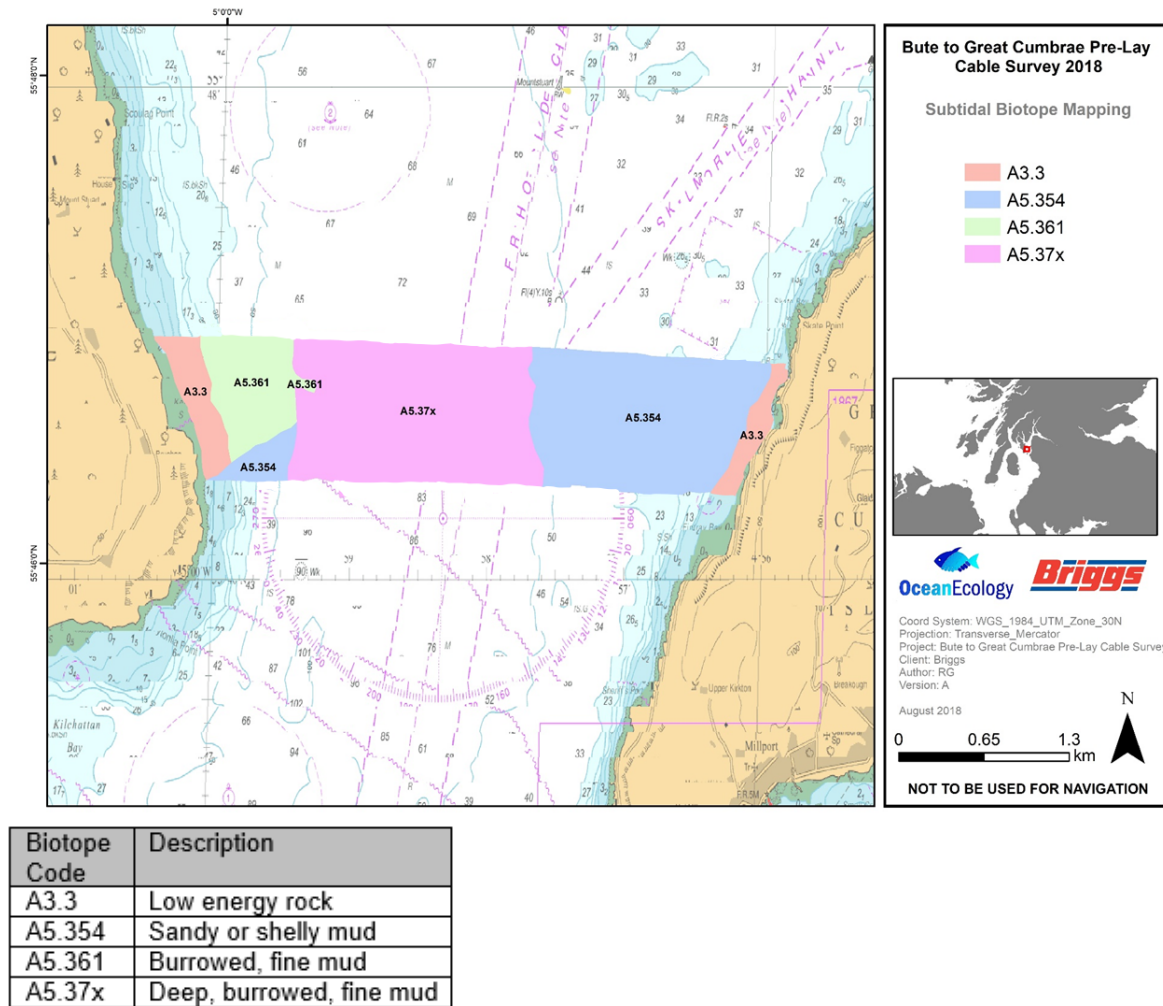


Figure 5: Subtidal Biotope Mapping

6.3. Management Requirements

The following management requirements have been identified to prevent / minimise potential impacts on benthic habitats and species:

- A Pre-Lay Grapnel Run will be conducted 1-3 weeks in advance of the cable installation. The PLGR activity is carried out by towing a set of grapnels along the planned cable route. The grapnels will be towed by multi-purpose support vessel and the grapnels will be either spear or sand point grapnels best suited for particular sections of the seabed along the proposed route. The grapnels will have a depth of penetration of 0.5m and a width of 1m. This is a smaller footprint than the proposed cable burial phase of the works whilst this will ensure that debris, in the form of redundant cables, fishing gear, discarded wires and ropes are removed from the cable route. This helps protect the burial equipment from damage caused by debris on the seabed during the installation phase and safeguard the longevity of the cable after installation.
- The cable will be buried using a Controlled Flow Excavation (CFE) tool. This will limit the area affected by the trenching activities to a corridor of approx. 6 m width. Excavation will generate some sediment suspension. However, due to the temporary nature of the jet trenching activities (1 to 2 days) and steady tidal flows through in the area, any suspended sediment will be rapidly dispersed;
- Where smaller multicat / dive support vessels (DSV) are required for operations in shallower waters near the two landfalls, a four-point anchor system will be required to be laid out on the seabed prior

to works commencing in the nearshore area. The anchors, which will be within 100 m from the multicat / DSV, will be installed by an anchor handler. The position for each of the anchors will be identified to avoid any areas of sensitive habitat e.g. maerl bed, present in these areas;

- Once works are complete the anchors will be removed by the anchor handler in order to minimise the risk of anchor drag or additional disturbance to the seabed;
- EMF has been minimised through a three-core design and wire armouring of the cable. No additional EMF created.
- Good practice pollution control measures will be in place to minimise risk of contamination;
- Other landing points were considered but ruled out in risk assessment.

7. ENVIRONMENTAL MANAGEMENT AND MITIGATION OF EFFECTS ON MARINE WILDLIFE

7.1. Introduction

This section describes the regulatory and policy framework under which SHEPD is required to ensure the protection of marine wildlife in the Project area. This section then goes on to provide an overview of the key sensitive receptors in the Project area and identifies a series of management and mitigation measures that are required to ensure potential impacts on these receptors are avoided and / or minimised.

7.2. Marine Mammals

All species of cetacean (whale, dolphin and porpoise) occurring in UK waters are listed in Annex IV (species of community interest in need of strict protection) of the Habitats Directive as European Protected Species (EPS) and fully protected in Scottish territorial waters (out to 12 nm) under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended). These regulations prohibit the deliberate killing, disturbance or the destruction of these species or their habitat. Bottlenose dolphin and harbour porpoise are also listed on Annex II of the Habitats Directive as species whose conservation requires the designation of Special Areas of Conservation (SACs) as enforced through Schedule 2 of the Habitats Regulations.

Cetaceans are also listed in Schedule 5 of the Wildlife and Countryside Act 1981 which prohibits their deliberate killing, injuring or disturbance. The Nature Conservation (Scotland) Act 2004 makes amendments to the Wildlife and Countryside Act 1981 in Scottish waters, including the addition of 'reckless' acts to species protection which makes it an offence to intentionally or recklessly disturb a cetacean.

Although not afforded the strict protection of EPS through the Habitats Directive, pinniped species occurring in UK waters are listed in Annex V (and hence Schedule 3 of the Habitats Regulations) such that they are defined as species of community interest and may thus be subject to management measures. Two species, the grey and harbour seals, are also listed in Annex II as species whose conservation requires the designation of SACs and they are thus featured on Schedule 2 of the Habitats Regulations.

The Marine (Scotland) Act 2010 also makes it an offence to "recklessly or intentionally harass" seals at any designated haul out location in Scotland. In addition to the legislative protection afforded to cetaceans and pinnipeds, species of cetacean occurring regularly in UK waters are designated as UK Biodiversity Action Plan (UKBAP) species, as is the harbour seal. Seven cetacean and two seal species are listed on the Scottish Priority Marine Features (PMF) list.

