Scottish Hydro Electric Transmission plc

Shetland-Yell HVAC Link

Non-Statutory Scoping Report

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1 INTRODUCTION

Scottish Hydro Electric Transmission plc (SHE Transmission), the licenced electricity Transmission Owner (TO) for the north of Scotland and part of Scottish and Southern Electricity Networks, is planning to submit a Marine Licence application, under Part 4 of the Marine (Scotland) Act 2010, for the installation of a 132 Kilovolt (kV) High Voltage Alternative Current (HVAC) transmission network between the island of Yell and the Shetland Mainland ('Shetland-Yell HVAC Link'). The Scoping Boundary for this route is presented in Figure 1-1. The cable installation corridor will be located within this Scoping Boundary and will continue to be refined as the development progresses. The cable installation corridor has an expected length of approximately 11 km.

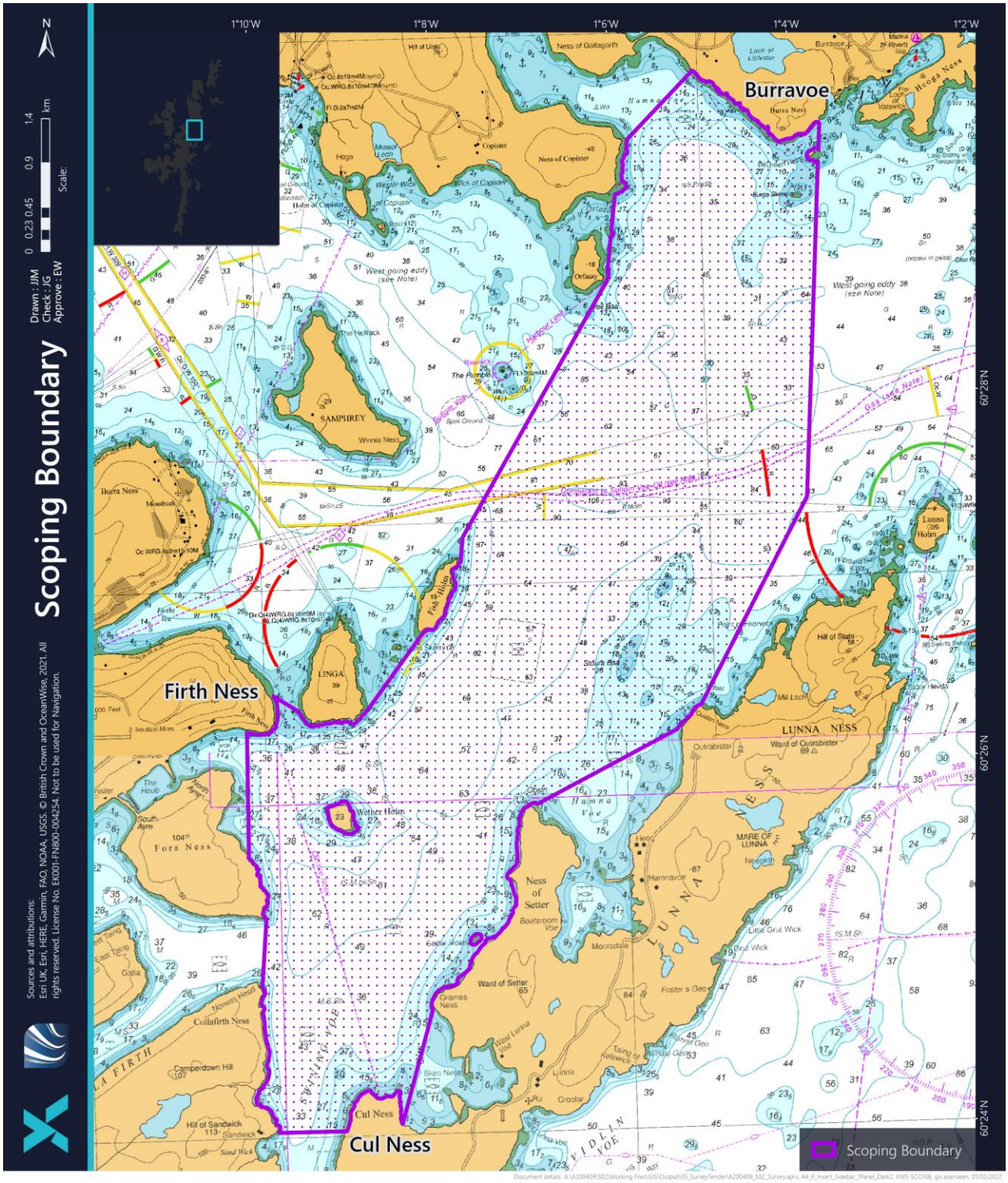

Figure 1-1 Shetland-Yell HVAC Link Scoping Boundary

1.1 Background

The Shetland-Yell HVAC Link forms part of the Shetland Renewable Connections Project. The aim of the Shetland Renewable Connections Project is to allow for the export of renewable power generated by the proposed Energy Isles and Beaw Field Wind Farms[1] on Yell by developing and constructing a transmission connection to the Kergord Switching Station and High Voltage Direct Current (HVDC) Converter Station. The transmission connection will also facilitate onwards transmission of renewable energy to the Scottish Mainland via the Shetland HVDC link (a separate project subject to its own consent requirements which is now currently under construction).

The Shetland Renewable Connections Project will be a 132 kV transmission network, comprising:

- A new 132 kV Switching Station located on Yell to connect Energy Isles and Beaw Field Wind Farms;
- New 132 kV connections from the proposed South Yell Switching Station to Energy Isles and Beaw Field Wind Farms using a combination of Overhead Line (OHL) and Underground Cable (UGC);
- A new 132 kV transmission connection from South Yell Switching Station to Kergord 132 kV Substation and HVDC Converter Station. This will consist of a combination of 132 kV UGC, OHL and up to two subsea cables between Yell and mainland Shetland;
- A combination of new 132 kV UGC and OHL to connect Gremista Grid Supply Point (GSP) to Kergord; and
- A new 132 kV UGC to connect Mossy Hill Wind Farm to one of the Gremista connections to form a tee-connection.

As described above, the Shetland-Yell HVAC Link is the subsea cable connection component of the Shetland Renewable Connections Project and comprises up to two cables between a landfall on Yell and a landfall on the Shetland Mainland.

