Carradale – Arran Cable Replacement

Marine Construction Environmental Management Plan

Scottish Hydro Electric Power Distribution plc

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1 INTRODUCTION

The Carradale – Arran North cable has been identified for replacement from asset integrity inspections. The replacement of this cable is essential to maintain the security of supply for SHEPD customers.

A Marine Environmental Appraisal (MEA) has been undertaken by Xodus Group Ltd, to support the Marine Licence, EPS Licence and Basking Shark Licence Applications which are required in order to conduct cable replacement activities within the 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 replacement works has been undertaken, in order to ascertain the magnitude and severity of environmental impacts. Where impacts have been assessed as potentially significant, or above acceptable criteria, mitigation protocols have been identified in order to remove or reduce the magnitude of effect. The following receptors have been assessed within the MEA:

- Designated Sites;
- Water Quality;
- Marine Megafauna;
- Benthic Ecology;
- 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 supports the processes required to help ensure that all environmental mitigation measures identified by the MEA and supporting documents are effectively disseminated to and implemented by the project team during cable replacement works. The CEMP is informed by, and should be read in conjunction with the following documents:

- Carradale – Arran Cable Replacement – Marine Environmental Appraisal;
- Project Description: Cable Replacement Carradale – Arran ('Project Description');
- Fisheries Liaison Mitigation Action Plan – Clyde (FLMAP); and
- EPS Protected Sites and Species Risk Assessment – Clyde (Xodus Report: A-302244-S02-REPT-008).

2 SCOPE

The CEMP is intended for use during all marine works (below Mean High Water Springs), associated with the Carradale – Arran cable replacement works, including:

- Marine geophysical survey and inspection (pre, during and post installation);
- Detailed route engineering;
- Marine and intertidal cable installation works, including cable laying, trenching, and 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
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: Section1.3.5	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: • Marine Licences; • EPS Licences; and • Basking Shark Licences.	N/A	Provide copies of licence, and audit.	Ensure copies maintained in relevant locations.
	Spill Response	Spill Response Plan	A Spill Response Plan must be developed prior to operations commencing, and should include the following details: • Immediate actions using Source-Pathway-Receptor Model; • Communication lines and contact details; • Reporting procedure; and • Implementation of Lessons Learned.	MEA: Section1.3.5	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 (including sections of removed out of service cables) 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.	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 installation works will be conducted within the boundaries of the Carradale – Arran installation corridor.	Section 1.3 of the MEA	Audit	Implement
Survey and Inspection **(*Not Covered by MEA*)**	General Ecology	Vessel Management	The following measures will be implemented during all survey works: • 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.	Section1.3.5 of the MEA 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.mcsuk.org/downloads/wildlife/basking_sharks/Basking_Shark_Code_of_Conduct_Poster.pdf	Audit	Implement, and ensure copies of the guidance are available on survey vessels.
	Marine Mammals	Marine Mammal Monitoring	There will be MMO coverage for the duration of the sub-bottom profiler (SBP) 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 magnification. The MMO will be located at a high point on the vessel, providing good all-round visibility.	EPS and Protected Sites and Species Assessment – Clyde: A-302244-S02-REPT-008	Audit	Implement

Phase	Aspect	Measure	Requirements	Additional Information	SHEPD Responsibility	Contractor Responsibility
Geophysical Survey and Inspection (***Not Covered by MEA***)	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 SBP 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 and Protected Sites and Species Assessment – Clyde: A-302244-S02-REPT-008	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 3 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 and Protected Sites and Species Assessment – Clyde: A-302244-S02-REPT-008	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 SBP 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 and Protected Sites and Species Assessment – Clyde: A-302244-S02-REPT-008	Audit	Implement
		Cetacean, Seal and Basking Shark Mitigation Zone	The mitigation zone is defined as the area within 500 m of the SBP; noting that the SBP 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 SBP operations (or after breaks in SBP survey activity 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 and Protected Sites and Species Assessment – Clyde: A-302244-S02-REPT-008	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 and Protected Sites and Species Assessment – Clyde: A-302244-S02-REPT-008	Audit	Implement
	Basking Sharks	Monitoring Protocols	The provisions of the marine mammal mitigation shall also apply to basking sharks.	EPS and Protected Sites and Species Assessment – Clyde: A-302244-S02-REPT-008	Audit	Implement
	Otters	Monitoring Protocols	The provisions of the marine mammal mitigation shall also apply to otters.	EPS and Protected Sites and Species Assessment – Clyde: A-302244-S02-REPT-008	Audit	Implement
	Ornithology	Vessel Management	The survey vessels will be moving at a slow speed during survey operations, to allow any rafting seabirds time to disperse before the vessel arrives. When not conducting surveys, vessels will avoid bird rafts where operationally possible and it is safe to do so.	EPS and Protected Sites and Species Assessment – Clyde: A-302244-S02-REPT-008	Audit	Implement.
Detailed Route Engineering	Project Design	Cable protection and stabilisation	The replacement Carradale – Arran cable will be buried where possible. Where burial is not possible, cable protection and stabilisation may include a combination of concrete mattresses, rock bags and rock placement.	EPS and Protected Sites and Species Assessment – Clyde: A-302244-S02-REPT-008	Ensure final design aligns to these parameters.	Implement during project design.