The following sections provide a summary of the most common species in the Project area;

Harbour porpoise *Phocoena phocoena*

Harbour porpoise *Phocoena phocoena* is the most abundant species in the Clyde and the British Isles. SCANS-III data for harbour porpoise estimate an abundance of 5,087 (95% CI: 1,701 - 10,386) and a density of 0.336 (animals/km²) in the south-west of Scotland (Hammond et al., 2017). Reid et al. (2003) reports that the Clyde has a harbour porpoise density of 1-10 (individuals/h) in March, May, July, August and September. The NMPi (2018) gives more spatially detailed data which show that the cable routes in the Clyde have a harbour porpoise relative abundance of 0.00-0.03 (animals/h).

During the Bute to Cumbrae and Arran to Carradale pre-lay cable survey, 25 sightings of harbour porpoise were observed. Twenty-four percent of these sightings included a juvenile. There was one sighting of an adult and a juvenile during the Arran to Carradale survey, and five sightings of an adult(s) and a juvenile during the Bute to Cumbrae survey. Group sizes ranged from 2-4 individuals (Ocean Ecology, 2018), suggesting the Firth of Clyde could be an area of preferred habitat of sheltered waters during calving season, lactation and/or seasonal migration (Weir et al. 2007).

Minke whale *Balaenoptera acutorostrata*

Opportunistic sightings of minke whale are often reported in the Clyde area to NGOs and sighting databases. SCANS-III data (Hammond et al. 2017) estimate Minke whale to have an abundance of 410 (95% CI: 0-1,259) and a density of 0.027 (animals/km²) in the south-west of Scotland. Reid et al. (2003) reported Minke whale to be present in densities of 0.01-1 individuals/h in August and October and the NMPI indicates that Minke whale has a relative abundance of 0.00-0.005 animals/h in the waters just to the south of the Firth of Clyde (NMPI, 2018).

During the Bute to Cumbrae and Arran to Carradale pre-lay cable survey, one minke sighting was observed in the Firth of Clyde (Ocean Ecology, 2018).

Bottlenose dolphin *Tursiops truncatus*

Bottlenose dolphin have been reported in the Clyde on numerous occasions during 2016 and 2017 (Clyde Marine Mammals Project, 2016 & 2017), although no obvious trends during which months are evident from the opportunistic sightings.

SCANS-III data (Hammond et al., 2017) estimate bottlenose dolphin to have an abundance of 1,824 (95% CI: 0-4,474) and a density of 0.121 (animals/km²) in the south-west of Scotland.

Killer whale *Orcinus orca*

The Clyde Marine Mammal Project reported two sightings of killer whale in the Clyde area during July and November 2016 (Clyde Marine Mammal Project, 2016) and one further sighting in April 2018 (HWDT, 2018). It is thought that the 2018 sighting belonged to the Northern Isles Community that moves between Iceland and Scotland (HWDT, 2018).

Humpback whale *Megaptera novaeangliae*

The Clyde Marine Mammal Project reported that there were 21 sightings of humpback whale in the Clyde area during 2016 and 5 sightings in 2017 (Clyde Marine Mammal Project, 2017). One sighting was reported in 2018 (HWDT, 2018a). Most sightings have been made between May and September (Reid et al. 2003).

Short-beaked common dolphin *Delphinus delphis*

Ryan et al. (2017) report 13 sightings, between 2011 to 2015, of a solitary individual (identified by nicks on its dorsal fin) within Lough Fyne and adjacent sea lochs around the Clyde. The individual has been associated with an individual harbour porpoise (also identified by photo-ID) in the area. Neither short- nor long-term associations between common dolphins and harbour porpoises have been previously documented. Two sightings of one individual common dolphin was observed in 2018 off Great Cumbrae (HWDT, 2018a).

Common dolphin in the Clyde area is reported to have a density of 1-10 (individuals/h) in March (Reid et al. 2003), and NMPI indicates the short-beaked common dolphin has a relative abundance of 0.000-0.381 (animals/h) (NMPI, 2018).

The main source of potential impact on cetaceans is underwater noise from cable lay and support vessels and cable burial (controlled flow excavation). There is potential for noise sensitive species (e.g. harbour porpoise) to be present in the Project area.

As with cetaceans, there is potential for seals (while at-sea) to also be affected by underwater noise generated during cable installation. However, given that seals are less sensitive to underwater noise than certain cetacean species, potential impacts in terms of disturbance and habitat avoidance are likely to be limited. Hauled out seals are sensitive to disturbance (noise or physical presence of construction vehicles and equipment). Breeding seals are particularly sensitive to disturbance as this can lead to the abandonment of pups if the level of disturbance is too high.

7.3. Birds

All rare, threatened or vulnerable bird species listed in Annex I of the Birds Directive, and all regularly occurring migratory species, are afforded protection through the designation of Special Protection Areas (SPAs). In 2016, the Scottish Government identified a suite of an additional 15 proposed SPAs (pSPAs) for marine birds. These pSPAs have been identified specifically for the protection of at sea territories for 45 species of rare and vulnerable seabirds which depend on the marine environment for a large part of their lifecycle. All wild birds in the UK are also protected under the Wildlife and Countryside Act 1981 (as amended). Under this Act it is an offence to intentionally or recklessly: kill, injure, take, damage, interfere, disturb or harass wild birds listed on Schedule 1 and 1A. This applies to their nests, eggs and young.

The proposed development site affects both the terrestrial and marine environments, and thus the birds nesting and feeding within either habitat. Rare and vulnerable birds are listed under Annex I of the European Birds Directive (79/409/EEC) and are afforded protection through the designation of Special Protection Areas (SPAs). No significant breeding or migratory colonies are thought to be affected by this project and there are no environmental designations for seabirds within the scope of this report.

The wider Clyde area is frequented by relatively high numbers of waders and wildfowl in the winter and spring. Notable species include the UKBAP priority species Herring Gull (*Larus argentatus*) and Common Scoter (*Melanitta nigra*) (Defra, 2013; JNCC, 2007); and IUCN Redlist 2013.2 species Curlew (status: near threatened) and Long-tailed Duck (status: vulnerable) (IUCN, 2013). Outside of the breeding season the wider area hosts significant numbers of Divers (*Gavia immer*, *Gavia arctica* & *Gavia stellata*), Ringed Plover (*Charadrius hiaticula*), Greenland White-fronted Geese (*Anser albifrons flavirostris*) and Slavonian Grebes (*Podiceps auritus*). Kintyre also supports good numbers of Eiders (*Somateria mollissima*), Red-breasted Mergansers (*Mergus serrator*), auks (Alcidae) and Goldeneyes (*Bucephala clangula*).

Potential impacts on seabirds offshore (e.g. disturbance) are limited due to the low number of vessels involved in cable installation (cable lay and support vessel), the localised, temporary and short term (one week during one breeding season only) nature of the cable installation activities, and the slow speeds of the cable lay and support vessels (2 or 3 knots / hour). However, there is potential for activities at the landfall to impact protected species in the Project area due to disturbance from cable installation vessels.

7.4. Fish

Atlantic salmon, *Allis* and *Twaite shad*, and sea and river lamprey (diadromous migratory species) are listed on Annex II of the Habitats Directive and, as such, are afforded protection through the designation of SACs. These species are also listed on the International Union for the Conservation of Nature (IUCN) Red List Atlantic salmon. Atlantic salmon, sea and river lamprey are also listed as PMFs and also on the Convention for the Protection of the Marine Environment in the North East Atlantic (OSPAR) list of marine habitats and species considered to under threat or in decline within the north-east Atlantic.

Migratory diadromous fish species are also considered to be electro-sensitive in that they are able detect induced voltage gradients. Atlantic salmon, sea trout and European eel, for example, use magnetic fields for orientation and navigation during migration, while river and sea lamprey are thought to use weak low-frequency electric field to detect prey and predators.

A number of elasmobranchs species (sharks, rays and skates) are also listed as OPSAR species and listed on the IUCN Red List as being vulnerable, except white skate which is listed as endangered and common skate which is listed as critically endangered. Most species are also UK BAP species. Basking shark, spurdog and common skate are also listed PMFs. Basking shark is also protected under the Wildlife and Countryside Act 1981. Herring and sandeel (benthic spawners) are also PMFs.

Elasmobranchs (sharks, rays and skates) use electroreceptors to detect very small changes in electrical currents. They have slow growth rates and low reproductive output compared to other fish species and therefore can be slow to recover if their populations are rapidly depleted. Consequently, due to pressures from overfishing many elasmobranchs are listed on the IUCN Red List.

