

paScottish and Southern Electricity Networks (SEN)

Aultbea - Ullapool Network Reinforcement: Loch Broom Subsea Cable Installation Construction Environmental Management Plan (CEMP)

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CONTENTS

1	INTRODUCTION	4
2	SCOPE	5
3	REVIEW AND UPDATE PROCEDURE	5
4	DOCUMENT STRUCTURE	5
5	MITIGATION REQUIREMENTS	6



1 INTRODUCTION

Scottish Hydro Electric Power Distribution plc (SHEPD) holds a licence under the Electricity Act 1989 for the distribution of electricity in the north of Scotland including the Islands. It has a statutory duty to provide an economic and efficient system for the distribution of electricity and to ensure that its assets are maintained to ensure a safe, secure and reliable supply to customers.

SHEPD propose to install a new 33 kV (Kilovolts) subsea power cable which will tie-in with the existing network on the Ullapool side and a proposed overhead line network on the southern side of Loch Broom at Alltnaharrie. The cable will be located within a designated 'installation corridor'.

A Marine Environmental Appraisal (MEA) was developed by Xodus Group Ltd, to support SHEPD's Marine Licence Applications to conduct cable installation activities within the proposed installation corridor. The MEA presents a review of baseline conditions within the installation corridor and identifies sensitive environmental receptors which are or may be present in the area. An assessment of potential effects on these receptors associated with the proposed cable installation activities was conducted, in order ascertain the magnitude and severity of environmental impacts. Where impacts were deemed to be significant, or above acceptable criteria, mitigation protocols were identified in order to remove or reduce the magnitude of effect. The following receptors were assessed by the MEA:

- Designated Sites;
- Seabed and Water Quality;
- Marine Megafauna;
- Benthic and Intertidal Ecology;
- Ornithology;
- Marine Archaeology; and
- Commercial Fisheries and Other Sea Users.

This Construction Environmental Management Plan (CEMP) is designed to provide a consolidated point of reference for SHEPD and their marine contractors. It ensures all environmental mitigation measures identified by the MEA and supporting documents are effectively disseminated to and implemented by the project team during cable installation activities. The CEMP is informed by, and should be read in conjunction with the following documents:

- Aultbea - Ullapool: Loch Broom Subsea Cable Installation – Marine Environmental Appraisal;
- Fisheries Liaison Mitigation Action Plan – Aultbea and Ullapool (FLMAP);
- Aultbea - Ullapool: Loch Broom Subsea Cable Installation – Navigation Risk Assessment (NRA); and
- Aultbea to Ullapool: EPS and Protected Species Risk Assessment (WSP, 2021).



2 SCOPE

The CEMP is intended for use during all marine works (below Mean High Water Springs), associated with the Aultbea - Ullapool: Loch Broom Subsea Cable Installation activities, including:

- Marine geophysical survey and inspection (pre, during and post installation);
- Detailed route engineering;
- Marine and intertidal cable installation works, including cable laying, trenching in the intertidal zone, and possible placement of rock bags and concrete mattresses; and
- Post installation reporting.

3 REVIEW AND UPDATE PROCEDURE

By its nature the CEMP is a living document, and it is important that it is updated as the project develops, in order to capture potential changes to mitigation requirements. However, the CEMP also forms part of SHEPD's consent requirements, and as such, any material changes to the mitigation requirements may need approval from Marine Scotland's Licencing Operations Team (MS-LOT). As such, it is important that a dialogue with MS-LOT is maintained throughout the project.

Any changes to the CEMP must be reviewed and approved by the following:

- SHEPD's project manager;
- Contractor's project manager;
- SHEPD's environmental consultant; and
- MS-LOT.

As a minimum, this CEMP should be reviewed, and where necessary, updated at the following project milestones:

- Award of Marine Licence;
- Following completion of pre-installation surveys and detailed route engineering; and
- Following any substantive change to project design or cable installation methods.

Note – sufficient time should be allowed for potential review by MS-LOT prior to the mobilisation of marine installation vessels.

4 DOCUMENT STRUCTURE

The mitigation requirements in this CEMP are presented in tabular form, grouped by project phase and relevant receptors. For each item of mitigation, a breakdown of both SHEPD's and their Contractor's requirements is provided, along with links and references to other relevant documents and guidance.