This non-statutory Scoping Report considers the offshore elements of the subsea cable(s) between the Mean High Water Spring (MHWS) boundaries on Yell and Shetland Mainland. The onshore elements of the project, landward of Mean Low Water Spring (MLWS), will be consented separately.

1.2 Project Need

There is currently significant renewable generation contracted on Shetland. To facilitate this substantial increase in renewable generation and to support the growth of the low carbon economy, there is a need to create a new 132 kV transmission network to connect each wind farm to a new substation and HVDC Converter Station at Kergord which is currently under construction having been granted planning consent from Shetland Islands Council (SIC) in 2020. The Kergord substation and Converter Station forms part of a new HVDC Link which will enable power generation from Shetland to be transferred to the UK mainland (and vice versa) via a 260 km subsea cable connecting to a new Direct Current (DC) Switching Station at Noss Head in Caithness. It should be noted that the Kergord Converter Station, the substation and the HVDC Link are separate projects from the 132 kV transmission network that the Shetland-Yell HVAC Link is part of.

[1] *The onshore wind farms are separate from the Shetland Renewable Connections Project and will be consented separately.*

1.3 Project Development

The development of the Project has been informed by a number of onshore and marine studies undertaken by SHE Transmission, in order to identify locations for the project infrastructure which represent the optimal balance between environmental, technical and commercial constraints. Options considered for the subsea cable routing and landfall selection have been informed by studies undertaken to establish a technically and environmentally feasible subsea cable route corridor which can be taken forward for development. The sections below provide an overview of the project development to date. However, the project will continue to develop through the consenting process, resulting in refinements to the subsea cable corridor as further surveys and studies are undertaken.

1.3.1 Black, Amber, Red, Green (BRAG) Assessment

Each landfall option and route corridor, described in the sections below, was appraised by undertaking a Black, Red, Amber, Green (BRAG) Assessment, which compromised a range of technical and environmental constraints being categorised as Black (very high risk), Red (high risk), Amber (moderate risk) and Green (low risk), allowing for a simple and intuitive comparison between the landfall areas and associated subsea cable corridor options. Following the BRAG assessment and stakeholder consultation, preferred corridor and landfall options were identified as the optimal balance between environmental, technical and commercial constraints.