The area to the south of Kintyre is a prominent fishing ground for shellfish, thornback ray and mackerel. Fishing operations around Cumbrae are expected to be both recreational fishing and low volume commercial catches. The area borders two ICES rectangles 40E4 and 40E5.

There is potential for localised disturbance of certain fish species that are sensitive to noise (e.g. cod and herring) associated with cable installation activities (vessel noise etc.). However, due to the highly localised, temporary and short term (one week) nature of these activities and the extent of alternative available habitat for these species (most of North Sea), potential impacts are highly unlikely.

With regards to potential impacts from electromagnetic fields (EMFs), based on data available from the cable manufacturer, it is predicted that based on the specific cable design and if the cable were continuously operating at maximum load, the electromagnetic field at the external surface of the cable will be 770.0 μ T, reducing to 6.8 μ T at a distance of 0.5 m from the cable and 1.7 μ T at a distance of 1 m from the cable. When these fields are compared to the earth's natural magnetic field of 50 μ T, any potential EMF impact will be restricted to the immediate area of the cable only and does not extend any distance from the cable. Also, it is worth noting that in reality, during operation the cable will be loaded well below maximum limits and therefore the actual EMF field less than that predicted above. It is recognised that burial of a cable is the most effective way to reduce EMF impacts, as this is the cable protection method for the project. In terms of potential impacts on elasmobranchs or electro-sensitive species that could be present in the immediate footprint of the cable, while there will be EMF emissions from the replacement cable, these emissions will replace those from the existing cable (once the existing cable is taken out of the service) and be limited to the immediate vicinity of the cable only, with no overall increase in EMF.

7.5. Otters

Otters are a European Protected Species (EPS) and, as such, are protected against deliberate or reckless harassment, disturbance including while occupying their structure/shelter or rearing/caring for their young. It is also an offence to obstruct access to a breeding site or resting place or damage or destroy a breeding site or resting place of such an animal, including when the animal is not there. Otters are also listed in Annex II as species whose conservation requires the designation of SACs.

Otters favour low peat-covered coastlines with a good freshwater supply and shallow, seaweed rich waters offshore. Otter is a Scottish PMF and listed on Annex II of the Habitats Directive. Otter (*Lutra lutra*) spraints were found on bedrock outcrops at both shore ends during intertidal Phase 1 surveys undertaken by ERM on behalf of BMC (ERM, 2018).

However, several mitigation measures are proposed to avoid otter holts. The proposed cable routes between Bute and Cumbrae remain flexible in the design route such that the working would allow for micro-routing and avoidance of known holt locations.

8. ENVIRONMENTAL MANAGEMENT REQUIREMENTS

This section provides measures for avoiding and reducing potential impacts on species that may be present in the vicinity of the marine and cable landfall works, below MHWS.

8.1. Employer Internal Guidance Documents

In recognition of the protected status of the above species, SHEPD has developed a number of internal guidance documents and procedures in order to manage their operations, these include:

- Bird Species Protection Plan (TG-NET-ENV-505)
- A Project specific Marine Mammal Protection Plan.

8.2. Marine Mammals – Marine Mammal Protection Plan

The following measures have been identified to reduce collision risk and disturbance to marine mammals present along the cable route corridor:

- Preparation of a Marine Mammal Protection Plan (MMPP) including:
 - Deployment of two suitably qualified and trained MMO/PAM operators, per 24 hours, on the installation vessel for the duration of the works to monitor for the presence of marine mammals (cetaceans and seals) prior to the commencement of, and during, the cable installation activities;
 - For operations that run in hours of darkness and/or in periods of poor visibility deployment of an active Passive Acoustic Monitoring (PAM) system to detect for the presence of cetaceans that cannot be detected by the MMO;
 - Mitigation zone – cable lay, trenching and rock filter bag placement works only to commence once all marine mammals are clear of the mitigation zone. Following consultation with SNH the following mitigation zones will be implemented for the Project:
 - 500 m for cetaceans
 - 500 m for seals
 - Reporting;
 - Soft-starts of equipment, where possible;
 - Reporting
- Marine Mammal Monitoring - MMO (visual) / PAM (acoustic):
 - There will be MMO coverage for the duration of the cable installation activities, with two adequately trained and experienced MMOs working standard 12 hour shifts. They will have experience of working at sea and will be trained and experience in the operation of PAM (acoustic) equipment.
 - During daylight hours the MMOs will carry out visual observations to monitor for the presence of marine mammals prior to commencing cable lay, trenching or rock filter bag placement activities and will recommend delays in the commencement of the cable installation activities should any marine mammals be detected within the mitigation zone (see below).
 - When visibility is poor (i.e. due to fog or during hours of darkness) the PAM system will be operated by a single MMO/PAM operator prior to any cable installation operations commencing.
- Mitigation Zone:
 - During pre-operational 30 minute watch, should any cetacean be detected within 500m of the cable installation vessel, start of activities will be delayed until their passage (or the transit of the vessel) results in the marine mammals no longer present in the mitigation zone. In both cases, there will be a 20-minute delay from the time of the last sighting within the mitigation zone to the commencement of the cable installation activities.

- All marine mammal, including seal sightings, will be documented by the MMO according to JNCC guidelines.
- BMC will provide all Project personnel with marine mammal awareness and good practice training;
- Posters and signs identifying risks and good practice will be provided;
- Pictures of species of concern will be provided;
- The cable installation and associated vessels are not expected to regularly exceed 10 knots, a speed threshold above which most lethal and serious injuries to marine mammals are thought to occur; and
- The MMO will have the authority to postpone or stop works in conditions of low visibility where marine mammal collision risk is high and the full extent of the safety zone cannot be observed.

8.3. Marine Mammals – Seal Haul Out Sites

Although no impacts are expected SHEPD will ensure BMC is aware of the Scottish Government advice and responsible behaviour around seals.

<http://www.gov.scot/Resource/0045/00452869.pdf>.

Scottish Government advice on issues regarding seal haul -outs states “New activities taking place near seal haul-outs, which present no significant disturbance to the seals, or where the disturbance is low level (a few seals) and/or short term (over a short time period), will normally be acceptable. This may require some monitoring of the seals to avoid the risk of potentially causing a significant proportion of seals on a haul-out site to leave that site either more than once or repeatedly or, in the worst cases, to abandon it permanently.”

8.4. Birds – Onshore

The following measures have been identified to ensure the protection of birds at the cable landfalls:

If vegetation clearance is required at the cable landfalls, it will be scheduled to avoid the main breeding bird season, which runs from March to September inclusive;

Should birds be found breeding during construction, a protection zone will be erected around the nesting site and left until the young have fledged. It is an offence to remove or restrict access to any bird's nest while it is being built or in use. If a bird nest is to be removed, then it must be shown to be disused.

8.5. Fish

The following measures have been identified regarding elasmobranchs and migratory fish:

EMF has been minimised through a three-core design and wire armouring of the cable and cable burial along the entire cable route.

8.6. Landfalls - General

In order to prevent impacts on protected species:

- The Ecological Clerk of Works (ECoW) (appointed by BMC) will conduct daily checks of the Project landfalls during construction of the onshore project elements, which will include inspection for the presence of otters and breeding birds;
- Personnel will be made aware of good practice measures for relevant species through toolbox talks;
- Where pipes or ducts are being used these will be capped to prevent mammals from accessing and becoming trapped;

- Any excavations left open overnight will be covered or provisioned with mammal ramps to prevent mammals, from falling in and becoming trapped; and
- Works will take place within a clearly demarcated works area with barriers such as Heras fencing used as appropriate.

9. ENVIRONMENTAL MANAGEMENT AND MITIGATION OF EFFECTS ON OTHER MARINE USERS

9.1. Introduction

In recognition of the importance of the management of the Project with regards to other users of the sea, a separate Fisheries Liaison Mitigation Action Plan has been produced alongside this CEMP and provides further details on the key sensitive receptors in the Project area and identifies a series of management and mitigation measures that are required to ensure potential impacts on these receptors are avoided and / or minimised.

