



Scottish Hydro Electric Power Distribution plc

# ED2 - Marine Licence Support

## Eriskay - Barra Submarine Cable Marine Environmental Appraisal

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## ABBREVIATIONS

ACRONYM/ABBREVIATION	DEFINITION
%	Percent
μPA	Micro Pascal
AA	Appropriate Assessment
AC	Alternative Current
AEOSI	Adverse Effect on Site Integrity
AIS	Automatic Identification System
ALARP	As Low as Reasonably Practicable
BEIS	Department of Business, Energy and Industrial Strategy
BT	British Telecoms
BTO	British Trust for Ornithology
BWM	Ballast Water Management
CalMac	Caledonian MacBrayne
CBA	Cost Benefit Analysis
CBRA	Cable Burial Risk Assessment
CEMP	Construction Environmental Management Plan
CLMP	Cable Laying and Monitoring Plan
CLV	Cable Lay Vessel
CNES	Comhairle nan Eilean Siar
CPS	Cable Protection System
dB	Decibel
DC	Direct Current
DD	Decimal Degrees
DDC	Drop Down Camera
DDM	Degrees and Decimal Minutes
DMS	Degrees, Minutes and Seconds
DSV	Dive Support Vessel
EB-1	Eriskay-Barra 1
EB-2	Eriskay-Barra 2
EB-3	Eriskay-Barra 3
EC	European Community
ECoW	Ecological Clerk of Works
EDR	Effective Deterrent Range
EMF	Electromagnetic Fields
EPS	European Protected Species
EU	European Union



ACRONYM/ABBREVIATION	DEFINITION
EUNIS	European Union Nature Information System
FCS	Favourable Conservation Status
FIR	Fishing Industry Representative
FLMAP	Fisheries Liaison Mitigation Action Plan
FLO	Fisheries Liaison Officer
FO	Fibre Optic
FSA	Formal Safety Assessment
GeMS	Geodatabase of Marine features adjacent to Scotland
ha	Hectare
HES	Historic Environment Scotland
HF	High Frequency
HMPA	Historic Marine Protected Area
HRA	Habitats Regulations Appraisal
HVAC	High Voltage Alternating Current
HWDT	Hebridean Whale and Dolphin Trust
IAMMWG	Inter-Agency Marine Mammal Working Group
ICPC	International Cable Protection Committee
IMO	International Maritime Organization
INNS	Invasive Non-Native Species
IRPCS	International Regulations for the Prevention of Collision at Sea
JNCC	Joint Nature Conservation Committee
kHz	kilohertz
KIS-ORCA	Kingfisher Information Service – Offshore Renewable and Cable Awareness
km	Kilometre
kV	Kilovolt
LAT	lowest astronomical tide
LF	Low Frequency
LSE	Likely Significant Effect
m	Metre
MarLIN	Marine Life Information Network
MARPOL	International Convention for the Prevention of Pollution from Ships
MBES	Multi-Beam Echosounder
MCA	Maritime and Coastguard Agency
MD-LOT	Marine Directorate – Licensing Operations Team
MEA	Marine Environmental Appraisal
MEPC	Marine Environmental Protection Committee
MGN	Marine Guidance Note



ACRONYM/ABBREVIATION	DEFINITION
MHWS	Mean High Water Springs
MLA	Marine Licence Application
MLWS	Mean Low Water Springs
MPA	Marine Protected Area
MTS	Marine Traffic Study
MU	Management unit
NCMPA	Nature Conservation Marine Protected Area
NLB	Northern Lighthouse Board
NM	Nautical Miles
NMFS	National Marine Fisheries Service
NMPi	National Marine Plan Interactive
NRA	Navigational Risk Assessment
NRHE	National Record of the Historic Environment
NSA	National Scenic Area
NtM	Notice to Mariners
OBS	On Bottom Stability
OCT	Open Cut Trench
OEL	Ocean Ecology Limited
OHL	Overhead Lines
OIMD	Operation, Inspection, Maintenance and Decommissioning Strategy
OoS	Out of Service
PAC	Pre-Application Consultation
PAD	Protocol for Archaeological Discoveries
PILS	Pipeline Lateral Stability Software
PLGR	Pre-Lay Grapnel Run
PMF	Priority Marine Feature
PSA	Particle Size Analysis
pUXO	Potential Unexploded Ordnance
PW	Phocid Carnivores in Water
RCZ	Recommended Clearance Zone
RIB	Rigid Inflatable Boat
ROV	Remotely Operated Vehicle
RPL	Route Position List
RSPB	Royal Society for the Protection of Birds
SAC	Special Areas of Conservation
SBP	Sub Bottom Profiler
SCANS	Small Cetaceans in European Atlantic waters and the North Sea



ACRONYM/ABBREVIATION	DEFINITION
SCFF	Scottish Creel Fishermen's Federation
SCOS	Special Committee on Seals
ScotMER	Scottish Marine Energy Research
SEL	sound exposure level
SEPA	Scottish Environment Protection Agency
SFF	Scottish Fishermen's Federation
SHEPD	Scottish Hydro Electric Power Distribution plc
SMU	Seal Management Unit
SMWWC	Scottish Marine Wildlife Watching Code
SNH	Scottish Natural Heritage
SOLAS	International Convention for the Safety of Life at Sea
SOPEP	Shipboard Oil Pollution Emergency Plans
SPA	Special Protection Area
SPL	Sound Pressure Level
SSEN	Scottish and Southern Electricity Networks
SSS	Side-Scan Sonar
SSSI	Site of Special Scientific Interest
SWFPA	Scottish White Fish Producers Association
t	Tonne
TDM	Touch Down Monitoring
TJP	Transition Joint Pits
UAV	Uncrewed Aerial Vehicle
UK	United Kingdom
UKHO	United Kingdom Hydrographic Office
UNCLOS	United Nations Convention on the Law of the Sea
USBL	Ultra Short Baseline
UXO	Unexploded Ordnance
VHF	Very High Frequency
WCA 1981	Wildlife and Countryside Act 1981
WCRIFG	West Coast Regional Inshore Fisheries Group
WEWS	Water Environment and Water Services
WFD	Water Framework Directive



# 1 INTRODUCTION

Scottish Hydro Electric Power Distribution plc (SHEPD) holds a licence under the Electricity Act 1989 for the distribution of electricity in Scotland. 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 provide a safe, secure and reliable supply to customers.

As part of a routine inspection campaign, SHEPD have identified that the current live subsea cable between Eriskay (South Uist) and Barra in the Outer Hebrides based is in poor condition and requires replacement to safeguard the supply of power to local communities. Currently, there are two subsea power cables between the Eriskay and Barra, these are:

- The Eriskay-Barra 1 (EB-1) which was installed in 1979 and is Out of Service (OoS); and
- The Eriskay-Barra 2 (EB-2) an 11 kilovolt (kV) cable which was installed in 2013, which has been found to be in poor external condition.

SHEPD intends to augment the existing EB-2 cable through the installation of a new 33 kV subsea cable (EB-3) which will initially operate at 11 kV. This will improve the resilience of the network and deliver network security, as replacement of cables before they fail is essential to ensure a continued electricity supply to customers connected to these circuits.

The proposed cable corridor extends between Coilleag a' Phrionnsa beach on the Isle of Eriskay and Cidhe Eolaigearraidh on the Isle of Barra. The proposed cable between Eriskay and Barra (herby referred to as "the Project") will be approximately 11 kilometres (km) long (including 10% contingency) from the Transition Joint Point (TJP) to TJP (Briggs, 2025); however, this Marine Environmental Appraisal (MEA) covers the proposed cable installation activities between Mean High Water Springs (MHWS) to MHWS. The proposed subsea cable is approximately 10 km from MHWS to MHWS, or approximately 9.5 km from Mean Low Water Springs (MLWS) to MLWS and will be installed within the proposed cable corridor, as illustrated in Figure 1-1 below. As identified in the Eriskay – Barra Subsea Cable Replacement Project Description (Briggs, 2025) certain sections of the existing EB-1 cable may require removal, as detailed in Section 3.

This MEA provides an assessment of the potential environmental impacts which may result from the Project and will be used to inform the Marine Licence, European Protected Species (EPS) Licence and Basking Shark Derogation Licence Applications. The mitigation requirements identified by this MEA will be included in the accompanying Marine Construction Environmental Management Plan (CEMP) (Xodus Document No. A-101090-S00-A-REPT-001) to ensure they are effectively disseminated to and implemented by SHEPD and the cable installation contractor during the proposed cable installation activities.

This MEA should be read in conjunction with the following documents:

- Eriskay - Barra Subsea Cable Replacement Project Description (Briggs, 2025);
- Marine Licence Application (MLA) Form;
- Inshore EPS Licence Application Form;
- Basking Shark Derogation Licence Application Form;
- Marine CEMP (Xodus Document No. A-101090-S00-A-PLAN-001);
- High Level Navigation Risk Assessment (NRA) (Xodus Document No. A-101090-S00-A-REPT-002);
- Outer Hebrides Fisheries Liaison Mitigation Action Plan (FLMAP);
- How SHEPD co-exists with other marine users document<sup>1</sup>;
- Operation, Inspection, Maintenance and Decommissioning Strategy (OIMD); and

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<sup>1</sup> <https://www.ssen.co.uk/globalassets/about-us/projects-and-live-works/subsea-cables/how-shepd-co-exists-with-other-marine-users.pdf>.



- Cost Benefit Analysis (CBA) Summary Report.



Figure 1-1 Eriskay – Barra proposed cable corridor

## 1.1 Project Need

The primary driver behind this Project is to reduce the overall network risk by installing a new subsea cable (EB-3), which will proactively augment the existing in-service cable (EB-2) to safeguard security of supply. Early intervention



will enhance network resilience, ensure continued electricity supply to customers, and avoid high costs associated with unplanned cable replacement following failure of the existing cable.

A secondary, but equally important driver, is the need to increase the capacity of the network circuit through the installation of EB-3 which can operate at 33 kV, addressing a predicted increased future energy demand. As detailed in Section 3 and the Project Description (Briggs, 2025), the proposed ED-3 cable will operate alongside the existing ED-2 cable.

## 1.2 Consideration of Alternatives

Following routine inspection of the existing 11 kV EB-2 submarine cable, the following options were considered and assessed based on engineering feasibility, investment and benefits such as network resilience.

**Option 1: Do minimum – replace on failure.** This option would maintain the existing EB-2 cable with minimal intervention until the asset fails. At the time of failure, the subsea cable would be replaced by a new cable. During this period customers could be supplied through the Barra Power Station, however this would result in third party generation being constrained during this time. This option was not chosen as although initial costs can be avoided, this would incur reputational damage from constrained supply to customers as well as additional costs from replacement under emergency conditions, and costs for impact and generation.

**Option 2: Planned replacement with similar sized cable.** This option would replace the existing 11 kV EB-2 cable prior to the end of its lifecycle – using a similar cable and design, disconnecting the old cable and using existing tie-in points on the onshore network. This would reduce the circuit's probability of failure. This option was not chosen as it does not meet the need for the long-term plan of providing a 33 kV capable supply to Barra or realise the same benefits that an additional cable would provide.

**Option 3: Planned replacement with a larger 300 mm<sup>2</sup> cable.** This option would replace the existing 11 kV EB-2 subsea cable prior to the end of its lifecycle – using a larger cable size which would allow for the anticipated increase in required supply capacity. This option was not chosen as it does not provide the enhanced security of supply that an additional cable would provide.

**Option 4: Augmentation with a similar sized cable.** This option would install a new 11 kV subsea cable while retaining the existing 11 kV EB-2 subsea cable in service. This would incur additional costs in installation and connecting into the 11 kV network on Eriskay and Barra as well as additional costs for inspections and maintenance. However, these costs could be reduced when considering inspections and maintenance in parallel and utilising existing onshore infrastructure to tie in the new cable. This option was not selected, as while it provides two circuits and improves network security, it does not meet the requirement for future demand growth and network reinforcement.

**Option 5: Augmentation with a larger 300 mm<sup>2</sup> cable.** This option would install a new larger subsea cable (rated at 33 kV) while retaining the existing 11 kV subsea cable EB-2 in service. The new cable would initially operate at 11 kV, with the capability to support a future upgrade to 33 kV when required. This aligns with anticipated demand growth identified by SHEPD's system planning team. Similar to Option 4, this would incur additional costs that can be reduced when considering inspections and maintenance in parallel and by utilising existing infrastructure to tie in this cable. This was chosen as the preferred option as two subsea cable circuits provide additional security to electricity supply and allow maximum use of the existing assets until end of life. This option also enables future network reinforcement through potential 33 kV operation.

**Option 6: Installation of two new cables on the existing route.** This option would replace the existing 11 kV subsea cable EB-2 and replace this with two new subsea cables. This would reduce the probability of failure of the existing circuit and provide additional security for the electricity supply. This was not chosen as although installation of two



cables within the same contract could create potential savings for the second cable, the additional benefits do not justify the additional cost of investment compared to Option 5.

Augmentation with a new, larger sized 33 kV rated subsea cable following a similar route (Option 5) was chosen as the preferred option as it provides the most benefit to customers by increasing the security of electricity supply with an additional circuit in the event a fault, as well as maximising the benefits of the existing subsea cable retained in service. The new cable will operate at 11 kV initially but will be capable of supporting future voltage uprating to 33 kV, ensuring long-term network resilience and capacity for demand growth.

### 1.2.1 Cable Corridor Selection

A desktop study was undertaken in 2024 and considered a number of shore landings and potential marine route corridors for a replacement to the existing subsea cable between Eriskay and Barra. A total of five landing points on Barra one on Eriskay and another at Pollacher on South Uist were considered, and three potential indicative marine routes identified as shown in Figure 1-2. Ultimately the mid-route was identified as the preferred option, given that it was the shortest route and would use the existing landfalls, thereby avoiding maerl beds and the grey seal pupping site in the area. Additionally, there were fewer technical constraints associated with the mid-route. Technical challenges with the north and south routes included presence of significant rock outcrops, a challenging landfall at the Barra end, the presence of an anchorage in the south route, and finally six cable crossings (BT and SSEN) with the south route. In contrast, the mid-route had fewer rock outcrops and limited cable crossings. The presence of the seagrass beds was taken into consideration in the selection of the mid-route, with the intention to avoid and minimise overlap with seagrass beds, wherever it is practicable to do so. An overview of the desk-based study conclusions is presented in Table 1-1.



Table 1-1 Desk-based study for the cable corridor selection (2024)

ASPECT	NORTHERN ROUTE	MID ROUTE	SOUTHERN ROUTE
<b>Physical site conditions</b>	Large area of fractured and faulted rock outcrop north of the island of Fuday and overall less sediment than the other routes. Much of this route had a challenging seabed profile with a high abrasive potential for a cable.	Higher sediment cover than the northern option, avoids large areas of rock outcrops, and routing south of Fuday is likely to provide more shelter from effects of the Atlantic ocean to the west for some of the cable route.	Shallow approach to potential landing on Barra, increased areas of rocky outcrops constraining the angle of approach to the Barra landing, significant areas of megaripple sandwaves (mobile seabed). Predicted coastal erosion at Barra landfall more significant than other routes.
<b>Protected seabed habitats (Sound of Barra SAC)</b>	Maerl beds, seagrass beds and large areas of reef present. Unlikely to be able to avoid any of these habitats due to distribution of sandwaves and rock outcrops. Also areas of seaweed and kelp communities.	No maerl beds. Seagrass beds identified in middle of the route and smaller areas at each end of the route. Likely to be potential to avoid seagrass at either end of the route but potential to avoid seagrass in middle of route will depend on results of route survey. Areas of reef habitat present but less than the other routes. Areas of seaweed and kelp communities present.	No maerl beds identified. Route is south of mapped area of seagrass but this habitat may still be present across parts of the route. Greater overlap with areas of reef habitat. Large area of kelp and seaweed communities toward Barra.
<b>Onshore Protected Areas and Seal Haul Outs / Pupping Sites</b>	Proximity to the Fiaray grey seal pupping site.	No designations identified.	High sensitivities (dune and machair) within Eolligarry SSSI.
<b>Human activity and 3rd party assets</b>	No impact from other subsea cables.	Potential for 1 or 2 crossings with existing subsea power cable.	Eriskay-Barra ferry route overlaps with large part of the route. Active anchorage at Barra approach.  6 crossings required – 4 with SSEN power cables and 2 with BT fibre optic cable.  Close proximity to Barra airport may result in installation constraints.
<b>Overall conclusion</b>	The Route Position List (RPL) North route was viewed as an unfavourable option due to interaction with maerl beds and proximity to the grey seal pupping site, abrasion risk from rock outcrops and presence of archaeological /historical features and the potential for coastal erosion at Barra landfall location.	This option was the preferred route due better sediment cover, reduced interaction with rock outcrops and sandwaves (mobile sediment), reduced interaction with existing power and BT cables and ability to use existing landfalls with lower environmental sensitivity (e.g., avoidance of maerl beds and the grey seal pupping site). This route avoided known locations of maerl beds, but areas of seagrass beds were identified and a route survey designed to map the extent of this habitat and look	While this route avoided the predicted extent of seagrass from publicly available survey data it was viewed as unfavourable overall due to significant engineering challenges relating to a shallow approach to potential landing on Barra, increased areas of rocky outcrops (compared to mid-route) constraining the angle of approach to the Barra landing, significant areas of megaripple sandwaves (mobile seabed). While not identified by historic survey data there was also the potential for areas of seagrass to be present along this route.



ASPECT	NORTHERN ROUTE	MID ROUTE	SOUTHERN ROUTE
	for opportunities to minimise interaction with this habitat.		This route would require six cable crossings, two with the existing live cable, two with the OoS cable and two with the live BT cable running between Eriskay and Barra. Some of these crossings are in shallow water which make traditional crossing designs difficult as MCA dispensation would likely be needed to allow deposits to protect the new cable from the existing cables. BT crossings are also further complicated by the need for a perpendicular crossing which is not consistent with the general direction of the route.

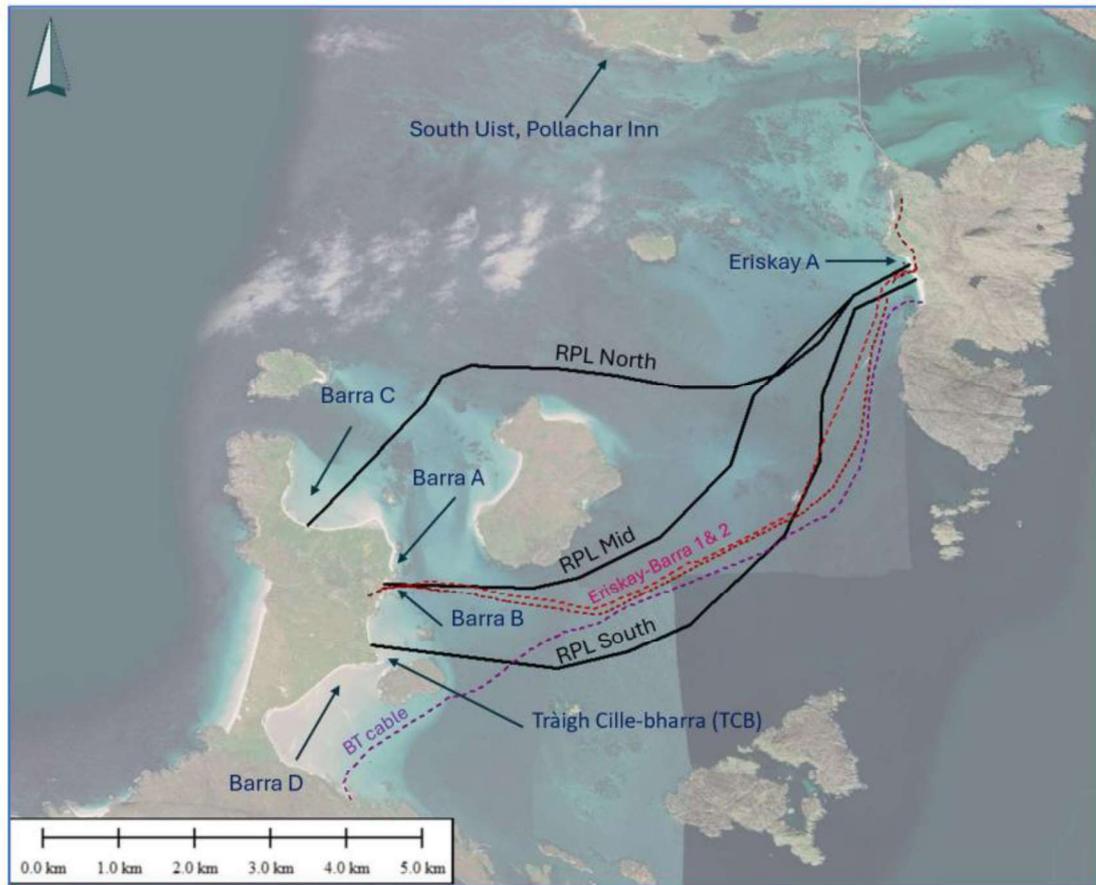


Figure 1-2 Cable corridor selection

## 2 LEGISLATIVE CONTEXT

This Section presents the key United Kingdom (UK) and Scottish legislation and policies which are applicable to the proposed cable installation activities and explains how and where these have been considered in the production of this MEA. This includes adherence to statutory legislation as well as to the policies presented in Scotland’s National Marine Plan (Scottish Government, 2015). Where necessary, additional mitigation measures have been presented in topic specific Sections to ensure that the Project adheres to relevant legislation and policies and complies with the conditions required. The information is provided in table form for ease of reference, as shown in Table 2-1.



Table 2-1 Key UK and Scottish legislation and policies pertinent to the Project

LEGISLATION OR POLICY	KEY REQUIREMENTS	RELEVANT SECTION (WHERE APPLICABLE)
<p><b>Marine (Scotland) Act 2010</b></p> <p>The Marine (Scotland) Act 2010 applies to Scottish territorial waters and makes provisions in relation to functions and activities in the Scottish marine area. The following regulations are pertinent to the proposed cable installation activities:</p> <ul style="list-style-type: none"> <li>Under Section 21 of the Act a marine licence is required for any activity which involves:                     <ul style="list-style-type: none"> <li>Deposit of any substance or object in the sea or on or under the seabed;</li> <li>Construction, alteration or improvement of works in or over the sea or on or under the seabed; and/or</li> <li>Removal of substances or objects from the seabed.</li> </ul> </li> <li>Under Section 82 of the Marine (Scotland) Act 2010, Marine Directorate – Licensing Operations Team (MD-LOT), acting on behalf of the Scottish Ministers, is required to consider whether a licensable activity is capable of affecting (other than insignificantly) a protected feature of a Nature Conservation Marine Protected Area (NCMPA) or a marine historic asset in a Historic Marine Protected Area (HMPA); and</li> <li>The seal haul-out sites, designated under The Protection of Seals (Designation of Haul-Out Sites) (Scotland) Order 2014 (as amended), are protected under Section 117 of the Act.</li> </ul>	<p>SHEPD will submit an MLA form alongside this MEA for the proposed cable installation activities.</p> <p>Section 5: Designated Sites assesses the potential impacts on NCMPAs in the vicinity of the proposed cable corridor. There is one NCMPA within proximity to the proposed cable corridor: the Sea of the Hebrides NCMPA, located 3.5 km away. The assessment in Section 5.5.1 concluded that the proposed cable installation activities are not capable of affecting (other than insignificantly) the protected features of the Sea of the Hebrides NCMPA.</p> <p>Section 5: Designated Sites assesses the potential impacts on designated seal haul-outs and concluded that there were no designated seal haul outs located within 500 m of the proposed cable corridor.</p> <p>Section 10: Marine Archaeology assesses the potential impacts on marine archaeological protected features (including HMPAs). This assessment concluded that there are no HMPAs in the vicinity of the proposed cable corridor and no significant effects on marine archaeology assets are to be expected.</p>	<p>Section 5: Designated Sites assesses the potential impacts on protected habitats and species. This assessment concluded that while the potential for LSE could not be ruled out, there will be no Adverse Effect on Site Integrity (AEoS) on Sound of Barra Special Area of Conservation (SAC), West Coast of Hebrides Special Protection Area (SPA) or Inner Hebrides and the Minches SAC. Section 7: Marine Megafauna assesses the potential impacts on EPS which have potential connectivity with the installation activities (i.e. cetaceans and otters). This assessment concluded that there will be no injurious impacts to these receptors; however, as disturbance could not be ruled out, an EPS licence application will be submitted to MD-LOT.</p>
<p><b>Conservation (Natural Habitats, &amp;c) Regulations 1994 (as amended in Scotland) (also known as 'the Habitats Regulations') and the revision to The Conservation (Natural Habitats) (EU Exit) (Scotland) (Amendment) Regulations 2019</b></p> <p>The Conservation (Natural Habitats, &amp;c) Regulations 1994 (as amended in Scotland) transpose the European Habitats Directive (92/43/EEC) and Birds Directive (79/409/EEC) into Scottish Law. In addition, the Conservation (Natural Habitats) (European Union (EU) Exit) (Scotland) (Amendment) Regulations 2019 make provision for the selection, designation, registration and notification of sites to be protected under the European Community (EC) Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora.</p> <p>The Habitats Regulations Appraisal (HRA) process forms part of these regulations. The HRA process requires that any proposal which has the potential to result in a Likely Significant Effect (LSE) to a European site or its designated features to be subject to an Appropriate Assessment (AA) carried out by the Competent Authority.</p> <p>The Conservation (Natural Habitats, &amp;c) Regulations 1994 as amended make it an offence to deliberately or recklessly capture, kill, injure, harass or disturb an EPS. When EPS are present, licences to permit activities that will affect them can only be granted when:</p> <ul style="list-style-type: none"> <li>There is a licensable purpose;</li> <li>There are no satisfactory alternatives; and</li> <li>The action authorised will not be detrimental to the maintenance of the population of the species concerned at a Favourable Conservation Status (FCS) in their natural range.</li> </ul> <p>The 2019 Regulations make amendments to the existing instruments that transpose the habitats and wild birds' directives so that they are operable.</p>	<p>Section 5: Designated Sites assesses the potential impacts on protected habitats and species. This assessment concluded that while the potential for LSE could not be ruled out, there will be no Adverse Effect on Site Integrity (AEoS) on Sound of Barra Special Area of Conservation (SAC), West Coast of Hebrides Special Protection Area (SPA) or Inner Hebrides and the Minches SAC. Section 7: Marine Megafauna assesses the potential impacts on EPS which have potential connectivity with the installation activities (i.e. cetaceans and otters). This assessment concluded that there will be no injurious impacts to these receptors; however, as disturbance could not be ruled out, an EPS licence application will be submitted to MD-LOT.</p>	



**LEGISLATION OR POLICY**

**Wildlife and Countryside Act 1981 (WCA 1981) (as amended) and the Nature Conservation (Scotland) Act 2004**

The primary legislation for the protection of birds in the UK is the WCA 1981 (as amended) in combination with the Nature Conservation (Scotland) Act 2004. Under these acts, it is an offence to harm wild bird species, their eggs and nests. Additional protection is provided for certain bird species listed on Schedule 1 of the WCA 1981, and it is an offence to disturb those species at their nest while it is in use. Licensing for wild birds does not cover development purposes, so any activity that could result in disturbance of a nesting Schedule 1 species should not proceed unless out-with the breeding season. In addition, the Conservation (Natural Habitats) (European Union (EU) Exit) (Scotland) (Amendment) Regulations 2019 also instrument an amendment to Section 27 of the WCA 1981 to ensure that existing protections continue.

Basking sharks (*Cetorhinus maximus*) are protected under Schedule 5 of the WCA 1981 which prohibits the killing, injuring, or taking by any method of those wild animals listed on Schedule 5 of the WCA 1981. When basking sharks are present, licences to permit activities that will affect them can only be granted when:

- There is a licensable purpose;
- There are no satisfactory alternatives; and
- The action authorised will not be detrimental to the maintenance of the population of the species concerned at a FCS in their natural range.

**KEY REQUIREMENTS**

**RELEVANT SECTION (WHERE APPLICABLE)**

Section 9: Ornithology assesses the potential impacts on ornithological receptors. The proposed cable corridor overlaps or is adjacent to the West Coast of Hebrides SPA and Eoligarry, Barra SPA; however, potential impacts on corncrake associated with the Eoligarry, Barra SPA are outwith the scope of this MEA as a terrestrial feature. Relevant mitigation applicable to corncrake is presented in the Onshore CEMP (WSP, 2026). Section 5: Designated Sites concluded that no AEOsI is anticipated on the West Coast of Hebrides SPA given the embedded mitigation. Overall, given the embedded mitigation set out in Section 4.3, no significant effects on wild birds, their eggs, and nests are to be expected.

Section 7: Marine Megafauna assesses the potential impacts on basking sharks as a result of the proposed cable installation activities. As described above, the proposed cable corridor is within the vicinity of the Sea of the Hebrides NCMPA for which basking shark are a qualifying feature. The assessment in Section 5.5.1 concluded that the proposed cable installation activities are not capable of affecting (other than insignificantly) the protected features of the Sea of the Hebrides NCMPA. The assessment in Section 7.4 concluded that while there will be no injurious impacts basking sharks, there is potential for disturbance, and as such a basking shark derogation licence application will be submitted to MD-LOT.

**Policy**

**Scotland's National Marine Plan (2015):**

- **General Policies –**
- **GEN 2 Economic benefit;**
- **GEN 3 Social benefit;**
- **GEN 5 Climate change;**
- **GEN 6 Historic environment;**
- **GEN 7 Landscape/seascape;**
- **GEN 8 Coastal processes and flooding;**
- **GEN 9 Natural heritage;**
- **GEN 10 Invasive non-native species;**
- **GEN 12 Water quality and resource;**
- **GEN 13 Noise; and**
- **GEN 18: Engagement.**

**GEN 2 Economic benefit:**

Sustainable development and use which provides economic benefit to Scottish communities is encouraged when consistent with the objectives and policies of this Plan.

**GEN 3 Social benefit:**

Sustainable development and use which provides social benefits is encouraged when consistent with the objectives and policies of this Plan.

**GEN 5 Climate change:**

Marine planners and decision makers must act in the way best calculated to mitigate, and adapt to, climate change.

**GEN 7 Landscape/seascape:**

Climate change has been considered within the biological sections of the MEA including: Section 6: Seabed and Water Quality; Section 7: Marine Megafauna; Section 8: Benthic and Intertidal Ecology; and Section 9: Ornithology. Additionally, as described in Section 1.2: Consideration of Alternatives, climate change has been factored into the justification for the cable replacement given the carbon emissions which would have resulted from the supplying power to communities on Barra with the temporary diesel generation.

**GEN 6 Historic environment:**

Development and use of the marine environment should protect and, where appropriate, enhance heritage assets in a manner proportionate to their significance.

**GEN 7 Landscape/seascape:**

Marine planners and decision makers should ensure that development and use of the marine environment take seascape, landscape and visual impacts into account.

**GEN 8 Coastal process and flooding:**

Developments and activities in the marine environment should be resilient to coastal change and flooding, and not have unacceptable adverse impact on coastal processes or contribute to coastal flooding.

Section 1: Introduction outlines the social and economic benefits of the Eriskay - Barra Subsea Cable Replacement. The proposed cable installation activities will provide social and economic benefits to the region by improving network resilience, reducing the risk of future customer interruptions, and mitigating potential impacts such as future constrained generation or temporary generation, associated carbon emission impacts associated with a subsea cable outage and help prevent other outage related costs.

Section 10: Marine Archaeology assesses the potential interaction between the proposed cable installation activities and marine archaeological receptors including heritage assets. This assessment concluded that no significant effects on heritage assets are to be expected.

The Project will have no significant long-term landscape/seascape effects.

Section 6: Seabed and Water Quality assesses the potential impact on coastal processes and flooding. This assessment concluded that the proposed cable installation activities will not result in changes to coastal processes and will not contribute to coastal flooding.



**LEGISLATION OR POLICY**

**KEY REQUIREMENTS**

**RELEVANT SECTION (WHERE APPLICABLE)**

**GEN 9 Natural heritage:**

Development and use of the marine environment must

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

The potential for the proposed cable installation activities to impact protected areas and protected species (including Priority Marine Features (PMFs)) is assessed within Section 5: Designated Sites as well as the biological sections of the MEA including: Section 6: Seabed and Water Quality; Section 7: Marine Megafauna; Section 8: Benthic and Intertidal Ecology; and Section 9: Ornithology. As described above, there will be no AEoSI on any European site and the proposed cable installation activities are not considered capable of affecting (other than insignificantly) the protected features of any NCMPA. Overall, no significant effects are anticipated as a result of the proposed cable installation activities.

**GEN 10 Invasive Non-Native Species (INNS):**

Opportunities to reduce the introduction of INNS to a minimum or proactively improve the practice of existing activity should be taken when decisions are being made.

Section 8: Benthic and Intertidal Ecology assesses the potential for the introduction of INNS as a result of the proposed cable installation activities. This assessment concluded that the likelihood of INNS being introduced is low; however, it is noted that INNS were recorded during the OEL (2025) survey and are noted by NatureScot to be present within the proposed cable corridor. As such, additional biosecurity measures have been proposed (see Section 4.3).

**GEN 12 Water quality and resource:**

Developments and activities should not result in a deterioration of the quality of waters to which the Water Framework Directive (WFD), Marine Strategy Framework Directive or other related Directives apply.

Section 6: Seabed and Water Quality assesses the potential impacts on the water quality of designated waters. This assessment concluded that no significant effects on the water quality of designated waters are to be expected.

**GEN 13 Noise:**

Development and use in the marine environment should avoid significant adverse effects of man-made noise and vibration, especially on species sensitive to such effects.

The potential for sound and vibration associated with the proposed cable installation activities to affect sensitive species has been considered within Section 7: Marine Megafauna. The underwater sound impact assessment concluded that there will be no injurious impacts on sensitive species however, as disturbance could not be ruled out, an EPS licence application will be submitted to MD-LOT. The EPS licence Application form submitted alongside this MEA contains full consideration of alternatives to sound emitting activities, including the "do nothing" option.

**GEN 18 Engagement:**

Early and effective engagement should be undertaken with the general public and all interested stakeholders to facilitate planning and consenting processes.

SHEPD has made key stakeholders aware of the cable actions and the Project and sought advice to inform the MEA:

- Scottish Fishermen's Federation (SFF);
- Scottish White Fish Producers Association (SWFPA);
- NatureScot;
- Maritime and Coastguard Agency (MCA);
- Northern Lighthouse Board (NLB);
- MD LOT;
- Comhairle nan Eilean Siar (CNES);
- CalMac;
- Royal Society for the Protection of Birds (RSPB);
- Eriskay Community Council;
- Northbay Community Council; and
- Western Isles Fisherman's Association.

The advice has been incorporated throughout this MEA.



**LEGISLATION OR POLICY**

**Scotland's National Marine Plan (2015):**

**Sea Fisheries Policies –**

- **Fisheries 1;**
- **Fisheries 2; and**
- **Fisheries 3.**

**FISHERIES 1:** Taking account of the EU's Common Fisheries Policy, Habitats Directive, Birds Directive and Marine Strategy Framework Directive, marine planners and decision makers should aim to ensure:

- Existing fishing opportunities and activities are safeguarded wherever possible;
- An ecosystem-based approach to the management of fishing which ensures sustainable and resilient fish stocks and avoids damage to fragile habitats;
- Protection for vulnerable stocks (in particular for juvenile and spawning stocks through continuation of sea area closures where appropriate);
- Improved protection of the seabed and historical and archaeological remains requiring protection through effective identification of high-risk areas and management measures to mitigate the impacts of fishing, where appropriate;
- That other sectors take into account the need to protect fish stocks and sustain healthy fisheries for both economic and conservation reasons;
- Delivery of Scotland's international commitments in fisheries, including the ban on discards; and
- Mechanisms for managing conflicts between fishermen and/or between the fishing sector and other users of the marine environment.

**FISHERIES 2:** The following key factors should be taken into account when deciding on uses of the marine environment and the potential impact on fishing:

- The cultural and economic importance of fishing, in particular to vulnerable coastal communities;
- The potential impact (positive and negative) of marine developments on the sustainability of fish and shellfish stocks and resultant fishing opportunities in any given area;
- The environmental impact on fishing grounds (such as nursery, spawning areas), commercially fished species, habitats and species more generally; and
- The potential effect of displacement on: fish stocks; the wider environment; use of fuel; socio-economic costs to fishers and their communities and other marine users.

**FISHERIES 3:** Where existing fishing opportunities or activity cannot be safeguarded, a Fisheries Management and Mitigation Strategy should be prepared by the proposer of development or use, involving full engagement with local fishing interests (and other interests as appropriate) in the development of the Strategy. All efforts should be made to agree the Strategy with those interests. Those interests should also undertake to engage with the proposer and provide transparent and accurate information and data to help complete the Strategy. The Strategy should be drawn up as part of the discharge of conditions of permissions granted.

**Scotland's National Marine Plan (2015): Recreation and Tourism Policy –**

- **Recreation and Tourism 2.**

**REC & TOURISM 2:** The following key factors should be taken into account when deciding on uses of the marine environment and the potential impact on recreation and tourism:

- The extent to which the proposal is likely to adversely affect the qualities important to recreational users, including the extent to which proposals may interfere with the physical infrastructure that underpins a recreational activity;
- The extent to which any proposal interferes with access to and along the shore, to the water, use of the resource for recreation or tourism purposes and existing navigational routes or navigational safety;
- Where significant impacts are likely, whether reasonable alternatives can be identified for the proposed activity or development; and
- Where significant impacts are likely and there are no reasonable alternatives, whether mitigation, through recognised and effective measures, can be achieved at no significant cost to the marine recreation or tourism sector interests.

**RELEVANT SECTION (WHERE APPLICABLE)**

Section 12: Commercial Fisheries and Other Sea Users assesses the potential impacts on commercial fisheries. This assessment concluded that due to the highly localised nature of the seabed disturbance footprint, the fact that the Project is replacing an existing cable within the licenced cable corridor, and the short duration, no significant effects on fish stocks, or the associated habitats on which these species depend, are anticipated. Please refer to the Outer Hebrides FLMAP for further detail on the proposed cable installation activities interaction with commercial fisheries.

Section 12: Commercial Fisheries and Other Sea Users assesses the potential impacts on recreation and tourism. This assessment concluded that no significant effects on recreational users and/or tourism are to be expected.



**LEGISLATION OR POLICY**

**Scotland's National Marine Plan (2015): Shipping, Ports, Harbours and Ferries Policies –**

- **Transport 1; and**
- **Transport 6.**

**TRANSPORT 1:** Navigational safety in relevant areas used by shipping now and in the future will be protected, adhering to the rights of innocent passage and freedom of navigation contained in UN Convention on the Law of the Sea (UNCLOS). The following factors will be taken into account when reaching decisions regarding development and use:

- The extent to which the locational decision interferes with existing or planned routes used by shipping, access to ports and harbours and navigational safety. This includes commercial anchorages and defined approaches to ports;
- Where interference is likely, whether reasonable alternatives can be identified; and
- Where there are no reasonable alternatives, whether mitigation through measures adopted in accordance with the principles and procedures established by the International Maritime Organization can be achieved at no significant cost to the shipping or ports sector.

**TRANSPORT 6:** Marine planners and decision makers and developers should ensure displacement of shipping is avoided where possible to mitigate against potential increased journey lengths (and associated fuel costs, emissions and impact on journey frequency) and potential impacts on other users and ecologically sensitive areas.