1.3.2 Landfall Locations

More than 30 landfall options across Yell and Mainland Shetland were originally identified during a landfall screening exercise which considered potential suitability for Horizontal Directional Drilling (HDD) and Open Cut Trenching (OCT). Sixteen landfall options were identified on the south Yell coastline, from West Sandwick in the west to Ay Wick in the east and 15 landfall options were identified on the Mainland Shetland, from Orka Voe in the west to Lunna Ness in the east. A short-list of landfalls to be brought forward for further assessment was then developed, based on physical and technical constraints, as well as potential cable length.

The short-listed landfalls were initially grouped into 10 landfall zones on Mainland Shetland and 11 landfall zones on Yell at the time of the subsea corridor development. Each landfall zone consisted of two to three nearby landfalls (e.g. those located within the same voe), and these were the basis for the development of a number of subsea corridors. A BRAG assessment was conducted for the marine approach to each landfall zone, considering high-level environmental and technical constraints. Additional landfall options were identified during the route selection phase, and the technical feasibility of these options was also assessed. These additional landfalls were located at Cul Ness, Firth Ness and on the Lunna peninsula on Mainland Shetland and at Burravoe and Copister on Yell.

An onshore assessment which considered the onward terrestrial cable routes from the preferred and less preferred landfall options was also carried out to understand their feasibility for the Project. Several landfalls were discounted through this process, as terrestrial environmental or technical constraints resulted in the installation of the required onshore infrastructure in these areas being unfeasible. Additionally, the marine approach to several landfalls were identified as being significantly constrained, further discounting several landfall options. The preferred landfall zone on Mainland Shetland was identified as Firth Ness (with an alternative Mainland landfall option at Cul Ness) and the preferred landfall on Yell was identified at Burravoe (with an alternative landfall at Copister) (see Figure 1-1 and Figure 1-2). Site visits were also conducted at these landfalls to understand their feasibility for the Project.

Following stakeholder consultation and additional studies and site visits, it became apparent that the landfall at Firth Ness was technically constrained and the alternative Mainland Shetland landfall at Cul Ness was identified as being

the preferred option. HDD at the preferred location at Firth Ness was deemed to not be technically feasible due to the safety risks associated with proximity to the existing Ninian pipeline. Cull Ness provided a greater clearance distance from the pipeline with less excavation required. Burravoe remains as the preferred landfall option on Yell.

Burravoe

Cul Ness

Figure 1-2 Preferred Landfall options

1.3.3 Subsea Cable Corridor

The short-listed landfall options informed the location of the seven initial subsea corridor options within a broad marine search area. The corridors were identified through a Geographic Information System (GIS) based subsea routing study and landfall assessment, carried out by Xodus in 2020 and 2021 to connect the various landfall options on Mainland Shetland and Yell.

The subsea cable corridors were routed to avoid environmental sensitivities, such as important seabed habitats (e.g. maerl beds), aquaculture sites, anchorage areas and wreck features, where possible. They were also refined to cross existing cables and pipelines at a 90-degree angle where possible, and avoid any areas of onerous seabed conditions (e.g. steep slopes), identified using available bathymetry data for the region and data from a reconnaissance survey conducted in 2020.

Based on the survey data, stakeholder engagement and public consultations, the Cul Ness to Burravoe option has been put forward as the preferred corridor, displayed in Figure 1-3. The Scoping Boundary has been developed by applying a buffer to the preferred cable corridor to allow for ongoing route refinement.