For completeness of the CEMP, this section describes the regulatory and policy framework under which SHEPD is required to minimise disruption to, and safeguard access to, other marine users, including fisheries and activities in the Project area and a summary of the key sensitive receptors, potential impacts and management and mitigation measures.

9.2. Regulatory Requirements & Relevant Policy & Guidance

The Scottish Government adopted the National Marine Plan (NMP) in 2015 to provide an overarching framework for marine activity in Scottish waters. The plan is underpinned by a set of policies which apply across existing and future development and use of the marine environment. Under Fisheries Planning Policies, Policy 3 states 'where existing fishing opportunities or activity cannot be safeguarded, a Fisheries Management and Mitigation Strategy (FMMS) should be prepared by the proposer of development'.

The NMP also sets out a number of key objectives and policies relating to subsea cables including:

- Protect submarine cables whilst achieving successful seabed user co-existence;
- Achieve the highest possible quality and safety standards and reduce risks to all seabed users and the marine environment; and
- Support the generation, distribution and optimisation of electricity from traditional and renewable sources to Scotland, UK and beyond.

9.3. Overview of Other Marine Users in the Project Area

Based on the information that has been collected and assessed in support of the, the following marine users have been identified as being present / using the marine environment in the vicinity of the marine cable route corridor and cable landfall works:

Moderate vessel traffic crossing the cable route as the main shipping channel to the Clyde crosses perpendicular to the cable. From the MBES and SSS data there is evidence of trawl fishing taking place along the proposed cable route. Fishing effort data from Marine Scotland suggests that fishing effort is low at the Project site (Marine Scotland, 2018).

A low level of canoeing/kayaking and sailing activity is recorded over the general vicinity.

9.4. Commercial Fisheries

During installation of the cable there is potential for temporary exclusion of fisheries from within the Project area. In accordance with navigational safety requirements, a 500 m safety zone will be implemented around the cable lay vessel and associated guard vessel for the duration of the installation works. Fishing will not be permitted within this safety zone. However, given that the cable installation works are only expected to

take one week to complete, the potential impact of this temporary exclusion on local fisheries will be negligible.

Once installed, the presence of cables on the seabed presents a potential obstruction, and safety risk, to fisheries, in particular demersal trawls and dredges which catch fish by dragging nets / gear along the seabed. Where nets / gear get caught or snagged on seabed infrastructure such as cables this can cause damage to the nets and presents a potential safety risk to vessels. As the cable will be buried along the entire cable route, the impact to commercial fisheries is expected to be negligible during the cable operational phase.

Information will be provided through notice(s) to mariners and/or radio navigational warnings and publication in appropriate bulletins, prior to the commencement of cable laying operations. Notifications will state the nature and timescale of any works carried out in the marine environment relating to the cable installation operations. In particular the Kingfisher Fortnightly Bulletin will be used to inform the Sea Fish Industry of the vessel routes, timings and locations of each cable laying operation along the licensed route. SHEPD will be responsible for ensuring that the location of the cable is charted by the United Kingdom Hydrographic Office (UKHO) and that surveys are undertaken post installation to assess whether the cable is safe to trawl over.

9.5. Shipping and Navigation

The main risk to shipping and navigation is increased risk of collision between the cable lay and any support vessels and other vessels transiting the area. As noted above, in accordance with navigational safety requirements a 500 m safety zone will be implemented around the cable lay and any support vessels for the duration of the cable installation activities. A number of other measures such as, Notices to Mariners, will also be implemented (detailed below) to advise other mariners and sea users in the area of the presence of the cable lay vessel and the nature of the works being undertaken. Given that cable installation activities are expected to be completed within one week, the risk of collision between the cable lay vessel and other vessels is considered to be very low.

The potential for vessel collisions during installation is managed through the following key processes:

- Notification of works;
- Implementation of a safety zone around the area of works;
- Use of guard vessels;
- Engagement with all legitimate sea users; and
- Implementation of a code of good practice for all vessels;
- Establishment of cooperation agreements between SHEPD and commercial fisheries and other legitimate sea users; and
- Presence of a FIR during installation.

Other measures regarding navigation include:

- If any proposed cable protection reduces the water depth by greater than 5% this will be agreed with the MCA prior to installation;
- In periods of poor visibility, restrictions such as a temporary cessation of installation activity may be considered to reduce the risk of collisions;
- Installation vessels will have passage planning procedures, holding positions (e.g. if waiting on weather), traffic monitoring (radar, visual and Automatic Identification System; AIS), means of communications with third party vessels and emergency response in the event of a vessel approaching on a collision course; and
- The as-laid coordinates of the cable will be issued to the UKHO and KIS-ORCA charts. This will ensure that mariners are aware of the location of the cable.

9.6. Subsea Infrastructure

In order to avoid damage to pre-existing subsea infrastructure, a detailed pre-construction geophysical survey was undertaken which identified pre-existing infrastructure in the vicinity of the works and will be used to inform mooring patterns.

The only existing subsea asset in the vicinity of the works, is an existing submarine electricity cable owned by SHEPD.

PLGR operations may recover uncharted subsea assets. If the debris recovered is found to be an Out of Service (OoS) cable it will be dealt with in accordance with the ICPC Recommendation No 1: Management of Redundant and Out of Service Cables (<https://www.iscpc.org/publications/recommendations/>). Any other debris found during PLGR will be either moved from the cable route if unsafe to recover or collected and disposed of in line with waste management procedure, see section 11.3.

Please see section 8.6 of Environmental Supporting Information for further detail on waste management.

9.7. Archaeology

No features of archaeological interest were identified along the offshore element of the replacement cable route corridor. However, there is still potential for the Project to uncover previously unknown features. Therefore, archaeological management and mitigation measures have been considered.

This section also describes the regulatory and policy framework under which SHEPD is required to protect archaeological assets in the Project area.

9.8. Regulatory Requirements & Relevant Policy & Guidance

Legislation, policy and guidance relevant to the protection of the marine historic and archaeological environment is summarised below.

INTERNATIONAL/ EU LEGISLATION AND POLICY

- The United Nations Convention of the Law of the Sea (UNCLOS);
- Annex to the UNESCO Convention on the Protection of the Underwater Cultural Heritage 2001; and
- The European Convention on the Protection of the Archaeological Heritage (revised), known as the Valletta Convention.

UK LEGISLATION AND POLICY

- The Merchant Shipping Act 1995;
- The Protection of Wrecks Act 1973 (Section 1 of the Protection of Wrecks Act was repealed in Scotland on the 1st November 2013 and the 8 wrecks around the coast of Scotland designated under this section of the Act are now protected by Historic Marine Protected Areas (HMPAs) as defined in the Marine (Scotland) Act 2010);
- The Protection of Military Remains Act 1986 has the principal concern to protect the sanctity of vessels and aircraft that are military maritime graves. Any aircraft lost while in military service is automatically protected under this Act; and
- The UK Marine Policy Statement (2011) states heritage assets should be conserved through marine planning in a manner appropriate and proportionate to their significance. Many heritage assets with archaeological interest are not currently designated as scheduled monuments or protected wreck sites but are demonstrably of equivalent significance.

SCOTTISH LEGISLATION AND POLICY

- The Marine (Scotland) Act 2010. This requires licensing activities in the marine environment to consider potential impacts on the marine environment including features of archaeological or historic interest and defines marine historic assets (Section 73);
- The Historic Environment Scotland Policy Statement 2016;
- Scottish Planning Policy (SPP) 2014;
- The Scottish Government's Planning Advice Note (PAN 2/2011) Planning and Archaeology 2011; and
- The Scottish Government's Planning Scotland's Seas: Scotland's National Marine Plan (March 2015).