5 MITIGATION REQUIREMENTS

Phase	Aspect	Measure	Requirements	Additional Information	SHEPD Responsibility	Contractor Responsibility	Date Actioned / Implemented
General	Environmental Awareness	The CEMP must be available to all personnel.	Copies of the CEMP must be available on all survey and installation vessels, and in project offices.	N/A	Audit	Ensure copies made available.	
		All project personnel will be trained and informed of their responsibility to implement the environmental and ecological mitigation outlined in the CEMP.	Toolbox talks, inductions, and awareness notices will be used to disseminate this information among all relevant project personnel.	MEA: Section 4.3	Audit training, induction, and toolbox talk records.	Ensure appropriate training is provided to personnel.	
		Copies of all licences and permits must be available at relevant project locations.	Copies of relevant licences and permits must be available on all vessels and in project offices. This includes: <ul style="list-style-type: none"> • Marine Licences; • EPS Licences; and • Basking Shark Licences. 	N/A	Provide copies of licence, and audit.	Ensure copies maintained in relevant locations.	
	Spill Response	Emergency Spill Response Plan	An Emergency Spill Response Plan must be developed prior to operations commencing, and should include the following details: <ul style="list-style-type: none"> • Immediate actions using Source-Pathway-Receptor Model; • Communication lines and contact details; • Reporting procedure; and • Implementation of Lessons Learned. 	MEA: Section 4.3	Work with Contractor to develop plan, and audit implementation and training.	Work with SHEPD to develop plan, and ensure it is implemented during all relevant activities.	
	Waste Management	Waste Management Plan	Develop and Implement a Waste Management Plan to ensure the waste hierarchy is followed, and all waste is sent for onward recycling or disposal via a licenced waste route. Provisions should also be included to prevent marine litter resulting from the project.	MEA: Section 4.3 NetRegs WMP Guidance https://www.netregs.org.uk/media/1718/a-simple-guide-to-site-waste-management-plans.pdf	Work with Contractor to develop plan, and audit implementation and training.	Work with SHEPD to develop plan, and ensure it is implemented.	
	Location of Works	Installation Corridor	All survey and cable installation activities will be conducted within the boundaries of the installation corridor, with exception to further sea space for vessel navigation (where required) in order to facilitate cable installation.	MEA: Section 3	Audit	Implement	
Survey and Inspection <i>(Not Covered by MEA)</i>	General Ecology	Vessel Management	The following measures will be implemented during all survey works: <ul style="list-style-type: none"> • All vessels will adhere to the provisions of the Scottish Marine Wildlife Watching Code (SMWWC), and the Basking Shark Code of Conduct; and • Survey crew will be made aware of all protected species within the marine environment, and their responsibility to implement the mitigation in this document. 	MEA: Section 4.3 SMWWC: https://www.nature.scot/professional-advice/land-and-sea-management/managing-coasts-and-seas/scottish-marine-wildlife-watching-code Basking Shark Code of Conduct: https://www.sharktrust.org/Handlers/Download.ashx?IDMF=6137b1a1-8518-4327-9922-7b280acb8336	Audit	Implement, and ensure copies of the guidance are available on survey vessels.	
	Marine Mammals	Marine Mammal Monitoring	For activities where mitigation is required, there will be Marine Mammal Observer (MMO) coverage for the duration of the surveying activities, with adequately trained and experienced MMO(s) working standard 12-hour shifts. They will have experience of working at sea and will have successfully deployed and used PAM equipment previously and be equipped with binoculars offering at least 8x	EPS & Protected Sites & Species RA.	Audit	Implement	