**Scotland's National Marine Plan (2015): Submarine Cables Policies –**

- **Cables 1;**
- **Cables 2; and**
- **Cables 3.**

**CABLES 1:** Cable and network owners should engage with decision makers at the early planning stage to notify of any intention to lay, repair or replace cables before routes are selected and agreed. When making proposals, cable and network owners and marine users should evidence that they have taken a joined-up approach to development and activity to minimise impacts, where possible, on the marine historic and natural environment, the assets, infrastructures and other users. Appropriate and proportionate environmental considerations and risk assessments should be provided which may include cable protection measures and mitigation plans.

Any deposit, removal or dredging carried out for the purpose of executing emergency inspection or repair works to any cable is exempt from the marine licensing regime with approval by Scottish Ministers. However, cable replacement requires a marine licence. Marine Licensing Guidance should be followed when considering any cable development and activity.

**CABLES 2:** The following factors will be taken into account on a case-by-case basis when reaching decisions regarding submarine cable development and activities:

- Cables should be suitably routed to provide sufficient requirements for installation and cable protection;
- New cables should implement methods to minimise impacts on the environment, seabed and other users, where operationally possible and in accordance with relevant industry practice;
- Cables should be buried to maximise protection where there are safety or seabed stability risks and to reduce conflict with other marine users and to protect the assets and infrastructure;
- Where burial is demonstrated not to be feasible, cables may be suitably protected through recognised and approved measures (such as rock or mattress placement or cable armouring) where practicable and cost-effective and as risk assessments direct; and
- Consideration of the need to reinstate the seabed, undertake post-lay surveys and monitoring and carry out remedial action where required.

**CABLES 3:** A risk-based approach should be applied by network owners and decision makers to the removal of redundant submarine cables, with consideration given to cables being left in situ where this would minimise impacts on the marine historic and natural environment and other users.

**RELEVANT SECTION (WHERE APPLICABLE)**

Section 11: Shipping and Navigation assesses the potential navigational safety impacts to key navigational receptors in the vicinity of the proposed cable corridor. This assessment is supported by a high level NRA which further details the potential impacts on navigational receptors and has been informed through stakeholder consultation (see Xodus Document No. A-101090-S00-A-REPT-002). The findings of the Formal Safety Assessment (FSA) demonstrate that effects to navigational receptors are tolerable with the implementation of the proposed mitigations.

This MEA provides a description of how potential impacts on the marine environment associated with the installation of the new cable and removal of sections of OoS cable sections have been minimised. The installation methodology has been informed by environmental surveys (Ocean Ecology Limited (OEL) (2025) identifying environmental sensitivities, the Cable Burial Risk Assessment (CBRA), the On Bottom Stability (OBS), CBA and a high level NRA. The route engineering report concluded a negligible risk of the cable being damaged from fishing and very low probability risk from anchoring, stemming from the regular ferry. An MLA is being submitted alongside this application.

A full description of the proposed cable installation activities, including cable protection methods, is provided in the Eriskay - Barra Subsea Cable Replacement Project Description (Briggs, 2025).

A justification for the chosen method of cable replacement (including removal of sections of the faulted cable) is summarised in Section 12: Consideration of Alternatives.



## 3 PROJECT DESCRIPTION

### 3.1 Summary

A summary of the activities considered within this MEA is provided in the bullets below. Please refer to the Eriskay - Barra Subsea Cable Replacement Project Description for further detail (Briggs, 2025).

- Seabed preparation:
  - Pre-installation surveys to identify debris / obstructions;
  - Pre-Lay Grapnel Run (PLGR), where required; and
  - Removal of sections of OoS cable(s), where required.
- Landfall establishment:
  - Intertidal Cable Installation via Open Cut Trenching (OCT).
- Subtidal Installation:
  - The replacement subsea cable will be surface laid along the entire length of the subtidal section of the cable corridor (Mean Low Water Springs (MLWS) to MLWS).
- Subtidal cable pull in:
- Cable protection and stabilisation:
  - Cable protection measures will include split pipe and may include concrete mattresses; and
  - Sea earths and associated protection may also be required.
- Post-installation surveys and site reinstatement.

### 3.2 Cable Installation

This Section provides an overview of the proposed cable installation activities. The proposed cable installation activities for the Eriskay – Barra cable replacement are currently planned to be undertaken in summer 2026, i.e., ahead of winter and anticipated deterioration in weather conditions. The licence duration being sought by SHEPD is 18 months for contingency in case the installation programme is delayed and cannot be completed before winter. Further detail on the cable installation methodology is provided in the Eriskay – Barra Cable Replacement Project Description (Briggs, 2025), which should be read in conjunction with this MEA. The proposed cable installation activities are expected to take up to 57 days. This anticipated duration includes all nearshore and offshore works as well as cable pull-in.

In order to allow sufficient flexibility for detailed route engineering, SHEPD are seeking consent for the 5.1 km<sup>2</sup> proposed cable corridor that is considered within this MEA, consisting of an approximately 10 km long (MHWS to MHWS) and 550 m wide cable corridor. The proposed subsea cable (MLWS to MLWS) will be installed within the proposed cable corridor and will be approximately 9.5 km in length. The location of the proposed cable corridor is provided in Figure 1-1, with coordinates of the bounding points provided in Table 3-1.

The replacement subsea cable consists of a single three-core 33 kV High Voltage Alternating Current (HVAC) submarine cable (Figure 3-1).

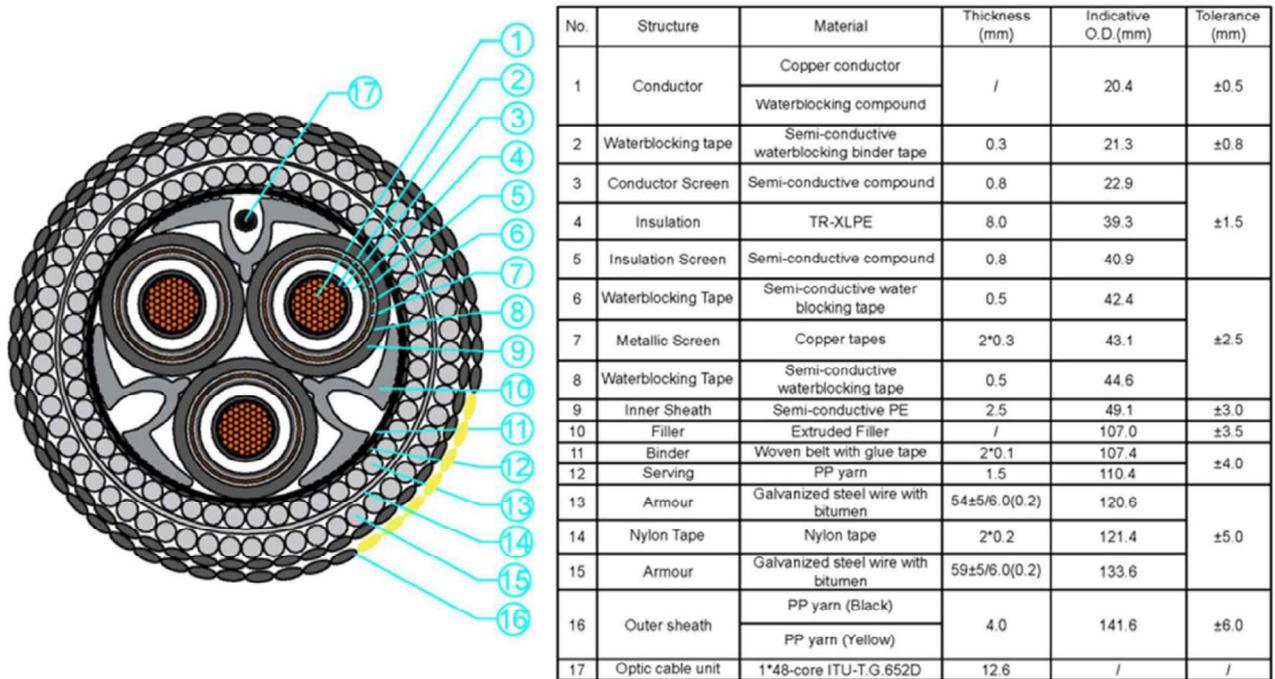


Figure 3-1 Cross section of submarine cable

Table 3-1 Coordinates for the proposed cable corridor (WGS84) in Degrees, Minutes and Seconds (DMS), Degrees and Decimal Minutes (DDM) and Decimal Degrees (DD)

LATITUDE (DDM)	LONGITUDE (DDM)	LATITUDE (DMS)	LONGITUDE (DMS)	LATITUDE (DD)	LONGITUDE (DD)
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*For the avoidance of doubt, the landward boundaries of the proposed cable corridor covered by this MEA are the Mean High Water Springs (MHWS). The landfall boundaries defined by the coordinates within this document should be considered approximations, due to the requirement to limit the number of vertices.*

57° 2.483' N	7° 25.338' W	57° 2' 28.98" N	7° 25' 2.28" W	57.4138333	-7.4223000
57° 2.418' N	7° 25.395' W	57° 2' 25.8" N	7° 25' 23.7" W	57.4300000	-7.4232500
57° 2.371' N	7° 25.372' W	57° 2' 22.26" N	7° 25' 22.32" W	57.3951667	-7.4228667
57° 2.347' N	7° 25.243' W	57° 2' 2.82" N	7° 25' 14.58" W	57.3911667	-7.4271667
57° 2.280' N	7° 25.175' W	57° 2' 16.8" N	7° 25' 1.5" W	57.3800000	-7.4195833
57° 2.190' N	7° 23.432' W	57° 2' 11.4" N	7° 23' 25.92" W	57.3650000	-7.3953333
57° 2.512' N	7° 21.897' W	57° 2' 3.72" N	7° 21' 53.82" W	57.4186667	-7.3649500
57° 2.785' N	7° 2.042' W	57° 2' 47.1" N	7° 2' 2.52" W	57.4641667	-7.3343333
57° 2.960' N	7° 19.578' W	57° 2' 57.6" N	7° 19' 34.68" W	57.4933333	-7.3263000
57° 3.232' N	7° 19.419' W	57° 3' 13.92" N	7° 19' 25.14" W	57.5386667	-7.3236500
57° 4.033' N	7° 19.264' W	57° 4' 1.98" N	7° 19' 15.84" W	57.6721667	-7.3216667
57° 4.173' N	7° 19.130' W	57° 4' 1.38" N	7° 19' 7.8" W	57.6955000	-7.3188333
57° 4.476' N	7° 18.347' W	57° 4' 28.56" N	7° 18' 2.82" W	57.7460000	-7.3578333



LATITUDE (DDM)	LONGITUDE (DDM)	LATITUDE (DMS)	LONGITUDE (DMS)	LATITUDE (DD)	LONGITUDE (DD)
57° 4.668' N	7° 18.487' W	57° 4' 4.8" N	7° 18' 29.22" W	57.7780000	-7.3811667
57° 4.690' N	7° 18.648' W	57° 4' 41.4" N	7° 18' 38.88" W	57.7816667	-7.3180000
57° 4.373' N	7° 19.598' W	57° 4' 22.38" N	7° 19' 35.88" W	57.7288333	-7.3266333
57° 4.144' N	7° 19.811' W	57° 4' 8.64" N	7° 19' 48.66" W	57.6966670	-7.3318333
57° 3.307' N	7° 19.986' W	57° 3' 18.42" N	7° 19' 59.16" W	57.5511667	-7.3331000
57° 3.141' N	7° 2.082' W	57° 3' 8.46" N	7° 2' 4.92" W	57.5235000	-7.3347000
57° 3.071' N	7° 2.312' W	57° 3' 4.26" N	7° 2' 18.72" W	57.5118333	-7.3385333
57° 2.819' N	7° 22.044' W	57° 2' 49.14" N	7° 22' 2.64" W	57.4698333	-7.3674000
57° 2.506' N	7° 23.488' W	57° 2' 3.36" N	7° 23' 29.28" W	57.4176667	-7.3914667
57° 2.578' N	7° 25.043' W	57° 2' 34.68" N	7° 25' 2.58" W	57.4296667	-7.4173833
57° 2.472' N	7° 25.274' W	57° 2' 28.32" N	7° 25' 16.44" W	57.4120000	-7.4212333

### 3.2.1 Seabed Preparation

#### Pre- and Post-Installation Surveys

Prior to cable installation, a pre-installation survey may be conducted using a Remotely Operated Vehicle (ROV) deployed from a survey vessel to assess seabed conditions and the presence of debris / obstructions / environmental and other sensitives within the proposed cable corridor. During installation, a similar survey spread may be utilised to monitor the installation process. Alternatively, an ROV or cable fish may be deployed from the Cable Lay Vessel (CLV) or other support vessel to operate touchdown monitoring and ROV surveys from this platform. During all ROV/cable fish operations, Ultra Short Baseline (USBL) positioning systems will be used to monitor the underwater position of the subsea equipment (21 – 31.5 kilohertz (kHz)). Additional survey equipment may include a Multi-Beam Echosounder (MBES) (380 – 700 kHz) and high resolution cameras.

Following cable installation, as-built surveys of the new cable and cable protection will be undertaken. These surveys will record the as installed position of the cable, and the actual deposits utilised to stabilise and/or protect the cable. These may be carried out as part of the stabilisation operations or using a separate uncrewed survey vessel due to the shallow nature of the proposed cable corridor.

#### PLGR

Any obstructions or debris (i.e., cables, chains, wires, ropes and/or fishing gear) which cannot be avoided will be removed via PLGR, where necessary. PLGR will be carried out along the proposed cable corridor, except in areas of seagrass. It is expected that this activity will be completed prior to the proposed cable installation activities to ensure that the proposed cable corridor remains free of debris during installation.

#### OoS Cable Removal

As described in Section 1, certain sections of the existing EB-1 cable may require partial removal. It is anticipated that 250 m of OoS cable may require removal within the proposed cable corridor. Where cable removal is required, the cut ends will be secured with clump weights to prevent cable movement in line with International Cable Protection Committee (ICPC) recommendations, Up to 12 clump weights (300 kg each; 3,600 kg collectively) may be used to secure the cable ends following OoS cable removal.



Split pipe (see Section 3.2.2) may be utilised for the OoS and live cable crossings to protect against abrasion between cables. For the crossing with the existing EB-2 cable, close to the Eriskay landfall, up to 5 m of split pipe may be applied to each cable. For the three crossings with the OoS cable, the following options are being considered:

- Option 1: Add split pipe to the new cable;
- Option 2: Cut back the section of OoS cable and secure with clump weights; or
- Option 3: Install a concrete mattress between the new and OoS cables.

Diver dredge is also included as a potential option to assist cable burial slightly below MLWS, or for removal of the OoS cable at crossings.

Up to five concrete mattresses (300 mm; 8.75 t each) may be required for the OoS cable crossings. If their placement may reduce navigable water depth by more than 5%, then consultation will be undertaken with the MCA. Installation of the concrete mattresses will either be from the CLV, a separate large installation vessel with ROV, or multicat vessel (e.g., the Forth Constructor).

## 3.2.2 Intertidal Cable Installation

### Open Cut Trench

The intertidal cable sections at the landfall locations at Eriskay and Barra will be trenched via OCT using land-based excavators with rock pecker attachments, with tidal working (excavations will not be conducted below the waterline). Excavated materials will be retained for subsequent reinstatement. There will be one trench at each landfall from MLWS to above MHWS. The trench will be for the replacement subsea cable and sea earths within intertidal area from MLWS to TJP, noting that the TJP is above MHWS, and is out of scope of this MEA. The trench will be 1 m in width, and the target Depth of Lowering (DoL) to the top of the cable will be 0.8 m - 1.2 m below ground level (subject environmental factors e.g., ground conditions). The trench will require a 20 m wide working corridor (10 m either side of the cable route) to conduct the works.

Cable protection in the form of articulated split pipe will be installed from the TJP to MLWS. Once split pipe is installed through the intertidal zone, it will be trenched in sections, so no trench is left open through a tidal cycle, therefore minimising sedimentation (Section 6).

The total length of the trench excavations in the intertidal zone will be:

- MLWS to MHWS at Eriskay – a maximum of 50 m; and
- MLWS to MHWS at Barra – a maximum of 200 m.

Once the cable installation in the intertidal areas is completed, the excavated material will be backfilled into the trench, returning the intertidal area to original conditions.

### Intertidal Cable Protection and Stabilisation

Split pipe (articulated pipe) has been recommended as primary cable protection and stabilisation for the Project, with no rock bags or concrete mattresses proposed for cable stability in the intertidal area. The proposed subsea cable will be protected with split pipe and trenched from the TJP to MLWS in the intertidal areas, as described above.

Cast-iron split pipe will be utilised to help protect and stabilise the cable in the intertidal section of the cable route at the landfalls. Overall, a worst-case of 700 m of split pipe protection may be required for the cable (including split pipe in the subtidal region, see Section 3.2.3), including 373 m in the intertidal (see Table 3-2). Split pipe can be applied during the shore end installation, being fitted on the CLV whilst the cable is being laid out or following the cable pull-in operations by divers using a Dive Support Vessel (DSV), or a combination of both methods.



Table 3-2 Split pipe requirements

LOCATION	INTERTIDAL	SUBTIDAL	TOTAL
Barra Shore End	230	123	353
Rock Outcrops (Barra)	-	46	46
Cable Crossings	-	58	58
Eriskay Shore End	83		83
Contingency	60	100	160
	373	327	700

### Sea Earths

Sea earths (earthing cables) will be installed to protect the cable infrastructure from surges and lightning strikes. It is expected that two earthing cables will be required at each shore end, using copper wires with a cross sectional diameter of 95 mm<sup>2</sup>. One cable will earth the armour of the HVAC cable system, while the other provides an earth for the Fibre Optic (FO) cable armour (integral within the HVAC cable system). The earthing wires will be installed in the OCT between MHWS and MLWS.

Concrete or chain clump weights may be used to anchor the two sea earths at their subsea termination at the end of each earth cable. There will be up to four clump weights for the earthing wires (two per landfall), weighing up to 60 kg each (240 kg collectively).

Up to 20 rock anchors (2 kg each) for the subsea earth may be used, in lieu of clump weights, in areas of rocky seabed with less sediment cover. The rock anchors have a diameter of 0.02 m and are 0.3 m in length.

### 3.2.3 Subtidal Cable Installation

In the subtidal region the cable will be surface laid from MLWS to MLWS by the CLV. No cable burial is planned in the subtidal as there will be sufficient self-burial to provide stability, based on current engineering studies. Engineering studies are ongoing which may alter the final quantity of cable stabilisation required, but the information which forms the basis of this MEA is based on the anticipated realistic worst-case scenario.

#### Subtidal Cable Protection and Stabilisation

Cast-iron split pipe will be utilised to help protect and stabilise the cable in the nearshore and will be applied at a small rock outcrop just past MLWS on the Barra end of the cable route. As described in Section 3.2.2 above, a worst-case total of 327 m of split pipe protection may be required for cable stabilisation and protection in the subtidal (Table 3-2). Split pipe or concrete mattresses may also be used where the proposed subsea cable crosses the existing live and OoS cables (see Section 3.2.1). Additionally, the sea earths (i.e., the two earthing wires) as described in Section 3.2.2 will separate and continue on the surface of the seabed for up to 50 m. A DSV will be positioned for split pipe installation and cable crossings using either 2 x spud legs or 2 or 4 point moorings. A small pontoon may also be used to support the DSV during cable pull in and will be used using either 2 x spud legs or 2 or 4 point mooring spread.



## 4 ASSESSMENT METHODOLOGY

This MEA supports SHEPD's applications for authorisation to complete the proposed cable installation activities by providing an assessment of potential impacts on sensitive environmental receptors.

The scope of this assessment is exclusively focused on impacts to receptors pertaining to the proposed cable installation activities below MHWS.

Data sources used to input into the subsequent assessment have been derived from:

- Relevant information and reports supplied by SHEPD; and
- Publicly available literature and data.

Potential impacts have been evaluated to determine how the proposed cable installation activities could affect the environment and the corresponding significance of those impacts. Where potential significant adverse impacts are identified, specific mitigation measures have been prescribed.

### 4.1 Marine Surveys

SHEPD appointed Aspect Land and Hydrographic Surveys Ltd. (Aspect) in 2025 to conduct a geophysical survey. The geophysical survey data included SSS, MBES bathymetry and MBES derived backscatter (MBBS). OEL undertook the benthic surveys in 2025 including benthic intertidal and subtidal surveys of the proposed cable corridor (see Section 8.2).

The main objectives of the marine surveys were to provide data (both technical and environmental) to form the basis for preliminary route engineering for the used to inform the project description as detailed in Section 3.

Available survey information as well as publicly available data has been used to inform this MEA.

### 4.2 Assessment Criteria

This MEA provides an assessment of potential impacts on environmental receptors, resulting from the effects of the proposed cable, and proposed cable installation activities. The terms effect and impact are different, as one drives the other. Effects are measurable physical changes in the environment (e.g. volume, time and area) arising from the proposed cable installation activities, while impacts consider the response of a receptor to an effect. Impacts can be defined as direct or indirect, beneficial or adverse.

In order to implement a systematic assessment of impacts between the different receptors, an overall approach to the assessment of impact significance has been implemented. The process considers:

- Sensitivity and value of a receptor;
- Magnitude of effect; and
- Determination and qualification of the significance of the impact.

#### 4.2.1 Sensitivity and Value

The sensitivity of a receptor is a function of its capacity to accommodate change and reflects its ability to recover if it is impacted. Sensitivity of a receptor is based on the following factors:

- Tolerance to change;
- Recoverability;
- Adaptability; and
- Value.



The scale of sensitivity is as follows: negligible, low, medium, high, very high.

## 4.2.2 Magnitude of Effect

The magnitude of an effect can be characterised by considering the following factors:

- Duration of the impact;
- Size and scale;
- Timing / seasonality; and
- Frequency.

Categorisation of the magnitude of effect will vary for specific topics. The magnitude categories are negligible, minor, moderate and major.

## 4.2.3 Significance of Impacts

The significance of potential impact has been determined by a combination of the sensitivity and value of a receptor and the magnitude of an effect. The general framework for assessing the significance of potential effects is outlined below (Table 4-1).

Table 4-1 Significance of impact

MAGNITUDE	SENSITIVITY / VALUE				
	NEGLIGIBLE	LOW	MEDIUM	HIGH	VERY HIGH
NEGLIGIBLE	Negligible	Negligible	Negligible	Minor	Minor
MINOR	Negligible	Negligible	Minor	Minor	Moderate
MODERATE	Negligible	Minor	Moderate	Moderate	Major
MAJOR	Minor	Minor	Moderate	Major	Major

In general, moderate or major impacts are classified as significant and will require additional mitigation in order to reduce the magnitude of effect to an acceptable level. Where a range of potential effects are identified, expert judgement will be used to determine the final significance.

## 4.3 Mitigation Requirements

Certain measures are incorporated into the Project design as adherence to standard industry best practices or embedded mitigation which is fundamental to how the Project will be executed. During the assessment of impacts in the receptor specific assessment sections, all embedded mitigation is considered when assessing the significance of an impact. Details of the embedded mitigation which SHEPD is committed to implementing, and hence, the measures considered within the impact assessments presented in this MEA, are included in Table 4-2. All embedded mitigation is included within the Marine CEMP (Xodus Document No. A-101090-S00-A-PLAN-001). Where required, additional mitigation has been suggested on a receptor specific basis, informed by the impact assessments.



Table 4-2 Embedded mitigation and best practice relevant to the Project

MEASURE	DETAILS
<b>Production of a Marine CEMP</b>	The Marine CEMP is designed to provide a consolidated point of reference for SHEPD and their marine contractors. It ensures all embedded and additional mitigation measures identified by this MEA and supporting documents are effectively disseminated to and implemented by the Project team during Project activities, thus ensuring that any potential environmental impacts are minimised.
<b>All Project personnel will be trained and informed of their responsibility to implement the environmental and ecological mitigation outlined in the Marine CEMP</b>	Toolbox talks, inductions, and awareness notices will be used to disseminate this information among all relevant personnel.
<b>Pre-installation surveys may be conducted to inform detailed route engineering</b>	Further pre-installation surveys may be required to inform detailed cable route engineering within the consented corridor. Where the surveys confirm the presence of sensitive benthic receptors in the proposed cable corridor, route engineering will seek to avoid sensitive habitats where possible and minimise interaction with these features.
<b>Consideration of sensitive habitats and features</b>	<p>As agreed with NatureScot, additional mitigation will be in place for consideration of the sensitive habitats and features within the proposed cable corridor. The proposed cable route has been designed to avoid maerl habitat and breeding seal haul-outs through using the existing landfalls; avoid reef habitat through avoiding all areas of bedrock and boulders; avoid key areas of kelp and seaweed habitats; and minimise overlap with seagrass beds.</p> <p>Seagrass beds will be avoided at each landfall, with a 55 m buffer around the seagrass at the Eriskay landfall and avoidance of the seagrass in the area west of the largest seagrass bed in the mid-section of the route (Figure 5-3). No burial (only self-burial) is proposed in the subtidal with no deposits in areas of seagrass other than the surface laid cable. Additionally, no PLGR will occur in seagrass beds.</p>
<b>Cable Laying and Monitoring Plan</b>	<p>A Cable Laying and Monitoring Plan (CLMP) will be prepared in support of the marine licence application. The CLMP will include:</p> <ul style="list-style-type: none"> <li>• Details of the location of all works relating to the licence and cable laying techniques;</li> <li>• A non-technical summary of the survey work used to inform cable routing, including geophysical, geotechnical and benthic surveys, desk top studies and cable route studies where available;</li> <li>• A laying plan based on survey data, including details on laying methods and the avoidance of damage to Kelp and Seaweed Communities on Sublittoral Sediment, Seagrass and Kelp Beds; and</li> <li>• Proposals for monitoring surveys of Kelp and Seaweed Communities on Sublittoral Sediment, Seagrass and Kelp Beds on completion of the works, to determine how they have been impacted, whether they</li> </ul>



MEASURE	DETAILS
	<p>are likely to recover and if the wider Kelp and Seaweed Communities on Sublittoral Sediment supports new growth around the cable.</p>
<p><b>Marine archaeological features</b></p>	<p>All wrecks or features of potential archaeological significance shall be avoided by a buffer of at least 50 m during detailed route design. The locations of wrecks and features of potential archaeological significance will be clearly identified on electronic charts on board the installation vessel and utilised to guide the proposed cable installation activities. The location of any wrecks or features of potential archaeological significance will be provided to Historic Environment Scotland (HES), and the United Kingdom Hydrographic Office (UKHO). Given that no marine archaeological assets have been identified within the cable corridor, a Protocol for Archaeological Discoveries (PAD) is not proposed, unless required.</p> <p>Should this be required, a PAD will be implemented during the installation activities if conditioned by the Marine Licence. Any features with archaeological potential encountered will be avoided.</p>
<p><b>Scottish Marine Wildlife Watching Code (SMWWC) and Basking Shark Code of Conduct</b></p>	<p>NatureScot developed the SMWWC as part of its duties under the Nature Conservation (Scotland) Act 2004. The SMWWC aims to minimise disturbance to marine wildlife. All Project vessels will adhere to the provisions of the SMWWC during the proposed cable installation activities, including reducing speed to the safest minimum when passing wildlife and avoiding sudden unpredictable changes in speed, direction and engine sound. Where animals are displaying signs of disturbance (e.g. sudden movement, aggressive behaviour), Project vessels will move away and if possible, take an alternative route or wait for the animals to move on. Additionally, all vessels will adhere to the Basking Shark Code of Conduct, such as reducing speed if basking sharks are sighted and avoiding sudden changes in speed (Shark Trust, 2025).</p>
<p><b>Protected Species Mitigation Plan – Outer Hebrides Region</b></p>	<p>Adherence to the mitigation measures set out in the Protected Species Mitigation Plan - Outer Hebrides Region (A-101009-S00-A-REPT-004) which will apply to the following receptors:</p> <ul style="list-style-type: none"> <li>• Marine mammals;</li> <li>• Basking shark;</li> <li>• Otters; and</li> <li>• Seabirds.</li> </ul>
<p><b>Lighting on board installation vessels will be kept to a minimum</b></p>	<p>Lighting on-board all installation vessels will be appropriately directed and kept to the minimum level required to ensure safe operations. This will minimise disturbance to seabird receptors, and the minimised light levels will reduce visual disturbance.</p>
<p><b>Vessels will be travelling at slow speeds during installation works</b></p>	<p>The slow speed of Project installation vessels will minimise the risk of disturbance and injury impacts to seabird and marine mammal receptors.</p>



MEASURE	DETAILS
<b>Production of an Emergency Spill Response Plan</b>	An Emergency Spill Response Plan will help to ensure that the potential for release of pollutants from the Project is minimised.
<b>Control measures and Shipboard Oil Pollution Emergency Plans (SOPEP) will be in place and adhered to under International Convention for the Prevention of Pollution from Ships (MARPOL) Annex I requirements for all vessels.</b>	As per the MARPOL 73/78 requirement under Annex I, all ships with 400 gross tonnage and above must carry an oil prevention plan as per the norms and guidelines laid down by IMO under Marine Environmental Protection Committee (MEPC) Act. Production of this plan will help to ensure that the potential for release of pollutants from installation, operation and decommissioning is minimised. In the event of an accidental fuel release occurring appropriate standard practice management procedures will be implemented accordingly.
<b>Vessels will be equipped with waste disposal facilities (sewage treatment or waste storage) IMO MARPOL Annex IV Prevention of Pollution from Ships standards</b>	A Waste Management Plan will be developed and implemented to ensure the waste hierarchy is followed and all waste is sent onward to recycling or disposal via a licenced waste route. Additionally, all recovered debris will be taken ashore and sent for appropriate recycling or disposal at a licenced waste handling facility.
<b>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)</b>	<p>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 INNS introduction during the proposed cable installation activities is minimised, including:</p> <ul style="list-style-type: none"> <li>• Adherence to relevant BWM measures, where relevant. Vessels will be issued with an International Ballast Water Management Certificate;</li> <li>• Ballast Water Management Plans 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;</li> <li>• All vessels will consider the requirements of MEPC.207(62) guidelines, including for example the implementation of a biofouling management plan, and records of biofouling management practices kept in a biofouling record book; and</li> <li>• All vessels will have an International Anti-Fouling System Certificate (as appropriate).</li> </ul>
<b>Use of clean, inert, and virgin materials (cable and protection)</b>	<p>Only materials free from organic contaminants shall be used to reduce the risk of INNS. Monitoring surveys will be undertaken to determine the colonisation of cable protection measures from INNS.</p> <p>All equipment used in the proposed cable installation activities (e.g., ROVs), will be cleaned with freshwater prior to arrival on site.</p>



MEASURE	DETAILS
<p><b>Additional INNS measures for <i>Sargassum muticum</i></b></p>	<p>The following measures will be adapted to be prevent the potential spread of <i>S. muticum</i>, as detailed within the Marine CEMP (Xodus Document No. A-101090-S00-A-PLAN-001) :</p> <ul style="list-style-type: none"> <li>• The intertidal excavation corridor shall be limited to 20 m (10 m either side of the cable route) (MHWS to MLWS) and will not overlap with any rocky locations where there is potential for <i>S. muticum</i>, including the areas where this species was identified (i.e., Barra landfall around TR01 and TR03). In the subtidal region beyond MLWS, the cable will be surface laid outwith the rocky areas where <i>S. muticum</i> was found (~ 25 m away);</li> <li>• During the anchor/spudding associated with the split pipe installation rocky areas will be avoided by a buffer of 10 m;</li> <li>• Material excavated in the vicinity for <i>S. muticum</i> is expected to be soft sediment and largely backfilled after the cable is buried; and</li> <li>• Cable pull will be conducted in an order which maintains proximity from the known areas where <i>S. muticum</i> is present and ensures the cable tension is sufficient for there to be no interaction with <i>S. muticum</i>.</li> </ul>
<p><b>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 Outer Hebrides FLMAP</b></p>	<p>Employment of a FLO will ensure all commercial fisheries operators in the vicinity of the Project will be proactively and appropriately communicated with in terms of the proposed cable installation activities.</p>
<p><b>Consultation with commercial fishing stakeholders to identify acceptable and feasible mitigation options with the aim of minimising potential effects on commercial fishing</b></p>	<p>SHEPD will, in consultation with commercial fishing stakeholders, work towards identifying acceptable and feasible mitigation options with the aim of minimising any potential effects on commercial fishing associated with the replacement of submarine electricity cable. There are various options available to mitigate the risks, including:</p> <ul style="list-style-type: none"> <li>• Continuing effective positive liaison with commercial fishing stakeholders through the pre-installation, installation and operational phases of any cable replacement;</li> <li>• Continued employment of FLO/Fishing Industry Representative (FIR) services until the completion of the replacement works;</li> <li>• Ensuring contractors comply with the contractor’s obligations outlined above so as to minimise any interference to commercial fishing activities;</li> <li>• Managing the cable replacement works so as to minimise any potential effects on the marine environment, habitats and commercial fishing;</li> <li>• Raising awareness of the danger of fishing in the vicinity of submarine cable;</li> <li>• Adopting a hierarchical approach to submarine cable protection, taking account of sea users concerns;</li> <li>• Organising an installation phasing workshop (if new cable is required) to inform commercial fishermen of planned activities;</li> </ul>



MEASURE	DETAILS
	<ul style="list-style-type: none"> <li>• Organising installation schedules (if new cable is required) as far as is practicably possible in order to reduce the combined loss of fishing area associated with safety zones;</li> <li>• Distributing weekly notice of operations;</li> <li>• Providing information in plotter format to enable fishermen to easily interpret the information; and/or</li> <li>• Scouting surveys to identify potting areas and any other relevant static gear areas.</li> </ul> <p>Additionally, discussions will be held with fish farm operators.</p>
<p><b>Notice to Mariners (NtMs), local notifications to marine users, Kingfisher bulletins, Radio Navigational Warnings, 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</b></p>	<p>Ensure navigational safety and minimise the risk and equipment snagging. Notices will also be issued if any OoS cables are removed or moved and chart updates will be provided.</p>
<p><b>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)</b></p>	<p>IRPCS are the international standards designed to ensure safe navigation of vessels at sea. All installation vessels will adhere to these rules, including displaying appropriate lights and shapes. SOLAS is an international maritime treaty which sets minimum safety standards in the installation, equipment and operation of merchant ships. The convention requires signatory flag states to ensure that ships flagged by them comply with at least these standards. In relation to the Project its compliance will ensure navigational safety.</p>
<p><b>As built survey data will be provided to the UKHO and Kingfisher for inclusion on Admiralty Charts and the Kingfisher Information Service – Offshore Renewable and Cable Awareness (KIS-ORCA) charts</b></p>	<p>Ensure navigational safety and minimise the risk of equipment snagging.</p>
<p><b>Engagement with Shipping and Navigation Consultees</b></p>	<p>Ongoing consultations with ports and harbour authority ensure continued awareness and communication of installation and harbour specific details relevant to minimising disruption. Ongoing consultation with fisheries as detailed within the Outer Hebrides FLMAP to discuss the potential impacts as a result of the installation activities.</p> <p>Engagement with ferry operators and regular runners ensures awareness of the installation details which minimises disruption. Installation maintenance and decommissioning schedules arranged to minimise impact on ferry schedules. This may extend to working in night-time</p>



MEASURE	DETAILS
	<p>hours where practicable. The contact details for the ferry operators will be shared with the installation contractor to aid in communication and awareness of upcoming works.</p>
<p><b>Mitigation for Otters</b></p>	<p>A protected species survey has been carried out at each landfall. Pre-works checks will be conducted by an Ecological Clerk of Work (ECOW) prior to the commencement of the proposed cable installation activities and will include the cable landfall areas and a 200 m mitigation zone. Any identified otter holts, layups and couches will be identified and avoided by a 40 m buffer.</p> <p>Additionally, to mitigate the risk of otters becoming trapped within excavated trenches at the landfalls, ramps will be incorporated into trench designs to ensure otters are able to escape should they enter a trench.</p> <p>Should pre-construction otter surveys identify otter features, SHEPD will consult with NatureScot ahead of works commencing to determine whether a disturbance licence for otter is required.</p> <p>All works with the potential to impact otter will be carried out in accordance with requirements of the terrestrial consent conditions including SHEPD's Otter Protection Policy.</p>

## 4.4 Cumulative Impact Assessment

The current 'Marine Projects' and "Applications" list on Marine Directorate's website (Marine Directorate, 2025a) was reviewed to identify other developments or activities with the potential to result in cumulative effects. A radius of search of 50 to 100 km was used to identify a number of ports & harbours and cable developments which are currently listed at pre-application, application, licence and post-consent status. There were no Projects identified which had overlapping timeframes with the proposed activities of the Project and located within the predefined search radius. Therefore, cumulative impacts have been screened out for further consideration.



## 5 DESIGNATED SITES ASSESSMENT

### 5.1 Introduction

This Section will provide the information required to support the HRA and MPA assessment processes. As such, the proposed cable installation activities will be assessed as to whether they are likely to result in a LSE on a European Site, in line with the HRA process, or if they are capable of affecting (other than insignificantly), on an NCMPA. Therefore, magnitude and significance of impact will not be discussed within this Section, and these will be determined in the topic-specific sections.

LSE on European sites which include SPAs and SACs, as well as Ramsar sites, will be determined. In addition to this, the potential impact on NCMPAs and designated seal haul-outs will also be assessed as per sections 82 and 117 of the Marine (Scotland) 2010 Act.

#### 5.1.1 Selection Criteria for Assessment of Protected Sites

The following selection criteria has been applied to identify protected sites taken forward for assessment:

- SACs and NCMPAs (including proposed and candidate sites) with cetaceans and basking sharks as qualifying features within 50 km of the proposed cable corridor;
- SACs (including proposed and candidate sites) with harbour seal (*Phoca vitulina*) interests within 50 km of the cable corridor and breeding grey seal within 20 km of the proposed cable corridor;
- Designated seal haul-outs or grey seal breeding sites that overlap with or are located within 500 m of the proposed cable corridor;
- SACs and NCMPAs (including proposed and candidate sites) with otter interests that overlap with or are located within 500 m of the proposed cable corridor;
- SPAs (including proposed sites), Ramsar Sites, and NCMPAs (including proposed sites) with birds as qualifying features that overlap with or are located within 2 km of the proposed cable corridor;
- SACs and NCMPAs (including proposed and candidate sites) with seabed / benthic protected features that overlap with the proposed cable corridor; or
- Other sites of importance, including Site of Special Scientific Interest (SSSIs), National Scenic Area (NSAs) and World Heritage Sites which transect the proposed cable corridor.

The distances between SPAs, SSSIs, NSAs and World Heritage Sites and the cable corridor were calculated on a straight-line basis. For the rest of the sites (e.g., SACs and NCMPAs) 'at sea' distances were calculated.

Where protected sites are outwith the distances stated above, the site has been screened out of further assessment in this report. Where no LSE is predicted on a European site or the Project is not predicted to be capable of affecting (other than insignificantly) on a NCMPA or designated seal haul-out, the site has been screened out for further assessment in this report. Where an LSE cannot be ruled out, a more detailed assessment has been carried out. Details of mitigation measures have then been presented where necessary. Further details on impacts to qualifying features will also be assessed in the topic-specific impact assessments.

### 5.2 Data Sources

The designated sites within the vicinity of the cable corridor have been identified through publicly available geospatial data (e.g. National Marine Plan Interactive (NMPi) (Marine Directorate, 2025b) and the Joint Nature Conservation Committee (JNCC) Marine Protected Area Mapper (JNCC, 2025) and supplemented with information from the results of the marine surveys.



## 5.3 Baseline and Receptor Identification

The designated sites located in the vicinity of the proposed cable corridor which have the potential to be impacted by the proposed cable installation activities subject to the selection criteria above are illustrated in Figure 5-1 and described in the following sections.