CODES OF PRACTICE, PROFESSIONAL GUIDANCE AND STANDARDS DOCUMENTS

- The Chartered Institute for Archaeologists (CIfA) Codes, Standards and Guidance (various) <http://www.archaeologists.net/codes/cifa>;
- The Crown Estate. (2010.) Model clauses for Archaeological Written Schemes of Investigation: Offshore Renewables Projects. Wessex Archaeology Ltd (Ref 73340.05) for The Crown Estate;
- English Heritage. (2012). Ships and Boats: Prehistory to Present. Designation Selection Guide. Swindon: English Heritage.
- Gribble, J. & Leather, S. for EMU Ltd. (2011). Offshore Geotechnical Investigations and Historic Environment Analysis: Guidance for the Renewable Energy Sector. Commissioned by COWRIE Ltd (project reference GEOARCH-09);
- The Joint Nautical Archaeology Policy Committee and Crown Estate. (2006). Maritime Cultural Heritage & Seabed Development: JNAPC Code of Practice for Seabed Development. York: CBA;
- Plets, R., Dix, J., & Bates, R. (2013). Marine Geophysics Data Acquisition, Processing and Interpretation: Guidance Notes. Swindon: English Heritage Publishing;
- Wessex Archaeology. (2014). Protocols for Archaeological Discoveries (PAD) <http://www.wessexarch.co.uk/protocols-archaeological-discoveries-pad>. Salisbury: Wessex Archaeology;
- Wessex Archaeology. (2006). On the Importance of Shipwrecks: Final Report Volume 1. Salisbury: Wessex Archaeology;
- Wessex Archaeology. (2011a). Assessing Boats and Ships 1860-1913 Archaeological Desk Based Assessment. Salisbury: Wessex Archaeology; and
- Wessex Archaeology. (2011b). Assessing Boats and Ships 1914-1938 Archaeological Desk Based Assessment. Salisbury: Wessex Archaeology.

9.9. Management Requirements

Although potential impacts on both known and unknown archaeological remains are considered to be low to negligible, there is still a requirement to identified specific measures that can be put in place to safeguard against any potential impacts on archaeological remains (known or unknown) in the area.

- Mitigation by design:
 - The potential for significant impacts on marine cultural heritage has been reduced to negligible-low during the development and design of the Project by conducting a desk based assessment, geophysical and Drop Down Video (DDV) surveys to identify any marine historic environment assets;
 - A survey has been conducted to inform final cable routing and vessel anchoring areas which will seek to avoid any anthropogenic seabed features; and
- Mitigation during installation:
 - The Supervisor for Offshore Works will be the initial point of contact regarding archaeological interests; and
 - Potential impacts on unknown heritage will be managed through implementation of a reporting protocol for the discovery of previously unknown marine cultural material during development e.g. the reporting protocol produced by Wessex Archaeology (2014) for the Crown Estate (<http://www.wessexarch.co.uk/protocols-archaeological-discoveries-pad>).
- Mitigation during operation:
 - The reporting protocol will be kept in place in case anything of interest is observed during inspection surveys. If any cultural heritage sites are reported during inspection surveys, it is recommended that they are investigated by a qualified marine archaeologist to determine their cultural heritage importance.

10. INVAISIVE NON-NATIVE MARINE SPECIES (INNMS)

10.1. Introduction

It is common practice for offshore construction projects around the UK to manage the risk of introduction of non-native marine species. As such all vessels involved in cable installation activities will be required to meet relevant legislative requirements and best standard practices with regards to ballasting activities and vessel biofouling management.

10.2. Regulatory Requirements & Relevant Policy & Guidance

To prevent the risk of spread of non-native species through discharging of ballast water, all works will be carried out in accordance with The International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM), adopted 2004 and due to enter into force on 8th September 2017. Once the treaty enters into force, ballast water will need to be treated before it is released into a new location, so that any microorganisms or small marine species are killed off.

The BWM Convention requires all ships to conduct ballast water exchange (BWE) to a set standard ('D-1') or to meet a ballast water performance standard ('D2') (dependent on build date and ballast water capacity*).

- Standard D-1 requires that all ships undertaking BWE should, whenever possible, conduct BWE at least 200 nautical miles (nm) from the nearest land and in water at least 200 m in depth. If neither of these scenarios is possible then a vessel may exchange in an area designated by the port state.
- Standard D-2 requires that new or retrofitted ballast water treatment systems be employed in order to minimise numbers of viable organisms remaining within the ballast tank before discharge. These treatment systems significantly reduce the likelihood of non-native species being introduced by inefficient exchange practices or in the event of an untreated near shore discharge.

The International Maritime Organisation (IMO) also aims to control and manage ships' biofouling through the implementation of the Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species (Biofouling Guidelines IMO 2011) (resolution MEPC. 207 (62)). The Biofouling Guidelines will not be ratified by member states, and there is currently no requirement for hull cleaning for vessel movement between ports in the EU, however the guidelines are intended to provide a globally consistent approach to the management of biofouling. The Biofouling Guidelines state that a ship should implement biofouling management practices, including the use of anti-fouling systems and other operational management practices to reduce the development of biofouling. The intent of such practices is to keep the ship's submerged surfaces, and internal seawater cooling systems as free of biofouling as practical.

In addition, in 2014 SNH commissioned the production of guidance for producing site and operation based plans for preventing the introduction of non-native species (Payne et al., 2014).

Although not directly applicable to the introduction of non-native marine species, related legislation is the Merchant Shipping (Anti-fouling systems) Regulations 2009 which prohibit the use of harmful organotin compounds in antifouling paints used on ships. Vessels of 400GRT and above, and every ship which is certified to carry 15 or more persons should have an International Anti-fouling System Certificate to ensure the antifouling paint complies with the regulations.

*Ships constructed before 2009 with a ballast capacity of between 1,500 and 5,000 m³ must at least meet the ballast water performance standard, and ships with a capacity <1,500 or > 5,000 m³ must meet the BWE standards or the performance standards until 2016, after which time it shall at least meet the performance

standard. Ships constructed in or after 2009 (capacity of < 5,000 m³) must meet the performance standard. Ships constructed between 2009 and 2012, capacity of 5,000 m³ or more shall meet D-1 or D-2 until 2016 and at least the performance standard after 2016. Ships constructed in or after 2012 (capacity of 5,000 m³ or more) shall meet the ballast water performance standard.

10.3. Management Requirements

In adopting management measures to prevent the introduction of INNMS, SHEPD will:

- Ballast water management:
 - Ensure all vessels contracted to undertake cable installation and ancillary activities will be contractually obliged to adhere to relevant BWM measures as outlined above, where relevant and be surveyed and issued with an International Ballast Water Management Certificate.
 - Ballast Water Management Plans (BWMP) will be provided by contracted vessels in accordance with Regulation B-1 of the Convention, alongside Ballast Water Record Books as described by BWM Regulation B-2.
- Biofouling / Antifouling:
 - The SHEPD will request that all vessels consider the requirements of Resolution MEPC.207(62) Guidelines for the Control and Management of Ships Biofouling to Minimise the Transfer of Invasive Aquatic Species, including for example the implementation of a biofouling management plan, and records of biofouling management practices kept in a biofouling record book.
 - Ensure all vessels (as appropriate) have an International Anti-fouling System Certificate.
 - All vessels will be required to undertake pre-use and post use checks, including the presence for marine growth. All equipment (ploughs, ROVs etc.) will be required to be free from marine growth prior to mobilisation.

11. WASTE MANAGEMENT

11.1. Introduction

The principal wastes generated from the works will include packaging, general waste and waste water. Hazardous wastes are possible in the form of used oils and chemicals.

Under the Duty of Care as a waste producer, the failure to manage wastes generated from the Project, such as failure to segregate recyclates, also results in breaches of waste management legislation in addition to potential environmental impact.

11.2. Regulatory Requirements & Relevant Policy & Guidance

In terms of waste generated offshore, the International Convention for the Prevention of Pollution from Ships (MARPOL 73/78) Annex IV (sewage) and Annex V (garbage) is the main legislative driver. Under the Convention, the North Sea is designated as a Special Area where the disposal of any waste (except food waste) offshore is prohibited. The Convention is transposed into UK legislation by the Merchant Shipping (Prevention of Pollution by Sewage and Garbage from Ships) Regulations 2008, which places a number of obligations on vessels in terms of managing waste.

The key driver for waste management legislation in the UK, when onshore disposal is required, is the Waste Framework Directive (WFD). The Directive is transposed into Scottish legislation by the Waste (Scotland) Regulations 2012; Waste Management Licensing (Scotland) Regulations 2011 and the Environmental Protection (Duty of Care) (Scotland) Regulations 2014. These regulations require all businesses and organisations that produce waste to take all reasonable measures to prevent waste, and to apply the waste hierarchy when managing waste.