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			magnification. The MMO will be located at a high point on the vessel, providing good all-round visibility.				
Geophysical Survey and Inspection <i>(Not Covered by MEA)</i>	Marine Mammals	Marine Mammal Observer	During daylight hours the MMO(s) will carry out visual observations to monitor for the presence of cetaceans, seals and basking sharks before the survey equipment is activated and will recommend delays in the commencement of the operation should any cetaceans be detected within the 500 m mitigation zone for cetaceans. This distance will also be 500 m for seals and basking sharks, except in the event of a need to avoid critical delay to the project in which case the mitigation zone for both species' groups will be 100 m. The criteria as to what constitutes a critical delay leading to reduction in mitigation zone distance from 500 m to 100 m would be agreed on a case by case basis in consultation with MS-LOT.	EPS & Protected Sites & Species RA	Audit	Implement	
		Passive Acoustic Monitoring (PAM)	When visibility is poor (i.e., due to fog or during hours of darkness) and/or during periods when the sea state is greater than Beaufort 3, the PAM system will be operated by a single MMO/PAM operator. The PAM system shall comprise of at least three hydrophone elements, allowing for directional localisation of detections, together with software allowing real time automated detection of marine mammal vocalisations (e.g. PAMGuard or equivalent).	EPS & Protected Sites & Species RA	Audit	Implement	
		Pre-Start Search	Visual (MMO) (and acoustic (PAM) monitoring if required) will be conducted for a pre-start search of 30 minutes (i.e., prior to the commencement of survey operations). This will involve a visual (during daylight hours) or PAM watch (during poor visibility or at night) to determine if any cetaceans, seals or basking sharks are within 500 m of the activities.	EPS & Protected Sites & Species RA	Audit	Implement	
		Cetacean, Seal and Basking Shark Mitigation Zone	The mitigation zone is defined as the area within 500 m of the survey equipment; noting that the equipment is deployed on a ROV, this will be the centre of the mitigation zone, and not the vessel. Should any cetaceans, seals or basking sharks be detected within the mitigation zone prior to the commencement of survey operations (or after breaks in survey activities of more than 10 minutes), operations will be delayed until their passage, or the transit of the vessel, results in the cetaceans, seals or basking sharks being out-with the mitigation zone. In all three cases, there will be a 20 minute delay from the time of the last sighting within the mitigation zone to the commencement/recommencement of the SBP operations.	EPS & Protected Sites & Species RA	Audit	Implement	
		Reporting	All recordings of cetaceans, seals and basking sharks will be made using JNCC Standard Forms. At the end of the operations, a monitoring report detailing the cetaceans recorded, methods used to detect them, and details of any problems encountered will be submitted to Marine Scotland and NatureScot. The report will also include feedback on how successful the mitigation measures were. This requirement will be communicated to the MMOs at project start up meetings and at crew change.	EPS & Protected Sites & Species RA	Audit	Implement	
	Basking Sharks	Monitoring Protocols	The provisions of the marine mammal mitigation shall also apply to basking sharks.	EPS & Protected Sites & Species RA	Audit	Implement	
	Otters	Monitoring Protocol	While no SACs designated for otters are present in the vicinity of the installation corridor, as a measure of best practice, the provisions of the marine mammal mitigation shall also apply to otters.	EPS & Protected Sites & Species RA	Audit	Implement.	
	Ornithology	Vessel Management	The survey vessel will be moving at a slow speed (maximum speed of 4-8 knots) during survey operations, to allow any rafting seabirds time to disperse before the vessel arrives. When not on survey effort, vessels will avoid bird rafts where operationally possible and it is safe to do so.	EPS & Protected Sites & Species RA	Audit	Implement.	



Phase	Aspect	Measure	Requirements	Additional Information	SHEPD Responsibility	Contractor Responsibility	Date Actioned / Implemented	
Detailed Route Engineering	Project Design	Cable protection and stabilisation	Deposit materials (mattresses and rock bags) may be utilised for asset stabilisation. These have been included as contingency only.	Aultbea Ullapool: Loch Broom Subsea Cable Installation Project Description; MEA: Section 3	Ensure final design aligns to these parameters.	Implement during project design.		
Detailed Route Engineering		Surface Laying	The cable will be surface laid for the offshore length. No submarine trenching or protection using rock berms will be conducted. It is the intention to bury the cable/split pipe and Sea Earths up to 50 m below MLWS. This would be done by land plant or by divers. In addition, it is proposed that the cable will be installed by using an open-cut trench method between MLWS to MHWS at the landfall locations. An open cut trench will be excavated to install and bury the cable and split pipe will be used.	Aultbea Ullapool: Loch Broom Subsea Cable Installation Project Description; MEA: Section 3	Ensure final design aligns to these parameters.	Implement during project design.		
		Pre-Installation Surveys	Appropriate pre-installation surveys and visual inspection will be conducted to confirm the locations of potentially sensitive features, including Annex 1 habitats and archaeological sites.	Aultbea Ullapool: Loch Broom Subsea Cable Installation Project Description; MEA: Sections 3 & 4.3.	Ensure included in Contractor's scope of works.	Pre-installation surveys as per scope of works.		
		Benthic Habitats	Avoidance of Sensitive Habitats	There is the potential for sensitive and protected habitats and species within the area. These include the tall sea pen and firework anemone within the subtidal area. The final cable route, and positioning of deposits will be optimised to avoid impacts on sensitive environmental features.	Aultbea Ullapool: Loch Broom Subsea Cable Installation Project Description; MEA: Sections 3, 4.3 & 8.4.	Review final design against environmental constraints.	Consider survey data and confirmed locations of sensitive habitats during route engineering.	
		Historic Environment	Avoidance of Wrecks and Archaeological Sites.	All wrecks or features of potential archaeological interest identified during survey operations shall be avoided by a buffer of at least 50 m.	MEA Section 10.4.	Review final design against archaeological constraints.	Consider survey data and treat confirmed locations of archaeological potential as hard constraints.	
Cable Installation	Water Quality	Tidal Working During Landfall Trench Construction	The timing of trenching works will be tide dependent (working at low water when the intertidal zone is exposed).	Aultbea Ullapool: Loch Broom Subsea Cable Installation Project Description; MEA Section 3 and 6.4	Audit	Implement		
	General Ecology	Scottish Marine Wildlife Watching Code (SMWWC) and Basking Shark Code of Conduct	The following measures will be implemented during all survey works: <ul style="list-style-type: none"> All vessels will adhere to the provisions of the Scottish Marine Wildlife Watching Code (SMWWC), and the Basking Shark Code of Conduct; and Survey crew will be made aware of all protected species within the marine environment, and their responsibility to implement the mitigation in this document. 	SMWWC: https://www.nature.scot/professional-advice/land-and-sea-management/managing-coasts-and-seas/scottish-marine-wildlife-watching-code Basking Shark Code of Conduct: https://www.sharktrust.org/Handlers/Download.ashx?IDMF=6137b1a1-8518-4327-9922-7b280acb8336	Audit	Implement, and ensure copies of the guidance are available on survey vessels.		
		Vessel Speed	Vessels will be travelling at a slow speed during cable installation activities. The slow speed of the vessels will minimise the risk of disturbance and injury impacts to seabird and marine mammal receptors.	MEA: Section 4.3	Audit	Implement		
		Otters	The management and mitigation of otters during cable installation activities will be implemented through the onshore environmental management plans. The provisions of the SMWWC shall also apply to otters.	Onshore CEMP	Audit	Implement.		
	Benthic Habitats	Minimise Deployment of Spud Legs	Reduces the potential for disturbance to benthic habitats and species including those which utilise the seabed.	MEA: Section 4.3	Review method statements to ensure efforts to minimise	Consider and implement alternatives to		