### 5.3.1 NatureScot Consultation

In the advice given by NatureScot the following requirements were indicated to be necessary and is detailed with Table 5-1.



Table 5-1 NatureScot advice

NATURESCOT COMMENT	RESPONSE
<p><b>Benthic Advice</b></p> <p>The Sound of Barra SAC is designated for the following benthic features:</p> <ul style="list-style-type: none"> <li>• Subtidal sand banks (including distinct component habitats of maerl and seagrass beds); and</li> <li>• Reefs.</li> </ul> <p>The reef habitat is in favourable condition and therefore the Conservation Objectives seek to maintain this condition. Subtidal banks are classed as unfavourable / declining, and the Conservation Objectives seek to restore favourable condition of the seagrass and maerl beds within the site. The unfavourable status reflects the condition of the seagrass beds and maerl beds within the site. There has been a reduction in the extent of seagrass beds to the east of the Eriskay causeway and to the west of Eriskay, resulting from the construction of the causeway. Aerial imagery also shows a reduction in the extent of seagrass beds to the south-east of Fiaraidh and historic beds along the Eriskay ferry route.</p>	<p>Noted, an assessment under the Habitat Regulations is provided within Sections 5.3.7 and 5.5.4 below.</p>
<p>Seagrass – There is a discrepancy between our NatureScot GeMS<sup>2</sup> outline for the seagrass bed and that provided by SSE, with the SSE bed showing it as wider than our 2017 record. This means that an area of approximately 1200m of seagrass will be traversed by the cable, rather than an area of 650m (as indicated by GeMS). The increase in this seagrass bed is also corroborated with aerial imagery. Whilst this is positive to see, this increases the risk to the seagrass beds through the proposed cable route. Additionally, there is the potential for overlap at the Eriskay landfall approach, where an isolated small seagrass bed is present.</p> <p>Cable replacement (using the proposed cable corridor) does not allow for avoidance of subtidal seagrass beds in the Southeast of Fuday Island. No details of the selection criteria for the cable route, clarity on micro siting within the cable corridor or methods of cable laying have been provided at this stage, and therefore it is not possible to expand further on advice for the route. However, avoidance for this seagrass bed is encouraged, if possible, and it is unclear whether a potential alternative route is possible, which avoids (or avoids most / some) of the seagrass areas.</p>	<p>Avoidance of sensitive features is the first principal for the Project as noted in Section 4.3. Where avoidance of sensitive seagrass is not possible through micro-siting, the Project has opted for surface lay and self-burial of the cable to ensure any impacts are as low as reasonably practicable. No external protection will be added to areas of seagrass to minimise the footprint.</p> <p>Seagrass will be avoided at each landfall, with a 55 m buffer around the seagrass at the Eriskay landfall and avoidance of the seagrass in the area west of the largest area in the mid-section of the route. No burial (only self-burial) is proposed in the subtidal with no deposits other than the surface laid cable, and no PLGR will occur in areas of seagrass. An assessment of the cable length in seagrass (1,040 m) has been presented in Section 5.5.4.</p>

<sup>2</sup> The NatureScot and JNCC Geodatabase of Marine features adjacent to Scotland (GeMS) database is available online at: <https://www.arcgis.com/home/item.html?id=0e722e3e91e424f8dacac5a587c0dfb>.



NATURESCOT COMMENT	RESPONSE
<p>Annex 1 Reefs – The reefs habitat is in favourable condition within the Sound of Barra SAC, with the benthic survey identifying sparse, small patches of potential reef across the survey area. Based on the route and survey, the impacts to these features may be mitigated by avoiding and micro-siting the cable around reef features. With appropriate mitigation, this does not raise significant concerns.</p> <p>Kelp and seaweed communities on sublittoral sediment – like seagrass, kelp and seaweed communities on sublittoral sediment is a PMF and is present along the identified cable route, between Barra and Fuday Island, spanning an area of 1.5 km. This PMF has low sensitivity to surface abrasion and siltation, pressures associated with cables. The impacts associated with cable laying over these features are unlikely to cause significant effects, due to the high likelihood of recovery of the feature, and the limited spatial extent of the area impact, regardless of whether the method of cable laying is trenching or burial.</p>	<p>The advice is noted, and the Project has committed to avoidance of cable installation works in identified areas of Annex 1 reefs.</p> <p>The advice on this feature is noted.</p>
<p><b>Impacts</b></p>	
<p>The activity of cable laying can cause a number of impacts on benthic communities. Based on the benthic survey, the primary concern from the proposed activity is the SAC feature seagrass beds. Interactions with features of the SAC could be minimised/avoided by micro-siting the cable.</p> <p>Seagrass beds have a high sensitivity to physical changes to the seabed, siltation and subsurface abrasion as well as a medium sensitivity to surface abrasion (FeAST). The risk and exposure of these pressures will depend on the proposed method of cable laying i.e., surface laying, trenching, use of hard substrates etc. If the cable is surface laid on top of seagrass, this could cause concentrated continuous surface abrasion across a localised area of seagrass beds, potentially damaging seagrass leaf blades (fronds). Scottish sublittoral seagrass relies predominantly on vegetative reproduction (below ground), where the bed size relies on the rhizome network of nodes and internode production. The cable may therefore damage the seagrass rhizome structure even if it does gradually become buried. The risk to the seagrass bed will depend on the cable movement and any surface laying should avoid denser patches of seagrass.</p>	<p>Avoidance of sensitive features is the first principal for the Project as noted in Section 4.3. Where avoidance of sensitive seagrass is not possible through microrouting, the Project has opted for surface lay and self-burial to ensure any impacts are as low as reasonably practicable. No additional protection is proposed in areas of seagrass to minimise the footprint. An assessment of this impact is provided in Section 5.5.4 below.</p>
<p>Any permanent loss of seagrass extent and distribution may interfere with the achievement of the Conservation Objectives and the Favourable Conservation Status of the species. We would advise against the use of reef forming structures (e.g., concrete mattress, rock armour, anchoring) to stabilise the cable in areas of historic or known distribution of seagrass habitat.</p>	<p>Noted. Where avoidance of sensitive seagrass is not possible through microrouting, the Project has opted for surface lay and self-burial to ensure any impacts are as low as reasonably practicable. No additional protection is proposed in areas of seagrass to minimise the footprint. Concrete mattresses have been included as a contingency for OoS and live cable crossings;</p>



NATURESCOT COMMENT	RESPONSE
<p>If trenching is proposed in the vicinity/over seagrass beds, it will result in subsurface abrasion, damaging the rhizomes and likely having a wider zone of primary and secondary impact (siltation/smothering). This could result in a significant damage to the seagrass bed and delay recovery. It is strongly advised that trenching is avoided over these seagrass beds. If trenching is proposed close to the seagrass beds, there should be consideration of the timing of the activity. During the spring/ summer, seagrass is particularly susceptible to high levels of suspended sediments reducing light penetration of the water, impacting the plants' ability to photosynthesise. Increased deposition of sediment can lead to smothering of seagrass beds and may cause seeds to be buried too deeply for germination. Physical disturbance at all times of the year can cause damage to rhizomes and the seedbank within the sediment, but carries additional risks of damage to growing plants, reproductive shoots and seed production if this occurs during the spring/ summer months. Additionally, seeds lying upon or held within the sediment may be removed / damaged along with dredged material or dislodged and carried away by currents.</p>	<p>however, no concrete mattresses will be applied in areas of seagrass.</p> <p>Avoidance of sensitive features is the first principal for the project as noted in Section 4.3. Where avoidance of sensitive seagrass is not possible through microrouting, the Project has opted for surface lay and self-burial to ensure any impacts are as low as reasonably practicable. No additional protection is proposed in areas of seagrass to minimise the footprint. As such, trenching of the cable in these areas is not planned. An assessment of this impact is provided in Section 5.5.4 below.</p>
<b>Coastal Advice</b>	
<p>The Barra landfall is approximately 770m from the Eoligarry SSSI, which is designated for coastal geomorphology, machair and sand dunes. Whilst no impacts are anticipated on the interests of the Eoligarry SSSI due to the distance of the works from site features, there are likely to be impacts on the beach and sand dune habitat if cable installation via trenching is the method used for installation. This advice is based on the assumption that the cable will be laid and buried within this trench across the beach and through the dunes.</p>	<p>This advice is noted and the assessment of potential impacts on the Eoligarry SSSI is provided in Section 5.3.8.</p>
<b>General Advice</b>	
<p>Landfall Options – Eriskay</p> <p>The seagrass bed at Eriskay is significantly reduced from its historic extent. Based on this loss, we advise that the preferred option would be to avoid the seagrass bed at the Eriskay landfall, as well as a minor overlap of Annex 1 reef. Our preference would be for the selection of route 2. Additionally, route 2 avoids steep dunes that could be vulnerable to erosion/destabilisation if trenching takes place. Beach levels change seasonally and over long timescales (with beaches falling in winter and rising in summer), and we advise that this should also be considered in the trench burial design.</p>	<p>The advice from NatureScot is noted, with avoidance of sensitive features being the first principal for the Project as noted in Section 4.3. Where avoidance of sensitive seagrass is not possible through microrouting, the Project has opted for surface lay and self-burial to ensure any impacts are as low as reasonably practicable. No additional protection is proposed in areas of seagrass to minimise the footprint.</p>



NATURESCOT COMMENT	RESPONSE
<p>Landfall Options Barra – For Barra, consideration should be given to the trend of coastal retreat, as well as seasonal and long-term changes to the coast.</p>	<p>The advice from NatureScot is noted. The cable will be buried beyond MHWS to the TJP (around 23 m above MHWS) at the Barra shore end. The cable will be buried to a standard depth of 0.8 – 1.2 m across the intertidal and the cable in this area will be protected with split-pipe. In the unlikely event of the cable becoming unburied in the intertidal area, remedial works will be planned to re-bury.</p>
<p>The application should quantify the area impacted by the proposal. This should include not only the primary area of impact (e.g., physical footprint) but also consider secondary impacts of the activity e.g., cable movement (surface abrasion) siltation, reef formation etc.</p>	<p>A Pipeline Lateral Stability Software (PILS) analysis has been carried out as part of the OBS analysis which estimates the P50 ocean conditions which signifies the average or expected level of wave height and current speed, where the actual outcome is forecasted to be higher 50% of the time and lower 50% of the time over the project's life. Self-burial of 4 cm to 6 cm is needed for complete stability. While it is not possible to predict the time it will take to achieve a self-burial depth (21% to 42% of the cable diameter), evidence from the Mull – Iona development suggests partial burial of the cable across much of the route within a two-month period. As such, the best case estimate is likely two months.</p> <p>PILS analysis was undertaken in a location for seagrass and the P50 results predicted a cable movement prior to self-burial of ±4 cm.</p> <p>A quantification of the area of seagrass impacted has been calculated as the length of the cable in seagrass (1,040 m) multiplied by the width of the cable (±4 cm cable movement before self-burial and stabilisation is achieved). For further information see the assessment in Section 5.5.4.</p>
<p>A cable laying plan – to include details on site routing, laying methods and the avoidance/minimisation of damage to SAC features and PMFs. This should follow a hierarchy of mitigation, avoiding activities</p>	<p>A Cable Laying and Monitoring Plan will be prepared in support of the marine licence application.</p>



NATURESCOT COMMENT	RESPONSE
<p>which may have an adverse impact on the key receptors and when this cannot be avoided, minimising and/or providing appropriate mitigation to avoid. Where there is overlap of a sensitive feature, and minimising impacts/mitigation is proposed, the application should justify the methods proposed. It may also require a derogation case and consideration of the inclusion of compensation measures.</p>	
<p>A biosecurity plan should be included.</p>	<p>The Project has considered the requirement for a biosecurity plan and has included relevant embedded mitigation within Section 4.3, including specific mitigation for the prevention of the spread of <i>S. muticum</i>. Please refer to the measures as set out in the Marine CEMP (Xodus Document No. A-101090-S00-A-PLAN-001).</p>
<p>We advise that the project should not use mattresses or any hard reef forming techniques within the seagrass bed habitat, including over known historic beds. Additionally, trenching may impact on seagrass rhizomes, affecting the integrity of beds). We strongly recommend that avoidance of seagrass beds and trenching is not proposed in seagrass beds.</p>	<p>The advice from NatureScot is noted, with avoidance of sensitive features being the first principal for the Project as noted in Section 4.3. Where avoidance of sensitive seagrass is not possible through microrouting, the Project has opted for surface lay and self-burial to ensure any impacts are as low as reasonably practicable. No additional protection is proposed in areas of seagrass to minimise the footprint.</p>
<p>There is a risk of cable exposure in the intertidal and landfall areas during the operational lifetime, and we strongly recommend that the developer should commit to re-bury the cable if it gets exposed over its operational lifetime. We strongly recommend that consideration is given to the seasonal and longer-term changes in beach levels, as well as the coastal edge trends, in trench depth design.</p>	<p>SHEPD has committed to re-bury the cable if it gets exposed over its operational lifetime, including replacement of split pipe as needed.</p>
<p>We recommend the creation of post-works restoration plans outlining steps to restore the dune habitats to their pre-works condition, to reduce the risk of erosion following disturbance.</p>	<p>The MEA covers the area up to MHWS, post work restoration plans will be considered within the relevant documents, i.e., the Onshore CEMP (WSP, 2026) which will include any mitigation requirements requested by NatureScot.</p>

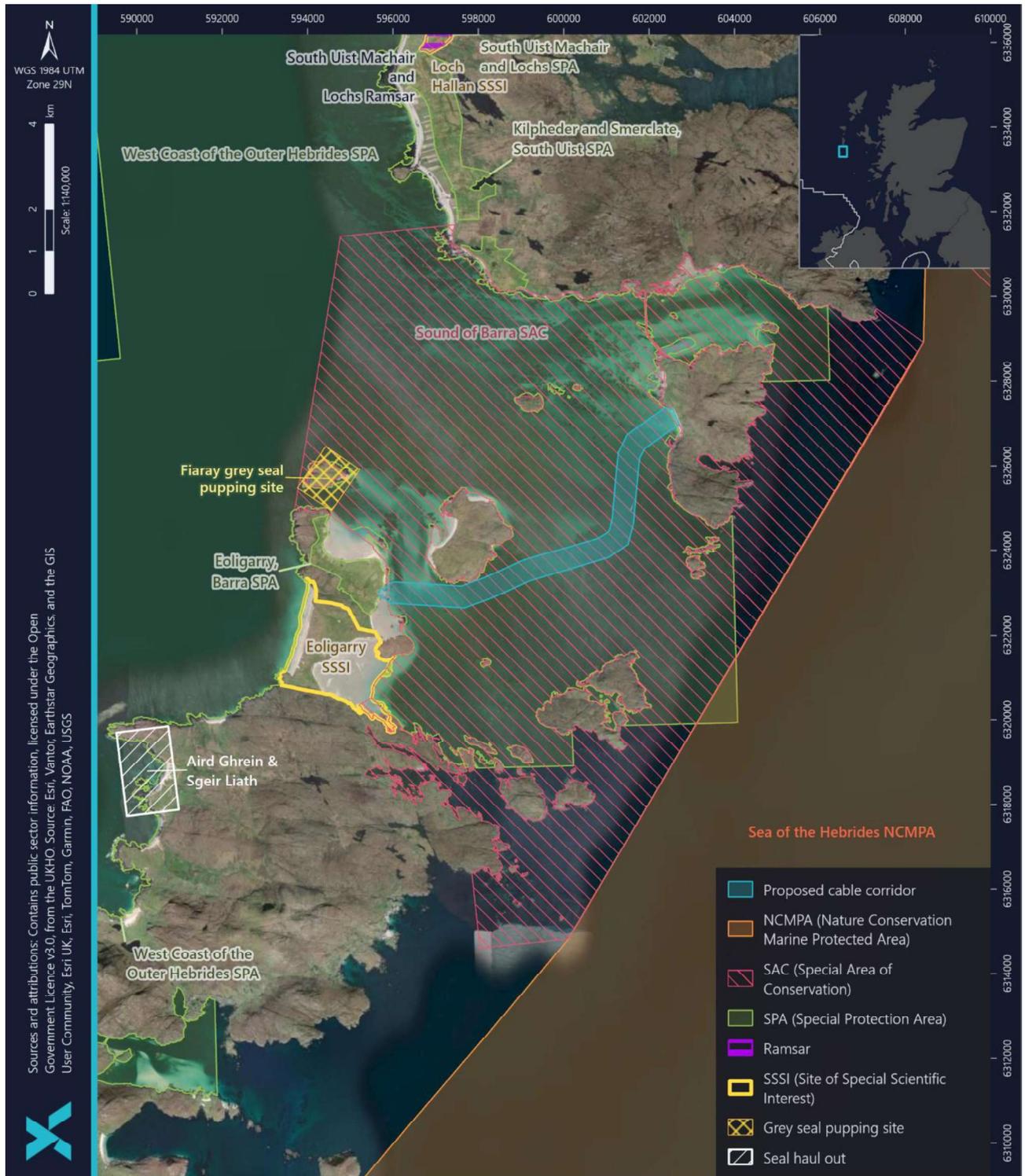


Figure 5-1 Designated sites within the vicinity of the proposed cable corridor



### 5.3.2 SACs and NCMPAs with Cetaceans and Basking Sharks as Qualifying Features

All species of cetacean (whale, dolphin and porpoise) occurring in UK waters are listed in Annex IV of the Habitats Directive. Harbour porpoise (*Phocoena phocoena*) and bottlenose dolphin (*Tursiops truncatus*) are listed under Annex II of the Habitats Directive and are given additional protection through the designation of SACs for those species. Basking sharks are protected under Section 9 of the Wildlife and Countryside Act 1981 (as amended) which prohibits the killing, injuring, or taking by any method of those wild animals listed on Schedule 5 of the Act.

The Inner Hebrides and the Minches SAC is located 9.1 km from the proposed cable corridor and is designated for harbour porpoise. The Sea of the Hebrides NCMPA located 3.5 km from the proposed cable corridor and is designated for basking shark (*Cetorhinus maximus*) and minke whale (*Balaenoptera acutorostrata*). There is potential for disturbance or injury to cetaceans associated with the vessel presence and sound emissions, and to basking shark from vessel presence. Therefore, SACs and NCMPAs with cetaceans and basking sharks as a qualifying feature are screened in for further assessment

### 5.3.3 SACs with Harbour or Grey Seal as a Qualifying Feature

There are no SACs (including proposed and candidate sites) with grey seal as a qualifying feature within 20 km of the proposed cable corridor and thus SACs with grey seal as a qualifying feature are not screened in for further assessment.

There is one SAC with harbour seal as a qualifying feature within 50 km of the proposed cable corridor: the Sound of Barra SAC. The Sound of Barra SAC overlaps with the proposed cable corridor (Figure 5-1). Harbour seals are most sensitive to disturbance during the pupping and moulting seasons which occur between June to July and moulting during July to August. The proposed cable installation activities will be undertaken in summer 2026 for a period of approximately two months (57 days), potentially overlapping with the pupping and moulting seasons. There is potential for disturbance or injury to harbour seals associated with the vessel presence and sound emissions. Therefore, SACs with harbour seal as a qualifying feature are screened in for further assessment.

### 5.3.4 Designated Seal Haul-Outs or Grey Seal Breeding Sites

There are no designated seal haul-outs or grey seal breeding sites that overlap with or are located within 500 m of the proposed cable corridor. Thus, any impacts on designated seal haul-outs, including grey seal breeding sites, are not screened in for further assessment.

### 5.3.5 SACs and NCMPAs with Otter Interests

The otter (*Lutra lutra*) is listed in Annex IV of the Habitats Directive as an EPS. They are small, semi-aquatic mammals which inhabit riverine, brackish and coastal environments throughout the UK. Although land mammals, otters depend on both freshwater and marine environments for food. Their marine habitat comprises low, peat-covered coastlines with shallow, seaweed rich waters and a consistent freshwater supply (NatureScot, 2024b).

There are no designated sites with otter as a qualifying feature located within 500 m of the proposed cable corridor and therefore SACs and NCMPAs with otter interests are screened out for further assessment.

Evidence of otters at the Barra landfall were observed in the OEL (2025) intertidal survey and WSP (2025) ecology survey (see Section 7.3.4). An assessment on potential impacts to otters (outwith as a feature of a SAC or NCMPA) is presented in Section 7.4.



### 5.3.6 SPAs and NCMPAs with Birds as Qualifying Features

Two SPAs are located within 2 km of the proposed cable corridor: the Eoligarry, Barra SPA and the West Coast of the Outer Hebrides SPA. The West Coast of the Outer Hebrides SPA overlaps with the proposed cable corridor and the Eoligarry, Barra SPA runs adjacent to the proposed cable corridor above MHWS. The designated feature of the Eoligarry, Barra SPA is breeding corncrake (*Crex crex*), and the designated features of the West Coast of the Outer Hebrides SPA include:

- Black-throated diver (*Gavia arctica*), non-breeding;
- Eider (*Somateria mollissima*), non-breeding;
- Great northern diver (*Gavia immer*), non-breeding;
- Long-tailed duck (*Clangula hyemalis*), non-breeding;
- Red-breasted merganser (*Mergus serrator*), non-breeding;
- Red-throated diver (*Gavia stellata*), breeding; and
- Slavonian grebe (*Podiceps auritus*), non-breeding.

Wintering birds could be present in the vicinity of the proposed cable corridor and may exhibit disturbance when foraging due to vessel presence. As such, the West Coast of the Outer Hebrides SPA is screened in for further assessment. The Eoligarry, Barra SPA is designated for breeding corncrake; however, this is a terrestrial species which breed in open habitats, primarily meadows, and as such these birds are unlikely to be utilising the coastal environment where the works will take place. Therefore, this species is unlikely to be disturbed by the cable installation activities and as such has been screened out for further assessment within this MEA. Nevertheless, the ecology survey report by WSP (2025) concludes that LSE can be ruled out for the Eoligarry, Barra SPA as the onshore works are outside of the boundaries of the SPA and corncrake were not recorded on the east side of the road. Relevant mitigation for breeding corncrake is presented in the Onshore CEMP (WSP, 2026).

### 5.3.7 SACs and NCMPAs with Seabed / Benthic Protected Features

There is one SAC with seabed / benthic protected features overlapping the proposed cable corridor: the Sound of Barra SAC, designated for reefs and subtidal sandbanks (with associated communities including PMFs) (Figure 5-1). The proposed cable installation activities have the potential to result in direct and indirect disturbance and loss to these features (temporary and permanent), and as such SACs with seabed / benthic protected features are screened in for further assessment. No NCMPAs with seabed / benthic protected features have been identified within the vicinity of the proposed cable corridor and therefore NCMPAs with seabed / benthic protected features are not screened in for further assessment.

### 5.3.8 Other Sites of Importance

The Eoligarry SSSI, designated for coastal geomorphology of Scotland, machair, and sand dunes, is located within proximity to the proposed cable corridor. Sand dunes have been recorded as part of the intertidal survey (OEL, 2025) at the upper extent of the Barra landfall. As this feature is located above MHWS it is outwith the scope of this MEA and the Eoligarry SSSI has been screened out for further assessment. A restoration plan for machair and dune habitat is presented within the Onshore CEMP (WSP, 2026).

## 5.4 Potential Connectivity with Designated Sites

Although there are designated sites overlapping, or within relatively close proximity to, the proposed cable corridor, for a LSE or adverse effects to arise, there has to be an impact pathway between the proposed cable installation activities and the qualifying features of a designated site. An initial consideration has been provided within Table 5-2



identifying where there is potential connectivity based on the impact pathways. Where there is no potential connectivity, sites are screened out for further assessment.

Where there is potential connectivity, i.e., LSE cannot be ruled out on a European site and/or the Project is capable of affecting (other than insignificantly) a protected feature in a designated site, a detailed assessment has been carried out in Section 5.5. Details of mitigation measures have then been presented where applicable. Further details on impacts to qualifying features will also be assessed in the topic-specific impact assessments.



Table 5-2 Designated sites within the vicinity of the proposed cable corridor as per the selection criteria and potential connectivity (JNCC, 2025)

DESIGNATED SITE	REASON FOR SELECTION	DISTANCE TO CABLE CORRIDOR (km)	RELEVANT QUALIFYING FEATURES	POTENTIAL IMPACT PATHWAY	REQUIREMENT FOR FURTHER ASSESSMENT
<b>Sound of Barra SAC</b>	Overlaps with the proposed cable corridor.	0	<ul style="list-style-type: none"> <li>• Harbour seal;</li> <li>• Reefs; and</li> <li>• Subtidal sandbanks.</li> </ul>	Direct / Indirect Habitat Loss; and Vessel presence offshore and pre-installation surveys (including sound emissions).	Y – Overlaps with proposed cable corridor and therefore further assessment is required.
<b>Eoligarry, Barra SPA</b>	Adjacent to the proposed cable corridor.	0	<ul style="list-style-type: none"> <li>• Corncrake breeding.</li> </ul>	Vessel presence and noise (offshore) and presence of machinery and vehicles at landfall.	N – Adjacent to the proposed cable corridor; however, as the species is terrestrial the potential impacts below MHWS from offshore vessels and landfall activities will not result in impacts to the species. As such this site has been screened out for further assessment as part of the MEA. Relevant mitigation for corncrake is presented in the Onshore CEMP (WSP, 2026).
<b>West Coast of the Outer Hebrides SPA</b>	Overlaps with the proposed cable corridor.	0	<ul style="list-style-type: none"> <li>• Black-throated diver, non-breeding;</li> <li>• Eider, non-breeding;</li> <li>• Great northern diver, non-breeding;</li> </ul>	Vessel presence and noise (offshore) and presence of machinery and vehicles at landfall.	Y – Overlaps with proposed cable corridor and species may be present in the marine environment therefore



DESIGNATED SITE	REASON FOR SELECTION	DISTANCE TO CABLE CORRIDOR (km)	RELEVANT QUALIFYING FEATURES	POTENTIAL IMPACT PATHWAY	REQUIREMENT FOR FURTHER ASSESSMENT
<b>Sea of the Hebrides NCMPA</b>	Site is located within 50 km of the proposed cable corridor	3.5	<ul style="list-style-type: none"> <li>• Long-tailed duck, non-breeding;</li> <li>• Red-breasted merganser, non-breeding;</li> <li>• Red-throated diver, breeding; and</li> <li>• Slavonian grebe, non-breeding.</li> </ul>	Vessel presence offshore and pre-installation surveys (including sound emissions).	Y – The designated site is located within 50 km of the proposed cable corridor with cetacean and basking sharks as qualifying features. Therefore, further assessment is required.
<b>Inner Hebrides and the Minches SAC</b>	Site is located within 50 km of the proposed cable corridor	9.1	<ul style="list-style-type: none"> <li>• Harbour porpoise.</li> </ul>	Vessel presence offshore and pre-installation surveys (including sound emissions).	Y – The designated site is located within 50 km of the proposed cable corridor with cetacean as a qualifying feature. Therefore, further assessment is required.



## 5.5 Assessment of Effects

Where sites have been screened in for further assessment (Table 5-2), i.e., where LSE cannot be ruled out on a European site and where the Project is potentially capable to adversely affecting (other than significantly) a protected feature of an NCMPA, further assessment has been carried out. Details of mitigation measures have then been presented where necessary. Further details on impacts to qualifying features are also assessed in the topic-specific impact assessments.

### 5.5.1 SACs and NCMPAs with Cetacean and Basking Sharks as Qualifying Features

As per the assessment of potential connectivity outlined in Section 5.4, the Inner Hebrides and Minches SAC, designated for harbour porpoise; and the Sea of the Hebrides NCMPA, designated for basking shark and minke whale, are within the connectivity range of 50 km of the proposed cable corridor. Further details on the assessment of potential impacts on cetaceans and basking shark are detailed within Section 7: Marine Megafauna.

#### Underwater Sound

Underwater sound emissions have the potential to cause physical injury or disturbance to cetaceans, particularly if they fall within their generalised hearing range (Southall *et al.*, 2019; NMFS, 2018). Basking sharks are an elasmobranch, a species that lacks any gas-filled cavities such as a swim bladder and is considered to have low sensitivity to underwater sound (Hart and Collin, 2015) and as such this feature of the Sea of the Hebrides NCMPA is not considered within this assessment. Nonetheless, minke whale and harbour porpoise are sensitive to underwater sound and an assessment of these impacts for the qualifying features of the Inner Hebrides and Minches SAC is provided below.

As detailed in Section 7: Marine Megafauna and Appendix A: Underwater Sound Impact Assessment, the pathway for underwater sound to impact upon cetaceans is through deployment of USBL positioning equipment associated with the pre and post installation surveys, as well as the use of ROVs and other subsea equipment during cable installation. However, as detailed in Appendix A, there is no realistic injury risk associated with the deployment of USBL equipment and the disturbance range is limited to approximately 207 m. The number of individuals which may incur a strong disturbance associated with the USBL is less than one individuals for both harbour porpoise and minke whale which is <0.1 % of the associated management units for both species.

The proposed cable installation activities will be transient, temporary, and localised, any disturbance to cetaceans at these sites resulting from underwater sound emissions will be limited. As such, there will be no AEoSI of the Inner Hebrides and the Minches SAC, and the proposed cable installation activities are not capable of affecting (other than insignificantly) the conservation objectives of the Sea of the Hebrides NCMPA.

#### Vessel Presence

There is a theoretical increased risk of collision and disturbance for harbour porpoise, minke whale and basking sharks associated with the increase in vessel traffic required for the proposed cable installation activities. However, as the cable installation vessels will be slow-moving, collision risk and disturbance is generally considered to be low. The Project will use a maximum of 10 vessels at one time throughout the cable installation (one Cable lay vessel, seven Support Rigid Inflatable Boats (RIBs) and two DSVs). As such, the presence of vessels associated with the proposed cable corridor is not considered to be substantive change from baseline vessel activity e.g., due to the regularly operated ferry service between Ardmhor (Barra) – Eriskay. Additionally, all Project vessels will adhere to the SMWWC and the Basking Shark Code of Conduct (Shark Trust, 2025) (see Table 4-2). As such, there will be no AEoSI of the Inner Hebrides and the Minches SAC and the Project is not cable of adversely affecting, other than insignificantly, the conservation objectives of the Sea of the Hebrides NCMPA as a result of vessel presence.



## 5.5.2 SACs with Harbour Seal as a Qualifying Feature

As per the assessment of potential connectivity outlined in Section 5.4, there is one designated site with harbour seal as protected features which directly overlap with the cable corridor: the Sound of Barra SAC. Further details on the assessment of potential impacts on pinnipeds are detailed within Section 7: Marine Megafauna.

### Underwater Sound

Underwater sound emissions have the potential to cause physical injury or disturbance to seals, particularly if they fall within their generalised hearing range (Southall *et al.*, 2019; NMFS, 2018). As detailed in Section 7: Marine Megafauna and Appendix A, no injury risk to harbour seals is associated with the Project, and the disturbance range is limited to approximately 207 m. The proposed cable installation activities are due to take place in summer 2026 and therefore may coincide with the pupping and moulting season for harbour seal. Considering that proposed operations will be highly localised, transient, temporary in nature, adherence to the SMWWC (Scottish Natural Heritage (SNH), 2017), and SHEPD's commitment to implementing the mitigation measures provided within the Protected Species Mitigation Plan – Outer Hebrides Region (see Xodus Document No. A-101009-S00-A-REPT-004), it is considered that there will be no AEOI for the Sound of Barra SAC with respect to harbour seal features from underwater sound emissions.

### Vessel, Vehicle and Human Presence

With the increase in vessel traffic associated with the cable installation, harbour seals could potentially be at an increased risk of collision and disturbance. People or plant entering beaches where seals are hauled out, or boats passing close by (within 200 m), can cause disturbance and elicit head up behaviour, followed by a stampede into the water. Harbour seals can habituate to some levels of disturbance (for example the ferry passing by the beaches every day) over time. However, novel and/or prolonged events have the potential to affect the survival of pups and the distribution of animals within the SAC and cause the abandonment of haul out sites. Nonetheless, as the installation vessels will be slow-moving, the risk is generally considered to be low, particularly as all vessels will adhere to the SMWWC. Moreover, the Project will use a maximum of 10 vessels at one time throughout the cable installation (one CLV, seven Support RIBs and two DSVs). As such, the presence of slow moving vessels associated with the proposed cable corridor is not considered to be substantive change from baseline vessel activity e.g., due to the regularly operated ferry service between Ardmhor (Barra) – Eriskay.

Given the overlap between the proposed cable corridor and the Sound of Barra SAC there could be impacts on seals from vehicles, equipment, and people needed for work in the intertidal areas at Barra and Eriskay, especially if the work coincides with the pupping or moulting seasons. Should works overlap with the pupping season this could potentially give rise to significant disturbance and / or mortality impact to seals within the SAC due to the potential for separation of mothers and pups. As such, the potential for LSE on the Sound of Barra SAC cannot be ruled out. Consultation with NatureScot has highlighted several locations within the Sound of Barra SAC where harbour seals frequently haul out and are considered important breeding sites (Figure 5-2). Nonetheless, the closest area is located approximately 1 km from the proposed cable corridor area at the Eriskay landfall, and as such no significant disturbance to breeding seals in these areas from vessels, vehicles or human presence is anticipated.



Figure 5-2 Harbour seal sightings 2016 – 2019 with hotspots indicated in red, as provided by NatureScot (2025)

Considering that the proposed operations will be highly localised, transient, temporary in nature and appropriate mitigation will be followed (e.g., adherence to the SMWWC (SNH, 2017)) in addition to SHEPD implementing the mitigation measures set out within the Protected Species Mitigation Plan - Outer Hebrides Region (see Xodus Document No. A-101009-S00-A-REPT-004), it is considered that there will be no AEOsI of the Sound of Barra SAC with respect to harbour seal features from vessel, vehicle or human presence.

### 5.5.3 SPAs and NCMPAs with Birds as Qualifying Features

As per the assessment criteria outlined in Section 5.3, there is one designated site with birds as qualifying features within 2 km of the proposed cable corridor screened in for further assessment: the West Coast of the Outer Hebrides SPA, designated for non-breeding populations of black-throated diver, eider, great northern diver, long-tailed duck red-breasted merganser and Slavonian grebe, as well as a breeding population of red-throated diver. Further assessment on potential impacts on birds is presented in Section 9: Ornithology.

#### Vessel Presence

The Project will use a maximum of 10 vessels at one time throughout cable installation (one CLV, seven Support RIBs and two DSVs). Vessel presence has the potential to result in visual disturbance to breeding and / or foraging seabirds; however, the presence of vessels will not be a substantive change from baseline vessel activity within the area including the regularly operated ferry service between Ardmhor (Barra) – Eriskay.

The presence of vessel lighting also has the potential to disorientate birds, leading to increased collision rates with vessels at night, which may be fatal (Rodriguez *et al.*, 2015). During the summer when the Project activities will take place there will be a reduced requirement for lighting due to longer daylight hours and therefore reduced risk. A single disturbance event is unlikely to have any immediate effect on the survival or breeding productivity of an individual bird, and this would only be expected with repeated disturbance over an extended period of time (Hockin *et al.*, 1992). There is limited potential for disturbance associated with the noise of vessel presence and lighting from the vessels.



The proposed cable installation activities are planned to occur in summer 2026 and therefore there is potential for installation to coincide with the sensitive peak breeding season for red-throated divers features of the West Coast of the Outer Hebrides SPA, if works are undertaken between May and mid-September (NatureScot, 2020). However, given that red-throated diver breed in land at lochs and in freshwater areas these birds are unlikely to be utilising the coastal environment where the works will take place, and as previously stated, the cable installation vessels will not be a substantive change from baseline conditions, no impacts on the breeding red-throated diver population are anticipated.

Additionally, should there be delays to the Project programme, this may coincide with non-breeding seasons for black-throated diver, eider, great northern diver, long-tailed duck, red-breasted merganser and Slavonian grebe features of the SPA, as they may be present to roost or feed in close proximity to the proposed cable corridor. The following mitigation measures will be implemented to reduce the potential impacts to ornithological receptors:

- The project vessels will adhere to the SMWWC;
- The project vessels will be moving at a maximum speed of 6 knots during operations, which will allow any rafting seabirds time to disperse before the vessel arrives. When not actively working, vessels will avoid bird rafts where operationally possible, and it is safe to do so;
- When within an SPA and where there is potential for 24-hour working, the following measures will be implemented to minimise the potential impacts to birds:
  - Lighting on-board the vessel(s) will be kept to the minimum level required to ensure safe operations;
  - Lights will be directed or shielded to prevent upward illumination and minimise disturbance; and
  - Blackout blinds and/or curtains will be used where possible when working in marine SPAs.

In addition, the proposed cable installation activities will be short-lived (maximum 57 days) and transient, therefore, there is very low potential for direct disturbance of any potential breeding birds within coastal nesting sites or loafing birds on the sea surface. Furthermore, any disturbance from the proposed cable installation activities will be restricted to the immediate vicinity of the Project vessels, minimising any direct disturbance within the West Coast of the Outer Hebrides SPA. As such, potential effects on the qualifying avian features of the SPA will be temporary and localised, and further reduced by the embedded mitigation measures outlined in Section 4.3. Therefore, no AEoSI of the West Coast of the Outer Hebrides SPA is anticipated.

### **Impacts from landfall Installation**

There is potential for impacts to the West Coast of the Outer Hebrides SPA associated with the landfall installation works. The proposed cable installation activities are planned to occur in summer 2026 and therefore there is potential for installation to coincide with the sensitive peak breeding season for red-throated divers features of the West Coast of the Outer Hebrides SPA if works are undertaken between May and mid-September (NatureScot, 2020). However, given that red-throated diver and breed in land at lochs and in freshwater areas, no impacts on the breeding red-throated diver populations are anticipated.

In addition, the proposed cable installation activities will be short-lived (57 days) and transient, with landfall works taking place over approximately one month, therefore, there is very low potential for direct disturbance of any potential breeding birds within coastal nesting sites. Furthermore, any disturbance from the proposed cable installation activities restricted to the immediate vicinity of the Project landfall, minimising any direct disturbance within the West Coast of the Outer Hebrides SPA. As such, potential effects on the qualifying avian features of the SPA will be temporary and localised, and further reduced by the embedded mitigation measures as outlined in Section 4.3. Therefore, no AEoSI of the West Coast of the Outer Hebrides SPA is anticipated.



## 5.5.4 SACs and NCMPAs with Seabed / Benthic Protected Features

As per the assessment of potential connectivity outlined in Section 5.4, there is one designated site with benthic protected features which directly overlaps with the proposed cable corridor: the Sound of Barra SAC. The Sound of Barra SAC is designated for reefs and subtidal sandbanks. Further details on the assessment of potential impacts on benthic and intertidal ecology receptors are detailed within Section 8: Benthic and Intertidal Ecology. The protected benthic species are illustrated in Figure 8-2.

### Direct / Indirect Habitat Loss

There is potential for permanent habitat loss and temporary disturbance associated with seabed preparation activities (e.g. PLGR and OoS cable removal), intertidal cable installation, installation of the subtidal cable and associated cable protection, and from the temporary placement of anchors from vessels during cable installation activities. Advice received from NatureScot as detailed in Table 5-1 highlighted the concern in relation to seagrass beds, reefs and the potential impacts to qualifying features of the SAC.

#### Annex I Reef

A full Annex I reef assessment was conducted by OEL (2025), following the Irving (2009) reef characterisation methods. A total of 14 images were used to identify potential Annex I reefs, this included three images of bedrock reef, four images of low stony reef, and seven images of potential geogenic reef. These reefs have been illustrated in Figure 8-3.