A key requirement is that the waste producer is responsible for ensuring that their waste is collected by an appropriately licensed waste carrier and managed at a suitably licensed facility. Section 34 of the Environmental Protection Act 1990 (as amended) lays out number of duties with respect to the management of waste. The Waste (Scotland) Regulations 2012 amended Section 34 to implement a number of actions in the Scottish Government's Zero Waste Plan (2010). The Duty of Care: A Code of Practice (Scottish Government, 2012) explains these duties which apply to anyone who produces, keeps, imports or manages controlled waste in Scotland.

In accordance with MARPOL (73/78) Annex V (as amended) every ship (certified to carry 15 persons or more), and vessel (of 400 gross tonnage and above) involved in the Project will have a Garbage Management Plan. The plan will include procedures for the collection, storage, processing and disposal of all waste, and will designate an individual responsible for implementing the plan. Waste types and volumes generated by the vessel/installation will be recorded in a garbage record book. Once the waste is brought onshore it will be managed in accordance with the duty of care legislation (see above). Information from the garbage record book will be used to complete the relevant Waste Transfer Notes.

The Special Waste (Scotland) Regulations 1996 set out the requirements for the preparation of Special Waste Consignment Notes for the handling and carriage of special waste (including hazardous waste) as defined within the regulations. The regulations provide the requirements for the removal of ships' waste to reception facilities and the avoidance of mixing waste streams.

11.3. Management Requirements

- General:

- The only materials to be deposited to the seabed by the cable installation vessels will be those detailed in the Marine Licence.
- All vessels engaged in cable installation operations will be equipped with waste storage facilities according to IMO International Convention for the Prevention of Pollution from Ships (MARPOL) standard vessels certified to carry 15 persons or more or of 400 gross tonnage and above will have the following in place:
 - Waste management plan; and
 - Garbage record book.
- No waste will be disposed of over the side of the vessel and all produced waste will be stored on board.
- All waste products and rubbish will be removed from the vessel and disposed of by a registered waste disposal company.
- Any debris or waste materials arising during the course of the works will be removed from the vessel and disposed of by a registered waste disposal company.
- **Waste Reduction**
 - The waste hierarchy of Prevention, Re-use, Recycle and Disposal will be adopted on the Project. The following measures will align the Project waste management with the hierarchy and reduce the amount of waste produced during construction:
 - The appropriate volume of materials will be ordered;
 - Excess materials will be returned to the supplier if possible;
 - Re-usable materials will be identified on site and removed for storage and re-sale;
 - Recyclable materials will be removed from site for processing in licenced facilities;
 - There will be clearly located and defined storage areas for materials; and
 - General information on waste will be provided in site inductions and toolbox talks with feedback welcomed.
- **Storage of Waste**
 - The following methods have been identified in relation to storage of waste:
 - Storage will be provided at suitable points for all waste streams including hazardous waste, liquid wastes and discarded smoking materials;
 - Waste will be segregated as far as practically possible;
 - Waste will be stored in secure covered containers which will be clearly labelled with the waste they hold e.g. wood, metal, plastics etc.;
 - Liquid wastes will be stored in appropriately (portable or permanent) bunded facilities that hold the capacity of the container;
 - Any hazardous waste will be stored in separate containers (further details on hazardous waste are provided below);
 - Any odorous wastes will be temporarily stored in suitable containers and where possible, at a distance from any nearby sensitive receptors;
 - All places of work will be kept clean and tidy. Waste will not be allowed to accumulate. All surplus material and waste are to be removed in a timely manner;
 - Storage areas / containers will be monitored and action taken if waste is piled too high; and
 - Burning of waste is prohibited.
- **Hazardous (Special) Waste**
 - “Hazardous waste” –any waste which contains properties that might make it harmful to human health or the environment. In Scotland, hazardous waste is referred to as Special waste.

Special waste could arise from the following sources:

- Maintenance of plant and machinery;
- Oily water waste;
- Oil filters;
- Oily rags;
- Oil absorbent pads etc.;

- Contaminated Marine Gas Oil (MGO);
- Hydraulic oil; and
- Environmental spill recovery (small amounts only; larger volumes taken away directly for disposal).

All special waste will be segregated by type and from other waste streams.

All special waste oil will be stored in a bunded facility until such times that it is collected.

Used filters, rags and absorbents will be stowed in the special waste container in drums or waste oil bags.

All waste recovered from the sea by PLGR will be disposed of appropriately ashore by approved waste disposal routes. Please see section 8.6 of Environmental Supporting Information for further detail on waste management.

12. POLLUTION PREVENTION, SPILL RESPONSE AND CONTINGENCY PLANNING

12.1. Introduction

Potential sources of offshore pollution associated with the vessels cable installation works are as follows:

- Oil
- Noxious liquid substances
- Harmful substances carried by sea in packaged form
- Sewage
- Waste from ships
- Air pollution from ships
- Invasive non-native species.

Specific practices relevant to the management of waste (including sewage) and invasive non-native species are considered in previous sections of this CEMP, and therefore this section of the CEMP focuses on wider pollution prevention and spill response and contingency planning.

12.2. Regulatory Requirements & Relevant Policy & Guidance

VESSELS - THE INTERNATIONAL CONVENTION FOR THE PREVENTION OF POLLUTION FROM SHIPS (MARPOL)

The International Convention for the Prevention of Pollution from Ships (MARPOL) is the main international convention covering prevention of pollution of the marine environment by ships from operational or accidental causes. All work will be carried out in accordance with these regulations. The Convention includes regulations aimed at preventing and minimising pollution from ships and currently includes six technical Annexes:

- Annex I Regulations for the Prevention of Pollution by Oil (entered into force 2 October 1983) - Covers prevention of pollution by oil from operational measures as well as from accidental discharges; the 1992 amendments to Annex I made it mandatory for new oil tankers to have double hulls and brought in a phase-in schedule for existing tankers to fit double hulls, which was subsequently revised in 2001 and 2003. Annex I require all ships of 400 GRT and above to have an approved Shipboard Oil Pollution Emergency Plan (SOPEP) onboard.
- Annex II Regulations for the Control of Pollution by Noxious Liquid Substances in Bulk (entered into force 2 October 1983) - Details the discharge criteria and measures for the control of pollution by noxious liquid substances carried in bulk; some 250 substances were evaluated and included in the list appended to the Convention; the discharge of their residues is allowed only to reception facilities until certain concentrations and conditions (which vary with the category of substances) are complied with. In any case, no discharge of residues containing noxious substances is permitted within 12 miles of the nearest land.
- Annex III Prevention of Pollution by Harmful Substances Carried by Sea in Packaged Form (entered into force 1 July 1992) - Contains general requirements for the issuing of detailed standards on packing, marking, labelling, documentation, stowage, quantity limitations, exceptions and notifications. For the purpose of this Annex, "harmful substances" are those substances which are identified as marine pollutants in the International Maritime Dangerous Goods Code (IMDG Code) or which meet the criteria in the Appendix of Annex III.
- Annex IV Prevention of Pollution by Sewage from Ships (entered into force 27 September 2003) - Contains requirements to control pollution of the sea by sewage; the discharge of sewage into the sea is prohibited, except when the ship has in operation an approved sewage treatment plant or

when the ship is discharging comminuted and disinfected sewage using an approved system at a distance of more than three nautical miles from the nearest land; sewage which is not comminuted or disinfected has to be discharged at a distance of more than 12 nautical miles from the nearest land.

- Annex V Prevention of Pollution by Garbage from Ships (entered into force 31 December 1988) - Deals with the different types of garbage and specifies the distances from land and the manner in which they may be disposed of. The Annex designates Special Areas (including the North Sea) where the disposal of any garbage is prohibited except food wastes. The dumping of plastics at sea is also prohibited by this Annex.
- Annex VI Prevention of Air Pollution from Ships (entered into force 19 May 2005) - Sets limits on sulphur oxide and nitrogen oxide emissions from ship exhausts and prohibits deliberate emissions of ozone depleting substances; designated emission control areas set more stringent standards for SO_x, NO_x and particulate matter. A chapter adopted in 2011 covers mandatory technical and operational energy efficiency measures aimed at reducing greenhouse gas emissions from ships.