Phase	Aspect	Measure	Requirements	Additional Information	SHEPD Responsibility	Contractor Responsibility	Date Actioned / Implemented	
					anchoring are included.	anchoring where possible.		
Cable Installation	Ornithology <i>(Also applicable to survey vessels)</i>	Vessel Lighting	The following measures will be implemented to minimise the potential impacts to birds during night-time working: <ul style="list-style-type: none"> Lighting on-board the cable survey vessel(s) will be kept to the minimum level required to ensure safe operations. Lights will be directed or shielded (where possible) to prevent upward illumination and minimise disturbance. 	MEA: Section 4.3	Audit	Implement		
	Pollution Prevention <i>(Also applicable to survey vessels)</i>	Shipboard Oil Pollution Emergency Plans	Control measures and shipboard oil pollution emergency plans (SOPEP) will be in place and adhered to under MARPOL Annex I requirements. In the event of an accidental fuel release occurring appropriate standard practice management procedures will be implemented accordingly.	MEA: Section 4.3 As per the MARPOL 73/78 requirement under Annex I, all ships with 400 GT and above must carry an oil prevention plan as per the norms and guidelines laid down by International Maritime Organization under MEPC (Marine Environmental Protection Committee) act.	Audit.	Demonstrate vessels are compliant with requirement, and SOPEPs up to date.		
	Pollution Prevention <i>(Also applicable to survey vessels)</i>	Sewage Treatment and Storage	Vessels will be equipped with waste disposal facilities (sewage treatment or waste storage) to IMO MARPOL Annex IV Prevention of Pollution from Ships standards. As the works are located within the 12 nm limit, no discharges of food waste, grey, or brown water will be permitted.	MEA Section 4.3	Audit	Demonstrate vessels are compliant with requirement.		
	Marine Non-Native Species <i>(Also applicable to survey vessels)</i>	IMO Ballast Water Convention	Ballast water discharges from vessels will be managed under International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (BWM Convention). The BWM Convention, adopted in 2004, aims to prevent the spread of harmful aquatic organisms from one region to another, by establishing standards and procedures for the management and control of ships' ballast water and sediments. Measures will be adopted to ensure that the risk of Non-Native Marine Species (NNMS) introduction during cable installation activities is minimised.	MEA: Section 4.3	Audit	Demonstrate vessels are compliant with requirement.		
		Use of clean materials.	Only clean stone (free from organic contaminants) shall be used in rock bags to reduce the risk of NNMS.	MEA Section 4.3 and 8.4.4.	Audit	Implement.		
	Commercial Fisheries and Other Sea Users <i>(Also applicable to survey activities)</i>	Fisheries Liaison	A Fisheries Liaison Officer (FLO) will be employed to manage interactions between cable installation vessels, personnel, equipment and fishing activity. This will be managed through the Fisheries Liaison Mitigation Action Plan.	MEA Section 4.3 FLMAP – Aultbea and Ullapool	Employ FLO and Provide FLMAP.	Work with FLO to implement FLMAP.		
		Navigation Warnings	Notice to Mariners (including local), Kingfisher bulletins, Radio Navigational Warnings, NAVTEX, and/or broadcast warnings will be promulgated in advance of any proposed works. The notices will include the time and location of any work being carried out, and emergency event procedures.	MEA Section 4.3 Aultbea - Ullapool: Loch Broom Subsea Cable Installation –NRA	Audit	Implement		
		Navigational Safety		All vessels will operate in compliance with International Regulations for the Prevention of Collision at Sea (IRPCS) (IMO, 1972) and the International Regulations for the Safety of Life at Sea (SOLAS).	MEA Section 4.3 Aultbea - Ullapool: Loch Broom Subsea Cable Installation –NRA	Audit	Implement	
				A guard vessel may be used during the installation campaign where a potential risk to the asset or danger to navigation has been identified.	MEA Section 12.3 Aultbea - Ullapool: Loch Broom Subsea Cable Installation –NRA	Audit	Implement	