The reef habitat is in favourable condition within the Sound of Barra SAC, with the benthic survey identifying sparse, small patches of potential reef across the survey area. Nonetheless, the Project has committed to avoidance of cable installation in identified areas of Annex I reef and the proposed cable route avoids all areas of bedrock and boulders (potential rock reefs), as per the NatureScot advice (see Table 5-1).

#### Annex I Subtidal Sandbank features

This habitat consists of sandy sediments that are permanently covered by shallow sea water, typically at depths of less than 20 m below chart datum (but sometimes including channels or other areas greater than 20 m deep). The habitat comprises distinct banks (i.e. elongated, rounded or irregular 'mound' shapes) which may arise from horizontal or sloping plains of sandy sediment.

The diversity and types of community associated with this habitat are determined particularly by sediment type together with a variety of other physical, chemical and hydrographic factors. These include geographical location (influencing water temperature), the relative exposure of the coast (from wave-exposed open coasts to tide-swept coasts or sheltered inlets and estuaries), the topographical structure of the habitat, and differences in the depth, turbidity and salinity of the surrounding water. Within the UK's inshore waters, this habitat can be categorised into four main sub-types:

- Gravelly and clean sands;
- Muddy sands;
- Eelgrass *Zostera marina* beds; and
- Maerl beds (composed of free-living *Corallinaceae*).

Annex I subtidal sandbank features within the SAC (including distinct component habitats of maerl and seagrass beds), are classed as unfavourable and the conservation objectives seek to restore favourable condition of the associated seagrass and maerl beds within the SAC. Specifically, there has been a reduction in the extent of seagrass beds to the east of the Eriskay causeway and to the west of Eriskay, resulting from the construction of the causeway (Carstairs and Carstairs, 2026). Aerial imagery also shows a reduction in the extent of seagrass beds to the south-east



of Fiaraidh and historic beds along the Eriskay ferry route (as advised by NatureScot, as per Table 5-1). The Annex I subtidal sandbank features and associated communities are present throughout the proposed cable corridor.

No maerl beds were identified during the OEL (2025) surveys. However, seagrass beds were observed at 107 of 328 images across eight stations and three transects (OEL, 2025). A full seagrass bed assessment was undertaken by OEL (2025), assessing:

- Seagrass percentage cover;
- Species composition;
- Wasting disease prevalence; and
- Epiphytic cover.

Seagrass composition at all stations consisted solely of *Zostera marina*, the mean seabed coverage of seagrass within the surveys transects in the cable corridor is illustrated within Figure 8-2. Percentage cover ranged from 5% at station ST08, to 65% (ST09 and ST11; Figure 5-6 and Figure 5-7), to 75% (ST20; Figure 5-8). Figure 5-3 illustrates the mean seagrass cover across the proposed cable corridor, and shows that in areas where seagrass is present, the mean seagrass coverage ranges between 1-5% (e.g., ST08; Figure 5-3) to 15-20% (e.g., ST11; Figure 5-3) of the whole seabed area within the transect (OEL, 2025). Additionally, wasting disease prevalence varied from <10% at transect TR01 to 50–80% at station ST09. Epiphytic cover was <10% at station ST11 but ranged between 50–80% at transect TR01.

Seagrass beds have a high sensitivity to physical changes to the seabed, siltation and subsurface abrasion as well as a medium sensitivity to surface abrasion (Marine Life Information Network (MarLIN), 2025). The risk and exposure of these pressures will depend on the proposed method of cable laying. The primary strategy for the Project is avoidance of the sensitive features where practicable, aligning with the NatureScot guidance. Where avoidance of sensitive seagrass is not possible through microrouteing, the Project has opted for surface lay and self-burial to ensure any impacts are as low as reasonably practicable. No additional protection, such as concrete mattresses will be used in areas of sensitive seagrass beds and no trenching or PLGR in these areas is proposed.

Nonetheless, as per the NatureScot advice, if the cable is surface laid on top of seagrass, this could cause concentrated continuous surface abrasion across a localised area of seagrass beds, potentially damaging seagrass leaf blades (fronds). However, this would require there to be continuous movement of the subsea cable which is considered to be highly unlikely as the cable is likely to self-bury quickly, stabilising the cable and preventing any movement. Furthermore, the seagrass beds are not present in high energy environments and the large seagrass bed to the south of the island of Fuday is a more sheltered part of the cable route, further reducing the potential for any cable movement. A PILS analysis has been undertaken and found that in areas of seagrass the predicted cable movement prior to self-burial is 4 cm (see Table 5-1). As discussed in Table 5-1, there is uncertainty in the time it will take to achieve the required self-burial depth; however, based on projects with similar seabed and tide/exposure conditions, a best case scenario is two months.

Additionally, Scottish subtidal seagrass relies predominately on vegetative reproduction (below ground), where the bed size relies on the rhizome network of nodes and internode production. The cable may therefore damage the seagrass rhizome structure even if it does gradually become buried. As the cable will only be partially covered by sediment when self-buried, or will only have a thin layer of sediment on top of it, it is unlikely that seagrass will be able to recover and re-grow within the cable footprint.

Aligned with NatureScot advice, the Project will ensure that the cable route avoids the identified areas of seagrass where possible; however, there is an unavoidable crossing with a seagrass bed in the middle of the proposed cable corridor. In this area the identified route has kept a straight-line, minimising the footprint of the cable within the seagrass bed while avoiding boulders and rock outcrops.

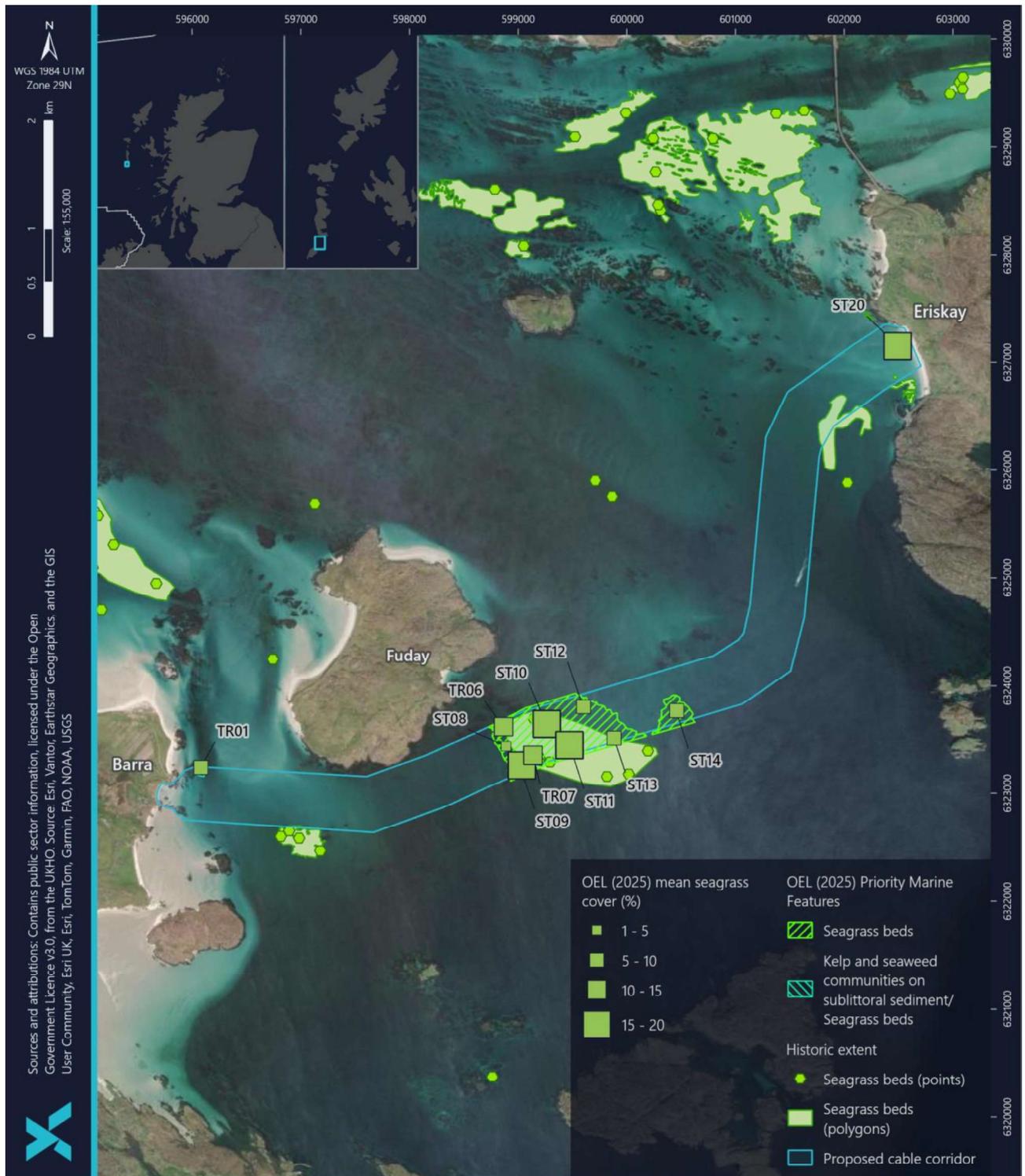


Figure 5-3 Average seagrass cover across the proposed cable corridor collected from historic SAC data and project-specific surveys (OEL, 2025)

### Assessment

The Sound of Barra SAC has a total area of 125 km<sup>2</sup>, the proposed cable corridor is wholly within the designated site and has a total area of 5.1 km<sup>2</sup>, approximately 4% of the SAC. It should be noted that the footprint of the installed cable will be significantly less than this.



The proposed cable corridor overlaps with qualifying features of the Sound of Barra SAC (i.e., Annex I reef and subtidal sandbanks (including the sensitive sub-features of maerl beds and seagrass beds). Consultation with NatureScot has been ongoing to inform the definition of the best methods for installation of the cables within the proposed cable corridor, in order to safeguard the conservation objectives of the Sound of Barra SAC. The advice from NatureScot is for avoidance of sensitive features within the proposed cable corridor where practicable, and where this is not possible, seeking to utilise the least invasive installation methods such as surface laid and self-burial. The advice also highlights that trenching and protection of surface laid cables through concrete mattresses or rock bags should be avoided in these areas of identified sensitive habitats.

SHEPD has committed to avoidance of Annex I Reef features given the limited extent within the proposed cable corridor and need to avoid these habitats as they present an abrasion risk to the cable. As such, no AEoSI with respect to Annex I reef features of the Sound of Barra SAC, or associated conservation objectives associated with this feature are anticipated. SHEPD has also committed to the avoidance of the seagrass areas at each landfall, including a 55 m buffer around the seagrass bed at Eriskay per NatureScot advice; however, given the extent of seagrass within the subtidal area of the proposed cable corridor it is not possible to avoid these features entirely. As such, SHEPD are committed to surface laying the cable and allowing the cable to self-bury as described above, and no deposits aside from cable (i.e., concrete mattresses or split pipe) will be placed in areas of seagrass and no PLGR will be undertaken in seagrass beds. Anchor/spudding will also not occur within areas of seagrass.

The NatureScot advice as detailed within Table 5-1 indicates the requirement for assessment of both the primary area of impact (physical footprint) in addition to the secondary impacts of the activity (from ongoing surface abrasion, etc.). The following seabed footprint within the protected features of the SAC are anticipated:

- Annex I Reef – No seabed footprint within this protected feature as there will be no direct overlap; and
- Seagrass features – A quantification of the area of seagrass impacted has been calculated as the maximum estimated length of the cable in seagrass of up to 1,040 m multiplied by the width of the cable (0.14 m), including  $\pm 0.04$  m cable movement before self-burial and stabilisation is achieved (total of  $\pm 0.08$  m). This results in a total cable impact diameter of up to 0.22 m. Therefore, the seabed footprint is 0.0002 km<sup>2</sup>.

It should be noted that the  $\pm 0.04$  m cable movement before self-burial is based on the PILS analysis as described in Table 5-1. There is strong historical evidence of self-burial for both the previous EB-1 and EB-2 cables, and partial burial is expected to occur within a short timeframe, potentially within months of the cable being installed. Evidence of self-burial from the Mull – Iona cable installation has also been factored into this assessment, considering the similar conditions. Navigation charts show currents of up to 1.3 m/s (2.5 knots) through the Sound of Iona near the Mull – Iona cable route but nearer to the periphery of the channel they are similar to the proposed cable route. The current ranges along the proposed cable route are expected to reach maximum values of 0.8 to 1.3m/s (1.5 – 2.5 knots). For Mull – Iona, the post-lay survey 43 days after cable lay showed signs of partial burial and at 66 days almost full self-burial. Given the similar seabed conditions and type, it is possible that partial burial to the extent needed for full stability may be achieved within a two month period. This is considered a best case scenario.

An assessment of the EB-2 cable identified that 91% of the cable had been fully buried within six years, with 5% partially buried and 4% on the surface of the seabed where rock occurred. An inspection video of the EB-2 cable was undertaken in 2021 to assess the burial status. The footage revealed that self-burial was only prevented where the cable passed over outcropping rock or in one instance a solitary large boulder. Evidence of cable movement was only present in specific locations over bedrock or boulders in high current/energy areas. The existing EB-2 cable is lighter (19.8 kg/m) than the proposed cable (30 kg/m), and as such it will take more energy to move the proposed cable. Overall, there is no evidence of cable movement for the existing EB-2 cable where buried. Even in regions where the EB-2 cable is only partially buried, there is marine growth present (Figure 5-4). If this cable was frequently mobile on a sandy seabed the growth would be abraded and absent. Furthermore, there is no evidence of a seabed



abrasion corridor along the existing EB-2 cable. Based on the cable inspection video from 2021, the cable is fully buried with seagrass distributed across the field of view (Figure 5-5).



Figure 5-4 Evidence of marine growth present over the existing EB-2 cable



Figure 5-5 Evidence of seagrass distributed across where the EB-2 cable is fully buried



Overall, there is strong historical evidence of self-burial for both the previous EB-1 and EB-2 cables and for the Mull – Iona cable which is located in similar conditions. There is evidence of a lack of cable movement from the EB-2 cable, with no seabed abrasion corridor (Figure 5-4; Figure 5-5). Notably, there is seagrass distributed across where the cable is fully buried. As such, partial recovery of the seagrass is anticipated within the cable impact diameter of 0.22 m described above. Specifically, no cable movement is anticipated once self-buried and there will be some degree of recovery around the cable (albeit unlikely directly on the footprint of the cable itself).

The seabed footprint of 0.0002 km<sup>2</sup> (i.e., the impact area) represents <0.01% of the wider seagrass habitat within the SAC (300 hectares or 3 km<sup>2</sup>) (NatureScot, 2025d). Therefore, the impact will be highly localised. The seagrass assessment carried out in OEL (2025) indicates an average of <20% coverage across all stations and transects (Figure 5-3). Additionally, six of the nine stations in the central seagrass patch were assessed to have an average of 15% coverage or less. Therefore, given the high degree of patchiness of the seagrass habitat, the direct loss of <0.01% of the habitat is not significant.

It should however be noted that the extent of the seagrass recorded by the OEL (2025) survey in the mid-section of the proposed cable corridor is greater than the former 2017 record which was used to inform the SAC's conservation advice (Marine Directorate, 2026) (Figure 5-3). This indicates that the extent of the seagrass within the SAC may be greater than previously thought, potentially indicating some degree of expansion or recovery of the seagrass beds. In the wider context of the Sound of Barra SAC, the highly localised footprint impact area of <0.01% will not prevent or reduce the recovery potential of the seagrass beds throughout the SAC, even though small, localised impacts will be caused by the proposed cable installation. Therefore the proposed cable installation activities will not hinder the achievement of the conservation objectives.

Nevertheless, an additional pre-installation survey may be carried out along the proposed cable route to inform the potential for microrouteing around seagrass features where possible. Additionally, a CLMP will be prepared in support of the marine licence application. Given the highly localised nature of the impact resulting in an impact area of <0.01% of the existing seagrass bed habitat, which is assessed to be not significant when considering the high degree of patchiness of the seagrass habitat, and taken into account the embedded mitigation with the commitment to avoiding seagrass beds where practicable, no AEOI on the Sound of Barra SAC is anticipated in relation to the Annex 1 subtidal sand banks features, and associated seagrass beds.



Figure 5-6 Example of seagrass observed at ST09 during the OEL (2025) environmental surveys

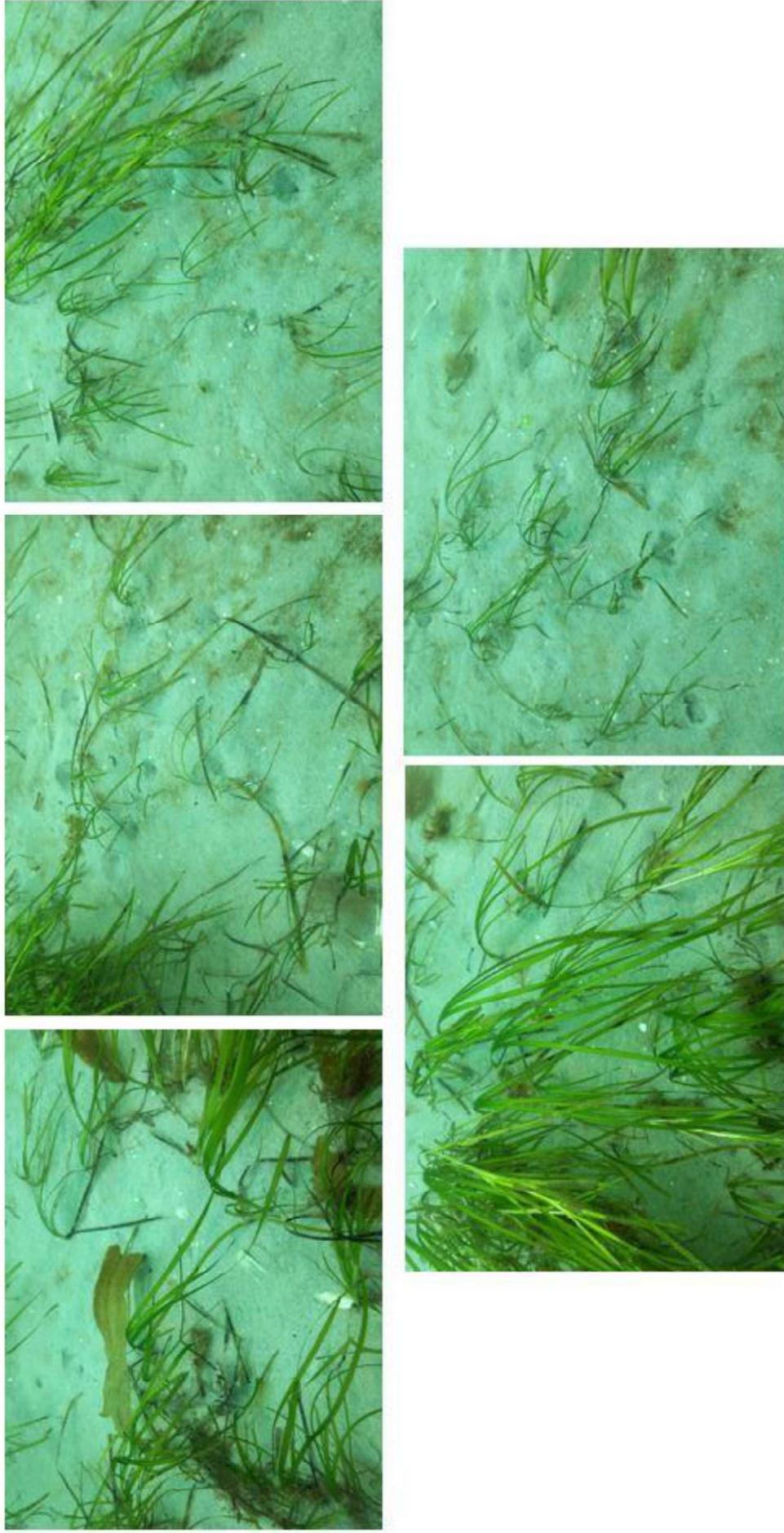


Figure 5-7 Example of seagrass observed at ST11 during the OEL (2025) environmental surveys



*Figure 5-8 Example of seagrass observed at ST20 during the OEL (2025) environmental surveys. It should be noted that this seagrass at the Eriskay landfill will be avoided by a 55 m buffer.*



## 6 SEABED AND WATER QUALITY

### 6.1 Introduction

This Section provides an overview of potential impacts on seabed conditions and water quality resulting from the proposed cable installation activities (including seabed preparation (PLGR and OoS cable removal), intertidal trenching, surface laying of the cable and associated protection and from the temporary placement of anchors). Details on baseline seabed conditions presented in this Section provides the relevant information for the purposes of the impact assessment and is not intended for engineering applications.

In the subtidal section between MLWS and MLWS, the proposed subsea cable will be surface laid allowing for self-burial, or surface laid and protected with split pipe and/or concrete mattresses for subtidal active cable crossings and areas in close proximity to rocky outcrops. No additional protection like split pipe will be installed in areas of seagrass. The working corridor in the subtidal area is expected to be 10 m wide. Options for the crossing the OoS cable being considered are to cut back sections and secure with clump weights, or to install a concrete mattress between the new and OoS cables.

In the intertidal areas between MHWS and MLWS, the cable will be trenched at both landfalls using the OCT method. This will be conducted using conventional land-based excavators working within a tidal window, i.e., when the intertidal area is exposed, avoiding works below the waterline. One trench will be required at each landfall down to MLWS with a width of approximately 1 m. It is anticipated that a 20 m wide working corridor will be required (10 m either side of the route), accounting for the footprint of the excavator and the temporary storage of excavated material. Sections of OoS cables may be removed in the nearshore at both ends, subject to project requirements, with removal conducted using mechanical plant working at low tide. Associated impacts on benthic features are discussed in Section 8. As such, potential effects on seabed quality have been screened out of this assessment.

The seabed footprint of the Project will be confined to the physical footprint of the proposed subsea cable and any cable protection or intertidal trenching. Intertidal trenching activities have the potential to result in sediment resuspension, therefore the potential impact of coastal sediment suspension is screened in for the water quality assessment. Additionally, the potential impact of changes to sediment and water quality following accidental release of hydrocarbons is screened in for the water quality assessment.

### 6.2 Data Sources

Seabed sediments and bathymetry data has been characterised through site-specific geophysical and geotechnical surveys undertaken by Aspect Land and Hydrographic Surveys Ltd (Aspect) in 2025 (Aspect, 2025), while the environmental data has been obtained through the OEL (2025) benthic surveys.

The OEL intertidal scope included Uncrewed Aerial Vehicle (UAV) mapping supported by walkover surveys to ground truth drone data and characterise habitats. The subtidal survey scope involved the collection of seabed imagery using drop down camera and the collection of grab samples for further particle size and macrofaunal analysis.

Water quality and the presence of designated water bodies have been identified through the Scottish Environment Protection Agency (SEPA) River Basin Management 3 database (SEPA, 2025a) and water classification hub (SEPA, 2025b).



## 6.3 Baseline and Receptor Identification

### 6.3.1 Seabed Sediments and Bathymetry

The geophysical baseline survey results indicate that the water depth along the proposed cable corridor ranges from approximately 0 m to 13 m below lowest astronomical tide (LAT). The minimum water depths were located at each landfall and the maximum water depth of 13.3 m is located at approximately 3 km from the Barra Landfall (as shown in Figure 6-1). The maximum seabed gradient within the proposed cable corridor is 7 degrees on the approach to both landfalls.

The available geotechnical data shows that offshore superficial sediments predominantly comprise fine to coarse sands with low mud and shell gravel content. Organic fragments were noted in three geotechnical cores and are expected to derive from roots of seabed flora (Aspect 2025). Particle Size Analysis (PSA) was undertaken for ten sampling locations in the subtidal region. The PSA results indicate a higher proportion of sands with the mean grain size across the survey area ranged from 170 µm to 584 µm (OEL, 2025). All but one of the samples were assigned the BHS modified folk classifications of 'sand' and 'muddy sand' and one sample 3 km south of the Eriskay landfall was assigned as 'coarse sediment' (see Figure 6-2).

In the intertidal region, walkover and UAV imagery analysis surveys confirmed that the Eriskay intertidal survey area was largely homogeneous predominantly characterised by fine grain sands, with steep upper shore topography influenced by adjacent sand dunes (outside the proposed cable corridor area). The surveys confirmed steep elevation at the upper shore area (~16 m) and relatively uniform levels elsewhere, with occasional rock outcrops and sand banks (OEL, 2025). The Barra intertidal area predominantly comprised fine grain sand with several notable rock outcrops distributed across the surveyed extents (Aspect, 2025). The northern area contained numerous boulders and rock walls (some anthropogenic) alongside natural bedrock, while the southern area was dominated by natural bedrock (OEL, 2025).

In addition, megaripples cover the southern two-thirds of the proposed cable corridor area, concentrated near the Barra landfall, with wavelengths of ~15 m; smaller megaripples (~10 m) occur in the north. Ripple fields (wavelengths ~1 m) are present in the northern section near Eriskay. Few seabed scars were observed, noting four short scars near Eriskay were found, likely from fishing or anchoring (Aspen, 2025).

### 6.3.2 Water Quality

The EU Water Framework Directive (2000/60/EC) (WFD) is implemented into Scottish law through the Water Environment and Water Services (Scotland) (WEWS) Act 2003 and regulated through the Water Environment (Controlled Activities) (Scotland) Regulations 2011. This directive ensures the protection of inland, transitional and coastal surface waters, and groundwaters through regulating individual pollutants, to remove and reduce pollution in water sources and prevent deterioration. Designated waterbodies are required to be kept in 'Good' status, both ecologically and chemically.

The proposed cable corridor overlaps with the Sound of Barra designated coastal waterbody (ID: 200494; 180.4 km<sup>2</sup>) which is listed in 'High' overall condition and water quality, and 'High' physical condition based on 2024 data (SEPA, 2025a). The overall condition is projected to continue to be 'High' through 2027 and beyond, with no pressures identified on this waterbody. The Sound of Barra designated shellfish water protected area (ID: SWPA72) is located ~140 m from the proposed cable corridor and is in 'Good' condition for 2023 (SEPA, 2025b). There are no bathing waters within 50 km of the proposed cable corridor.

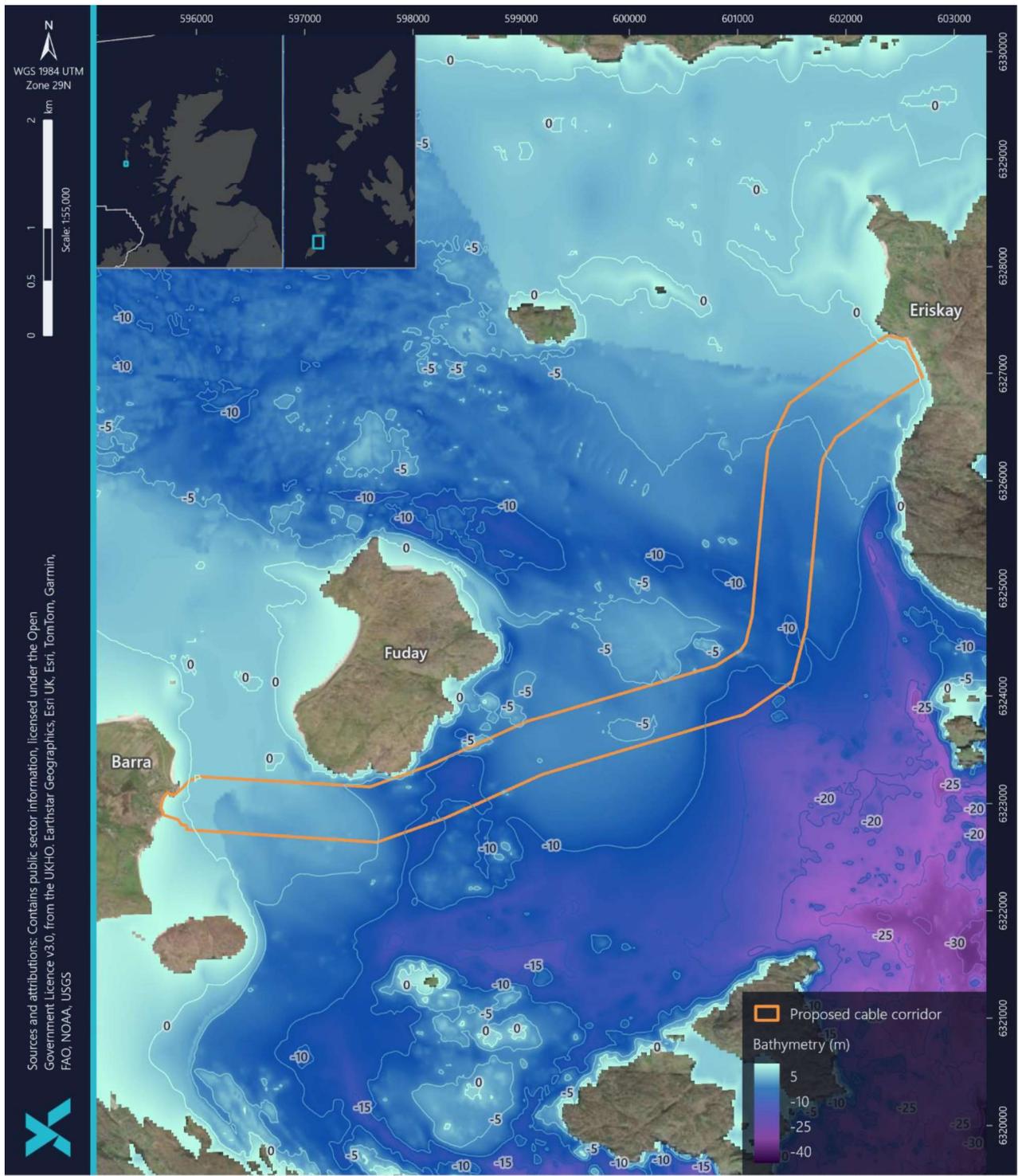


Figure 6-1 Bathymetry within the proposed cable corridor



Figure 6-2 BSH sediment analysis within the proposed cable corridor



## 6.4 Impact Assessment

### 6.4.1 Coastal Sediment Suspension

In the intertidal areas between MHWS and MLWS, the proposed subsea cable will be trenched at both landfalls using the OCT method. This will be conducted using conventional land-based excavators working within a tidal window, i.e., when the intertidal area is exposed, avoiding works below the waterline. Additionally, trenching will occur in sections to minimise suspension of sediments. However, where trenching is not feasible due to seabed constraints (e.g., shallow bedrock), the cables will be surface laid with split pipe. Furthermore, small sections of OoS cable may also be removed to allow the new cables to be installed. This will also be conducted at low tide. It is therefore expected that there will be no disturbance of submerged sediments resulting from these intertidal activities. The intertidal region is characterised by fine grain sands (Aspect, 2025). As such, there may be temporary and highly localised increases in suspended sediment caused by the incoming tide interacting with the trench walls and associated spoil. However, this will not be significantly greater than that expected by natural wave action causing low-level erosion of the shoreline sediments.

#### Assessment of Impact Significance

The proposed cable corridor is located within Sound of Barra designated coastal waterbody (ID: 200494) which is listed in 'High' overall condition. The Sound of Barra designated coastal waterbody has an area of 180.4 km<sup>2</sup>. The proposed cable corridor is 5.1 km<sup>2</sup>, which represents ~3% of the overall waterbody area. The proposed cable corridor is also within close proximity to the Sound of Barra shellfish water protected area (ID: SWPA72) which is listed in 'Good' status; however, there is no direct overlap with the shellfish water protected area. Given the limited spatial overlap with the coastal waterbody, and given there is no overlap with any designated bathing waters or shellfish water protected areas, with the good condition of the waterbody and no pressures identified, the overall sensitivity is **low**.

All proposed cable installation activities at the landfall locations will be tidally dependent, working at low water thereby reducing the extent of resuspended sediment. Increased suspended sediment in the intertidal region will only occur during the interaction between the incoming tide, the trench walls and spoil heaps. This will result in highly localised and temporary increases in suspended sediment which will be analogous to natural conditions. Therefore, the magnitude of effect is assessed as **minor**, resulting in a **negligible** consequence.

Embedded mitigation measures considered as part of the Project design are listed in Section 4.3.

SENSITIVITY	MAGNITUDE OF EFFECT	CONSEQUENCE
Low	Minor	Negligible

Impact Significance – NOT SIGNIFICANT

### 6.4.2 Subtidal Sediment Suspension

It is expected that the majority of the subtidal cable installation will be achieved through surface lay and self-burial, with split-pipe and/or concrete mattresses used in limited areas where self-burial is unlikely to be achieved e.g., for crossings and in areas in proximity to rock outcrops. Seabed preparation in the subtidal area will be limited to PLGR and OoS cable removal. As such, no subtidal trenching is proposed and there will be minimal suspended sediment concentrations as a result of the proposed cable installation activities. The subtidal seabed sediments are comprised of fine to coarse sands with low mud and shell gravel content (OEL, 2025). Any effects are anticipated to be highly localised and limited to the immediate vicinity of the proposed cable installation activities, and temporary in nature.



as the sediment is anticipated to re-deposit over a short-term duration. Therefore, there will be no significant effects on designated waterbodies.

#### Assessment of Impact Significance

As described in Section 6.4.1 above, the sensitivity of water quality receptors is assessed to be **low**. Given that the proposed cable installation activities will result in minimal suspended sediments, the magnitude of effect is assessed as **negligible**, resulting in a **negligible** consequence.

SENSITIVITY	MAGNITUDE OF EFFECT	CONSEQUENCE
Low	Negligible	Negligible

Impact Significance – NOT SIGNIFICANT

### 6.4.3 Changes to Sediment and Water Quality Following Accidental Release of Hydrocarbons

There is the potential for an unplanned spill to occur in the event of a collision with another vessel, if one of the Project vessels loses containment of hydrocarbon bunkers, or a hydraulic line leaks or fails (for example associated with cranes and ROVs). The main release risk associated with the proposed cable installation activities is a loss of diesel fuel from the installation and support vessels. Diesel has very high levels of light ends, evaporating quickly on release. The low asphaltene content prevents emulsification, therefore reducing its persistence in the marine environment. Light oil (such as diesel) tends to dissipate completely through evaporation and physical dispersion within 1 – 2 days and does not normally form emulsions. Some small-dispersed globules of semi-solid oil may persist for some time if the oil possesses wax or other persistent components. Any discharge of hydrocarbons will be limited to the inventory of each vessel during the proposed cable installation activities. Due to the low viscosity of diesel, it will spread very rapidly to form a thin sheen at the surface. The sheen will break up rapidly under the influence of spreading and evaporation. Diesel is unlikely to persist within the water column once the spill has occurred.

Based on the volume and components of marine diesel, it is unlikely that diesel will percolate to the seabed and deposit on sediments. Therefore, sediments are unlikely to be affected by a spill. As such, it is not considered to present a major risk to the environment.

Accidental releases of hydraulic fluids from the cranes on the Project vessels and used for the ROVs are possible. Hydraulic fluids are used as part of a closed system (i.e. lines) in cranes and other machinery equipment (such as ROVs). The potential impacts of a hydraulic fluid release depend on the properties and components of each hydraulic fluid. Hydraulic fluids can either be oil or water-based. Water-based hydraulic fluids used are unlikely to be toxic to the marine environment and will disperse rapidly as they tend to not bioaccumulate and are biodegradable. Any accidental spills of oil-based hydraulic fluid are unlikely to form a sheen, as the potential volume of hydraulic fluid spilled is likely to be small and mineral oil content is low. Equipment (cranes, ROVs etc.) used during the Project will be regularly maintained, reducing the likelihood of a release.

As outlined in Section 4.3, vessels will be MARPOL compliant and the Emergency Spill Response Plan and the SOPEPs in place for each vessel, these measures will minimise the risk of a spill occurring and provide a clear protocol in the event of a release scenario, resulting in rapid and effective remedial action, limiting the extent of any spill. A large spill of hydrocarbons or hydraulic fluids is very unlikely during the proposed cable installation activities. The impact of an accidental release (diesel or hydraulic fluid) is not considered to be significant.



**Assessment of Impact Significance**

As described in Section 6.4.1 above, the sensitivity of water quality receptors is assessed to be **low**. Best practice will be followed, and it is therefore unlikely that a spill would occur during the operations. Impact significance will vary depending on the size, volume and nature of the spill. Based on the very low likelihood of such an event, the magnitude of effect is assessed as **moderate**, resulting in a **minor** consequence. Embedded mitigation measures considered as part of the Project design are listed in Section 4.3

SENSITIVITY	MAGNITUDE OF EFFECT	CONSEQUENCE
Low	Moderate	Minor
Impact Significance – NOT SIGNIFICANT		

**6.4.4 Operation**

The proposed subsea cable has been designed to be maintenance free, as such no planned ongoing maintenance activities are proposed. SHEPD will conduct routine inspections and surveys of the proposed subsea cable throughout its operational life to ensure it remains in good condition (please refer to the OIMD strategy submitted alongside this MEA). There is a potential for remedial cable repair works to be required, in the event the proposed subsea cable is damaged or the need for additional stabilisation materials is identified during the routine surveys; however, this would be subject to a separate licensing process.

If required, impacts on seabed conditions and water quality resulting from cable repairs will be analogous to those occurring during installation, although significantly reduced on both spatial and temporal scales. It should be noted that cable repair activities would be subject to a separate licensing process. As such, impacts during the operational phase are considered to be not significant.

**6.5 Conclusion**

There is potential for increases in coastal and subtidal sediment suspension resulting from the trenching of the proposed subsea cable in the intertidal areas and removal of OoS cables in the subtidal region; however, the resulting increased suspended sediment concentrations will be temporary in nature and highly localised to the footprint of the cable in the subtidal region. The majority of proposed cable installation activities at the landfall locations will be tidally dependent. Increased suspended sediment will only occur during the interaction between the incoming tide, the trench walls and spoil heaps and as a result of cable removal activities. This will result in highly localised and temporary increases in suspended sediment which will not have a significant impact on coastal water quality or the status of designated waters. Therefore, the impact is considered negligible and not significant. Best practice will be followed by all installation vessels, therefore the likelihood of accidental hydrocarbon releases from the installation vessel is extremely remote. The level of impact is therefore considered minor and not significant.



## 7 MARINE MEGAFUNA

### 7.1 Introduction

This Section of the report provides further detail on marine megafauna, including marine mammals (cetaceans, pinnipeds and otters) and basking sharks, in the vicinity of the proposed cable corridor, and presents results from an assessment of potential impacts on key sensitive species. Management and mitigation measures to ensure impacts are minimised will also be suggested. This Section also provides an EPS and Protected Species Risk assessment, with regard to potential impacts on cetaceans, basking sharks and otters which will support any required EPS or basking shark derogation licence applications.

### 7.2 Data Sources

The presence of marine mammals within the vicinity of the proposed cable corridor have been characterised through publicly available geospatial data (e.g., NMPi) and relevant literature sources, including the findings of the Small Cetaceans in European Atlantic waters and the North Sea (SCANS) SCANS-IV survey (Gilles *et al.*, 2023), Special Committee on Seals (SCOS) (2024) report and Carter *et al.*, (2025) updated seal at sea density mapping. Additionally, site-specific marine mammal surveys have been undertaken by Aspect (2025).

### 7.3 Baseline and Receptor Identification

#### 7.3.1 Cetaceans

Twenty-three species of cetaceans have been recorded in waters in the west coast of Scotland, with the most common species sighted including harbour porpoise, minke whale (*Balaenoptera acutorostrata*), common dolphin (*Delphinus delphis*), bottlenose dolphin, white-beaked dolphin (*Lagenorhynchus albirostris*), Risso's dolphin, (Hebridean Whale and Dolphin Trust (HWDT), 2018).