12.3. Cable Landfall Installation

As the Project boundary ends at MHWS, in addition to the vessel related legislation detailed above the following legislation is also relevant to the cable replacement works, in particular in relation to cable landfall installation works:

- The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (CAR);
- The Water Environment and Water Services (WEWS) (Scotland) Act 2003; and
- The Pollution Prevention and Control (Scotland) Regulations 2012 (PPC 2012).

The Water Framework Directive (WFD) came into force in December 2003 and is implemented in Scotland through the Water Environment and Water Services (Scotland) Act 2003. This provides Ministers with the powers to make regulations to control activities which could affect the water environment. The Scottish Environment Protection Agency's (SEPA's) powers under CAR are defined as for the purpose of 'protecting the water environment' and include authorising activities including abstractions, impoundments, building and engineering works, and activities liable to cause Pollution. Activities likely to cause pollution to the water environment require authorisation under CAR. A key objective of this Directive is the achievement of 'good ecological status (as a minimum) of all natural waterbodies.

In addition to these regulations, there are a number of guidance documents and best practice guidelines related to prevention of pollution in the water environment, including:

- The recently updated UK guidance for pollution prevention (GPP) available at: <http://www.netregs.org.uk/environmental-topics/pollution-prevention-guidelines-pgpsand-replacement-series/guidance-for-pollution-prevention-gpps-full-list/>. Including GPP5 Works or Maintenance in or Near Water.
- Land Use Planning System SEPA Guidance Note 17. Marine development and marine aquaculture planning guidance;
- CIRIA (Construction Industry Research and Information Association) Report C532,
- Control of water, pollution from construction sites: Guidance for consultants and contractors
- CIRIA Report C584D, Coastal and marine environmental site guide (C584D).

12.4. Management Requirements

Emissions shall be reduced by ensuring efficient operation and maintenance of all equipment wherever possible. Specific energy and fuel efficiency projects should be introduced to reduce air emissions. Natural resources such as fossil fuels shall be used as efficiently as possible. Targets should be set to continually reduce CO2 emissions generated from all equipment.

All vessels 450 GRT and above require an approved SOPEP i.e. procedures and descriptions of actions to be taken in the event of an oil pollution incident. The SOPEP shall contain all information and operational instructions as required by the “Guidelines for the development of the Shipboard Oil Pollution Emergency Plan” as developed by the Organization (IMO). The appendices contain names, telephone, telex numbers, etc., of all contacts referenced in the SOPEP, as well as other reference material.

The following measures have been identified regarding emergency spills:

- Work will stop immediately, and the source of the spill will be addressed where possible;
- Follow vessel SOPEP procedure and emergency spill response;
- Isolate the source of the spill / leak if safe to do so;
- Sources of ignition will be eliminated – in case of spilled substance being flammable;
- The spill will be contained as far as practicable using appropriate spill equipment;
- All spills will be reported to the appropriate authorities where applicable;
- The Project Team will be provided with emergency spill response training;
- Spill kits will be made available at fuel storage and refuelling locations and in individual plant vehicles and vessels; and
- Spill kits will be replaced after use.

The collected contaminant from a spill will be treated as hazardous (Special) waste and will be disposed of appropriately.

The COSHH record for any chemicals stored on the Project will be kept and updated by BMC along with the data sheet for any COSHH Material, chemical or substance. Operating instructions have to be prepared (under the use of current Material Safety Data Sheets (MSDS). For all used hazardous substances a register has to be maintained.

Records will be kept of all visual fuel and oil checks of plant and fuel and oil storage containers by BMC.

Records will be kept by BMC of all spills and actions taken will be noted. Lessons learned will be communicated as appropriate.

BMC will be required to undertake cable landfall works in line with standard industry best practice and the general environmental management plans provided by SHEPD:

- Biosecurity
- Waste management;
- Working in or near water;
- Unexpected contaminated land;
- Working in sensitive habitats; and
- Oil storage and refuelling.

13. DROPPED OBJECTS

Any debris (or waste) arising during the course of the Project will be removed from the site of the works if practicably feasible and safe to do so, for disposal at an approved location.

Should debris not be able to be removed immediately and it is considered to be a danger to navigation or risk to any other legitimate user of the sea, notification should be provided to Marine Scotland and a mitigation plan proposed for approval by Marine Scotland.

The mitigation plan must include consideration of removal or alteration to the debris.

Separate provisions apply for the accidental loss of pollutants.

14. MONITORING AND REPORTING PLAN

14.1. Introduction

Monitoring and reporting of activities during the Project is required in order to ensure works are carried out as per legislation, consent conditions and in line with SHEPD requirements. This section describes the monitoring (including auditing) and reporting activities that will be performed during the execution of the Project.

14.2. Monitoring During Cable Installation

All vessels utilised on the Project shall be fully compliant with the ISM Code and flag state requirements. Where ISM Code does not apply to a vessel utilised due to vessel size the vessel operator shall ensure that the vessel has a suitably integrated Safety Management System in use on board the vessel.

Table 3 below outlines a number of environmental documents / certificates the vessels will be expected to provide in order to comply with the environmental aspects of the initial vessel audit and / or ongoing audits throughout the Project work. Documentation will be required to be provided to SHEPD (where specified) ahead of operations and prior to HAZID in order that any necessary amendments can be made in advance of works commencing. Pre-installation vessel checks will be undertaken by SHEPD, to ensure all appropriate documentation is onboard the vessel.

Table 3: Vessel Audit Checklist

Aspect	Document	Action	Responsibility for Provision
Marine Licence and related documentation	Marine Licence	Copy of Marine Licence to be on board vessel throughout works	Vessel
	EPS Licence	Copy of EPS Licence to be on board vessel throughout works	Vessel
	CEMP	Copy of CEMP to be on board vessel throughout works	Vessel
	FLMAP	Copy of FLMAP to be on board vessel throughout works	Vessel
	MMPP	Copy of MMPP to be on board vessel throughout works	Vessel
Water Protection	Shipboard Marine Pollution Emergency Plan (SOPEP)	Plan to be presented prior to the HAZID, and on-board vessel throughout works	Vessel
	Ensure that materials are secured on deck	Evidence required at vessel audit	Vessel
	Wastes are required to be contained on-board vessels for appropriate disposal on return to port	Evidence required at vessel audit	Vessel
Oily Discharges	Oil Pollution Prevention Certificate	Certificate to be presented prior to the HAZID, and on-board vessel throughout works	Vessel
	Oil Record Book	Record book to be on-board vessel throughout works	Vessel
Ballast Water Management	International Ballast Water Management Certificate	Certificate to be presented prior to the HAZID, and on-board vessel throughout works	Vessel
	Ballast Water Management Plan	Plan to be presented prior to the HAZID, and on-board vessel throughout works	Vessel
	Ballast Water Record Book	Record book to be on-board vessel throughout works	Vessel
Biofouling Management	International Anti-Fouling System Certificate	Certificate to be presented prior to the HAZID, and on-board vessel throughout works	Vessel
	Biofouling Management Plan	Plan to be presented prior to the HAZID, and on-board vessel throughout works	Vessel
	Biofouling Record Book	Record book to be on-board vessel throughout works	Vessel
Waste Management	Waste Management Plan	Plan to be presented prior to the HAZID, and on-board vessel throughout works	Vessel
	Garbage Record Book	Record book to be on-board vessel throughout works	Vessel
	Controlled Waste Transfer Note / Special Waste Consignment Note	Notes to be on-board vessel at vessel audit and throughout works	Vessel
Marine Mammals	MMO Records	Evidence required at vessel audit	Vessel

Daily checks will be carried out by the Supervisor for Offshore Works. Any actions resulting from these inspections will be reported at team meetings.

SHEPD Project Manager will arrange a schedule of audits for both the vessel and work sites as appropriate during the delivery of the Project. The audits will include evaluation of compliance with environmental legislation, good practice and with any project and client requirements.

Following completion of each audit, a report will be prepared, and distributed to the Project Team and SHEPD personnel as appropriate. This will identify any corrective measures that need to be undertaken, which will be entered into the Audit Close Out Schedule. This will contain details on who is responsible for implementing each action and the associated timescales.