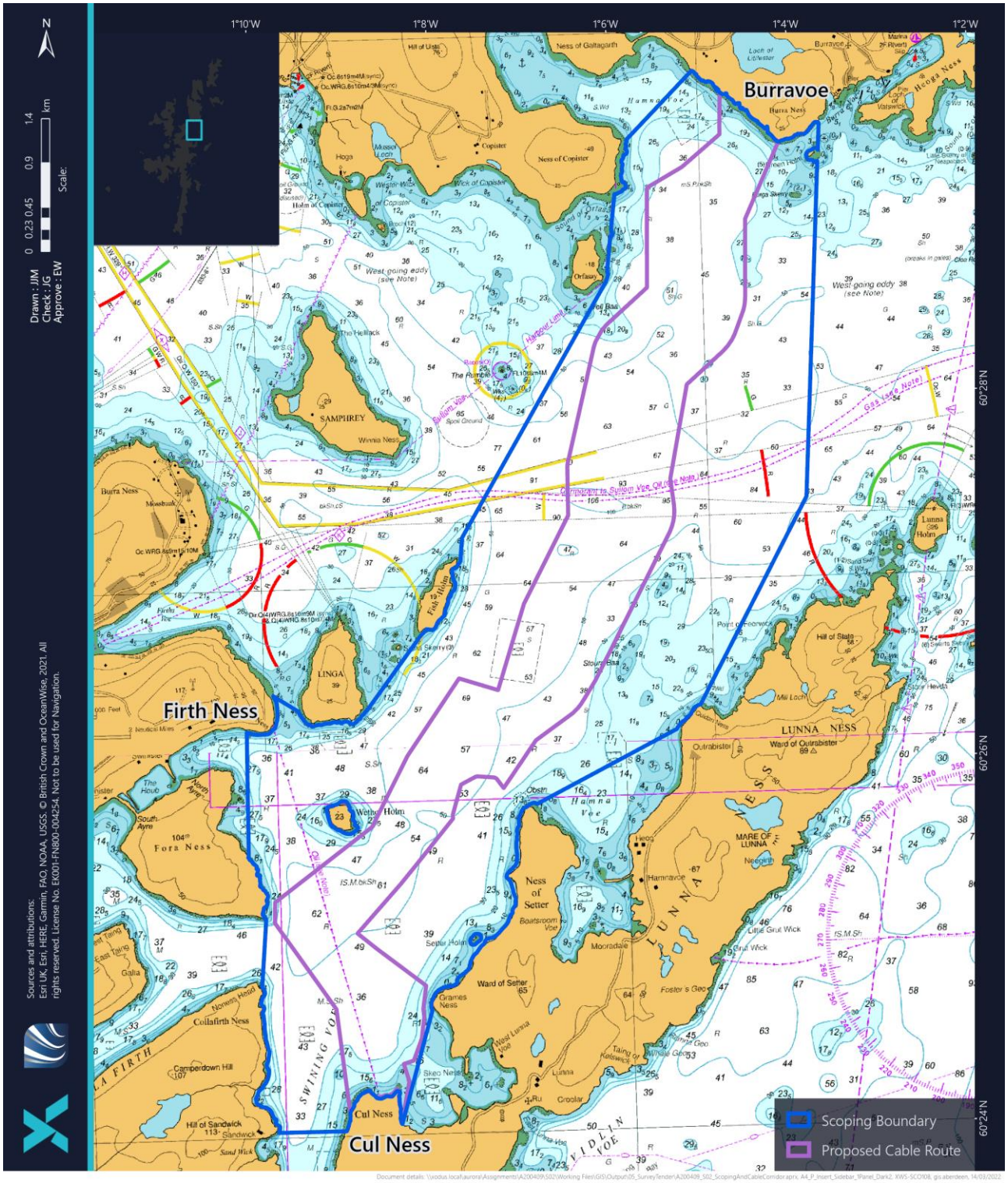

Figure 1-3 Preferred Cable Installation Corridor

1.3.4 Scoping Boundary

Although Cul Ness has been identified as the preferred landfall on Mainland Shetland, a less preferred landfall at Firth Ness is still being considered. Therefore, in order to maintain optionality and a necessary level of flexibility in site selection, the Scoping Boundary, which forms the basis of this report, includes both Cul Ness and Firth Ness as landfall options on Mainland Shetland. The cable installation corridor will be located within the Scoping Boundary and will continue to be refined as the development progresses. This refinement of the cable installation corridor will be informed by stakeholder feedback and continued route engineering, informed by the marine surveys planned for 2022.

1.3.5 Survey Activity

Initial bathymetry data within the Scoping Boundary is already available from a bathymetric reconnaissance survey conducted in 2020 as well as publicly available UK Hydrographic Office (UKHO) data, and this was used in the development of the cable corridors that were the basis of the BRAG assessment. Further marine surveys are planned to be undertaken in 2022 which will gather further information on bathymetry, seabed sediments, tidal currents, biological features, existing infrastructure and marine archaeology along the proposed corridor. The information obtained by these surveys will be used alongside information gained from desk-based studies and stakeholder consultation on other users of the sea (e.g. fishing, shipping and aquaculture site operators) to refine the cable corridor and landfall selection, and inform a Cable Burial Risk Assessment (CBRA) and the Marine Environmental Appraisal (MEA).