The SCANS-IV survey indicates that eight species were observed within block CS-H this included: harbour porpoise, bottlenose dolphin, Risso's dolphin, white-beaked dolphin, white-sided dolphin, common dolphin, beaked whale and minke whale (Gilles *et al.*, 2023). The following provides a description of these species, including their density (animals / km<sup>2</sup>) and abundance:

- **Harbour porpoises** are considered to be a resident species off the west coast of Scotland, with frequent sightings year-round (HWDT, 2018; BEIS, 2022). Harbour porpoises are commonly observed alone or in small groups of up to five animals (Hague *et al.*, 2020; HWDT, 2018). The abundance of harbour porpoise observed in block CS-H during the SCANS-IV survey was 5,470 animals, with a density of 0.39 animals per km<sup>2</sup> (Gilles *et al.*, 2023);
- **Bottlenose dolphins** are considered to be a resident species off the west coast of Scotland, with sightings year-round (HWDT, 2018). Bottlenose dolphins are most often observed in small groups of three to ten individuals, (BEIS, 2022; HWDT, 2018). The abundance of bottlenose dolphins in block CS-H during the SCANS-IV survey was 4,784 animals, with a density of 0.34 animals / km<sup>2</sup> (Gilles *et al.*, 2023);
- **Risso's dolphins** are common in deeper, offshore waters (Hague *et al.*, 2020); however, in the Outer Hebrides there is deep water close to shore and as such this species has been observed along the coast (HWDT, 2018). Risso's dolphins are seen year-round in the west of Scotland and often observed alone or in groups of up to 20 individuals (HWDT, 2018). The abundance of Risso's dolphins in block CS-H during the SCANS-IV survey was 341 animals, with a density of 0.02 animals / km<sup>2</sup> (Gilles *et al.*, 2023);
- **White-beaked dolphins** are considered to be a resident species off the west coast of Scotland, with sightings year-round (HWDT, 2018); however, sightings are most frequent from June to October (BEIS, 2022). White-



beaked dolphins are rarely seen alone and frequently observed in groups of five to 20 animals, although larger groups of several hundred are occasionally observed (HWDT, 2018). The abundance of white-beaked dolphins in block CS-H during the SCANS-IV survey was 1,930 animals, with a density of 0.14 animals / km<sup>2</sup> (Gilles *et al.*, 2023);

- **Common dolphin** are typically observed in large, fast-moving groups, often exceeding 100 individuals, and are known for their acrobatic behaviour and bow-riding (HWDT, 2018). The abundance of common dolphins in block CS-H during the SCANS-IV survey was 12,958 animals, with a density of 0.93 animals / km<sup>2</sup> (Gilles *et al.*, 2023);
- **White-sided dolphin** are typically found in cool temperate and subarctic waters of the North Atlantic (HWDT, 2018). They are social animals, usually seen in groups of 2 to 30 individuals, although larger aggregations have been recorded (HWDT, 2018). The abundance of white-sided dolphins in block CS-H during the SCANS-IV survey was 390 animals, with a density of 0.03 animals / km<sup>2</sup> (Gilles *et al.*, 2023);
- **Beaked whales** are deep-diving cetaceans that are rarely observed due to their elusive nature and preference for deep offshore waters (Barlow *et al.*, 2006). They are typically solitary or found in small groups and are difficult to detect visually, which limits the availability of robust abundance estimates (Barlow *et al.*, 2006). The abundance of beaked whale in block CS-H during the SCANS-IV survey was 47 animals, with a density of 0.003 animals / km<sup>2</sup> (Gilles *et al.*, 2023);
- **Minke whale** are the most commonly observed baleen whale species in Scottish waters (HWDT, 2018). They are typically seen alone or in small groups and are known to feed in areas of high prey availability, such as tidal fronts and upwelling zones (Webb *et al.*, 2018). The abundance of minke whales in block CS-H during the SCANS-IV survey was 695 animals, with a density of 0.04 animals / km<sup>2</sup> (Gilles *et al.*, 2023); and
- **Other Species:**
  - Killer whales (*Orcinus orca*) are seen throughout the west of Scotland, both in coastal and offshore waters year-round; however, sightings are considered infrequent (HWDT, 2018). The majority of sightings have been attributed with individuals which belong to a small, resident group known as the 'West Coast Community' (HWDT, 2018). During the SCANS-IV survey, there were too few killer whales sighted to be able to determine abundance (Gilles *et al.*, 2023); and
  - Humpback whales (*Megaptera novaeangliae*) are considered a migratory species in the Hebrides and have occasionally been sighted in the summer months (HWDT, 2018; BEIS, 2022). Since 2004 there have been less than 10 sightings recorded, with sightings primarily around Skye and the Outer Hebrides (HWDT, 2018). Therefore, this species is considered unlikely to be present. Furthermore, there were no sightings of humpback whales in block CS-H during the SCANS-IV survey.

As noted in Section 5, the proposed cable corridor is located 3.5 km from the Sea of the Hebrides NCMPA (minke whale) and 9.1 km from the Inner Hebrides and the Minches SAC (harbour porpoise). During the geophysical and benthic surveys, no marine mammal observations were recorded within the survey areas (Aspect, 2025).



Table 7-1 Population parameters of cetaceans potentially present within the vicinity of the proposed cable corridor (Gilles *et al.*, 2023; Inter-Agency Marine Mammal Working Group (IAMMWG), 2022)

SPECIES	ESTIMATED DENSITY <sup>3</sup> (ANIMALS / km <sup>2</sup> ) (GILLES <i>et al.</i> , 2023)	ESTIMATED ABUNDANCE WITHIN THE PROPOSED CABLE CORRIDOR (5.1 km <sup>2</sup> )	MANAGEMENT UNIT (MU) / BIOGEOGRAPHICAL POPULATION ESTIMATE (IAMMWG, 2022)	PROPORTION OF THE MU POTENTIALLY AFFECTED BY THE PROPOSED CABLE INSTALLATION ACTIVITIES (%)
Harbour porpoise	0.39	1.99	24,305	0.008
Bottlenose dolphin	0.34	1.73	45	3.85
Risso's dolphin	0.02	0.10	8,687	0.001
White-beaked dolphin	0.14	0.71	34,025	0.002
Common dolphin	0.93	4.74	57,417	0.008
White-sided dolphin	0.03	0.15	12,293	0.001
Beaked whale	0.003	0.02	N/A	N/A
Minke whale	0.04	0.20	10,288	0.002

### 7.3.2 Seals

Two pinniped (seal) species regularly occur in the Scottish offshore and coastal environment: grey seals and harbour seals. Both grey and harbour seals are listed under Annex II of the Habitats Directive and are PMFs. Approximately 36% of the world's grey seals breed in the UK (of these, 81% breed at colonies in Scotland). Harbour seals are most sensitive to disturbance during the pupping season from mid-June to July and moulting which begins in August. For grey seals, breeding occurs September/October through to December with moulting until early April.

Similar to seabirds, seals are central-place foragers, utilising a terrestrial 'base' for important life history events (i.e., breeding, pupping, moulting, etc.) and to rest, and then undertake foraging trips at sea before returning to land (Vance *et al.*, 2021). While both species are associated with shallower shelf waters, grey seals often make longer foraging trips to deeper waters than harbour seals.

There are no SACs with grey seal as a qualifying feature within 20 km of the proposed cable corridor; however, the Sound of Barra SAC, designated for harbour seal, overlaps with the proposed cable corridor (Figure 5-1). There are no designated seal haul-outs or grey seal breeding sites that overlap with or are located within 500 m of the proposed cable corridor. The closest designated seal haul-out site is the Aird Ghrein & Sgeir Liath, which is located 10.4 km away. Nonetheless, NatureScot advice shows that there are other known seal haul outs located within the Barra Sound (as shown in Figure 5-2). Based on the information received from NatureScot, the nearest haul out is located approximately 1 km north of the Eriskay landfall.

<sup>3</sup> Based on SCANS-IV block CS-H.



Harbour seals are widespread around the west coast of Scotland and throughout the Hebrides (SCOS, 2024). The proposed development is located within the Western Isles Seal Management Unit (SMU). The most recent August counts of harbour seals at haul-out sites (2016–2023) recorded 3,080 seals in the West Highlands sub-region, contributing to a total of 24,822 seals counted across Scotland (SCOS, 2024). The harbour seal population estimated from the physical counts for the Scotland during this period was 34,475 individuals, representing a substantial proportion of the overall UK harbour seal population, which was estimated at 40,525 (SCOS, 2024).

Carter *et al.*, (2022) modelled the habitat preference of grey and harbour seals and predicted at sea seal distribution on a 5 km x 5 km grid for both species. These data have been processed according to the method described in SCOS (2024), utilising scalars to generate estimates of number of seals within each grid cell (and 95% confidence limits). This is calculated by scaling the Carter *et al.*, (2022) relative density in a cell to an absolute at sea seal density (mean numbers of seals per cell) using the most recent independent estimate of the grey or harbour seal population and the proportion of the population at sea at a given time.

Recently, updated density models have been released (Carter *et al.*, 2025), incorporating expanded seal tracking datasets and recent haul-out count data to refine at-sea abundance estimates for both species. In line with these updates, Figure 7-1 presents the mean predicted absolute abundance of grey and harbour seals per 25 km<sup>2</sup>. Within the proposed cable corridor, predicted densities range from 11 – 25 harbour seals per 25 km<sup>2</sup> and 26 – 50 grey seals per 25 km<sup>2</sup>, representing a moderate density in the proposed cable corridor.

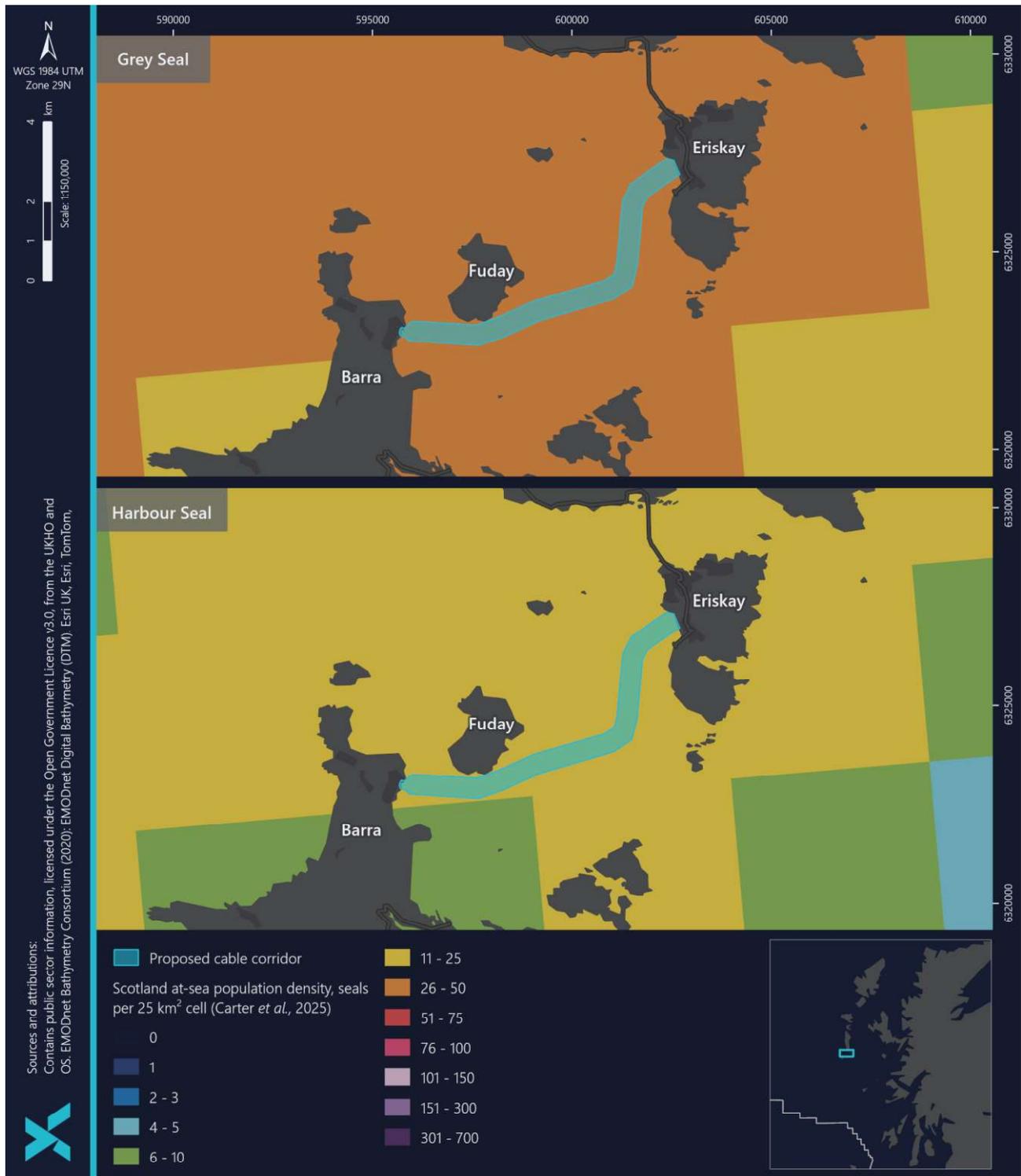


Figure 7-1 Seal density (Carter *et al.*, 2025)



### 7.3.3 Basking Sharks

Basking sharks (*Cetorhinus maximus*) are protected under Schedule 5 of the WCA 1981 which prohibits the killing, injuring, or taking by any method of those wild animals listed on Schedule 5 of the WCA 1981. The Nature Conservation (Scotland) Act 2004, Part 3 and Schedule 6 make amendments to the WCA 1981, strengthening the legal protection for threatened species to include 'reckless' acts, and specifically makes it an offence to intentionally or recklessly disturb or harass basking sharks.

Basking sharks are the second largest fish in the world (Sims, 2008). This species can be found throughout the offshore waters in the UK continental shelf (Sims, 2008) and are considered frequent visitors to the north and west coasts of Scotland with the waters here having a high suitability for basking sharks (HWDT, 2018; Witt *et al.*, 2012; Austin *et al.*, 2019). They are widely distributed in cold and temperate waters and feed predominantly on plankton and zooplankton e.g., barnacles, copepods, fish eggs and deep-water oceanic shrimps by filtering large volumes of water through their wide-open mouth. They typically move very slowly (around 4 miles per hour). In the winter, they dive to great depths to get plankton while in the summer they are mostly near the surface, where the water is warmer.

Due to their size, slow swimming speeds and preference for swimming in coastal waters during the summer months, basking sharks are considered to be at potential risk of collision with vessels associated with the proposed cable installation activities. Given that basking sharks are slow to mature and have a long gestation period, the species can be slow to recover if populations are rapidly depleted.

Basking sharks are most frequently seen in the west of Scotland between May and October, with sightings peaking at the height of summer in July and August (HWDT, 2018). The modelled persistence of above mean density of basking sharks in the vicinity of the proposed cable corridor (summers 2001 – 2012) was between 1,300 and 5,500 (NMPi, 2025). This modelling indicates a high abundance of individuals, and this is supported by the surrounding sightings of basking sharks recorded in 2001 – 2012 (approximately ~18) (NMPi, 2025). As such, it is likely that basking shark will be present in the vicinity of the proposed cable installation activities.

As detailed in Section 5.3.2, the Sea of the Hebrides NCMPA, designated for basking shark, is located 3.5 km from the proposed cable corridor (Figure 5-1).

### 7.3.4 Otters

As described in Section 5.3.5, otters are small, semi-aquatic mammals which inhabit coastal environments throughout the UK and depend on marine environments for food. An otter survey was undertaken by OEL during the intertidal survey and two otter sightings were recorded in proximity to the Barra landfall (OEL, 2025). Additionally, an ecology survey undertaken by WSP (2025) found field signs of otters (spraints and feeding remains) along the coastline at Barra. It should be noted that WSP (2025) did not report any signs of otter at Eriskay.

As detailed in Section 5.3.5 there are no designated sites with otters as the qualifying feature in the vicinity of the proposed cable corridor.

## 7.4 Impact Assessment

This Section outlines the proposed cable installation activities which have the potential to impact upon marine megafauna species, including cetaceans, pinnipeds, basking shark and otters.

### 7.4.1 Identification of Potential Impacts

This Section reviews potential impacts to marine megafauna receptor species from the proposed cable installation activities and narrows down which activities require further assessment to identify the likelihood and significance of



those impacts. Impacts from accidental releases from pollution for all marine megafauna have not been considered for further assessment, given that the likelihood of this is extremely low.

### Marine Mammals Impacts

Underwater sound emissions from the proposed cable installation activities are likely to constitute the greatest potential risk to marine mammals within the vicinity of the proposed cable corridor. Underwater sound emissions have the potential to impact cetaceans and other marine species in two ways:

- Injury – physiological damage to auditory or other internal organs; and
- Disturbance (temporary or continuous) – disruptions to behavioural patterns, including, but not limited to: migration, breathing, nursing, breeding, foraging, socialising and / or sheltering (note: this impact factor does not have the potential to cause injury).

If a sound emission is composed of frequencies which lie outside the estimated auditory bandwidth for a given species, then the potential for auditory impact is considered to be very unlikely (National Marine Fisheries Service (NMFS), 2018). To understand the potential for sound-related impacts, the likely hearing sensitivities of different marine mammal hearing groups has been summarised in below in Table 7-2 (Southall *et al.*, 2019).

Table 7-2 Auditory bandwidth estimated for marine megafauna (Southall *et al.*, 2019; NMFS, 2018)

HEARING GROUP	ESTIMATED AUDITORY BANDWIDTH
Low-frequency (LF) cetaceans (e.g. baleen whales, such as minke whales)	7 Hz to 35 kilohertz (kHz)
High-frequency (HF) (e.g. dolphins)	150 Hz to 160 kHz
Very high-frequency (VHF) cetaceans (e.g. harbour porpoises)	275 Hz to 160 kHz
Phocid carnivores in water (PW) (e.g. grey and harbour seal)	50 Hz to 86 kHz

The potential sources of underwater sound associated with proposed cable installation activities include:

- Vessel sounds;
- Sound associated with cable-laying activities;
- Sound from the USBL positioning device during installation – please refer to the EPS licence application form submitted alongside this MEA; and
- Sound from geophysical survey devices used during pre- and post-installation survey, and inspection including MBES and SSS.

While vessel sound is broadband and will be audible to marine mammals, the presence of the vessels within the proposed cable corridor will not constitute a substantive change from baseline vessel numbers (Section 11). Additionally, the duration of the cable installation campaign is relatively short-lived. As such the presence of vessels will not result in a significant change to the existing soundscape in the area, hence, this aspect does not have the potential to result in adverse underwater sound impacts on marine mammals and is not considered further.

Underwater noise emissions resulting from the cable laying activities are expected to be minimal. Moreover, trenching activities in the intertidal area will be conducted at low water when the area is dry, and hence there is no potential for underwater noise emissions to result from this activity. As such, noise from cable laying activities does not have any potential for adverse effects on cetaceans and pinnipeds and is not considered further. Therefore, the potential for underwater sound emissions to result from seabed preparation and cable installation is minimal. Further details



on the cable lay methodologies are described in the supporting Eriskay – Barra Subsea Cable Replacement Project Description (Briggs, 2025)

The MBES and SSS proposed for the pre-installation surveys will operate at frequencies > 200 kilohertz (kHz) and therefore are above the hearing threshold for marine mammals. However, USBL devices commonly operate in a frequency range which makes them audible to cetaceans and pinnipeds, and hence this equipment does have the potential to result in adverse effect on these receptors. The highly mobile nature of cetaceans and pinnipeds and the temporary, localised nature of USBL noise emissions associated with the activities dramatically reduces the likelihood of interactions between the Project and cetacean and pinniped receptors resulting in significant impacts. However, as the risk of injury or disturbance to a small number of individual cetaceans remains, an EPS licence may be required and hence impacts from noise emissions associated with USBL have been carried forward for further assessment.

Collision risk is another potential risk to marine mammals in the area and may cause mortality and sublethal injury (Laist *et al.*, 2001). However, marine mammals are highly mobile and as the proposed cable installation activities are due to take place from slow moving vessels operating in well-defined routes, collision risk is anticipated to be negligible. Any remaining residual risk from vessel movements will be further reduced on the basis of the embedded mitigation measures outlined in Section 4.3, which includes the management of vessel speeds and the commitment for vessels to adhere to the SMWWC. For this reason, vessel movements have not been identified as having the potential to cause adverse or significant impacts to the FCS of any marine mammal population and has therefore been screened out from further assessment.

The marine mammal species of interest in the area do not rely extensively on eyesight for hunting and navigation and potential impacts resulting from localised elevation of sediment, considering this and the fact that changes to water quality are expected to be minimal (as detailed in Section 6), water quality impacts are not discussed further.

Seals are particularly susceptible to disturbance during their respective pupping and moulting seasons, when the residency of seals at haul-outs and in surrounding waters elevates the relative density of each species. As mentioned in Section 5.3.3, there are no designated seal haul-outs or grey seal breeding sites that overlap with or are located within 500 m of the proposed cable corridor. NatureScot has advised there are other known seal haul outs within Barra Sound (Figure 5-2), for which the closest is 1 km from the Eriskay landfall. Therefore, there may be potential for impacts from underwater sound and landfall / intertidal activities on seals and as such this impact pathway is considered further.

### **Basking Shark Impacts**

The basking shark is an elasmobranch (sharks and rays) which is a group with generally low sensitivity to sound vibrations due to the fact they do not have a swim bladder. The hearing range of basking sharks is not known; however, five other elasmobranchs have been found to have a hearing range between 20 Hz to 1 kHz (Macleod *et al.*, 2011). It is acknowledged that this may not be entirely transferable to basking sharks, however since the USBL equipment operates at a minimum frequency of 20 kHz which is several orders of magnitude higher than 1 kHz, it is unlikely this equipment will be audible to basking sharks. Any sound emissions resulting from the cable installation equipment is also expected to be minimal and unlikely to result in any injury or significant disturbance (as described above). On this basis, the potential for sound emissions to impact upon basking sharks is screened out of further assessment. Nonetheless, collision risk and disturbance from the cable installation vessels does pose a potential threat to this slow moving species and as such this impact pathway is considered further.

### **Otter Impacts**

Otters are particularly sensitive to anthropogenic changes to their habitats, as their coastal habitat use is highly dependent on the presence of freshwater features (Loy *et al.*, 2022). As such, the location of their holts is restricted, and anthropogenic changes to their habitat may have dramatic repercussions, including localised extinctions. Given



that otters may be present within the vicinity of the Project activities due to noted sightings of two otters during the landfall surveys (OEL, 2025) and evidence of otters during the ecology survey (WSP, 2025), there is potential for vessel, vehicle and human presence to result in disturbance to otters during the intertidal works. Given that otters may be present it is recommended that pre-works checks are carried out by an ECoW prior to the commencement of proposed cable installation activities and will include the cable landfall areas and a 200 m mitigation zone as detailed within the embedded mitigation measures Table 4-2 . Any otter holts, layups and couches will be identified and avoided by a 40 m buffer. The trenches in intertidal areas will be fitted with ramps to allow otter that may have entered the trenches to escape.

## 7.4.2 Injury of Disturbance from Sound Emissions

Underwater sound generated by USBL constitutes the only source of sound with the potential to cause injury or significant disturbance to marine mammals. USBL typically operates in the frequency range of 20 – 33.5 kHz, and as such is audible to all marine mammal species likely to be present in the vicinity of the proposed cable corridor. The USBL source level utilised during the proposed cable installation activities will be limited to 207 decibel (dB) re 1 Micro Pascal ( $\mu\text{Pa}$ ) (peak).

Underwater sound modelling has been undertaken to identify the potential range (i.e., the straight-line distance from the source) in which underwater sound impacts to marine mammals could occur. This assessment was based on the methods and thresholds provided by the current best practice guidance, as presented by NMFS (2018) and Southall *et al.*, (2019). The full sound assessment has been presented in Appendix A; a summary of the results is presented below.

Based on a source level of 207 dB re  $1\mu\text{Pa}$  (peak), Very High Frequency (VHF) cetaceans represent the hearing group with the greatest potential impact range for the peak Sound Pressure Level (SPL) metric (36 m at 10 m depth). Conversely, High-Frequency (HF) cetaceans represent the hearing group with the lowest potential impact range for the peak SPL metric. Furthermore, a theoretical risk of injury has been identified with regard to the cumulative sound exposure level (SEL) criteria.

Based on a source level of 207 dB re  $1\mu\text{Pa}$  (peak), under the worst-case scenario, the largest injury range resulting from USBL was 104 m for VHF cetaceans (harbour porpoises), when considering cumulative sound exposure levels for a stationary animal. For whale, dolphin, and seal receptors (LF, VHF and PW hearing groups) the potential injury ranges were significantly reduced. While a theoretical injury risk is identified by the underwater sound modelling, this is based on a cumulative exposure over an extended time period. As such, in order for a harbour porpoise to be at risk of injury, an animal would have to remain within 104 m of the USBL device for a period of several hours. The likelihood of this scenario occurring is extremely low when considering that the source is deployed from a moving vessel, and that animals will tend to move away from sources of acoustic disturbance.

As such, the assessment concludes that there is no realistic risk of injury to marine mammals, resulting from the use of USBL with source levels up to 207 dB re  $1\mu\text{Pa}$  (peak).

Whilst no injury impacts are expected, sound emissions have the potential to affect the behaviour of marine mammals in the vicinity of the sound source. Significant or strong disturbance may occur when an animal is at risk of a sustained or chronic disruption of behaviour or habitat use resulting in population-level effects. The potential impacts resulting from USBL sound was modelled in the underwater sound assessment in Appendix A.

Under the worst-case scenario, it was predicted that a behavioural change may occur for marine mammals within 207 m of the cable installation vessel. As such, underwater sound emissions from the use of USBL have the potential to elicit a strong behavioural response in marine mammals which could be classed as a disturbance of EPS offence as defined under Regulations 39(1) or 39(2).



However, for the relevant biogeographical population MU for cetacean species which occur in the area (Table 7-1), this will not result in population levels effects or adversely affect the FCS of any relevant species. This is due to the fact that the sound assessment predicts that less than 0.1% of the biogeographic populations of relevant cetacean species will be impacted by sound-related disturbance as a result of USBL operations. Moreover, the number of animals within the disturbance range at any one time is predicted to be  $\leq 0.1$ . This means that on average, there will be no marine mammals within the disturbance range for 90% of USBL operations, making potential disturbance impacts at the population level arising from this equipment negligible.

As the vessel and / or the subsea equipment (e.g. an ROV) will generally not be stationary during USBL operations, animals within a particular area will not be exposed to extended periods of underwater sound. Rather, individuals would have to follow the moving equipment to be subjected to lasting or prolonged periods of acoustic disturbance. As such, the exposure to disturbance from USBL operations will be extremely limited in duration, and hence, does not have the potential to result in adverse effects at a population or species level.

Given the transient, highly localised and short-term nature of the USBL activities, it is very unlikely that any disturbance effects from use of USBL would negatively impact upon the FCS of any of the cetacean species which may be present in the survey area. This is on the basis that the modelled level of disturbance is unlikely to affect the ability of any individual animal to survive or reproduce and will not have significant population-level impacts to any marine mammal. As such, no mitigation is required to limit the potential impacts on marine mammals resulting from USBL operations.

The above notwithstanding, it is possible that a small number of cetaceans may experience some level of disturbance for the short period that they encounter the proposed cable installation activities. As such, an EPS licence is expected to be required for the USBL-related activities which will be conducted during the proposed cable installation activities (as per Regulation 39(2)) (Scottish Government, 2024).

**Assessment of Impact Significance**

As cetaceans are EPS, and therefore afforded strict protection under the Habitats Regulations, and also potentially vulnerable to underwater sound impacts, the sensitivity is assessed as **high**. Due to the potential vulnerability of seals to disturbance impacts during breeding and moult periods, combined with the protection afforded to seals under the Marine Scotland (2010) Act, seals are assessed as having a **high** sensitivity. There will be no injurious impacts to marine mammals as a result of sound-generating activities. However, there is potential for disturbance to marine mammals from underwater sound. Activity-related disturbance is expected to be limited to one or a few individuals of a species and will therefore not result in any adverse impact to the FCS of any marine mammal species. Therefore, the magnitude of effect is assessed as **minor**, resulting in a **minor** consequence.

As the impact is not significant, no additional mitigation measures are required. Embedded mitigation measures considered as part of the Project design are listed in Section 4.3.

SENSITIVITY	MAGNITUDE OF EFFECT	CONSEQUENCE
High	Minor	Minor
Impact Significance – NOT SIGNIFICANT		



### 7.4.3 Potential Disturbance from Vessel Presence (Basking Sharks)

As discussed in Section 7.4.1, impacts on marine mammals resulting from vessel presence are screened out of this assessment. However, basking sharks are considerably less mobile than marine mammals and are therefore identified as being more sensitive to vessel presence. Additionally, basking sharks are frequently sighted in the Outer Hebrides, and basking shark are a protected feature of the Sea of Hebrides NCMPA.

Project vessels will be moving slowly during the cable installation works reducing the risk of collision and disturbance to basking sharks in line with the Basking Shark Code of Conduct (Shark Trust, 2025), and SHEPD are committed to ensuring vessels adhere to the SMWWC (NatureScot, 2017). In addition, only a small number of vessels are required for the cable installation activities, which does not constitute a substantive change to baseline vessel activity in the proposed cable corridor (Section 11). The proposed cable installation activities also have a short duration. These factors considerably reduce the risk of injury or disturbance to basking sharks resulting from interaction with project vessels. Therefore, with consideration of the embedded mitigation measures, the risk of collision between basking shark and project vessels is considered to be low.

Considering these factors, and that the presence of the project vessels will not constitute a substantive change from baseline vessel activity in the vicinity of the proposed cable corridor, it is concluded that vessel presence will not adversely affect the FCS of basking sharks. However, since the risk of disturbance cannot be entirely ruled out, a basking shark derogation licence may be required under the WCA 1981.

#### Assessment of Impact Significance

Due to the potential vulnerability of basking sharks to injury and disturbance resulting from vessel presence, combined with the protection of the species under the WCA 1981, a **high** sensitivity has been assigned. The risk of injury or disturbance of basking sharks as a result of vessel presence during the proposed cable installation activities is extremely limited, and not expected to affect FCS of the species, and as such the magnitude of effect is **minor**, resulting in an overall **minor** consequence.

As the impact is not significant, no additional mitigation measures are required. Embedded mitigation measures considered as part of the Project design are listed in Section 4.3.

SENSITIVITY	MAGNITUDE OF EFFECT	CONSEQUENCE
High	Minor	Minor

Impact Significance – NOT SIGNIFICANT

### 7.4.4 Potential Disturbance from Nearshore and Intertidal Activities

There will be a number of vessels and vehicles present on site during Project activities, including onshore plant during intertidal works, which have the potential to result in visual disturbance risk to seals and otters; however, it is noted that the vessel activity will not be a substantive change from baseline vessel activity within the area.

#### Seal Impacts

The Sound of Barra SAC is overlapped by the proposed cable corridor, which is designated for harbour seals. Given the overlap between the proposed cable corridor and the Sound of Barra SAC, there is potential for impacts on harbour seals from vessels, vehicles, equipment, and human presence in the nearshore and intertidal landfall area. This is especially likely if the work coincides with the pupping season, which is between mid-June to July (SCOS, 2024), and if the work areas are adjacent to the areas used for pupping or as haul-outs.

The works are proposed to occur in summer of 2026 and may overlap with the pupping season, which could possibly give rise to significant disturbance and / or mortality impact to seals present, due to the potential for separation of



mothers and pups, if the landfall works are in the vicinity of a harbour seal breeding site. Consultation with NatureScot has highlighted several locations within the Sound of Barra SAC where harbour seals frequently haul out and which are considered as important breeding sites where seals are particularly vulnerable (Figure 5-2). The closest seal haul out area is located approximately 1 km north of the Eriskay landfall. Given this separation and the localised nature of the landfall works, it is not considered likely that the intertidal and landfall works will result in significant disturbance to hauled out seals within this area. This is particularly evident when considering the temporary nature of the landfall and intertidal works (approximately one month), coupled with the additional vessels not constituting a significant deviation from baseline shipping given the ferry service through the Barra Sound. In addition, the Project will implement the embedded mitigations detailed in Section 4.3, including adherence to the SMWWC and slow moving vessels. Given the above, any impacts to seals from nearshore and intertidal works including human, vessel and vehicle presence will be minor and no significant impacts are anticipated.

### **Otter Impacts**

Vessel, vehicle and human presence have the potential to disturb otters at the landfall sites. This is due to the potential avoidance of areas at the landfall and intertidal areas where vessels, vehicles and site workers are present. Additionally, disturbance may be caused by temporary habitat change associated with proposed cable installation activities and equipment placement. Furthermore, as OCT will be utilised at landfalls, this also presents a risk to otter should they enter a trench and become trapped which has the potential to induce additional disturbance.

Although there is the potential for disturbance to otters, this is likely to be greatly reduced, owing to the temporary nature of the nearshore Project activities. As such, no permanent impacts are expected on otter habitats which could induce permanent and irreversible damage.

Although no significant impacts to otter populations are anticipated, there is still the potential for disturbance which could constitute an offence under the Habitats Regulations, and as such the following mitigation measures, aligning with the NatureScot advice, will be implemented to minimise any effects:

- Pre-construction otter surveys will be conducted prior to the commencement of the cable replacement operation, and will include the cable landfall areas and a 200 m mitigation zone;
- An appropriately qualified ECoW will be appointed to work with the cable installation personnel and ensure sensitive otter sites are not disturbed;
- Any otter holts, layups and couches will be identified and avoided by a 40 m buffer;
- To mitigate the risk of otters becoming trapped within excavated trenches at the landfalls, ramps will be incorporated into trench designs to ensure otters are able to escape should they enter a trench; and
- All mitigations will be compliant with terrestrial planning conditions including SHEPD's Otter Protection Policy.

These mitigation measures will minimise any disturbance to otters, or the habitats that they depend on. The above notwithstanding, it is possible that a small number of otters may experience some level of disturbance for the short period that they encounter the proposed installation activities. As such, if evidence of otters is found during pre-construction otter surveys, SHEPD will consult with NatureScot to ascertain whether an EPS licence for otter disturbance is required for intertidal activities.



**Assessment of Impact Significance**

There is potential for disturbance risk to seals and otters from the presence of vessels and vehicles during installation activities as well as from the excavations of trenches in the intertidal. Due to the potential vulnerability of seals to disturbance impacts during breeding and moult periods, combined with the protection afforded to seals under the Marine Scotland (2010) Act and as a qualifying feature of the Sound of Barra SAC, seals are assessed as having a **high** sensitivity. Similarly, due to the protection afforded to otters as EPS, and the potential vulnerability to changes in their coastal habitat, otters are also assessed as having a **high** sensitivity.

With the implementation of the proposed embedded mitigations, no adverse impacts to harbour seals are anticipated. Additionally, as there is no overlap with designated grey seal or harbour seal breeding sites and the nearest harbour seal breeding site identified by NatureScot is 1 km away, adverse impacts on grey seals or harbour seals will be minor. Similarly, with the implementation of the embedded mitigation for otter, any disturbance to otters will be minimal.

Therefore, the magnitude of impact is assessed as **minor**, resulting in a **minor** consequence. Embedded mitigation measures considered as part of the Project design are listed in Section 4.3.

SENSITIVITY	MAGNITUDE OF EFFECT	CONSEQUENCE
High	Minor	Minor

Impact Significance – **NOT SIGNIFICANT**

**7.4.5 Operation**

The proposed subsea cable has been designed to be maintenance free, as such no planned ongoing maintenance activities are proposed. SHEPD will conduct routine inspections and surveys of the proposed subsea cable throughout its operational life to ensure it remains in good condition (please refer to the OIMD strategy submitted alongside this MEA). There is a potential for remedial cable repair works to be required, in the event the proposed subsea cable is damaged or the need for additional stabilisation materials is identified during the routine surveys; however, this would be subject to a separate licensing process.

If required, impacts on marine megafauna resulting from cable repairs will be analogous to those occurring during installation, although significantly reduced on both spatial and temporal scales. As such, impacts during the operational phase are considered to be not significant.

Underwater sound from routine inspections and surveys of the cable will have the potential to affect marine mammals; however, this will be consented separately through the EPS licence regime and are not assessed further.

**7.5 Conclusion**

Underwater noise emissions are the impact mechanism most likely to affect marine megafauna in the area of activities. Noise modelling used to inform the assessment (see Appendix A: Noise Impact Assessment), demonstrates that whilst there may be some disturbance to marine mammals resulting from USBL operations, this is likely to be limited in space and time and should only affect a few individuals of any species.

There will be no injurious impacts to cetaceans, seals or otters as a result of proposed cable installation activities and no requirement to apply for an EPS licence in that respect; however, there is potential for disturbance to cetaceans, and therefore an EPS licence application has been submitted alongside this MEA. The disturbance is expected to be limited to one or a few individuals of the local population and will therefore not result in any adverse impact to the FCS of any marine mammal species.



No significant impacts to seals are anticipated from the nearshore activities with consideration of the embedded mitigation. Furthermore, the proposed cable installation activities will not result in the catching or killing of seals, and thus the protection provided to the two species by the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) will not be breached.

Potential impacts on otters as a result of nearshore activities are expected to be limited, and will not impair an otter's ability to survive, breed or reproduce, or rear or otherwise care for its young, and there will be no adverse impact on the FCS of otters in the region. Nonetheless, should evidence of otter be identified during pre-construction surveys, SHEPD will consult with NatureScot to ascertain whether an EPS licence for otter disturbance is required for the nearshore works prior to works commencing.

Finally, vessel presence will not adversely affect the FCS of basking sharks given the embedded mitigation measures. Nevertheless, SHEPD will apply for a basking shark derogation licence, as the risk of disturbance cannot be entirely ruled out.

Considering the temporary and localised nature of the activities there are not anticipated to be any significant impacts to individuals or populations of marine megafauna in the area.



## 8 BENTHIC AND INTERTIDAL ECOLOGY

### 8.1 Introduction

This Section provides detail on the benthic and intertidal habitats and species located within, and in the immediate vicinity of, the proposed cable corridor. An assessment of potential impacts on key sensitive habitats and species is presented, along with an outline of secondary mitigation requirements, which may be undertaken if potential significant impacts are identified. The impact assessment focuses on habitats that are protected or are qualifying features of conservation sites located within the proposed cable corridor and that have the potential to be impacted.

### 8.2 Data Sources

The benthic and intertidal ecology baseline has been established through the results of the site-specific benthic survey (OEL, 2025) and supplemented by publicly available geospatial data (Marine Directorate, 2025b). Where applicable, descriptions of features of conservation importance have been obtained through the Marine Life Information Network (MarLIN) database (MarLIN, 2025) and Tyler-Walters *et al.*, (2016) descriptions of Scottish PMFs.

The OEL (2025) benthic surveys included an intertidal survey of the proposed cable landfall areas at Barra and the west coast of Eriskay and a subtidal benthic characterisation survey of the proposed cable corridor (OEL, 2025). The intertidal survey was conducted via UAV and an intertidal walkover survey with a 250 m buffer. The subtidal survey consisted of seabed imagery using a Drop-Down Camera (DDC) and grab samples. Grab samples were collected using a 0.1 m<sup>2</sup> Day grab and analysed for macrobenthic and PSA (OEL, 2025). A sampling summary of the intertidal and subtidal surveys is presented in Table 8-1. The subtidal transects and grab stations are illustrated in Figure 8-1.