Phase	Aspect	Measure	Requirements	Additional Information	SHEPD Responsibility	Contractor Responsibility	Date Actioned / Implemented
Cable Installation		Communications	<p>Compliance with the FLMAP Delivery Programme and how Scottish Hydro Electric Power Distribution co-exist with other marine users. Specifically:</p> <ul style="list-style-type: none"> • Ensure that notice and information distribution is not less than 20 days, if possible, for individual vessels mobilisations; • Regular liaison and updates by FIR with local fishermen of proposed timings with confirmations when operations are finalised; and • Regular liaison and updates by FLO with other legitimate sea users of proposed timings with confirmations provided when planned works are finalised. 	FLMAP – Aultbea and Ullapool	SHEPD's priority is to identify and pro-actively engage with legitimate sea-users who could be potentially impacted by SHEPD's work.	Implement and ensure the FLO and FIR are provided the relevant information regarding project progress.	
		Protocol for Archaeological Discoveries	It is acknowledged that there is the potential that archaeological features could be present within the installation corridor, which are not identified by preconstruction surveys. In order to account for this, and subject to further discussion with Historic Environment Scotland, the Crown Estate's 'Protocol for Archaeological Discoveries' (PAD) (TCE, 2014) could be used as a basis for further mitigation during installation activities. The role of the Implementation Service described within the above protocol would be replaced by an archaeological service provider appointed by SHEPD or their installation Contractor.	<p>MEA Section 10.4 PAD: https://www.wessexarch.co.uk/sites/default/files/field_file/2-Protocol%20For%20Archaeological%20Discoveries.pdf</p>	Audit.	If required, implement, and ensure PAD is available on installation vessels.	
Post Cable Installation	Marine Survey	As-Built Surveys	As built surveys will be conducted to ascertain the actual position of the cable, associated protection measures and locations of potential snagging risks.	MEA: Section 4.3	Ensure included in Contractor's scope of works.	Conduct as-built surveys as per scope of works.	
	Historic Environment	Reporting Wrecks	The location of any wrecks or features of potential archaeological significance will be provided to Historic Environment Scotland, and the UKHO.	MEA: Section 10.4	Submit data to relevant stakeholders.	Provide SHEPD with relevant information and data in agree format.	
	Close Out Reporting	Marine Licence	A close out report will be submitted to Marine Scotland providing details of actual material deposits on the seabed, and as built locations of the cable.	N/A	Submit report to MS-LOT.	Provide SHEPD with relevant information and data in agreed format.	
		EPS and Basking Shark Licences	Marine Mammal reports to be provided to MS-LOT for geophysical survey activities.	N/A	Submit report to MS-LOT.	Provide SHEPD with relevant information and data in agreed format.	
		JNCC Marine Noise Registry	JNCC marine noise registry to be updated with actual survey duration, locations, and source noise details.	N/A	Submit report to JNCC.	Provide SHEPD with relevant information and data in agree format.	
Updating Marine Stakeholders	Provision of As-Built survey data.	As built survey data will be provided to the UKHO and Kingfisher for inclusion on Admiralty Charts and KIS-ORCA Charts.	MEA Section 4.3.	Submit data to relevant stakeholders.	Provide SHEPD with relevant information and data in agree format.		