Exact survey specifications are to be confirmed, pending technical engagement with suppliers and preparation for mobilisation. Based on recent comparable surveys, SHE Transmission anticipate that surveys will include the following:

- Geophysical data acquisition to determine water depths, seabed features, shallow geology, object detection and cable crossing positions. Instruments used: Multibeam Echo Sounder (MBES), Side Scan Sonar (SSS), Sub-bottom Profiler (SBP) and Magnetometer (offshore and nearshore);
- Environmental survey comprising the recovery of sediment samples and seabed photography as part of the habitat mapping (offshore). Instruments used: grab sampler and drop-down camera; and
- Geotechnical survey to determine the structure and physical properties of the surficial and shallow sediment layers (offshore). Instruments used: Vibrocorer and Cone Penetrometer Testing (CPT).

All necessary consents (e.g. European Protected Species (EPS) Licence) will be in place ahead of the survey operations commencing. These licence applications will be supported by relevant environmental information and assessments (e.g. EPS Risk Assessment).

1.4 Digital Marine Environmental Assessment

SHE Transmission proposes that in addition to a conventional 'hard copy' of the MEA, a digital MEA (dMEA) will be presented to Marine Scotland and the SIC. This is intended to support the Marine Licence and Works Licence applications for the Shetland-Yell HVAC Link. The exact format that the dMEA will take is yet to be determined; however, further details on the advantages of this approach and how SHE Transmission intend to implement dMEA for the Shetland-Yell HVAC Link is provided in Section 6.2.

SHE Transmission are already using digital solutions for stakeholder engagement. This includes the preparation and use of ESRI StoryMap[2] on the route refinement and selection of the preferred cable corridor and the onshore elements of the project. The StoryMap is an interactive digital tool which helps to provide a holistic overview of the wider Shetland Renewable Connections Project, both onshore (above MHWS) and in the marine environment (below MHWS). and the StoryMap will be publicly available on the Project webpage and during future consultations.

An example image from the StoryMap is presented in Figure 1-4.

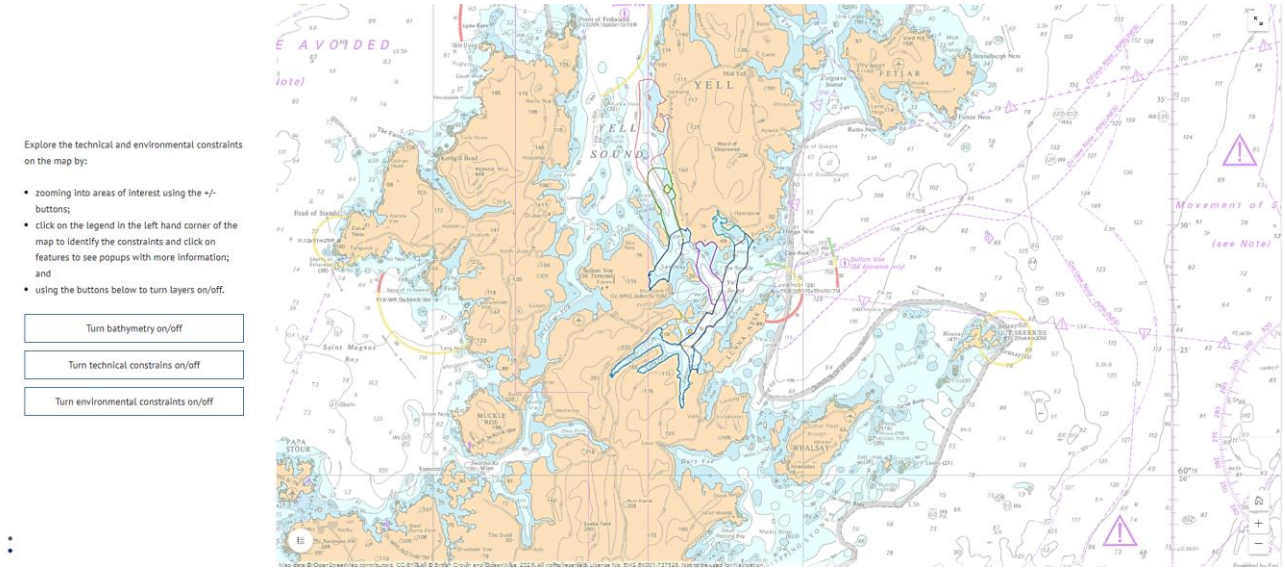

Figure 1-4 Example Image of the StoryMap Created on the Route Refinement and Site Selection

The aim of the dMEA to provide an MEA that is more accessible and intuitive in an interface that is easier to interact with and navigate for regulators, stakeholders and members of the general public. SHE Transmission propose to use this in future projects to gradually move away from hard copy MEAs. Further information regarding the dMEA approach and key benefits is provided in Section 6.2

[2] *https://doc.arcgis.com/en/arcgis-storymaps/get-started/what-is-arcgis-storymaps.htm*

2 CONSENT REQUIREMENTS

2.1 Marine Licence Requirement

2.1.1 Marine (Scotland) Act 2010

Under Part 4 of the Marine (Scotland) Act 2010, a Marine Licence is required for the installation of submarine cables in Scottish waters.