Table 8-1 Sampling summary (OEL, 2025)

LOCATION	BARRA	ERISKAY
Intertidal		
Target Notes	160	46
UAV Imagery	-	83
Subtidal		
DDC		20
Grabs		10
Transects		16

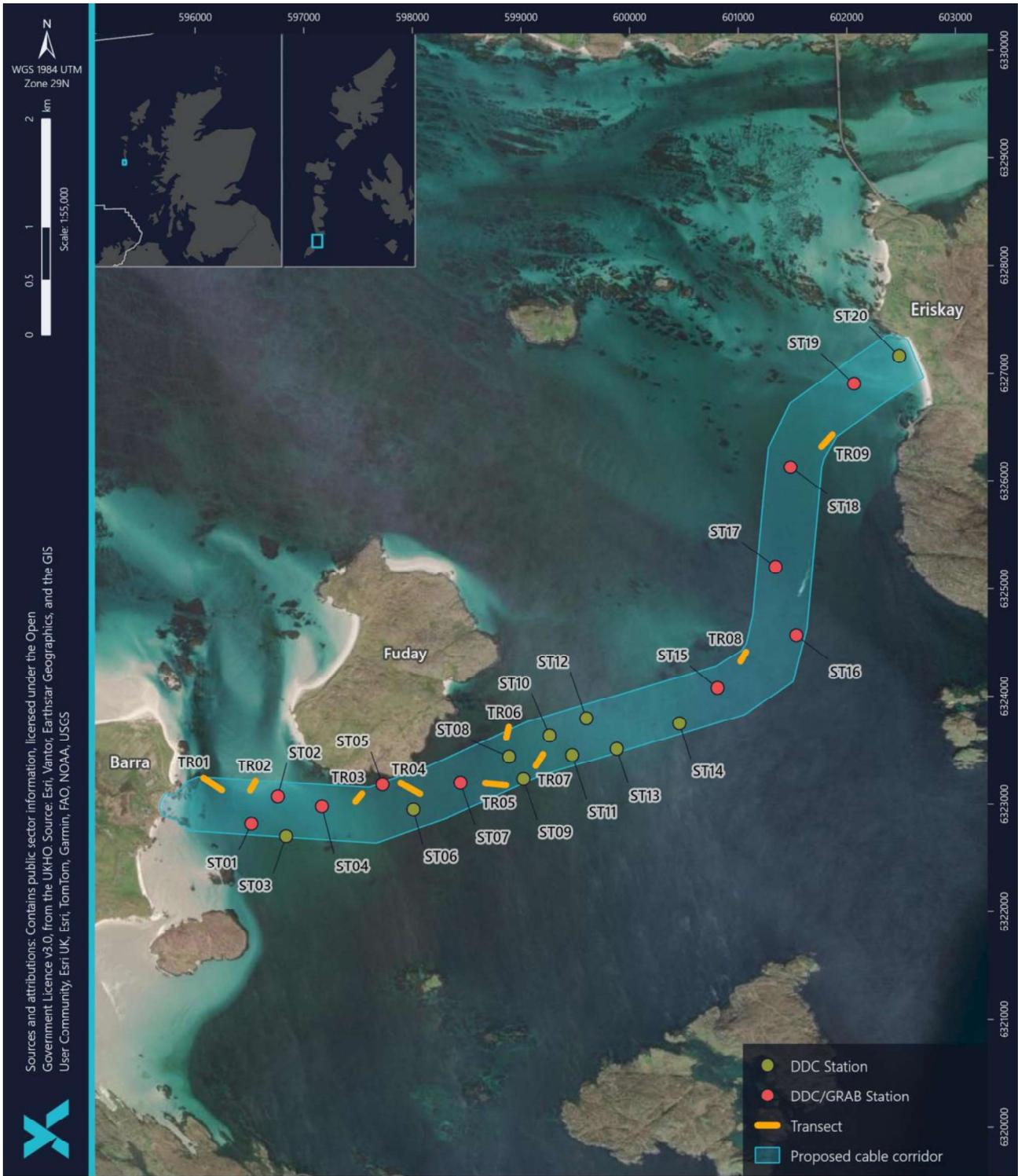


Figure 8-1 Benthic sampling stations within the proposed cable corridor (OEL, 2025)



## 8.3 Baseline and Receptor Identification

### 8.3.1 Overview

The following Sections characterise the seabed habitats and species likely to be present along the proposed cable corridor, including the potential presence of sensitive features (e.g., PMFs and Annex I habitats etc.). There were no fish spawning or nursery grounds identified within the benthic survey; therefore, there is no potential for impacts on fish from any benthic habitat disturbance and this impact is not considered further.

#### NatureScot Consultation

Consultation held with NatureScot emphasises the importance of the seagrass beds and reefs within the Sound of Barra SAC with regards to the installation methodology and route selection. Consideration of this advice is presented in Section 5.3.1 and has been used to support this Benthic and Intertidal Ecology chapter.

### 8.3.2 Subtidal

A subtidal survey was undertaken by OEL (2025) in which a total of sixteen habitats were recorded (Table 8-2). The subtidal area was a mixture of subtidal sand and infralittoral rock, dominated by diverse kelp and mixed red seaweeds (OEL, 2025). The main habitats identified across the subtidal survey area comprised primarily of A5.23 'Infralittoral fine sand', which was dominant particularly in the east towards Eriskay moving towards the centre of the cable route. Within the middle of the cable route large areas of A5.5331 '*Zostera marina/angustifolia* beds on lower shore or infralittoral clean or muddy sand' were identified (OEL, 2025).

Within the nearshore section closest to Eriskay, only A5.23 'Infralittoral fine sand' was present, whereas the nearshore area closest to Barra was slightly more complex. The majority of the nearshore area closest to Barra was dominated by A5.23 'Infralittoral fine sand' with smaller patches of rock habitats as identified within the Annex I reef assessment such as A3.3 'Atlantic and Mediterranean low energy infralittoral rock' and A3.2 'Atlantic and Mediterranean moderate energy infralittoral rock' (OEL, 2025).

More seaward, of the following habitats and biotopes were observed (OEL, 2025):

- A5.23 'Infralittoral fine sand'/A5.52 'Kelp and seaweed communities on sublittoral sediment';
- A5.24' Infralittoral muddy sand ' / A5.52 'Kelp and seaweed communities on sublittoral sediment';
- A3.22' Kelp and seaweed communities in tide-swept sheltered conditions';
- A3.214 '*Laminaria hyperborean* and foliose red seaweeds on moderately exposed infralittoral rock';
- A3.222 'Mixed kelp with foliose red seaweeds, sponges and ascidians on sheltered tide-swept infralittoral rock'; and
- A3.212 '*Laminaria hyperborean* on tide-swept, infralittoral rock'..

The distribution and extent of the habitats/biotopes identified within the Eriskay to Barra subtidal survey area survey based on all current available data are presented in Table 8-2.

#### Subtidal Features of Interest

Potential Annex I reef habitat was identified within the proposed cable corridor through the benthic survey (OEL, 2025) and as such an Annex I reef assessment was undertaken, as described in Section 5.5.4. The results of the Annex I reef assessment concluded that the habitats present were characteristic of low stony reef (A3.125, A3.212, A3.214) bedrock reef (A3.222), and potential geogenic reef (A3.125, A3.212, A3.214, A3.222) (OEL, 2025). Due to the high occurrence of dense kelp and algal cover, most of the imagery where Annex I reef may have been present were assigned as 'potential geogenic reef'. In the remainder of the imagery, Annex I low stony reef was clearly observed in four images and bedrock in three images. Due to this, it should be noted that geogenic features have potentially



been underestimated in the imagery analysis (OEL, 2025). Annex I reefs are a qualifying feature of the Sound of Barra SAC, as assessed within Section 5.5.4.

The subtidal sand habitats (A5.2) (including associated seagrass beds) described above and listed in Table 8-2 are part of the Annex I habitat subtidal sandbanks, and are a qualifying feature of the Sound of Barra SAC, as assessed within Section 5.5.4. A total of four PMFs were identified in the subtidal survey and is detailed in the OEL (2025) surveys these included Kelp and Seaweed Communities on Sublittoral Sediment (A5.521, A5.522, A5.5213), Tide-Swept Algal Communities (A3.222), Seagrass Beds (A5.5331) and Kelp Beds (A3.212, A3.214). Due to the high abundance of seagrass, a further assessment was undertaken with a summary provided in Section 5.5.4. Seagrass beds were observed at 107 of 328 images across eight stations and three transects. Seagrass composition at all stations consisted solely of *Zostera marina* (OEL, 2025).

A burrow assessment was undertaken throughout the subtidal survey area. While burrows were observed in the imagery and their density calculated, they did not qualify as the PMF habitat burrowed mud as they did not occur over mud but instead within sand. It should also be noted that burrowed mud associated fauna such as the tall sea pen (*Funiculina quadrangularis*) and the Norway lobster (*Nephrops norvegicus*) were not identified at all throughout the seabed imagery (OEL, 2025).

OEL (2025) reported the presence of *Crassikorophium crassicorne*, an amphipod crustacean, in relatively high numbers during the environmental survey at ST05 (46 individuals) and ST07 (73 individuals). While OEL (2025) report this species as an INNS, *C. crassicorne* is a cryptogenic species and therefore its origin is unknown. Additionally, the presence of the INNS wireweed (*S. muticum*) has been confirmed within the proposed cable corridor at the Barra landfall around TR01 and TR03 through the environmental surveys.

Ocean quahog (*Arctica islandica*), an OSPAR List of Threatened and / or Declining Species and PMF, was observed at ST15 (six individuals) (OEL, 2025). One individual of the economically important venerid bivalve group (*Veneridae*) was observed at ST16 (OEL, 2025). Finally, maerl of the family *Hapalidiaceae* was present at stations ST16 and ST17. To note, no maerl was identified during DDC pre-screening in the field, or in image analysis at ST16 or ST17 (OEL, 2025). The subtidal habitats, Annex I reef features and PMFs are illustrated in Figure 8-2.



Table 8-2 Summary of subtidal habitats (OEL, 2025)

BSH	HABITAT/BIOTOPE	DESCRIPTION
<b>A3.1 – High energy infralittoral rock</b>	A3.12	Sediment-affected or disturbed kelp and seaweed communities
	A3.125	Mixed kelps with scour-tolerant and opportunistic foliose red seaweeds on scoured or sand-covered infralittoral rock
	A3.1161	Foliose red seaweeds with dense <i>Dictyota dichotoma</i> and/or <i>Dictyopteris membranacea</i> on exposed lower infralittoral rock
<b>A3.2 – Moderate Energy Infralittoral Rock</b>	A3.212	<i>Laminaria hyperborean</i> on tide-swept, infralittoral rock
	A3.214	<i>Laminaria hyperborean</i> and foliose red seaweeds on moderately exposed infralittoral rock
	A3.22	Kelp and seaweed communities in tide-swept sheltered conditions
	A3.222	Mixed kelp with foliose red seaweeds, sponges and ascidians on sheltered tide-swept infralittoral rock
<b>A5.2 – Subtidal Sand</b>	A5.23	Infralittoral fine sand
	A5.231	Infralittoral mobile clean sand with sparse fauna
	A5.24	Infralittoral muddy sand
	A5.243	<i>Arenicola marina</i> in infralittoral fine sand or muddy sand
<b>A5.5 – Subtidal Macrophyte Dominated Sediment</b>	A5.52	Kelp and seaweed communities on sublittoral sediment
	A5.521	<i>Laminaria saccharina</i> and red seaweeds on infralittoral sediments
	A5.5213	<i>Laminaria saccharina</i> and filamentous red algae on infralittoral sand
	A5.522	<i>Laminaria saccharina</i> and <i>Chorda filum</i> on sheltered upper infralittoral muddy sediment
	A5.5331	<i>Zostera marina/angustifolia</i> beds on lower shore or infralittoral clean or muddy sand

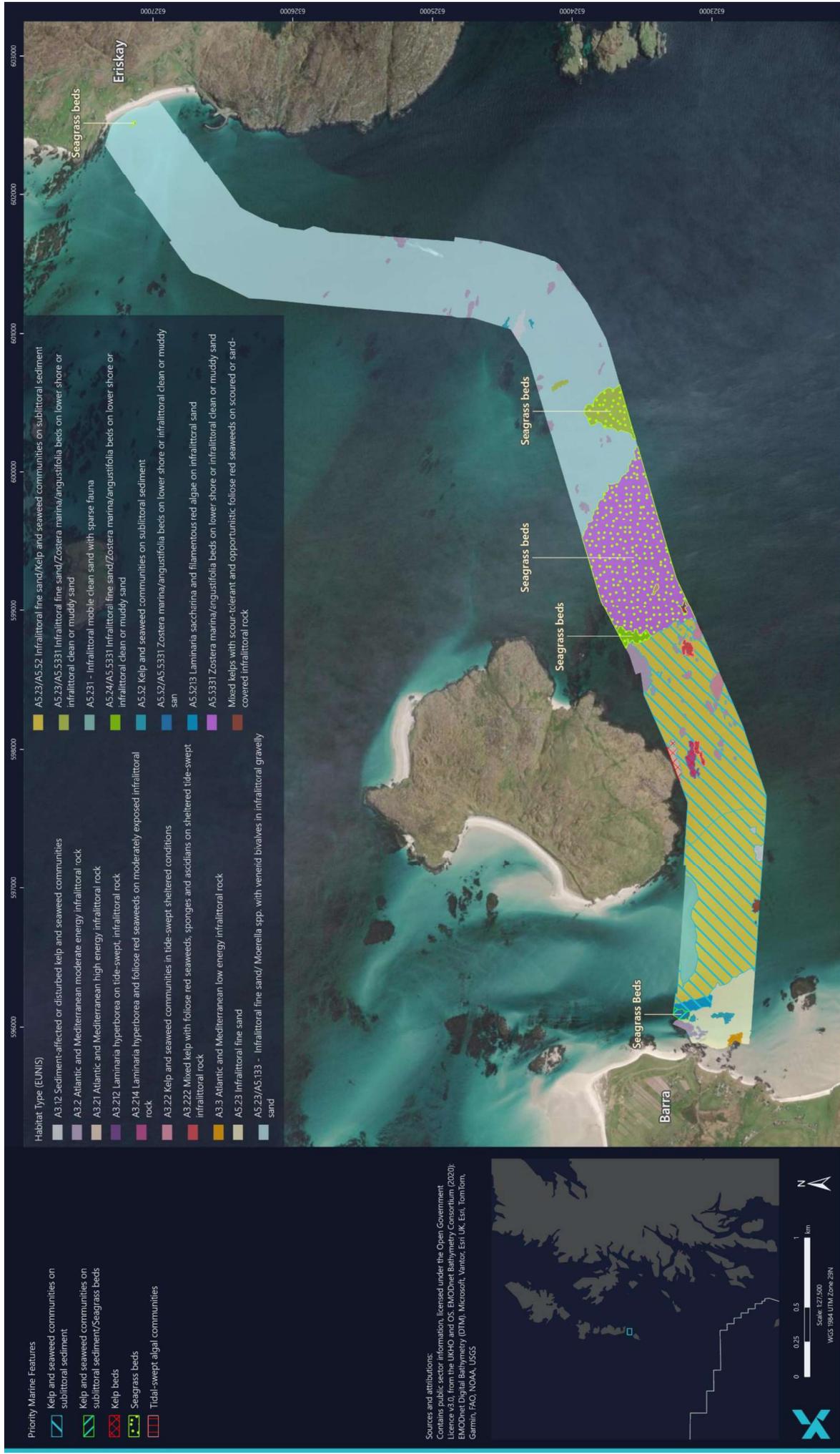


Figure 8-2 EUNIS characterisation of subtidal habitats

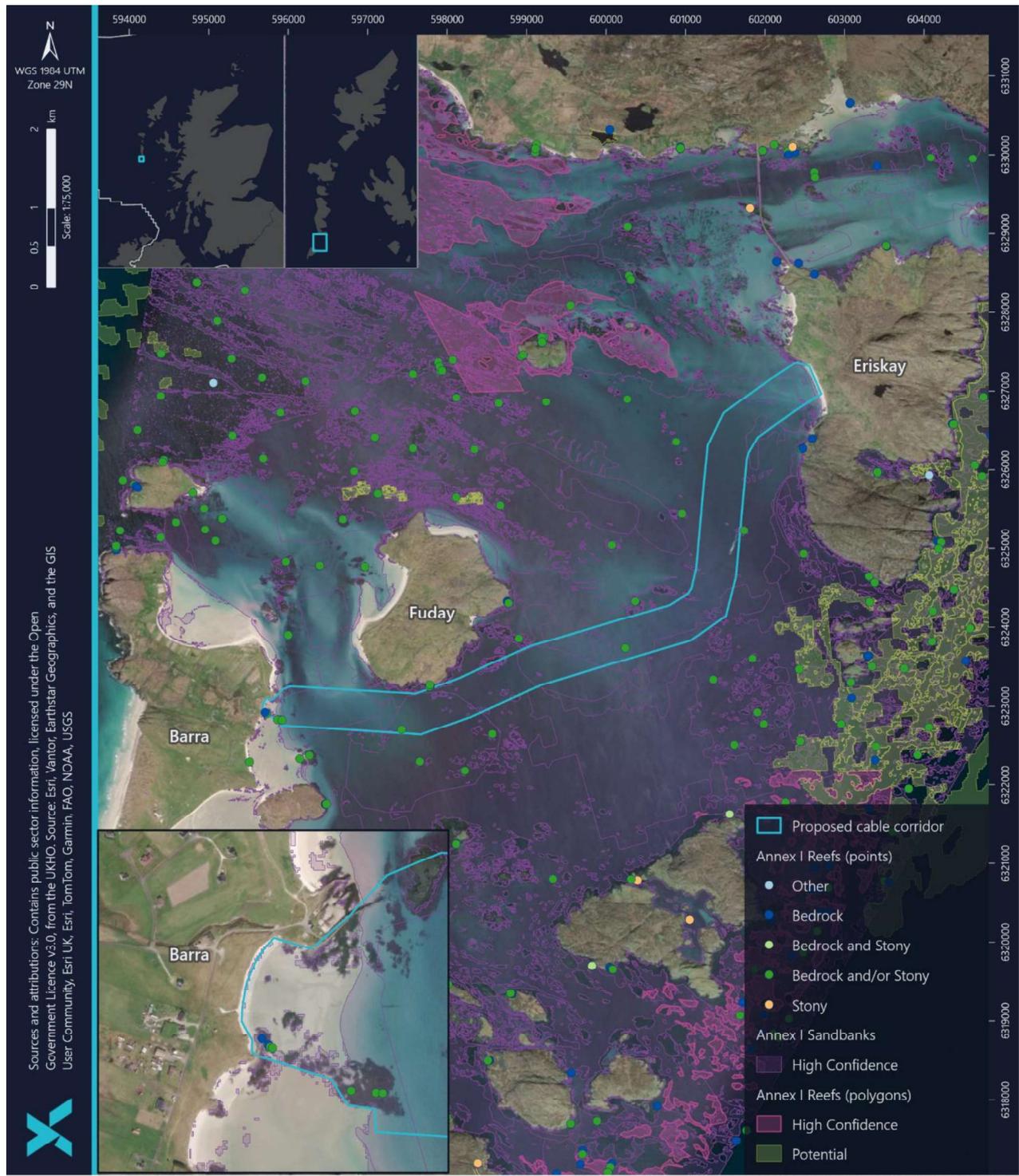


Figure 8-3 Annex I reefs and sandbanks in the proposed cable corridor



### 8.3.3 Intertidal

#### Barra

The Barra intertidal zone was predominantly characterised by the biotope A2.231 'Polychaetes in littoral fine sand', with A2.2 'Littoral sand and muddy sand' occurring on the upper shore and two distinct bands of A2.21 'Strandline' present.

The northern part of the survey area featured rocky habitats mainly composed of boulders and rock walls, many of which appeared to be of anthropogenic origin, alongside natural bedrock formations. In contrast, all rocky habitats in the southern section consisted of natural bedrock.

Occurrences of B3.11 'Lichens or small green algae on supralittoral and littoral fringe rock' and B3.111 'Yellow and grey lichens on supralittoral rock' were recorded in both the northern and southern extents where rock dominated exposed areas. Rock biotopes were prominent throughout these regions, including A1.31 '*Furoids* on sheltered marine shores' and A1.314 '*Ascophyllum nodosum* on very sheltered mid eulittoral rock'. Additionally, a patch of A1.313 '*Fucus vesiculosus* on moderately exposed to sheltered mid eulittoral rock' was identified in the southern area.

While the lower shore was primarily defined by A2.231 'Polychaetes in littoral fine sand', scattered rocky patches were present. In the north, an area of A1.2142 '*Fucus serratus* and under-boulder fauna on exposed to moderately exposed lower eulittoral boulders' extended seaward.

Overall, rocky habitats across the survey area were diverse, reflecting variations in wave energy and elevation. These differences influenced tidal submersion, resulting in a mix of upper, mid, and lower shore biotopes and clear zonation patterns along the rocky substrates (OEL, 2025).

Full details of the Barra intertidal habitats are provided in Table 8-3 and illustrated in Figure 8-3.

#### Eriskay

Along the upper shore, there was a lack of biota, and the upper shore was assigned as EUNIS habitat complex A2.22 'Barren or amphipod-dominated mobile sand shores'. Below this, the shoreline was characterised by biotope A2.211 '*Talitrids* on the upper shore and strandline.' The majority of the intertidal area was characterised by the mosaic habitat made of EUNIS classifications A2.221 'Barren littoral coarse sand' and A2.1 'Littoral coarse sediment' (OEL, 2025).

Smaller patches of exposed bedrock classified as A1 'Littoral rock and other hard substrata' were scattered throughout the intertidal area with slightly larger patches of exposed bedrock present in the northeastern part of the survey area. One patch of A1.45 'Ephemeral green or red seaweeds (freshwater or sand-influenced) on non-mobile substrata' was recorded to the north of the site (OEL, 2025).

Full details of the Eriskay intertidal habitats are provided in Table 8-3 and illustrated in Figure 8-3.

#### Intertidal Features of Interest

To the upper extent of the intertidal walkover survey area, there was a presence of sand dunes bordering both Eriskay and Barra intertidal area, however these habitats are above MHWS and out of scope of this assessment. It should be noted that no other habitats or features of interest were identified in the intertidal area, and no INNS were identified in the intertidal area.



Table 8-3 Summary of intertidal habitats (OEL, 2025)

BSH	EUNIS CODE	EUNIS DESCRIPTION
Barra		
<b>A1 – Littoral rock and other hard substrata</b>	-	-
<b>A1.2 – Moderate energy littoral rock</b>	A1.213	<i>Fucus vesiculosus</i> and barnacle mosaics on moderately exposed mid eulittoral rock
	A1.214	<i>Fucus serratus</i> on moderately exposed lower eulittoral rock
	A1.2141	<i>Fucus serratus</i> and red seaweeds on moderately exposed lower eulittoral rock
	A1.2142	<i>Fucus serratus</i> and under-boulder fauna on exposed to moderately exposed lower eulittoral boulders
<b>A1.3 – Low energy littoral rock</b>	A1.31	<i>Fucoids</i> on sheltered marine shores
	A1.311	<i>Pelvetia canaliculata</i> on sheltered littoral fringe rock
	A1.312	<i>Fucus spiralis</i> on sheltered upper eulittoral rock
	A1.3121	<i>Fucus spiralis</i> on full salinity sheltered upper eulittoral rock
	A1.3122	<i>Fucus vesiculosus</i> on mid eulittoral mixed substrata
	A1.313	<i>Fucus vesiculosus</i> on moderately exposed to sheltered mid eulittoral rock
	A1.3131	<i>Fucus vesiculosus</i> on full salinity moderately exposed to sheltered mid eulittoral rock
	A1.3132	<i>Fucus vesiculosus</i> on mid eulittoral mixed substrata
	A1.314	<i>Ascophyllum nodosum</i> on very sheltered mid eulittoral rock
	A1.3141	<i>Ascophyllum nodosum</i> on full salinity mid eulittoral rock
	A1.315	<i>Fucus serratus</i> on sheltered lower eulittoral rock
	A1.3151	<i>Fucus serratus</i> on full salinity sheltered lower eulittoral rock
	A1.3152	<i>Fucus serratus</i> on full salinity lower eulittoral mixed substrata
<b>A1.4 – Features of littoral rock</b>	A1.41	Communities of littoral rockpools
	A1.421	Green seaweeds ( <i>Enteromorpha spp.</i> And <i>Cladophora spp.</i> ) in shallow upper shore rockpools
	A1.45	Ephemeral green or red seaweeds (freshwater or sand-influenced) on non-mobile substrata
<b>A2.1 – Littoral coarse sediment</b>	-	-



BSH	EUNIS CODE	EUNIS DESCRIPTION
<b>A2.2 – Littoral sand and muddy sand</b>	A2.21	Strandline
	A2.22	Barren or amphipod-dominated mobile sand shores
	A2.221	Barren littoral coarse sand
	A2.23	Polychaete/amphipod-dominated fine sand shores
	A2.231	Polychaetes in littoral fine sand
<b>A2.8 – Features of littoral sediment</b>	-	-
<b>B3.1 – Supralittoral rock (lichen or splash zone)</b>	B3.111	Yellow and grey lichens on supralittoral rock
	B3.113	<i>Verrucaria maura</i> on littoral fringe roc
Eriskay		
<b>A1 – Littoral rock and other hard substrata</b>	-	-
<b>A1.1- High energy littoral rock</b>	-	-
<b>A1.4 – Features of littoral rock</b>	A1.45	Ephemeral green or red seaweeds (freshwater or sand-influenced) on non-mobile substrata
<b>A2.1 – Littoral coarse sediment</b>	-	-
<b>A2.2</b>	A2.211	<i>Talitrids</i> on the upper shore and strandline
	A2.221	Barren littoral coarse sand

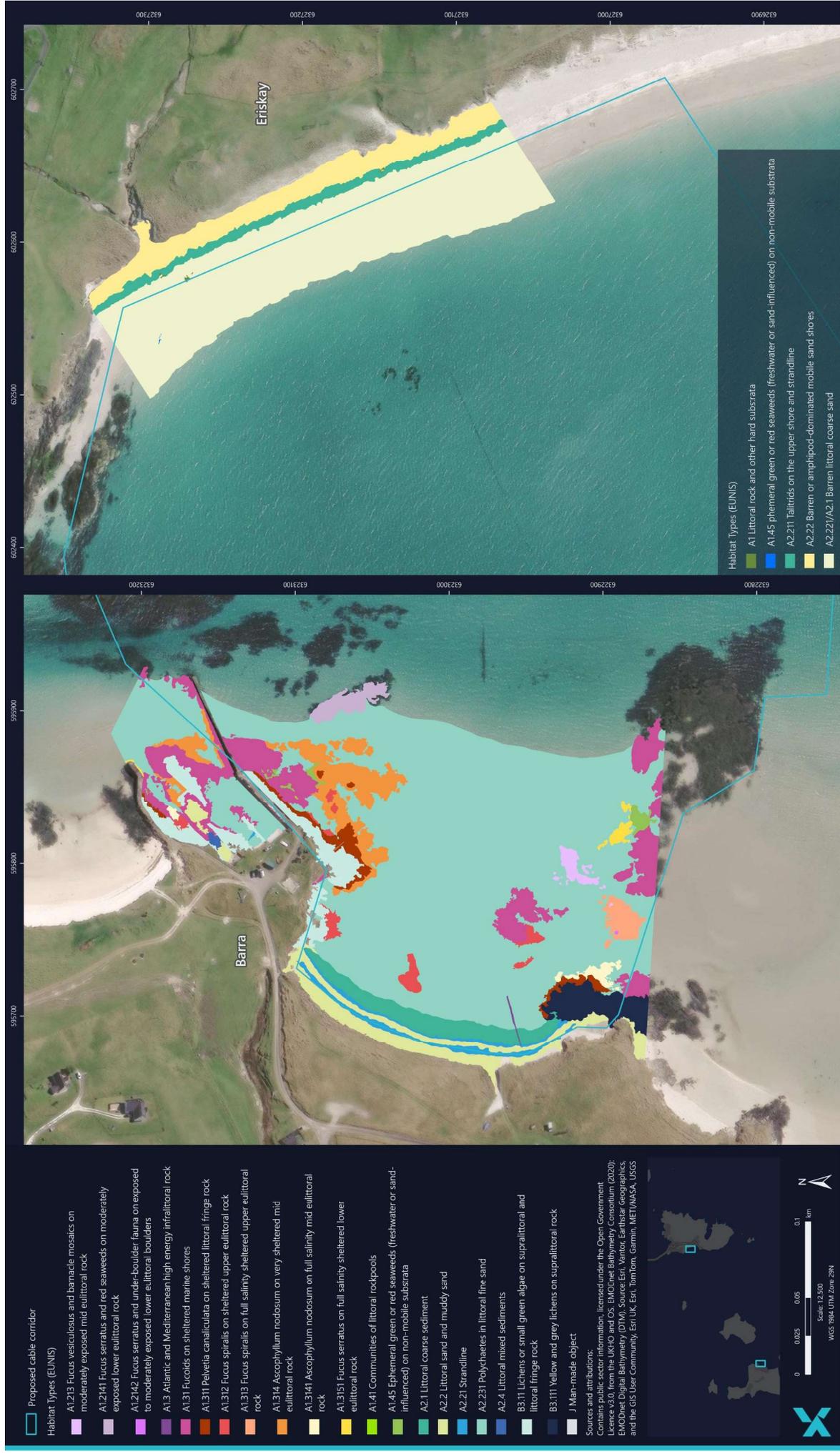


Figure 8-4 EUNIS characterisation of intertidal habitats



## 8.4 Impact Assessment

### 8.4.1 Area of Impact

Potential impacts associated with the proposed cable installation activities and removal of sections of the OoS cable include the following:

- Temporary and permanent direct habitat loss or disturbance;
- Temporary increases in suspended sediment and associated deposition;
- Introduction and/or spread of INNS; and
- Accidental release of hazardous substances.

The placement of the proposed subsea cable (surface lay), cable trenching in the intertidal, seabed preparation activities (PLGR and OoS cable removal), use of cable stabilisation/protection and spud/anchor deployments will be in direct contact with the seabed and have the potential for direct impacts on benthic species and habitats within the Project footprint. The proposed cable corridor will cross a variety of benthic habitats and biotopes as described in Section 8.3, including direct overlap with qualifying features of the Sound of Barra SAC (see Section 5.5.4). Avoidance of sensitive features is the first principal for the Project as noted in Section 4.3, and the Project has committed to the following:

- Avoidance of cable installation activities in identified areas of Annex I reef, and avoidance of all areas of boulders and bedrock;
- Avoidance of key areas of kelp and seaweed habitats and minimising the seabed footprint (i.e., small amount of split pipe only). The placement of concrete mattresses is only being considered as a contingency for cable crossings, and all cable crossings are outwith areas of kelp and seaweed communities;
- Avoidance of seagrass at each landfall (including the 55 m buffer around the Eriskay end seagrass) and area to west of largest area in the mid-route; and
- Where seagrass cannot be avoided using microrouting in the subtidal, the cable will be surface laid with self-burial. No deposits or external protection (other than the cable) will be installed, and no PLGR, will take place in the areas of seagrass beds. No anchor/spudding will occur in areas of seagrass. .

As discussed in Section 3, it is expected that the proposed subsea cable will be surface laid in the subtidal (MLWS to MLWS). In the intertidal areas between MHWS and MLWS, the proposed subsea cable will be trenched at both landfalls via OCT.

For cable crossings, the following options are being considered:

- Crossing in service EB-2 cable - Add split pipe to the new cable and the existing EB-2 in service cable;
- Crossing OoS cable – Preferred option: Cut back the sections of the OoS ED-1 cable and secure with clump weights; Contingency Option 1: leave OoS cable *in situ* and add split pipe to the new cable; Contingency Option 2: Use concrete mattresses to separate the new cable and the OoS cable;
- ; or

The estimated lengths of the proposed subsea cable to be surface laid (subtidal) and trenched (intertidal) are summarised in Table 8-4. The lengths and footprints of the proposed subsea cables and associated deposits have been included in Table 8-5.



Table 8-4 Length of the proposed subsea cable to be surface laid and buried

INSTALLATION TYPE	LOCATION	EXTENT	TOTAL LENGTH (m)
Surface Laid (Subtidal)	Eriskay – Barra	Maximum length of surface laid cable (MLWS to MLWS)	9,300
Trenching (Intertidal)	Eriskay	Maximum length of trenched cables in the intertidal areas between MHWS and MLWS	50
	Barra		200
<b>Total Cable Length (MHWS to MHWS)</b>			<b>9,550</b>

The following worst-case assumptions have been made for the area of seabed impacted:

- Temporary footprint:
  - The intertidal impact corridor for OCT (~ 1 m per trench) has been assessed, based on the length of the proposed intertidal cable expected to be trenched at each landfall, with an assumed 20 m wide working corridor;
  - The subtidal impact corridor is assessed as 10 m wide (excluding areas of seagrass where no PLGR and OoS cable removal will take place), to include disturbance arising from pre-installation activities (i.e., PLGR and removal of sections of OoS cable (EB-1) (~250 m);
  - Spud can / anchoring areas:
    - The DSV and support pontoon for cable pull-in will either be deployed with spud legs or mooring lines / anchors;
    - Spud legs: a maximum spud diameter of 0.4 m has been assumed for a seabed footprint of 0.13 m<sup>2</sup> per spud leg (total seabed footprint per barge placement, assuming four spud legs, is 0.5 m<sup>2</sup>). While the total number of deployments is unable to be predicted, it has been assumed that there will be a total of 16 barge placements, with four set up locations at Barra, four set up locations in the mid-route and eight set up locations at Eriskay, resulting in a total area of 8 m<sup>2</sup> in total; and
    - Anchors: Each 2 t anchor impacts an area of 6.24 m<sup>2</sup> (based on 2.4 m x 2.6 m dimensions), with four deployments potentially required at each landfall, giving a total area of ~25 m<sup>2</sup> per landfall, and an overall total area of ~50 m<sup>2</sup>.
- Permanent footprint:
  - The surface laid cable (without split pipe, in areas of seagrass<sup>4</sup>) has a cross sectional diameter of 141.6 mm (i.e., 0.14 m), and there will be up to ±0.08 m of cable movement prior to self-burial, resulting in a footprint of 0.22 m on the seabed, with a total length of 1,040 m;
  - The surface laid cable (without split pipe, outwith areas of seagrass) has a cross sectional diameter of 0.14 m, with a total length of 8,133 m ;
  - The surface laid cable (with split pipe) has a cross sectional diameter of 260 mm, resulting in a footprint of 0.26 m on the seabed, with a total length (MLWS to MLWS) of 327 m ;
  - Cast iron split pipe protection has been assessed based on the total length of 700 m, with a cross section diameter of approximately 0.260 m;
  - Each 300 mm concrete mattress measures 6 m x 3 m, therefore impacting an area of 18 m<sup>2</sup> each;
  - Clump weights for the Sea Earthing cables are 0.5 m diameter with a footprint of 0.2 m<sup>2</sup>.; and

<sup>4</sup> In the subtidal the cable will be surface laid with self-burial, and therefore the seabed footprint will be temporary; however, this has been assessed as a permanent footprint given that there will be no recovery in areas of seagrass beds and there is potential for the cable to be partially exposed even with self-burial.



- Clump weights for securing OoS cable ends are 1 m diameter with a footprint of 0.8 m<sup>2</sup>.

Table 8-5 Footprint of cable installation methods and permanent materials along the proposed cable corridor

INSTALLATION METHOD	DESCRIPTION	AREA OF SEABED IMPACT (m <sup>2</sup> )	AREA OF SEABED IMPACT (km <sup>2</sup> )
<b>Temporary Footprint</b>			
<b>Intertidal Impact Corridor</b>	Total trenching length of 250 m, with a 20 m wide working corridor (noting the trench itself will be 1 m wide).	5,000	0.005
<b>Subtidal Impact Corridor (excluding areas of seagrass)</b>	The total length of the surface laid cables (MLWS to MLWS) is 9.3 km, assuming a 10 m wide corridor for seabed preparation (e.g., PLGR and OoS removal), noting this excludes areas of seagrass.	93,000	0.093
<b>Spud Can / Anchoring Work Areas</b>	Seabed footprint associated with spud leg placement (16 placements total) and anchoring for the DSV vessel in the nearshore. There will be no anchor/spudding within areas of seagrass.  Assumes 0.4 m diameter spud legs and anchor footprint of 2.4 m x 2.6 m.	58	0.0001
<i>Maximum Temporary Footprint (km<sup>2</sup>)</i>			<b>0.1</b>



INSTALLATION METHOD	DESCRIPTION	AREA OF SEABED IMPACT (m <sup>2</sup> )	AREA OF SEABED IMPACT (km <sup>2</sup> )
<b>Permanent Footprint</b>			
<b>Surface Laid Cable<sup>5</sup> (MLWS to MLWS) – Without Split Pipe, In Areas of Seagrass</b>	The surface laid cable in areas of seagrass will be 1.04 km, with a 0.22 m seabed footprint (including cable movement).	228.80	0.0002
<b>Surface Laid Cable (MLWS to MLWS) – Without Split Pipe, Outwith Areas of Seagrass</b>	The surface laid cable outwith areas of seagrass will be 7,933 m with a cross-sectional diameter of 0.14 m.	1,110.62	0.001
<b>Surface Laid Cable (MLWS to MLWS) – With Split Pipe</b>	Surface laid cable with split pipe for a total length of 327 m with a 0.26 m diameter.	85.02	0.00009
<b>Concrete Mattresses (300 mm)</b>	Each mattress (6 m x 3 m) impacts an area of 18 m <sup>2</sup> . The quantity required will be up to five.	90	0.0001
<b>Earthing Clump Weights</b>	Each clump weight has a seabed footprint of 0.2 m <sup>2</sup> . The quantity required will be up to four for the sea earths (two per landfall).	0.8	0.000001
<b>Clump Weights (OoS Cables)</b>	Each clump weight has a seabed footprint of 0.8 m <sup>2</sup> . The quantity required will be up to 12.	9.6	0.00001
<b>Maximum Permanent Footprint (km<sup>2</sup>)</b>			<b>0.001</b>

## 8.4.2 Direct Loss / Disturbance to Benthic Habitats and Communities

The proposed cable installation activities have the potential to result in direct loss and/or disturbance of benthic habitats and communities, including the sensitive seabed features and habitats. As described in Section 8.3.2, there are a number of sensitive subtidal habitats which were identified in the OEL (2025) survey, including Annex I reef habitat and Annex I subtidal sandbanks (including seagrass beds). Overall, four PMFs were found to be present in the proposed cable corridor: kelp and seaweed communities on sublittoral sediment, tide-swept algal communities, seagrass beds and kelp beds (Figure 8-2).

<sup>5</sup> In the subtidal the cable will be surface laid with self-burial, and therefore the seabed footprint will be temporary; however, this has been assessed as a permanent footprint given that there will be no recovery in areas of seagrass beds and there is potential for the cable to be exposed even with self-burial.



Temporary habitat loss / disturbance will be associated with intertidal trenching, subtidal seabed preparation activities (PLGR and removal of OoS cables) and the spud can / anchoring areas. The maximum temporary footprint for habitat loss / disturbance is 0.1 km<sup>2</sup> (Table 8-5). Permanent habitat loss / disturbance will occur in the footprint of the surface laid cable and where there are deposits on the seabed (e.g., concrete mattresses and split pipe). The maximum permanent footprint for habitat loss / disturbance is 0.001 km<sup>2</sup> (Table 8-5).