All corrective actions identified as a result of any audit or inspection generated either by BMC or by SHEPD will be entered into the Corrective Actions Tracker. This will detail:

- The date of the audit;
- The origin of the audit finding (e.g. weekly inspection);
- The audit finding;
- The corrective action required;
- Responsibility for the corrective action;
- Date of close-out of the corrective action.

14.3. Reporting During / After Installation

DAILY REPORTING

In addition to incident reporting, environmental related matters will be reported to SHEPD Supervisor for Offshore Works in the Daily Progress Report (DPR) prepared by BMC.

END OF INSTALLTION REPORTING

BMC will be responsible for the preparation of all reports required at the end of the cable installation activity, including, but not necessarily limited to the following:

- As laid report;
- Charting;
- RPL report; and
- Lessons learned report.

The above will be used to compile the end of installation report required by Marine Scotland.

14.4. Incident Response and Reporting

All incident reporting and investigation will be undertaken in line with SHEPD requirements as detailed in MS-SHE-010 Incident Reporting Management and Investigation Standard and REF-PSSHE-COM-015 Reporting of SHE Incidents. The requirements are detailed in Figure 6 and this should be the first reference in the event of an incident or near miss.

Refer to Figure 6 for response requirements

Reporting required within 30 minutes **0800 107 3207**

Incident response will be based on the Stop, Control, and Notify principle. Works will be stopped and where possible the source of any pollution will be addressed. Appropriate measures will be taken to contain the pollutant.

After an incident any lessons learnt from the incident will be communicated to all of the Project Team and appropriate action will be taken elsewhere on the Project if necessary. All relevant method statements, sections of the CEMP, toolbox talks etc. will be updated and all Project Team members informed of the changes.

Audits will be conducted at regular intervals with corrective and preventative actions being monitored in an Audit Close-out Schedule.

The Project Team will be briefed on the system for reporting incidents and near misses as a part of their Site Induction.

Any complaints received from the public or regulatory authorities will also be recorded on the environmental incidents and near misses register.

In general, all significant environmental or pollution incidents will be initially managed according to SHEPD process outlined above, but also according to BMC emergency response procedures, including the Shipboard Marine Pollution Emergency Plan (SOPEP).

SHE Communication No. REF-PF-SHE-COM-015

For issue to Scottish and Southern Electricity Networks (Employees and Contract Partners)

SHE COMMUNICATION

Reporting of SHE Incidents

Introduction:

It is an unfortunate fact that every month some incidents, incurred by persons working on behalf of Scottish and Southern Electricity Networks (SSEN), are reported late.

Late reporting of incidents is not good practice as it often introduces additional risk and more importantly it means that we lose the opportunity to provide the persons involved in the incident with the help and support they deserve.

Delayed or late reporting of incidents is not a standard we are willing to accept and therefore we are introducing a change in addition to the requirements of the related SSE Group Standard (MS-SHE-010). Without exception, these additional requirements apply to all incidents incurred by persons working on behalf of Scottish and Southern Electricity Networks.

New requirements:

All 'Safety, Health and Environment (SHE) incidents' incurred when working on behalf of SSEN shall be reported to our 30 minute line (within 30 minutes of the incident occurring). For the benefit of doubt, in this case the term SHE incidents includes:

- All injury incidents incurred when working on behalf of SSEN
- All injuries to members of the Public associated with SSEN work and/ or assets
- All incidents impacting the environment
- All Road Traffic Collisions incurred when working on behalf of SSEN
- All erroneous operational incidents (e.g. switching incidents) incurred when operating on behalf of SSEN
- All near-miss incidents incurred when working on behalf of SSEN.

Actions post incident for persons involved in incidents:

The three actions listed below must be completed by persons on site (operational and non-operational) if an incident occurs:

- Deal with the emergency requirements of the incident
- Call the 30 minute line (0800 107 3207)
- Inform your supervisor/ manager.

Guidance for supervisors/ managers:

The guidance listed below is provided for all supervisors/ managers with regard to the actions required if an incident occurs:

- Supervisors/ managers must ensure the welfare of persons involved in incidents
- If you are a supervisor or manager in a contracted partner company you must call your nominated SSEN contract manager and ensure they are aware of the incident

SHE Communication No. REF-PF-SHE-COM-015									
<ul style="list-style-type: none"> • SSEN supervisors/ managers must ensure that incidents are escalated accordingly within their Directorate • Responsible supervisors/ managers must record incidents in the SEAR system (ASAP and definitely within 24 hours of the incident occurring) • Responsible supervisors/ managers must investigate incidents in real-time and complete the incident investigation (ASAP and definitely within 20 working days). An investigation is only complete when the final report and resultant actions are recorded in the SEAR system and the incident account is closed. <p>Notes:</p> <ul style="list-style-type: none"> • Help and support regarding the requirements for the reporting and management of incidents can be obtained from a member of the Networks SHE Team. • Dispensation regarding the requirements set out above can be requested from the Head of SHE Networks if, for good reason, the responsible supervisor/ manager believes delivery is not practicable with the specific circumstances of the incident in mind. <p>Application:</p> <p>These additional requirements are implemented with immediate effect and they apply to all persons who work on behalf of Scottish and Southern Electricity Networks and all incidents incurred by persons working on behalf of Scottish and Southern Electricity Networks.</p> <p>For the benefit of doubt, these requirements apply to all employees and contract partners who work on behalf of Scottish and Southern Electricity Networks.</p> <p style="text-align: center;">30 Minute Line (everyone) – 0800 107 3207</p> <p>Briefing:</p> <p>All supervisors/ managers shall, without delay, ensure that this communication is shared with the employees and contract partners working on their behalf.</p> <p style="text-align: center;">At Scottish and Southern Electricity Networks – if it's not safe, we don't do it</p>									
Communication by (✓)		Managers	✓	Notice board	✓	Tool-box talk	✓	Team brief	✓
Communication complete by (✓)		1 week	✓	2 weeks		1-month		2-months	
Issued by: Richard Gough, Head of SHE, Networks						Date of issue: 22/09/2016			



Figure 6: SSEN Reporting Requirements

15. BMC INTEGRATED MANAGEMENT SYSTEM POLICY

Integrated Management System Policy

Briggs Marine & Environmental Services provide clients with the following services: the provision of marine contracting and marine civil engineering services, submarine cable laying and maintenance services, environmental services including training, consultancy and oil spill response, oil and gas terminal operation services, and the maintenance and deployment of moorings and navigation buoys.

The company is committed to continually improving the quality, reliability and efficiency of the services it provides. To achieve this a fully integrated management system has been adopted; independently verified as operating in accordance with the requirements of ISO 9001 (Quality Management Systems), ISO 14001 (Environmental Management Systems), OHSAS 18001 (Occupational Health and Safety Management System) and in accordance with the principles of ISO 50001 (Energy Management Systems). Integral to this commitment is the absolute desire to reduce accidents and work-related ill health to our employees and other persons and to lessen harm to the environment to the minimum level that is reasonably practicable.

Briggs Marine & Environmental Services shall comply fully with the requirements of all relevant and applicable Health, Safety and Environmental legislation and any other regulations pertinent to its undertaking.

We will, in the interests of our business and the service we provide to our customers, promote and communicate throughout the organisation the need for quality, safety and environmental awareness. This shall be achieved by regular meetings, toolbox talks and forums held across the organisation. We will ensure the integrity of service through compliance with appropriate codes, standards and directives applicable to our activities.

Objectives and targets will be set annually in order to ensure continuous improvement throughout the organisation. These objectives and targets shall be measurable and auditable with results being fed back into system improvements.

We acknowledge the importance of the performance of our vendors in achieving our quality, safety and environmental aims. Therefore, we shall seek to establish close and constructive relationships with our suppliers and subcontractors at all times.

Adequate resources shall be made available in order to ensure implementation of this policy across the organisation. This policy shall be available to the public and other interested parties on request.

By signing this policy document, I acknowledge my overall responsibility for health, safety and environmental care within the organisation. This policy shall be reviewed annually, or more frequently if circumstances so require.

This policy statement is to be displayed on notice boards throughout the organisation.

[Redacted]

Colleson Briggs
Managing Director
Briggs Marine and Environmental Services
March 2018