Phase	Aspect	Measure	Requirements	Additional Information	SHEPD Responsibility	Contractor Responsibility
Detailed Route Engineering	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.	EPS and Protected Sites and Species Assessment – Clyde: A-302244-S02-REPT-008	Ensure included in Contractor's scope of works.	Pre-installation surveys as per scope of works.
		UXO	UXO survey to be conducted along installation corridor to inform final proposed cable route.	MEA: Section 7.5.4	Audit	Implement.
	Benthic Habitats	Avoidance of Sensitive Habitats	The final cable route, and positioning of external protection will be optimised to avoid impacts on sensitive environmental features, including Annex 1 habitats such as reefs insofar as possible.	MEA: Section1.3.5 and 5	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.	MEA: Section1.3.5 and 7.	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 Arran Landfall Trench Construction	The timing of trenching works at the Arran landfall will be tide dependent (working at low water when the intertidal zone is exposed).	MEA: Section1.3.5 and 4.	Audit	Implement
		Horizontal Directional Drilling (HDD)	There is the requirement for HDD ducts at the Carradale landfall. HDD will stop short of punch-out of the seabed until pilot hole drilling and reaming are complete to minimise loss of drilling fluid to the sea.	Project Description	Audit	Implement
	General Ecology	Scottish Marine Wildlife Watching Code (SMWWC)	All vessels will adhere to the provisions of the SMWWC during installation works.	SMWWC: https://www.nature.scot/professional-advice/land-and-sea-management/managing-coasts-and-seas/scottish-marine-wildlife-watching-code	Audit	Implement, and ensure copies of the guidance are available on survey vessels.
		Vessel Speed	Vessels will be travelling at a slow speed during installation works. The slow speed of installation vessels will minimise the risk of disturbance and injury impacts to seabird and marine megafauna receptors.	MEA: Section1.3.5	Audit	Implement
		Otters	The management and mitigation of otters during cable installation will be implemented through the onshore environmental management plans. The provisions of the SMWWC shall also apply to otters.	Onshore CEMP MEA: Section 6.4	Audit	Implement.
	Benthic Habitats	Minimise Deployment of Anchor Chains	Reduces the potential for disturbance to benthic habitats and species including which utilise the seabed.	MEA: Section1.3.5	Review method statements to ensure efforts to minimise anchoring are included.	Consider and implement alternatives to anchoring where possible.
	Ornithology (*Also applicable to survey vessels)*	Vessel Lighting	The following measures will be implemented to minimise the potential impacts to birds during night time working: • Lighting on-board the cable survey vessel(s) will be kept to the minimum level required to ensure safe operations; and • Lights will be directed or shielded to prevent upward illumination and minimise disturbance; and • Blackout blinds and/or curtains will be used on external windows/portholes where possible.	MEA: Section1.3.5	Audit	Implement
	Pollution Prevention (*Also applicable to survey vessels)*	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: Section1.3.5 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.

Phase	Aspect	Measure	Requirements	Additional Information	SHEPD Responsibility	Contractor Responsibility
Cable Installation	Pollution Prevention (*Also applicable to survey vessels)*	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: Section1.3.5	Audit	Demonstrate vessels are compliant with requirement.
	Marine Non-Native Species (*Also applicable to survey vessels)*	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 Marine Non-Native Species (MNNS) introduction during cable installation works is minimised.	MEA: Section 1.3.5	Audit	Demonstrate vessels are compliant with requirement.
		Use of clean materials.	Only clean stone (free from organic contaminants) shall be used in rock berms or filter bags to reduce the risk of NNMS.	MEA: Section1.3.5	Audit	Implement.
	Commercial Fisheries and Other Sea Users (*Also applicable to survey activities)*	Profiling of Rock Berms	All rock berms will be profiled with shallow side slopes and constructed of appropriate materials to minimise snagging risk.	Project Description	Audit Ensure final design and as built data aligns to these parameters.	Implement
		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.	FLMAP	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: Section1.3.5	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: Section1.3.5	Audit	Implement
		Communications	Compliance with the FLMAP Delivery Programme and how Scottish Hydro Electric Power Distribution co-exist with other marine users. Specifically: • 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 Delivery Programme for Carradale - Arran	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.
	Historic Environment	Protocol for Archaeological Discoveries	It is acknowledged that there is the potential that archaeological features could be present within the installation corridor, which have not been identified by preconstruction surveys or desktop assessments. In order to account for this, the Crown Estate's 'Protocol for Archaeological Discoveries' (PAD) will be implemented during the proposed installation works.	PAD: https://www.wessexarch.co.uk/sites/default/files/field_file/2_Protocol%20For%20Archaeological%20Discoveries.pdf	Audit.	Implement, and ensure PAD is available on installation vessels.
		UXO	Live footage viewing during cable installation will be conducted to ensure no UXO are present in close proximity to the cable route.	MEA: Section 7.5.4	Audit	Implement.

Phase	Aspect	Measure	Requirements	Additional Information	SHEPD Responsibility	Contractor Responsibility
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: Section1.3.5	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 7	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 replacement cables.	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 relevant 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 for relevant geophysical survey activities.	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 Cable Awareness Charts.	MEA: Section 1.3.5	Submit data to relevant stakeholders.	Provide SHEPD with relevant information and data in agree format.