There will be avoidance of cable installation activities in identified areas of Annex I reef, and therefore no direct loss / disturbance to Annex I reef is anticipated and no significant effects are anticipated. There will be avoidance of key areas of kelp and seaweed habitats. Where avoidance is not possible, there will be a limited spatial extent of the area affected, as only split pipe will be used to protect the cable (where surface laying and self-burial is not appropriate), with no concrete mattresses placed in these habitats. Any impacts will be highly localised to the footprint of the surface laid cable. Additionally, there is a high likelihood of recovery of the kelp and seaweed features, and therefore no significant effects are anticipated.

As described above, the proposed cable route aims to avoid seagrass where possible. This includes avoiding seagrass at each landfall, with a 55 m buffer around the seagrass at the Eriskay end. Where possible, the cable will avoid the seagrass area west of the largest area in the mid-section of the route, although the seagrass bed is anticipated to extend across the entire proposed cable corridor at this location, and total avoidance may be impossible. Where seagrass cannot be avoided, the cable will be microrouted around the densest patches of seagrass where possible and surface laid with self-burial. No mechanical trenching is proposed and no other deposits (i.e., split pipe or concrete mattresses) other than the cable will be laid in areas of seagrass. No PLGR will be undertaken in areas of seagrass. No anchor/spudding will occur in areas of seagrass.

As described in Section 5.5.4, the seabed footprint for permanent, direct loss of seagrass along the proposed cable route is 0.0002 km<sup>2</sup>, which represents 0.01% of the wider seagrass habitat within the Sound of Barra SAC. It is noted that overall national status of seagrass has been declining due to various pressures, including declines in the Sound of Barra following the construction of the Eriskay causeway (Carstairs, M. and Carstairs, S., 2026).

Given the high degree of patchiness of the seagrass habitat with an overall mean coverage of 1-20% of the seafloor in the proposed cable corridor (Figure 5-3), the direct loss of <0.01% of the habitat is not considered significant, and partial recovery is anticipated (see Section 5.5.4). A pre-installation survey may be carried out along the length of the proposed cable route to inform the potential for micro-routeing around the densest seagrass features where possible. Additionally, a CLMP will be prepared in support of the marine licence application, which will include a commitment to monitor the recovery and condition of the seagrass beds as well as the condition of the cable including burial status.

Overall, given the highly localised footprint of the temporary and permanent direct habitat / loss disturbance, the widespread presence of the sensitive features throughout the Sound of Barra, and the embedded mitigation, the proposed cable installation activities will not have a significant impact on the national status of any PMFs.

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### Assessment of Impact Significance

Given the presence of a number of habitats and species identified as having high conservation or national and international importance, the overall sensitivity is **high**.

There will be no direct loss / disturbance to Annex I reef and therefore the magnitude of effect is considered to be **negligible**. For kelp and seaweed communities, the cable installation activities will be localised and temporary occurring over a short-term duration resulting in a minor change to a small proportion of the receptor population. As such, the magnitude of effect is considered to be **minor**. For seagrass, there will be a permanent impact which

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will occur in a highly localised footprint, and given the embedded mitigation, the magnitude of effect is considered to be **minor**. Overall, given the extremely localised footprint, and the wider availability of these seabed habitats and species, the magnitude of effect is considered **minor**, resulting in a **minor** consequence.

Embedded mitigation measures considered as part of the Project design are listed in Section 4.3.

SENSITIVITY	MAGNITUDE OF EFFECT	CONSEQUENCE
High	Minor	Minor
Impact Significance – NOT SIGNIFICANT		

### 8.4.3 Temporary Increases in Suspended Sediment

In the intertidal areas between MHWS and MLWS, the proposed subsea cable will be trenched at both landfalls using OCT. This will be conducted using conventional land-based excavators working within a tidal window, i.e., when the intertidal area is exposed, avoiding works below the waterline. It is therefore expected that there will be no disturbance of submerged sediments resulting from these intertidal activities. There may be temporary and highly localised increases in suspended sediment caused by the incoming tide interacting with the trench walls and associated spoil. However, this will not be significantly greater than that expected by wave action causing low-level erosion of the shoreline sediments.

The habitat complexity of the intertidal zone supports a wide range of species that will demonstrate different sensitivities to increased turbidity and sediment deposition. The temporary reduction in water quality and resettlement of sediments is expected to occur locally around the proposed cable installation activities, and the impacts will be most applicable to sessile and less mobile fauna. Suspension and deposition of fine particles may have an effect on low mobility filter feeders; however, the intertidal benthic communities in muddy and sandy sediments will be generally adapted to high sediment loading and have a high tolerance to temporary and localised increases in suspended sediment, and associated sediment deposition.

A number of sensitive benthic features have been identified in the subtidal region of the proposed cable corridor, as described in Section 8.3.2. Seagrass is considered to have high sensitivity to changes in suspended solids (water clarity) and medium sensitivity to smothering and siltation rate changes (light) (d’Avack *et al.*, 2024). All other subtidal features are considered to be less sensitive to the temporary increases in suspended sediment concentrations. Any temporary increases in suspended sediment concentrations and associated deposition will be minimal in the subtidal, with effects being highly localised and limited to the immediate vicinity of the proposed cable installation activities.



**Assessment of Impact Significance**

Given the presence of a number of habitats and species identified as having high conservation or national and international importance, the overall sensitivity is **high**.

Any temporary increases in suspended sediment concentrations and associated deposition will be minimal in the subtidal region given that no trenching is proposed. Any effects will be highly localised and temporary in nature. As such, the magnitude of effect is **minor** for all subtidal features of interest, resulting in a **minor** consequence.

Embedded mitigation measures considered as part of the Project design are listed in Section 4.3.

SENSITIVITY	MAGNITUDE OF EFFECT	CONSEQUENCE
High	Minor	Minor

Impact Significance – **NOT SIGNIFICANT**

**8.4.4 Introduction and/or Spread of INNS**

As described in Section 8.3.2, NatureScot has advised that the INNS wireweed (*S. muticum*) is present within the proposed cable corridor. A number of embedded mitigation measures have been proposed to minimise the impact of introduction and/or spread of INNS and additional biosecurity measures have been adapted given the presence of *S. muticum* at the Barra landfall. These biosecurity measures are detailed in Section 4.3.

Ballast water discharges from vessels will be managed under the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (BWM Convention). Implementation of the BWM Convention will not mitigate the risk of an INNS being introduced via biofouling on a vessel. However, this vector is considered to carry a lower risk of INNS introduction than ballast water and the installation vessel movements are unlikely to constitute a change from baseline conditions with respect to the potential for introducing INNS. Concrete mattresses and clump weights will be new, and free from organic material. The protective deposits do not therefore present a risk of transport and introduction of INNS.

In addition to the above, larger vessels will utilise anti-fouling measures in order to reduce INNS impacts. Anti-fouling measures also help reduce the fuel consumption of the vessels being used which will in-turn reduce the volume of emissions.

The embedded biosecurity measures, including management of ballast water in adherence with the BWM Convention, will ensure that there are no pathways for INNS to be introduced by the proposed cable installation activities and subsequently spread. Therefore, the likelihood of introduction of INNS and the likelihood of spread and establishment are reduced to low, and the residual impact is not significant.

**Assessment of Impact Significance**

Given the presence of a number of habitats and species identified as having high conservation or national and international importance, the overall sensitivity is **high**. Nevertheless, the embedded mitigation measures as described in Section 4.3 will ensure that there are no pathways for INNS to be introduced and spread as a result of the proposed cable installation activities. Therefore, the magnitude of effect is **negligible**, resulting in a **minor** consequence.

SENSITIVITY	MAGNITUDE OF EFFECT	CONSEQUENCE
High	Negligible	Minor

Impact Significance – **NOT SIGNIFICANT**



## 8.4.5 Accidental Release of Hazardous Substances

The use of vessels could lead to a fuel release, or of cleaning fluids, oils and hydraulic fluids used on board vessels and during ROV operations, which could be released overboard or accidentally discharged. These discharges can be potentially harmful and can lead to localised organic enrichment and a change in the balance of the food chain. However, as the vessels will be < 12 nautical miles from shore, there will be no discharge of grey water, sewage, food waste or drain water.

All vessels will be compliant with IMO and MARPOL requirements and as such, the risk of oils and other contaminants entering the marine environment is very low (Section 6). Neither organic enrichment nor oxygen depletion is considered likely, due to the relatively small cumulative volume of any discharges. Any reduced water quality will be short-term and localised in nature within the proposed cable corridor, occurring sequentially with the location of the proposed cable installation activities, and near the seabed. A temporary and localised reduction in water quality is unlikely to cause a detectable change to the benthic species and habitats along the proposed cable corridor.

### Assessment of Impact Significance

Given the presence of a number of habitats and species identified as having high conservation or national and international importance, the overall sensitivity is **high**. Nevertheless, the embedded mitigation measures as described in Section 4.3 will ensure the risk of releases of hazardous substances being released into the marine environment are minimised, impacts on benthic receptors are expected to be minimal. Therefore, the magnitude of effect is **negligible**, resulting in a **minor** consequence.

SENSITIVITY	MAGNITUDE OF EFFECT	CONSEQUENCE
High	Negligible	Minor

Impact Significance – NOT SIGNIFICANT

## 8.4.6 Operation

### Maintenance Activities

The proposed subsea cable has been designed to be maintenance free, as such no planned ongoing maintenance activities are proposed. SHEPD will conduct routine inspections and surveys of the proposed subsea cable throughout its operational life to ensure it remains in good condition (please refer to the OIMD strategy submitted alongside this MEA). There is a potential for remedial cable repair works to be required, in the event the proposed subsea cable is damaged or the need for additional stabilisation materials is identified during the routine surveys; however, this would be subject to a separate licensing process.

If required, impacts on benthic ecology resulting from cable repairs will be analogous to those occurring during installation, although significantly reduced on both spatial and temporal scales. As such, impacts during the operational phase are considered to be not significant.

### Heating and Electromagnetic Fields (EMF)

While operational, subsea power cables generate heat since they are not made from perfect conductors, and as such in theory could result in increased temperatures in their surrounding environs. However, due to the very high specific heat capacity of sea water, this effect will be highly localised, and limited to the immediate vicinity (the surface) of the proposed subsea cable. As such, the impact resulting from heat emitted by the cable will be wholly within the footprint of the proposed subsea cable, and has therefore been assessed as habitat loss, so is not considered further.



The effects of EMF on benthic communities are currently not well understood as there has been limited research to date, as illustrated by the inclusion of impacts of EMF on benthic species as a key evidence gap within the ScotMER benthic evidence map (ScotMER, 2024). Recent studies on this subject have focussed on cables associated with marine renewables, transmission links and interconnectors which operate at much higher voltages than the proposed subsea cables. Where studies have investigated the effects of EMF on benthic species (e.g., crustaceans), the studies have considered the effects of Direct Current (DC) cables rather than Alternating Current (AC). The proposed subsea cable is a 33 kV subsea cable which will initially operate at 11 kV. The Feature Activity Sensitivity Tool (FeAST) defines a benchmark EMF changes with the potential to affect electro-sensitive species as a change in the local B-field variation from the natural GMF of 10  $\mu$ T due to anthropogenic means (NatureScot, 2025a).

A study by Normandeau et al., (2011) presented modelling of EMF associated with HVAC cables ranging from 35 – 132 kV and found that the average B-fields for the modelled HVAC cables (assuming 1 m depth of lowering) were 7.85  $\mu$ T at the seabed directly above the cable (i.e., horizontal distance from the cable = 0). As such the strengths of EMF resulting from the operation for the Project are anticipated to be below the FeAST benchmark of 10  $\mu$ T.

Therefore, EMFs resulting from the operation of the proposed subsea cable is not anticipated to be of a magnitude which may result in adverse effects on benthic organisms according to the current literature and fall within the natural range of the earth geomagnetic field in the vicinity of the Project. Therefore, no significant effects are anticipated.

### Assessment of Impact Significance

Given the presence of a number of habitats and species identified as having high conservation or national and international importance, the overall sensitivity is **high**. Nevertheless, EMFs resulting from the operation of the proposed subsea cable is not anticipated to be of a magnitude which may result in adverse effects on benthic organisms. Therefore, the magnitude of effect is **negligible**, resulting in a **minor** consequence.

SENSITIVITY	MAGNITUDE OF EFFECT	CONSEQUENCE
High	Negligible	Minor

Impact Significance – NOT SIGNIFICANT

## 8.5 Conclusion

Physical disturbance and smothering of benthic habitat and species via sediment re-suspension and settlement are likely to occur within the footprint of the proposed installation activities; however, any effects are expected to be highly localised and temporary. Given the embedded mitigation measures, including biosecurity measures for the control of INNS, no significant impact on the benthic and intertidal ecology is anticipated to result from the proposed cable installation activities.



## 9 ORNITHOLOGY

### 9.1 Introduction

This Section of the report provides further detail on the bird receptors in the vicinity of the proposed cable corridor and presents results from an assessment of potential impacts which may result from the proposed cable installation activities. Management and mitigation measures to ensure the identified impacts are minimised will also be suggested where necessary.

### 9.2 Data Sources

This Section draws on a number of data sources including published papers (NatureScot, 2020) and publicly available geospatial data (Marine Directorate, 2025b).

### 9.3 Baseline and Receptor Identification

The Scottish coastal and marine environment forms vital habitat to a variety of seabird species (Scottish Government, 2020). While the marine environment forms important habitat to seabirds year-round, birds are most vulnerable to human disturbance at sea during the breeding season, and in the moulting period when many species become flightless and spend greater time on the sea surface (Scottish Government, 2020). After the breeding season ends, moulting birds disperse from their coastal colonies to head to offshore waters. This at sea period increases the likelihood of interactions with survey vessels and potential collision risk.

As discussed in Section 5.3.6, there are two designated sites with ornithological features within the vicinity of the proposed cable corridor: the West Coast of the Outer Hebrides SPA, direct overlap, and the Eoligarry, Barra SPA, adjacent with no overlap (Figure 5-1).

The West Coast of the Outer Hebrides SPA is designated for the protection of black-throated diver, non-breeding; Eider, non-breeding; great northern diver, non-breeding; long-tailed duck, non-breeding; red-breasted merganser, non-breeding; red-throated diver, breeding; and Slavonian grebe, non-breeding (NatureScot, 2025b) and the Eoligarry, Barra SPA is designated for corncrake, breeding (NatureScot, 2025c).

The breeding Corncrake of the Eoligarry, Barra SPA is a terrestrial species which breed in open habitats, primarily meadows, and as such these birds are unlikely to be utilising the coastal environment where the works will take place. Therefore, this species is unlikely to be disturbed by the cable installation activities and as such is not considered further within this MEA. However, the necessary mitigation for breeding corncrake will be provided within the Onshore CEMP (WSP, 2026) for works above MHWS.

The bird species of the West Coast of the Outer Hebrides SPA are however considered further.

### 9.4 Impact Assessment

#### 9.4.1 Installation

The proposed cable installation is scheduled for summer 2026, which may overlap with the peak breeding season for red-throated diver, a qualifying feature of the West Coast of the Outer Hebrides SPA if works occur between May and mid-September (NatureScot, 2020). In the event of project delays, activities could also coincide with the non-breeding season for other features of this SPA, including black-throated diver, eider, great northern diver, long-tailed duck, red-breasted merganser, and Slavonian grebe.



The installation works are short-term (approximately 57 days, with around one month involving intertidal activity) and transient in nature. Consequently, the likelihood of direct disturbance to breeding birds in coastal areas or to loafing birds on the sea surface is considered very low, given the high mobility of these species. Additionally, as red-throated divers typically breed inland on freshwater lochs (BTO, 2025a), these species are unlikely to be utilising the coastal environment where the works will take place.

However, there remains some potential for disturbance to seabirds at sea beyond SPA boundaries due to their wide-ranging movements. However, the proposed cable installation activities are considered extremely unlikely to result in any adverse effects on the FCS of sensitive ornithological receptors. This is concluded for the following reasons:

- No adverse effects on water quality (and associated changes to prey availability) are anticipated as detailed in Section 6;
- Cable installation vessels will be slow moving, as detailed in Section 4.3, reducing the potential for disturbance;
- All vessels will adhere to the provisions of the SMWWC during the proposed cable installation activities;
- During night-time operations and intertidal operations, vessel lighting will be minimised insofar as possible whilst allowing for safety, as detailed in Section 4.3. This will reduce the potential for bird strikes or disturbance of seabirds; and
- The waters in the vicinity of the proposed cable corridor are subject to relatively high levels of vessel activity, predominantly associated with ferry vessel traffic (see Section 11). As such, the presence of the installation vessels required to facilitate the cable installation will not constitute substantive change from baseline vessel activity (and hence source of disturbance to seabirds).

### Assessment of Impact Significance

Due the proposed cable corridor being situated within a designated site, and the potential vulnerability of these birds to disturbance during the moulting season, the sensitivity is assessed as high. The designated features of the West Coast of the Outer Hebrides SPA include black-throated diver non-breeding, eider, non-breeding, great northern diver, non-breeding, long-tailed duck, non-breeding, red-breasted merganser, non-breeding, red-throated diver, breeding, and Slavonian grebe, non-breeding.

Given that the presence of the installation vessels will not constitute a change from baseline conditions, together with the transient, localised and temporary nature of potential impacts in addition to red-throated diver breeding in land at lochs and in freshwater areas these birds are unlikely to be utilising the coastal environment where the works will take place. Furthermore, due to the embedded measures, effects on ornithological receptors are expected to be minor, and no adverse effects on the FCS of any species are anticipated. Therefore, the magnitude of effect is assessed as minor, resulting in a minor consequence.

SENSITIVITY	MAGNITUDE OF EFFECT	CONSEQUENCE
High	Minor	Minor

Impact Significance – NOT SIGNIFICANT

## 9.4.2 Operation

The cable has been designed to be maintenance free, as such no planned ongoing maintenance activities are proposed. SHEPD will conduct routine inspections and surveys of the cable throughout its operational life to ensure it remains in good condition (please refer to the OIMD strategy submitted alongside this MEA). There is a potential for remedial cable repair works to be required, in the event the cable is damaged or the need for additional



stabilisation materials is identified during the routine surveys; however, this would be subject to a separate licensing process.

If required, impacts on ornithological receptors resulting from cable repairs will be analogous to those occurring during installation, although significantly reduced on both spatial and temporal scales. As such, impacts during the operational phase are considered to be not significant.

## 9.5 Conclusion

Seabird species have the potential to be disturbed by the physical presence of vessels during the proposed cable installation activities in the intertidal and nearshore areas, including the protected features of the West Coast of the Outer Hebrides SPA. However, the increase in vessel activity is not considered to be a substantive change from baseline conditions and will be short-term in nature. Given the implementation of the mitigation measures outlined in Section 4.3, no significant effects on wild birds, their eggs and nests are to be expected.



## 10 MARINE ARCHAEOLOGY

### 10.1 Introduction

This Section provides detail on marine archaeological features in the vicinity of the proposed cable corridor. An assessment of potential impacts on these features is then presented, along with recommendations for additional secondary mitigation measures that may be required in order to ensure losses of or impacts to the archaeological record are minimised.

### 10.2 Data Sources

A review of publicly available information pertaining to marine archaeological sites in the vicinity of the proposed cable corridor has been conducted in order to inform this assessment. The key sources utilised were:

- UKHO global wrecks and obstructions data (UKHO, 2025); and
- Historic Environment Scotland (HES) – Trove (formerly known as 'Canmore') (HES, 2025a) and PastMap (HES, 2025b) databases.

### 10.3 Baseline and Receptor Identification

There are no recorded wrecks or other marine archaeological interests directly overlapping with the proposed cable corridor, with the closest recorded wreck being the unverified Canmore wreck 'Unknown 1876' (National Record of the Historic Environment (NRHE) ID 326110) located approximately 550 m north-west of the northern section of the proposed cable corridor (Figure 11-1). Nonetheless, geophysical survey data has confirmed no wrecks or other archaeological targets have been recorded within the cable corridor (Aspect, 2025; High Level NRA (Xodus Document No. A-101090-S00-A-REPT-002)).

### 10.4 Impact Assessment

#### 10.4.1 Installation

As described in Section 10.3, there are no known wrecks directly overlapping with the proposed cable corridor. The closest wreck is 550 m from the proposed cable corridor based on the Canmore data; however, the Aspect (2025) geophysical surveys did not cover this area. It is anticipated that any potential for damage to or loss of the historic record would be limited to interactions with wrecks or artefacts during cable laying operations and the placement of stabilisation measures. Should such interactions occur, the damage or loss of archaeological features would be a permanent effect on a potentially highly sensitive receptor, which has no ability to recover, and as such could constitute a significant impact on historic records.

However, as detailed in Section 4.1, marine route surveys including geophysical and environmental survey, have been undertaken and no wrecks or other potential archaeological interests have been identified in the proposed cable corridor to date. An additional pre-installation survey may be carried out along the proposed cable route and any geophysical and video data would be checked for archaeological features. During detailed route design, the following provisions shall be implemented with regard to wrecks or other features of potential archaeological value identified in the survey data (Section 4.3):

- All confirmed (through geophysical survey) wrecks or features of potential archaeological significance shall be avoided by a buffer of at least 50 m during detailed route design;



- The locations of confirmed wrecks and features of potential archaeological significance will be clearly identified on electronic charts on board the installation vessel and utilised to guide the proposed cable installation activities;
- The location of any wrecks or features of potential archaeological significance will be provided to HES, and the UKHO; and
- It is acknowledged that there is the potential that archaeological features could be present within the cable corridor, which are not identified by pre-installation surveys. In order to account for this, if conditioned by licence conditions, a PAD will be implemented during the cable installation activities.

Given the analysis marine route survey data, and the avoidance of features of archaeological significance through the route engineering process it is considered that the proposed cable installation activities will not result in significant adverse effects on marine archaeological receptors.

### Assessment of Impact Significance

The damage or loss of archaeological features would be a permanent effect on a potentially highly sensitive receptor, which has no ability to recover, and as such could constitute a significant impact on historic records. Therefore, the sensitivity of marine archaeology receptors is assessed as **high**. The proposed cable installation activities are not anticipated to result in any disturbance or damage to marine archaeology receptors given none have been identified within the vicinity. Nevertheless, the embedded mitigation Section 4.3 will be applied to ensure there will be no adverse effects on marine archaeology as a result of the proposed cable installation activities. Given the implementation of the embedded mitigation, the magnitude of effect is assessed as **negligible**, resulting in a **minor** consequence.

SENSITIVITY	MAGNITUDE OF EFFECT	CONSEQUENCE
High	Negligible	Minor
Impact Significance – NOT SIGNIFICANT		

## 10.4.2 Operation

The proposed subsea cable has been designed to be maintenance free, as such no planned ongoing maintenance activities are proposed. SHEPD will conduct routine inspections and surveys of the proposed subsea cable throughout its operational life to ensure it remains in good condition (please refer to the OIMD strategy submitted alongside this MEA). There is a potential for remedial cable repair works to be required, in the event the proposed subsea cable is damaged or the need for additional stabilisation materials is identified during the routine surveys; however, this would be subject to a separate licensing process.

If required, impacts on archaeological receptors resulting from cable repairs will be analogous to those occurring during construction, although significantly reduced on both spatial and temporal scales. As such, impacts during the operational phase are considered to be not significant.

## 10.5 Conclusion

No wrecks or marine archaeology assets have been identified within the cable corridor based on a review of publicly available data; and confirmed through geophysical surveys. Given the implementation of the embedded mitigation measures as described in Section 4.3, it is considered to be extremely unlikely that the proposed cable installation activities would result in the loss or damage of archaeological features. As such, this assessment concludes that the Project will not result in any adverse impacts on the historic record.



## 11 SHIPPING AND NAVIGATION

### 11.1 Introduction

The proposed cable corridor is located in the Sound of Barra and as such there are a number of navigational considerations required to facilitate the installation and operations of the cable. Through good communication and understanding of stakeholder requirements, SHEPD aim to minimise any potential impacts shipping and navigation by agreeing mitigation strategies before the proposed cable installation activities begin. This approach continues through all phases of the Project, thus ensuring that all impacts to navigation are not significant.

A consultation meeting was held with 29<sup>th</sup> January 2026 with representatives from the Western Isles Fisherman Association and Caledonian MacBrayne (CalMac) to understand key concerns to navigation from the Project, which has supported the assessment of impacts. Additionally, a meeting will be held with the harbour masters from the Comhairle nan Eilean Siar Harbour Authority on 10<sup>th</sup> February 2026. The following impacts have been considered for the Project:

- Vessel collision (Third party vessel with project vessel) during installation, maintenance and decommissioning;
- Disruption to established vessel routes and areas during installation, maintenance and decommissioning;
- Interactions with vessel anchors during installation, maintenance and decommissioning;
- Interactions with vessel anchors during normal operations;
- Interactions with fishing gear during installation, maintenance and decommissioning;
- Interactions with fishing gear during normal operations;
- Reduction in under keel clearance during normal operations; and
- EMF effects and compass deviation.

Full details of the navigational assessment are provided in the High level NRA (Xodus Document No. A-101090-S00-A-REPT-002), which has been submitted alongside this MEA. A summary of the High Level NRA is provided in the subsequent sections.

### 11.2 Supporting Documents

A High Level NRA has been undertaken for the Project to ascertain the risks to shipping and navigation for all phases of the Project, including installation, operations, maintenance and decommissioning.

The High Level NRA was undertaken based on a Marine Traffic Study (MTS) established by undertaking a review of historic Automatic Identification System (AIS) data for a 10 NM corridor around the proposed cable corridor (the Study Area).

Following the MTS, a high level Formal Safety Assessment (FSA) was conducted in line with IMO 2018 guidance (IMO, 2018) and the MCA Methodology for Assessing the Marine Navigational Safety & Emergency Response Risks of Offshore Renewable Energy Installations (OREI) (MCA, 2021). The FSA identified hazards for the Project and provide an assessment of associated risks of these hazards and provide recommendations for further mitigations where required to ensure risks were As Low as Reasonably Practicable (ALARP).

Full details of the High Level NRA, including methodology and outcomes of the FSA are provided in the High Level NRA (Xodus Document No. A-101090-S00-A-REPT-002), which has been submitted alongside this MEA.

### 11.3 Baseline and Receptor Identification

A summary of the key navigational receptors and shipping baseline are provided below, with full details available in the High Level NRA.



### 11.3.1 Key Navigation Features

A number of navigational features have been identified at proximity to the cable corridor, as per the high level NRA, including:

- Ports and ferry routes;
- Aids to Navigation;
- Cables; and
- Wrecks and obstructions.

A summary of each of these features is provided below.

#### Ports and Ferry Routes

Aird Mhòr is the terminal for the Sound of Barra ferry, across to Eriskay in the West Highlands of Scotland. The service commenced in March 2004, enabling cars to be driven, for the first time, all the way from Vatersay in the south, to Port of Ness at the northern tip of Lewis<sup>6</sup>.

The terminal for the Sound of Barra ferry is situated at Ceann a' Ghàraidh on Eriskay. To accompany the building of the Eriskay Causeway, new harbours and slipways were built at Aird Mhòr on the north east of Barra, and at Ceann a' Ghàraidh on Eriskay's east coast. Both ferry ports are operated by CalMac, and are located in the Western Isles Council Statutory Harbour Authority area. The direct ferry service across the Sound of Barra has been operated by CalMac since 2007 using the MV Loch Alainn (MMSI: 232003073). The Loch Alainn has the capacity for 150 passengers and 24 cars. The MV Loch Bhrusda is the temporary replacement vessel when the Loch Alainn is being maintained.

The proposed cable corridor landfalls and approaches intersect the harbour areas of Ceann a' Ghàraidh, Eriskay, and Eoligarry, Barra, respectively. The Barra (Aird Mhòr) to Eriskay (Ceann a' Ghàraidh) ferry route intersects the northern half of the proposed cable corridor (Figure 11-1). As a result, vessel traffic within the study area primarily consists of passenger vessels operating this service. It comprises 58.5% of the track lines in the AIS data.

#### Cables and Navigational Aids

Multiple submarine cables run within and near the proposed cable corridor, among them is the ED-2 cable. Additionally, there is also the active British Telecoms (BT) HIE S 1.18B telecommunications cable which is approximately 80m from the proposal cable corridor near the Eriskay landfall.

The Bo Tanna East Cardinal Buoy intersects the mid-point of the proposed cable corridor as an aid for navigation.

No charted anchorage areas are located within, or in the immediate vicinity of the proposed cable corridor.

#### Wrecks and Obstructions

Wreck locations were identified using Marine Themes Vector data layers from Emapsite and the National Record of the Historic Environment (Canmore) – Maritime records of wrecks, losses, and obstructions. The unverified Canmore wreck 'Unknown 1876', National Record of the Historic Environment (NRHE) ID 326110, is the closest at approximately 550 m northwest of the northern section of the proposed cable corridor (Figure 11-1).

The closest UKHO dataset wreck is unnamed and categorised as a wreck showing any portion of hull or superstructure. This wreck is located approximately 4,000 m northwest of the northern section of the proposed cable corridor (Figure 11-1). The accuracy of the UKHO dataset is considered greater than that of the Canmore dataset.

Neither the UKHO nor the Canmore dataset display any wreck or obstruction which intersects the proposed cable corridor (Figure 11-1). This is also confirmed from geophysical surveys undertaken (Aspect, 2025).

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<sup>6</sup> <https://www.ports.org.uk/port.asp?id=756>



### 11.3.2 Baseline Shipping

The High Level NRA highlighted from the AIS data that a total of 6,475 and 1,737 vessel tracks were recorded within the study area between the dates 1<sup>st</sup> November 2024 and 31<sup>st</sup> October 2025. The busiest route was the ferry service operated by the passenger vessels Loch Alainn and Loch Brushda with 1,531 and 93 tracks respectively intersecting the proposed cable corridor.

The AIS data highlighted that vessel tracks observed within the 10 NM study area and the cable corridor were from cargo and tankers vessels, fishing vessels, offshore industry vessels, recreational vessels, passenger vessels and other vessels. A summary of the vessel track data across the study area is provided below:

- Passenger vessels are the most frequently observed vessels within both the 10 NM Study Area and the cable corridor, accounting for 58.5% and 93.9% of total tracks across each area respectively. The ferries were the most frequently occurring vessel type within the passenger vessel category;
- Cargo vessels and tankers (accounting for 3.3% of the tracks in the Study Area and 0% within the cable corridor) were mainly observed during the day, with cargo vessels being the predominant sub-category;
- Other vessels (including dredging vessels, military vessels pilot vessels, tugs etc) accounted for 5.2% of tracks in the Study Area and 2.5% within the proposed cable corridor;
- Fishing vessels (accounting for 11.3% of the tracks in the Study Area and 0.2% of the tracks within the proposed cable corridor) were also primarily observed during the day. Additionally, tracks within the cable corridor are straight in nature, suggesting that the vessel are in transit, and not actively engaged in fishing in the corridor. However, it's noted that due to their size, smaller inshore vessels are less likely to have AIS equipment installed, and therefore may be under-represented in the data;
- Recreational vessels accounted for 19.1% of the tracks in the Study Area and 2.8% within the proposed cable corridor, with sailing vessels being the most common sub-category; and
- Offshore industry vessels, accounted for 2.6% of tracks within the Study Area and 0.7% of tracks within the proposed cable corridor. High-speed craft were the most common sub-category within the offshore industry vessel category.

The vessel track type and density data within the study area is presented in Figure 11-2.

## 11.4 Approach to Mitigation

The FSA within the High Level NRA undertook an assessment of identified impacts/ hazards. The assessment took the Project navigation safety specific embedded mitigations into account, as laid out in Table 4-2 and Table 12-1.

## 11.5 Conclusion

From the assessments undertaken in the High Level NRA, a summary of the FSA outcomes is provided in Table 11-1, showing that all risks were assessed to be ALARP. Full details of the FSA are provided in the High Level NRA (Xodus Document No. A-101090-S00-A-REPT-002).



Table 11-1 Navigational risk assessment results

HAZARD / IMPACT	LIKELIHOOD	CONSEQUENCE	INITIAL RISK	RESIDUAL RISK
Vessel collision – installation, maintenance and decommissioning	Remote	High	Tolerable	ALARP
Disruption to Established Vessel Routes and Areas – Installation, Maintenance and Decommissioning	Remote	Medium	Broadly Acceptable	ALARP
Interaction with Vessel Anchors – Installation, Maintenance and Decommissioning	Remote	Medium	Broadly Acceptable	ALARP
Interaction with Vessel Anchors – Normal Operations	Remote	Medium	Broadly Acceptable	ALARP
Interactions with Fishing Gear – Installation, Maintenance and Decommissioning	Remote	High	Tolerable	ALARP
Interactions with Fishing Gear – Normal Operations	Remote	High	Tolerable	ALARP
Reduction in Under Keel Clearance – Normal Operations	Remote	Low	Broadly Acceptable	ALARP
EMF and Compass Deviation Effects – Normal Operations	N/A	N/A	No Risk	No Risk





Figure 11-2 Vessel type track line and density overview



## 12 COMMERCIAL FISHERIES AND OTHER SEA USERS

### 12.1 Introduction

Through good communication and understanding of viewpoints, SHEPD aim to minimise any potential impacts by agreeing mitigation strategies before the proposed cable installation activities begin. This approach continues through all phases of the Project, thus enabling co-existence with other marine users as SHEPD and their Contractors carry out the proposed cable installation activities. It should be noted that risks to navigational safety are specifically covered in Section 11 and the High Level NRA.

Works are planned to keep unnecessary interference with other legitimate sea users to a minimum. SHEPD achieve this by actively engaging with legitimate sea users and those with consented development rights close to the operations.

SHEPD's consultations and agreements are tracked through the Outer Hebrides FLMAP. This is a key document which shows the associated risks to the commercial fishing industry and other legitimate sea users, addresses the potential effects and identifies how to minimise and mitigate potential impacts. SHEPD will give as much notice as is practicably possible for the activities and provides updates when things change.

#### 12.1.1 Stakeholder engagement

Consultation meetings with representatives from the Western Isles Fisherman Association, Caledonian MacBrayne (CalMac) and harbour masters from the Comhairle nan Eilean Siar Harbour Authority as described in Section 11.1 to understand if the proposed cable would raise any issues for other sea users. During the meeting held with the Comhairle nan Eilean Siar Harbour Authority, the harbour masters raised the potential for the proposed cable to interfere with possible future dredging of the harbour area of Ceann a' Ghàraidh in Eriskay should a larger ferry require the deepening of the navigational channel.

While the proposed cable's likely RPL falls closer to the Ceann a' Ghàraidh ferry pier at the landfall location than the live EB-2 cable's landfall, the existing OoS and live cables are closer to the ferry's transit route than the proposed cable (Figure 12-1). Any future dredging to facilitate the navigation of a larger ferry in the vicinity of the ferry pier would therefore be restricted by the existing cable assets, rather than the new proposed cable. It is therefore not likely that the proposed cable would create any new restriction to potential future dredging. SHEPD will however continue to liaise with the Comhairle nan Eilean Siar Harbour Authority on any future ferry pier development plans.

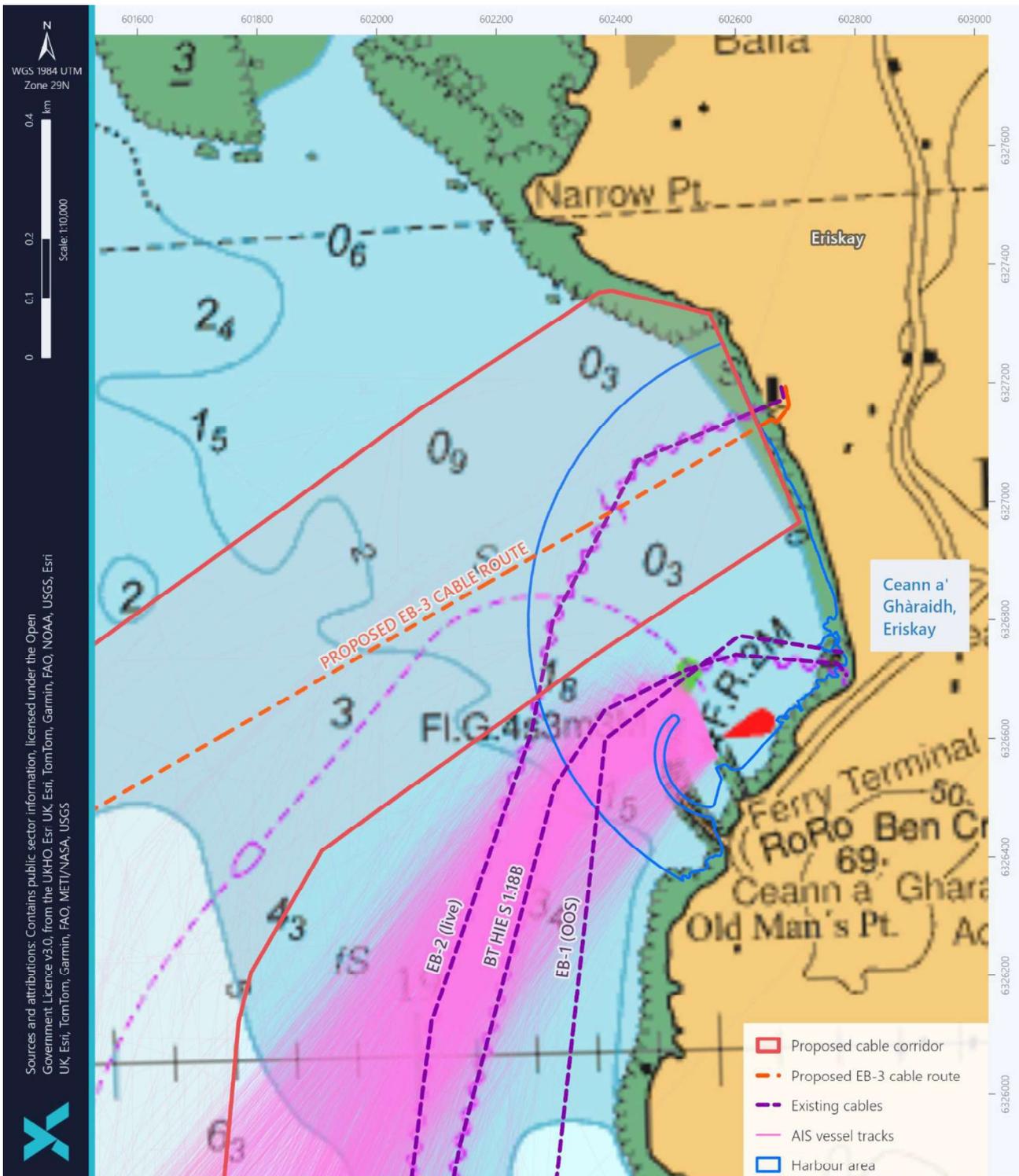


Figure 12-1 Proposed EB-3 cable route within the cable corridor and other live and OoS cables in the Ceann a' Ghàraidh harbour area



## 12.2 Supporting Documents

The purpose of the Outer Hebrides FLMAP is to:

- Illustrate the associated risks to the commercial fisheries industry and other legitimate sea users (e.g., aquaculture, shipping (i.e., navigation risk) and address the potential effects (highlighted in the marine licenced evidence); and
- Identify how to minimise and mitigate potential impacts on local communities.

A summary assessment of all the potential marine interactions and activities which could influence or affect the proposed cable installation activities is provided within the Outer Hebrides FLMAP.

### 12.2.1 FLMAP Delivery

The FLMAP Delivery Programme sets out how the FLO and Fishing Industry Representative (FIR) will communicate during the proposed cable installation activities and how the deliverables and mitigation, set out in the FLMAP, will be measured and fulfilled. This document will also highlight any regional specific communication and consultation that is required, which may extend the notice period required to issue NtMs and communicate upcoming works. It will also highlight any ongoing issues which may arise throughout the works.

### 12.2.2 Co-Existence Between SHEPD and Other Marine Users

SHEPD have produced a co-existence strategy, 'How Scottish Hydro Electric Power Distribution co-exists with other marine users'. This document outlines SHEPD's approach to minimising interactions with other marine users as far as is practicable to maximise the potential for coexistence. The key principles of SHEPD's approach to co-existence include:

- Stage 1 – Identifying other marine users, and all relevant stakeholders potentially affected by the Project;
- Stage 2 – Identifying efficient communication channels for the promulgation of information to other marine users; and
- Stage 3 – Engaging and addressing the concerns of other marine users to agree co-existence plans and mitigation activities.

Further details on the specific mitigations to minimise impacts on other marine users (including recreational users and non-fishing vessel traffic) are detailed within the Outer Hebrides FLMAP. It is noted that the proposed cable corridor is located adjacent to the mainland Eriskay to Barra ferry route, which is a lifeline ferry service. However, given the short duration of the proposed cable installation activities (i.e., 57 days) there will be no long-term impacts to recreational users (and no adverse impact to navigational safety, see Section 11 for further details. Furthermore, the only additional assets within the proposed cable corridor are the ED-1 and ED-2 cable which are both owned by SHEPD.

## 12.3 Approach to Mitigation

A summary of SHEPD's approach to mitigating interactions with commercial fisheries and other sea users during the installation and operation of the proposed cable replacement is presented in Table 12-1 below.

*Table 12-1 Summary of mitigation for commercial fisheries and other sea users*



MEASURE	DETAILS
<p><b>Avoidance of Trawling and Anchoring</b></p>	<p>In line with guidance provided by the UKHO, the International Maritime Organisation (IMO) and the Maritime and Coastguard Agency (MCA) within the Mariner's Handbook (NP100), and Marine Guidance Note (MGN) 661, SHEPD recommend that vessels should avoid demersal fishing and anchoring in proximity to subsea cables.</p>
<p><b>Production of a Marine CEMP</b></p>	<p>The Marine CEMP is designed to provide a consolidated point of reference for SHEPD and their marine contractors. It ensures all embedded and additional mitigation measures identified by this MEA and supporting documents are effectively disseminated to and implemented by the Project team during Project activities, thus ensuring that any potential environmental impacts are minimised.</p>
<p><b>All Project personnel will be trained and informed of their responsibility to implement the environmental and ecological mitigation outlined in the Marine CEMP</b></p>	<p>Toolbox talks, inductions, and awareness notices will be used to disseminate this information among all relevant personnel.</p>
<p><b>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 Outer Hebrides FLMAP</b></p>	<p>Employment of a FLO will ensure all commercial fisheries operators in the vicinity of the Project will be proactively and appropriately communicated with in terms of the proposed cable installation activities.</p>
<p><b>Consultation with commercial fishing stakeholders to identify acceptable and feasible mitigation options with the aim of minimising potential effects on commercial fishing</b></p>	<p>SHEPD will, in consultation with commercial fishing stakeholders, work towards identifying acceptable and feasible mitigation options with the aim of minimising any potential effects on commercial fishing associated with the replacement of submarine electricity cable. There are various options available to mitigate the risks, including:</p> <ul style="list-style-type: none"> <li>• Continuing effective positive liaison with commercial fishing stakeholders through the pre-installation, installation and operational phases of any cable replacement;</li> <li>• Continued employment of FLO/Fishing Industry Representative (FIR) services until the completion of the replacement works;</li> <li>• Ensuring contractors comply with the contractor's obligations outlined above so as to minimise any interference to commercial fishing activities;</li> <li>• Managing the cable replacement works so as to minimise any potential effects on the marine environment, habitats and commercial fishing;</li> </ul>



MEASURE	DETAILS
	<ul style="list-style-type: none"> <li>• Raising awareness of the danger of fishing in the vicinity of submarine cable;</li> <li>• Adopting a hierarchical approach to submarine cable protection, taking account of sea users concerns;</li> <li>• Organising an installation phasing workshop (if new cable is required) to inform commercial fishermen of planned activities;</li> <li>• Organising installation schedules (if new cable is required) as far as is practicably possible in order to reduce the combined loss of fishing area associated with safety zones;</li> <li>• Distributing weekly notice of operations;</li> <li>• Providing information in plotter format to enable fishermen to easily interpret the information; and/or</li> <li>• Scouting surveys to identify potting areas and any other relevant static gear areas.</li> </ul>
<p><b>Notice to Mariners (NtMs), local notifications to marine users, Kingfisher bulletins, Radio Navigational Warnings, 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.</b></p>	<p>Ensure navigational safety and minimise the risk and equipment snagging. Notices will also be issued if any Out of Service (OoS) cables are removed or moved and chart updates will be provided.</p>
<p><b>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)</b></p>	<p>IRPCS are the international standards designed to ensure safe navigation of vessels at sea. All installation vessels will adhere to these rules, including displaying appropriate lights and shapes. SOLAS is an international maritime treaty which sets minimum safety standards in the installation, equipment and operation of merchant ships. The convention requires signatory flag states to ensure that ships flagged by them comply with at least these standards. In relation to the Project its compliance will ensure navigational safety.</p>
<p><b>As built survey data will be provided to the United Kingdom Hydrographic Office (UKHO) and Kingfisher for inclusion on Admiralty Charts and the Kingfisher Information Service – Offshore Renewable and Cable Awareness (KIS-ORCA) charts</b></p>	<p>Ensure navigational safety and minimise the risk of equipment snagging.</p>
<p><b>Engagement with Shipping and Navigation Consultees</b></p>	<p>Ongoing consultations with ports and harbour authority (Western Isles Council) to ensure continued awareness</p>



MEASURE	DETAILS
	<p>and communication of installation and harbour specific details relevant to minimising disruption. Ongoing consultation with fisheries as detailed within the Outer Hebrides FLMAP to discuss the potential impacts as a result of the installation activities.</p> <p>Engagement with ferry operator CalMac and regular runners ensures awareness of the installation details which minimises disruption. Installation maintenance and decommissioning schedules arranged to minimise impact on ferry schedules. This may extend to reducing Recommended Clearance Zones (RCZs) around cable installation vessels for the CalMac ferries, and working during night-time hours where practicable.</p> <p>Please refer to the NRA (Xodus Document No. A-101090-S00-A-REPT-002).</p>
<p><b>Guard Vessels and Recommended Clearance Zones</b></p>	<p>A guard vessel or small support vessel, marshalling a 500 m RCZ may be used during the installation campaign where a potential risk to the asset or danger to navigation has been identified. The requirement for a guard vessel will be considered through consultation with the Western Isles Council Harbour Authority, ferry operator CalMac, and Installation Contractor.</p> <p>The RCZ may be reduced to 250 m (or other agreed distance) for the CalMac Ferries and vessels carrying Western Isles Council Harbour Authority. This will be implemented through ongoing communications and agreements between the Western Isles Council Harbour Master, the CalMac ferry operator, SHEPD and the cable installation contractor.</p>



## 13 CONCLUSIONS

The MEA supports SHEPD's application for a marine licence and works licence to complete the proposed cable installation activities which are anticipated to take place in Summer 2026. It provides a robust assessment of potential impacts of the proposed cable installation activities on groups of sensitive environmental receptors (Sections 5 to 12). Where relevant, these impact assessments have considered interactions with protected sites, and indirect impacts on other receptors. Specifically, environmental assessments of potential impact from the proposed cable installation activities have been carried out for the following receptors:

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

Table 13-1 provides an overview of the findings from the environmental assessments undertaken within this MEA. On the basis of the findings and recommendations of the impact assessments presented in Sections 5 to 12, and the embedded mitigation requirements discussed in Section 4.3, it is anticipated that the proposed cable installation activities will be conducted without significant impact on any relevant environmental receptor.



Table 13-1 Outcomes of Environmental Assessments of Receptors

ENVIRONMENTAL RECEPTOR	ASSESSMENT UNDERTAKEN	LEVEL OF IMPACT	ASSESSMENT OUTCOME	OVERALL SIGNIFICANCE	ADDITIONAL MITIGATION	RESIDUAL SIGNIFICANCE
Designated Sites (Section 5)	SACs with cetacean qualifying features (Inner Hebrides and the Minches SAC) – <b>Underwater Noise and Vessel Presence</b>	Potential LSE	There is potential for harbour porpoises to be present in the proposed cable corridor and subject to impacts from underwater sound and vessel presence. No realistic injury risk is associated with the Project and the disturbance range is limited to approximately 207 m. The number of individuals which may incur a strong disturbance associated with USBL positioning systems is < 0.1 individuals. The proposed cable installation activities will be transient, temporary, and localised, any disturbance to cetaceans at these sites resulting from underwater sound emissions will be limited. Vessels will be slow moving and will adhere to the SMWWC, so the risk of collision is unlikely. Vessel activity will not represent a significant deviation from baseline shipping levels and therefore disturbance from vessel presence is expected to be minimal. Given the embedded mitigation, no AEOsI is anticipated on the Inner Hebrides and the Minches SAC.	No AEOsI		No AEOsI
	NCMPAs with cetacean/ basking shark qualifying features (Sea of Hebrides NCMPPA) - <b>Underwater Noise and Vessel Presence</b>	Potential LSE	There is potential for minke whale to be present within the proposed cable corridor and be exposed to underwater sound during installation activities. Vessel presence may also cause disturbance to minke whale and basking shark. No realistic injury risk is associated with the Project and the disturbance range is limited to approximately 207 m. The number of individuals which may incur a strong disturbance associated with USBL positioning systems is < 0.1 individuals. The proposed cable installation activities will be transient, temporary, and localised, any disturbance to minke whale resulting from underwater sound emissions will be limited. Vessels will be slow moving and will adhere to the SMWWC and basking shark code of conduct, so the risk of collision is unlikely. Vessel activity will not represent a significant deviation from baseline shipping levels and therefore disturbance from vessel presence is expected to be minimal. Given the embedded mitigation, no significant effects are anticipated. Thus, the proposed cable installation activities are not capable of affecting (other than insignificantly) the protected features of the Sea of the Hebrides NCMPPA.	The Project is not capable of affecting (other than insignificantly) the protected features of the Sea of Hebrides NCMPPA	No additional mitigation measures identified. See Section 4.3: Mitigation Requirements for embedded mitigation.	The Project is not capable of affecting (other than insignificantly) the protected features of the Sea of Hebrides NCMPPA
Designated Sites (Section 5)	SACs with Harbour Seal as a Qualifying Feature (Sound of Barra SAC) – <b>Underwater Noise and vessel, vehicle and human presence</b>	Potential LSE	There is potential for harbour seals to be present in the proposed cable corridor and subject to impacts from underwater sound and vessel, vehicle or human presence. No realistic injury risk is associated with the Project and the disturbance range is limited to approximately 207 m. The proposed cable installation activities will be transient, temporary, and localised, any disturbance to seals at these sites resulting from underwater sound emissions will be limited. In terms of vessel, vehicle and human presence, there are no designated seal haul-outs within 500 m of the proposed cable corridor. Per NatureScot advice there are other seal haul-outs present; however, the closest is also beyond 500 m of the proposed cable corridor. Given the embedded mitigation, no significant effects are anticipated on harbour seal. As such, there is considered to be no AEOsI to the harbour seal features of the Sound of Barra SAC.	No AEOsI		No AEOsI
	SACs with Seabed / Benthic Protected Features (Sound of Barra SAC) – <b>Habitat loss / disturbance</b>	Potential LSE	The proposed cable corridor overlaps with protected features of the Sound of Barra SAC, including Annex I reefs and subtidal sandbanks (including associated seagrass beds). There will be no direct habitat loss / disturbance to the Annex I reefs as SHEPD has committed to avoidance of these features. For seagrass, the footprint of permanent habitat loss / disturbance from the surface laid cable including potential cable movement is 0.0002 km <sup>2</sup> (based on a cable impact diameter of 0.22 m), representing <0.01% of the seagrass habitat within the SAC. Partial recovery of the seagrass is anticipated within the cable impact diameter of 0.22 m (see Section 5.5.4). In the wider context of the Sound of Barra SAC, the highly localised footprint impact area of <0.01% (which is considered not significant considering the high degree of patchiness) will not prevent or reduce the recovery potential of the seagrass beds throughout the SAC, especially considering that the site surveys have identified that the seagrass beds have a larger extent than previously recorded. Therefore the proposed cable installation activities will not hinder the achievement of the conservation objectives. Overall, given the embedded mitigation, no AEOsI on the Sound of Barra SAC is anticipated.	No AEOsI		No AEOsI



ENVIRONMENTAL RECEPTOR	ASSESSMENT UNDERTAKEN	LEVEL OF IMPACT	ASSESSMENT OUTCOME	OVERALL SIGNIFICANCE	ADDITIONAL MITIGATION	RESIDUAL SIGNIFICANCE
Seabed Conditions and Water Quality (Section 6)	SPAs and NCMPAs with Birds as Qualifying Features (West Coast of the Outer Hebrides SPA) – <b>Vessel Presence and Landfall Installation</b>	Potential LSE	A CLMP will be prepared in support of the marine licence application.  There is potential for disturbance to the seabird features of the West Coast of the Outer Hebrides SPA as a result of vessel presence and landfall installation activities. Vessel activity will not represent a significant deviation from baseline shipping levels and given the embedded mitigation (e.g. minimal lighting to reduce light disturbance), disturbance from vessel presence is expected to be minimal, short-lived and transient. As such, no AEOsI on the protected features of the West Coast of the Outer Hebrides SPA is anticipated.	No AEOsI		No AEOsI
	SPAs and NCMPAs with Birds as Qualifying Features ( <i>Eoligarry, Barra SPA</i> ) – <b>Vessel Presence and Landfall Installation</b>	No LSE	The Eoligarry, Barra SPA is located adjacent to the proposed cable corridor above MHWS and is designated for breeding corncrake. However, given this species are terrestrial and breed in land (typically in meadows), there is not considered to be connectivity to impact on this feature of the SPA from the cable installation activities, as such there is no potential for LSE. Relevant mitigation for breeding corncrake is presented in the Onshore CEMP (WSP, 2026).	No LSE		No LSE
	Coastal Sediment Suspension Subtidal Sediment Suspension Changes to Sediment and Water Quality Following Accidental Release of Hydrocarbons	Minor Negligible Minor	All proposed cable installation activities at the landfall locations will be tidally dependent. Increased suspended sediment will only occur during the interaction between the incoming tide, the trench walls and spoil heaps and as a result of any cable removal activities. This will result in highly localised and temporary increases in suspended sediment which will not have a significant impact on coastal or subtidal water quality. Additionally, no trenching is proposed in the subtidal and therefore subtidal sediment suspension will be minimal. Best practice will be followed by all installation vessels, therefore the likelihood of an accidental hydrocarbon release from one of the installation vessels is extremely remote. Overall, no significant effects on designated waterbodies are anticipated.	Not significant	No additional mitigation measures identified. See Section 4.3: Mitigation Requirements for embedded mitigation.	Not significant
Marine Megafauna (Section 7)	Injury or Disturbance from Sound Emissions (Marine Mammals)	Minor	An underwater sound impact assessment has been conducted based on sound modelling presented in Appendix A. The underwater sound impact assessment concluded that there will be no realistic risk of injury to any species exists resulting from USBL operations. While there may be some disturbance, this is likely to be limited in space and time and should only affect a few individuals of any species. There will be no injurious impacts to marine mammals as a result of the proposed cable installation activities and no requirement to apply for an EPS licence in that respect; however, as there is potential for disturbance, SHEPD will apply for an EPS licence alongside this MEA. Disturbance is expected to be limited to one or a few individuals of the local population and will therefore not result in any adverse impact to the FCS of any cetacean or pinniped species, and no mitigation is proposed for USBL operations. Given the transitory nature of the activities with the mobile nature of marine mammals, no significant impacts to individuals or populations of marine megafauna in the area are anticipated.	Not Significant	No additional mitigation measures identified. See Section 4.3: Mitigation Requirements for embedded mitigation.	Not Significant
	Vessel Presence (Basking Sharks)	Minor	Basking sharks are considerably less mobile than marine mammals and are therefore identified as being more sensitive to vessel presence. Basking sharks are also frequently sighted in the Western Isles, for which basking shark are now a protected feature of the Sea of Hebrides NCMPA.  Vessels will be slow moving and will adhere to the SMWWC and basking shark code of conduct, so the risk of collision is unlikely. Vessel activity will not represent a significant deviation from baseline shipping levels and therefore disturbance from vessel presence is expected to be minimal. Given the embedded mitigation and short-term duration of the proposed cable installation activities, no significant effects are anticipated. Overall, vessel presence will not adversely affect the FCS of basking sharks. Nevertheless, since the risk of disturbance cannot be entirely ruled out, SHEPD will apply for a basking shark derogation licence alongside this MEA.	Not Significant		Not Significant



ENVIRONMENTAL RECEPTOR	LEVEL OF IMPACT	ASSESSMENT UNDERTAKEN	ASSESSMENT OUTCOME	OVERALL SIGNIFICANCE	ADDITIONAL MITIGATION	RESIDUAL SIGNIFICANCE
<p><b>Marine Megafauna (Section 7)</b></p> <p>Potential Disturbance from Nearshore Activities (Otter and Pinnipeds)</p>	<p>Minor</p>	<p>There is potential for disturbance to seals and otters as a result of the nearshore and intertidal cable installation activities. There are no seal haul-outs (designated and otherwise known) within 500 m of the proposed cable corridor. The impact assessment concluded that the intertidal and landfall works will not result in significant disturbance to seals given the temporary nature of the activities and considering that vessel presence will not constitute a significant deviation from baseline shipping activity. Given the embedded mitigation, no significant effects are anticipated. The proposed cable installation activities will not result in the catching or killing of seals, and thus the protection provided to the two species by the Conservation (Natural Habitats, &amp;c.) Regulations 1994 (as amended) will not be breached.</p> <p>There is potential for disturbance to otters during the intertidal cable installation activities, as evidence of otter presence was recorded during the environmental surveys at the Barra landfall. There will be adherence to the embedded mitigation measures, including the measures set out in SHEPD's Otter Protection Policy. Given the temporary nature of the activities, with the embedded mitigation, no significant disturbance is anticipated. As such, the proposed cable installation activities are not anticipated to impair any otter's ability to survive, breed or reproduce, or rear or otherwise care for its young, and therefore there will be no adverse impact on the FCS of otters in the region. Nonetheless, should evidence of otter be identified during pre-construction surveys, SHEPD will consult with NatureScot to ascertain whether an EPS licence for otter disturbance is required for the nearshore works prior to works commencing.</p>	<p>Not Significant</p>	<p>Not Significant</p>	<p>Not Significant</p>	
<p>Direct Loss / Disturbance to Benthic Habitats and Communities</p>	<p>Minor</p>	<p>The placement of the proposed subsea cable (surface lay), cable trenching in the intertidal, seabed preparation activities (PLGR and OoS cable removal), use of cable stabilisation/protection and spud/anchor deployments will be in direct contact with the seabed and have the potential for direct and indirect impacts on benthic species and habitats within the Project footprint.</p>	<p>An assessment has been carried out in Section 5.5.4 on the potential impacts to the protected features of the Sound of Barra SAC (Annex I reefs and subtidal sandbanks (including seagrass) and concluded that any effects will be highly localised and temporary, and given the embedded mitigation, no significant effects are anticipated. SHEPD has committed to avoidance of Annex I reefs, and a pre-installation survey (ROV, camera transects) will be carried out along the length of the proposed cable route to inform the potential for micro-routing around seagrass features. Additionally, no significant impact on the national status of any PMFs is anticipated as a result of the proposed cable installation activities.</p>	<p>Not Significant</p>	<p>Not Significant</p>	
<p><b>Benthic and Intertidal Ecology (Section 8)</b></p> <p>Temporary Increase in Suspended Sediments and Associated Sediment Deposition</p>	<p>Minor</p>	<p>The presence of the INNS wireweed (<i>S. muticum</i>) has been confirmed within the proposed cable corridor through the environmental surveys. A number of embedded mitigation measures have been proposed to minimise the impact of introduction and/or spread of INNS. As such, the potential impact is considered to be wholly managed through the embedded mitigation and no significant effects are anticipated.</p>	<p>No additional mitigation measures identified. See Section 4.3: Mitigation Requirements for embedded mitigation.</p>	<p>Not Significant</p>	<p>Not Significant</p>	
<p>Introduction and/or Spread of INNS</p> <p>Accidental Release of Hazardous Substances</p>	<p>Minor</p>	<p>A number of embedded mitigation measures have been proposed to minimise the impact of accidental releases of hazardous substances. As such, the potential impact is considered to be wholly managed through the embedded mitigation and no significant effects are anticipated.</p>	<p>Not Significant</p>	<p>Not Significant</p>	<p>Not Significant</p>	
<p>Heating and EMF (Operation)</p>	<p>Minor</p>	<p>The impact resulting from heat emitted by the cable will be wholly within the footprint of the proposed subsea cable, and has therefore been assessed as habitat loss, and has not been assessed further. EMFs resulting from the operation of the proposed subsea cable is not anticipated to be of a magnitude which may result in adverse effects on benthic organisms. Therefore no significant effects are anticipated.</p>	<p>Not Significant</p>	<p>No additional mitigation measures identified. See Section 4.3: Mitigation Requirements for embedded mitigation.</p>	<p>Not Significant</p>	



ENVIRONMENTAL RECEPTOR	ASSESSMENT UNDERTAKEN	LEVEL OF IMPACT	ASSESSMENT OUTCOME	OVERALL SIGNIFICANCE	ADDITIONAL MITIGATION	RESIDUAL SIGNIFICANCE	
<b>Ornithology (Section 9)</b>	Wild birds, their eggs and nests	Minor	Seabirds may be disturbed by vessel presence during cable installation in intertidal and nearshore areas. Although the West Coast of the Outer Hebrides SPA overlaps the proposed cable corridor, the breeding features (red-throated diver) nest inland and are unlikely to occur at the works location. Given the temporary, short-term nature of activities, minimal change from baseline vessel traffic, and implementation of mitigation measures including adherence to the SMWWC, slow vessel speeds and directional lighting (Section 4.3), impacts are not expected to result in mortality or nest disturbance and are unlikely to significantly affect seabird populations.	Not Significant	No additional mitigation measures identified. See Section 4.3: Mitigation Requirements for embedded mitigation.	Not Significant	
	<b>Marine Archaeology (Section 10)</b>	Negligible	There are no known wrecks directly overlapping with or within proximity to the proposed cable corridor and no wrecks were identified in the geophysical surveys. There is potential for unknown wrecks or other historical assets to be present. Given the embedded mitigation measures, including avoidance of features of archaeological significance through detailed route design, it is considered to be extremely unlikely that the proposed cable installation activities would result in the loss or damage of archaeological features. As such this assessment concludes that the proposed cable installation activities will not result in any adverse impacts on the historic record.	Not Significant /ALARP	No additional mitigation measures identified. See Section 4.3: Mitigation Requirements for embedded mitigation.	Not Significant	
<b>Shipping and Navigation (Section 11)</b>	Vessel collision – installation, maintenance and decommissioning	Tolerable		Not Significant /ALARP		Not Significant /ALARP	
	Disruption to Established Vessel Routes and Areas – Installation, Maintenance and Decommissioning	Broadly Acceptable		Not Significant /ALARP		Not Significant /ALARP	
	Interaction with Vessel Anchors – Installation, Maintenance and Decommissioning	Broadly Acceptable			Not Significant /ALARP	Not Significant /ALARP	
	Interaction with Vessel Anchors – Normal Operations	Broadly Acceptable		A HLNRA has been undertaken for the Project and submitted alongside this MEA (see Xodus Document No. A-101090-S00-A-REPT-002).	Not Significant /ALARP		Not Significant /ALARP
	Interactions with Fishing Gear – Installation, Maintenance and Decommissioning	Tolerable		The proposed cable corridor crosses a busy, well-marked navigational area near Barra Sound, creating a potential hazard due to slow-moving, limited-maneuvrability installation vessels. However, risks are minimal given the short duration of works, planned coordination with ferry operators and harbour authorities, standby support vessels, and implementation of a 500 m restricted zone. Additional measures include notifying mariners, marking landfall points, and updating UKHO and KIS-ORCA charts. No trawling or anchoring occurs near the route, and industry standards further reduce risk. Overall, navigation and seabed cable risks are considered ALARP.	Not Significant /ALARP	No additional mitigation measures identified. See Section 4.3: Mitigation Requirements for embedded mitigation.	Not Significant /ALARP
	Interactions with Fishing Gear – Normal Operations	Tolerable			Not Significant /ALARP		Not Significant /ALARP
<b>Commercial Fisheries and Other Sea Users (Section 12)</b>	Reduction in Under Keel Clearance – Normal Operations	Broadly Acceptable		Not Significant /ALARP		Not Significant /ALARP	
	EMF and Compass Deviation Effects – Normal Operations	No Risk		Not Significant /ALARP		Not Significant /ALARP	
	Assessment of impacts on commercial fisheries and other sea users has been presented in the Outer Hebrides FLMAP	Minor	The proposed cable installation activities have the potential to disrupt commercial fisheries and other sea users. SHEPD has taken a pro-active approach to minimising impacts on commercial fisheries and other sea users through the implementation of the Outer Hebrides Isles FLMAP. As discussed within the Outer Hebrides FLMAP, appropriate mitigation measures and consultations will be in place to minimise potential impacts on commercial fisheries and other sea users. Once these consultations and mitigation measures have been implemented, no significant impact on commercial fisheries and other sea users are expected. This information has been provided in the Outer Hebrides FLMAP.	Not Significant	No additional mitigation measures identified. See Table 12-1 for embedded mitigation.	Not Significant	



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## APPENDIX A UNDERWATER SOUND IMPACT ASSESSMENT

During the cable lay, a Remotely Operated Vehicle (ROV) or Ultra-Short Baseline (USBL) will be utilised, deployed from the support vessel, to monitor the proposed subsea cables at the touch down locations with the seabed. This will capture seabed information at the contact point and helps observe the lay tension that is applied to the proposed subsea cables from the vessel. This will also help to minimise the potential for the proposed subsea cables to become suspended along the route.

This Section describes the potential impacts and disturbance to marine mammal species in the area as a result of utilising USBL.

### A.1 Acoustic Injury or Disturbance Criteria for Marine Mammals

#### A.1.1 Injury

National Marine Fisheries Service (NMFS) (2018) defines two different types of sound that have the potential to result in acoustic injury:

- **Impulsive:** sounds which are short in duration (i.e., less than 1 second long) and temporary, occupy a broadband bandwidth, and have rapid rise and decay times with a high peak pressure level; and
- **Non-impulsive:** sounds which may occupy a broadband, narrowband or tonal bandwidth, can be brief, prolonged, continuous or intermittent in nature, and are not characterised by rapid rise and decay times or a high peak pressure level.

A dual-metric approach has been adopted which identifies the range of potential injury to marine mammals from both the peak sound pressure level ( $SPL_{PEAK}$ ; also called the source level) and cumulative Sound Exposure Level (SEL) for the operation of USBL which is the only equipment identified to require consideration for sound-related injury. The thresholds above which each marine mammal hearing group may experience sound-related injury are presented in Table 14-1 below. These thresholds are derived from measurements of marine mammal hearing using weighting functions which account for peak hearing abilities for each hearing group (NMFS, 2018).

*Table 14-1 Criteria considered in this assessment for the onset of injury in marine mammals from impulsive sound (NMFS, 2018; Southall et al., 2019)*

MARINE MAMMAL HEARING GROUP	IMPULSIVE SOUND		NON-IMPULSIVE SOUND
	$SPL_{PEAK}$ (dB re 1 $\mu$ Pa)	CUMULATIVE SEL (dB re 1 $\mu$ Pa <sup>2</sup> S)	CUMULATIVE SEL (dB re 1 $\mu$ Pa <sup>2</sup> S)
Low-frequency (LF) cetaceans	219	183	199
High-frequency (HF) cetaceans	230	185	198
Very high-frequency (VHF) cetaceans	202	155	173
Phocid pinnipeds (underwater)	218	185	201



## A.1.2 Disturbance

There are currently no disturbance criteria which have been adopted or recommended by UK regulators or statutory nature conservation bodies. NatureScot have recently advised that the Effective Deterrent Range (EDR) of 5 km should be used as a proxy for disturbance range for sub-bottom profiler operations, however this is not considered appropriate for USBL, given that USBL is a significantly less powerful sound source than an SBP. As such auditory thresholds for disturbance, as defined by NMFS (2018), coupled with behavioural response criteria detailed in Southall *et al.*, (2007) have been adopted for the assessment of potential marine mammal disturbance from USBL. These thresholds, which utilise the behavioural response severity scale detailed in Southall *et al.*, (2007) for grading the strength of behavioural responses, are provided in Table 14-2.

Table 14-2 Disturbance threshold criteria for impulsive sound (Southall *et al.*, 2007; NMFS, 2018)

BEHAVIOURAL EFFECT	THRESHOLD CRITERIA (SPL <sub>RMS</sub> )
Potential strong behavioural reaction (6 or more on the severity scale)	160

## A.2 Sound Propagation Modelling

### A.2.1 Approach

Modelling to identify the potential range (i.e., the straight-line distance from the source) in which sound impacts to marine mammals could occur was undertaken using Xposure, a semi-empirical propagation model developed by Xodus. Modelling was conducted at water depths bookending those expected in the survey area. The dual-metric modelling approach recommended by NMFS (2018) has been used to identify impacts from: (1) the peak Sound Pressure Level (SPL<sub>PEAK</sub>); and (2) the cumulative SEL. The SEL represents the total energy produced by a sound-generating activity (i.e., USBL) standardised to a one-second interval. This enables comparison of the total energy attributed to different activities with different inter-pulse intervals. As described above, empirically-derived weighting functions (NMFS, 2018; Southall *et al.*, 2019) have been applied to the modelling outputs to account for peak hearing sensitivity for the respective marine mammal hearing groups

The following assumptions have been applied to the models:

- Maximum SPL<sub>PEAK</sub> has been used for all calculations;
- Maximum pulse length and minimum turn around has been used where provided;
- Where source frequencies occur across a range of frequencies, a flat 1/3 octave spectrum has been used;
- Where data is unavailable, the time between pulses has been calculated as 1.5 times the ping length;
- Mammals swim at seabed depths (this represents the worst-case);
- Vessels are moving at slow speeds; and
- Survey equipment (i.e., USBL) likely to be used in the nearshore shallow water environment (i.e., < 10 m) will likely operate at a very high frequency to provide better resolution and will operate at a lower SPL, and so does not constitute a worst-case scenario.

The directional characteristics of sound are also an important factor affecting the received sound pressure levels from sound-generating activities. Sound source arrays are designed so that the majority of acoustic energy is directed downwards towards the ocean floor for data collection purposes. As such, the amount of energy emitted across the horizontal plane is significantly less ( $\geq 20$  dB) than the amount of energy emitted downwards.



Due to the frequency-dependent nature of sound, the loss of pressure on the horizontal plane is more pronounced at higher frequencies than at lower frequencies. Directional corrections can be applied to the model outputs, which provide broadband normalised amplitudes at varying angles of azimuth<sup>7</sup> and dip angle<sup>8</sup>. Directivity corrections have been applied to the modelling outputs under the assumption that the animal is directly in-line with the vessel (i.e., at the 0° azimuth).

## A.2.2 Injury Impacts

For the proposed cable installation activities, the expected frequency range for USBL operations overlap with the hearing range of all cetacean hearing groups. Potential injury to cetaceans (i.e., injury which results from a permanent threshold shift in hearing abilities) is limited to impulsive sound sources which exceed the injury thresholds defined in Table 14-1.

Modelling of ranges at which injury impacts are likely to result from deployment of USBL has been undertaken (Table 14-3). Impacts from sound sources which are strictly behavioural in nature (i.e., disturbance impacts) are covered in the subsection below.

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<sup>7</sup> The azimuth is taken as the angle of circumference around the boat which lies parallel to the surface of the water, progressing around the boat from port to starboard.

<sup>8</sup> The dip angle is taken as the angle under the boat, progressing from prow to stern.



Table 14-3 Sound modelling results for injury impacts from the impulsive sound source (N/E = no exceedance of thresholds)

ACTIVITY	DEPTH (m) <sup>9</sup>	FREQUENCY (kHz)	SOURCE LEVEL SPL <sub>PEAK</sub> (dB re 1µPa)	INJURY RANGE (m)											
				CUMULATIVE SEL (STATIC MAMMALS)			CUMULATIVE SEL (MOVING MAMMALS)			PEAK SPL					
				VHF	HF	LF	PW	VHF	HF	LF	PW	VHF	HF	LF	PW
USBL	100	24 – 33.5	207	104	98	73	86	104	56	36	44	24	6	11	11
	10	24 – 33.5	207	12	11	11	11	12	11	11	11	36	10	16	17

<sup>9</sup> Depth refers to below the Project activity, which has been assumed to be hull-mounted or towed at the surface. These depths have been identified as representative of the nearshore and offshore depths in which the proposed cable installation activities are likely to occur across the proposed cable corridor, based on available bathymetry data.



USBL has the potential to cause injury to EPS and other marine mammals. As such, the operation of USBL associated with the Project may be potentially injurious to EPS species without appropriate mitigations.

Across modelling scenarios and metrics, the injury ranges were generally highest for the VHF hearing group (Table 14-3), which is represented by harbour porpoise in UK waters. Conversely, HF cetaceans seemed to constitute the hearing group with the lowest potential impact ranges for the peak SPL metric, while LF cetaceans had the lowest impact ranges for the cumulative SEL metric, when comparing between activity types (Table 14-3).

High frequency sounds attenuate more quickly than lower frequency sounds such that an animal would need to be much closer to the sound source for it to cause acoustic injury. The deployment of hull-mounted USBL in 100 m depths elevated the potential range of impact to a maximum of 104 m (cumulative SEL) for VHF cetaceans. However, the likelihood of a cetacean being this close to operational equipment is extremely unlikely when considering that the source is deployed from a moving vessel travelling at more than 2 ms<sup>-1</sup> (i.e., 4 knots) and, in some cases, is being towed at depth (e.g., a USBL may be mounted on a towed device within a few metres of the seabed).

The majority of injury ranges were slightly reduced when considering animal movement during the cumulative SEL estimation. Swim speeds of the species most likely to be observed in the area have been shown to be several ms<sup>-1</sup> (e.g., cruising minke whale swim speed is 3.25 ms<sup>-1</sup> and harbour porpoise may swim up to 4.3 ms<sup>-1</sup>) (Blix and Folkow, 1995; Otani *et al.*, 2000). Further, NatureScot has provided standard values for mean swimming speeds of various marine mammal species likely to occur in the vicinity of the proposed cable corridor, including harbour seal / grey seal (1.8 ms<sup>-1</sup>; Thompson, 2015); and minke whale (2.1 ms<sup>-1</sup>; Williams, 2009). To offer a representative model of the predicted sound exposure ranges of marine mammals moving away from the sound source, a conservative mean swim speed of 1.5 ms<sup>-1</sup> has been used in the calculations. Considering that USBL will be deployed while the vessel is moving, the cumulative SELs are expected to be lower than predicted based on the premise that animals are likely to move away from the mobile sound source, opposite to the direction of vessel travel.

It should also be noted that the modelling scenarios presented as part of this assessment are meant to define the worst-case injury ranges associated with the deployment of USBL. The *in situ* deployment of USBL will most frequently occur in waters of intermediate depths (i.e., between 10 to 100 m). Moreover, the source levels modelled constitute the lowest frequency and highest SPL that are likely to be used, meaning that the actual sound propagation in the marine environment is also likely to be less than those defined by the modelled outputs, thereby this assessment constitutes a conservative estimate.

As such, the assessment concludes that there is no realistic risk of injury to EPS which may result from the use of USBL with SPL<sub>PEAK</sub> source levels of up to 207 dB re 1µPa.

### A.2.3 Disturbance Impacts

In addition to physical injury, sound emissions have the potential to result in behavioural disturbance of cetacean species within the vicinity of the sound source. Significant or strong disturbance (see Table 14-2; Southall *et al.*, 2007) may occur when an animal is at risk of a sustained or chronic disruption of behaviour or habitat use, which could result in a population-level effect. An assessment of potential disturbance impacts as a result of USBL operations impulsive and non-impulsive sound is provided in the sections below. The outputs of the sound modelling assessment against cetacean disturbance thresholds are provided in Table 14-4.



Table 14-4 Sound modelling results for disturbance impacts from impulsive sound sources

ACTIVITY	DEPTH (m)	FREQUENCY (kHz)	SPL <sub>RMS</sub> (dB re 1 µPa)	RANGE OF BEHAVIOURAL CHANGE (m)
USBL	100	24 – 33.5	200	182
	10	24 – 33.5	200	207

The USBL activities have the potential to generate a strong disturbance event (i.e., a disturbance offence). The sound generated by the USBL has the potential to generate disturbance impacts on the order of a couple hundred metres (Table 14-4).

The number of individuals which may experience disturbance from the worst-case scenario for USBL has been calculated in Table 14-5 below, based on the population parameters supplied in Section 7: Marnie Megafauna. In these calculations, the impact range serves as a radius with which to calculate the total area of coverage for a potential disturbance event associated with each survey activity.

Table 14-5 Number of individual cetaceans and proportion of the mu which may experience disturbance from the cable installation activities, based on known population parameters of the most frequently occurring species

SPECIES	NUMBER OF INDIVIDUALS WHICH MAY INCUR A STRONG DISTURBANCE USBL (0.13 km <sup>2</sup> AREA)	MAXIMUM PROPORTION OF THE MU POTENTIALLY AFFECTED BY THE INSTALLATION ACTIVITIES
Harbour porpoise	< 0.1	< 0.01 %
Bottlenose dolphin	<0.1	< 0.1 %
Risso's dolphin	< 0.01	< 0.01 %
White-beaked dolphin	< 0.1	< 0.01 %
Common dolphin	0.1	< 0.01 %
White-sided dolphin	< 0.01	< 0.01 %
Beaked whale	< 0.01	N/A
Minke whale	< 0.01	< 0.01 %

The source levels associated with USBL have the potential to elicit a strong behavioural response in EPS which could be classed as a disturbance offence as defined under Regulations 39(1) or 39(2). However, for the relevant biogeographical population MU for harbour porpoise, bottlenose dolphin, Risso's dolphin, common dolphin and minke whale which all regularly occur in the area, this will not incur significant impacts. For these species, less than 0.1% of the biogeographic population will be impacted by sound-related disturbance (Table 14-5). Moreover, less than a tenth of any cetacean will be potentially disturbed by USBL deployment at any given time, making potential disturbance impacts from this survey equipment negligible.

Given the transient and short-term nature of the survey and vessel activities, it is highly unlikely that any disturbance offences from the use of USBL would negatively impact upon the FCS of any of the cetacean or seal species which may be present in the survey area. This is on the basis that the modelled level of disturbance is unlikely to affect the ability of any individual animal to survive or reproduce and will not have significant population-level impacts to any EPS. Regardless, it is possible that a small number of animals may experience some level of disturbance for the short period that they encounter the proposed survey activities.