The purpose of this report is to determine the type, and scope, of studies to be undertaken to support the application for the Marine Licence for the Shetland-Yell HVAC Link.

2.1.2 The Zetland County Council Act 1974

SIC has a duty under the Zetland County Council Act 1974 (ZCC Act) to promote the conservation of, and control development in, the coastal area of Shetland with the exception of those areas under the jurisdiction of the Lerwick Port Authority and Broonies Taing Pier Trust. The council's Works Licence Policy provides the detailed development policy framework that underpins the CST1 Coastal Development Policy within the Shetland Local Development Plan, and is applicable to all marine developments, including dredging but excluding those connected with marine aquaculture, below MHWS out to 12 Nautical Miles (NM) (Shetland Islands Council, 2017).

A Works Licence is required for developments that fall within the scope of the Zetland County Council Act 1974 below MHWS and out to 12 NM. All Works Licence applications are considered by the SIC, with reference to relevant planning policy and legislation, including the Works Licence Policy and the Shetland Island Marine Spatial Plan among others. As the Shetland-Yell HVAC Link qualifies as requiring a Works Licence under the Zetland County Council Act, a Works Licence application will be submitted to SIC and supported by the MEA at the same time as the Marine Licence submission to Marine Scotland-Licensing Operations Team (MS-LOT).

2.2 EIA Requirements

Submarine cables do not require a formal Environmental Impact Assessment (EIA) as they are not listed on either Schedule 1 or Schedule 2 of the Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (as amended).

Although a formal EIA is not required for submarine cables, Marine Scotland advises in their Guidance for Marine Licence Applicants (Marine Scotland, 2015a) that "*applicants for marine licences for submarine cables should consider the scale and nature of their projects and give consideration to the need for a proportionate environmental assessment*". Results from this assessment along with other relevant information about the Project should then be provided to support the Marine Licence application.

2.3 Marine Planning Policy

2.3.1 Scottish National Marine Plan

The Scottish Government adopted the National Marine Plan (NMP) in early 2015 (Marine Scotland, 2015b) to provide an overarching framework for marine activity in Scottish waters, with the aim to enable sustainable development and the use of the marine area in a way that protects and enhances the marine environment whilst promoting both existing and emerging industries. This is underpinned by a core set of general policies which apply across existing

and future development and use of the marine environment. The relevant core policies and principles of the NMP have been considered in the context of the Shetland-Yell HVAC Link and development of this report.

2.3.2 The Islands' Act 2018

The Islands Act (2018), which received Royal Assent on 6th July 2018, makes the provision for a National Islands Plan (NIP) in Scotland (Scottish Government, 2019). The NIP lays out a series of strategic objectives aimed at improving the quality of life for island communities. Specifically, with regards to development activities, there are a number of relevant objectives related to sustainable development of the marine area. For example, Strategic Objective 2 encompasses building on "Scotland's National Marine Plan to ensure that fishing and other economic activities stemming from the sea provide increased opportunities for island communities, but at the same time that they are pursued in a sustainable manner" whilst Strategic Objective 8 includes a commitment to "protect island biodiversity". The implications of these commitments will be reviewed as part of the development of the Shetland-Yell HVAC Link and any the licensing requirements will be reviewed in accordance with any consequent changes in legislation.

The Islands' (Scotland) Act 2018 also introduced a licensing scheme in relation to any works in or under the sea in the coastal waters surrounding islands for up to 12 NM. Local authorities apply to the Scottish Ministers for an island licensing area designation to be made.

2.3.3 Shetland Islands' Marine Spatial Plan and the Shetland Islands Regional Marine Plan

The Shetland Islands Marine Spatial Plan (SIMSP) provides an overarching policy framework to guide marine development and activity. This SIMSP is based on Scottish Ministers' commitment to making marine management more efficient, inclusive and accessible. Areas of constraint and/or opportunities for development have been identified in order to reduce potential conflicts between marine activities and encourage co-existence between multiple users. The SIMSP aims to provide an approach to the management of the sea around Shetland; facilitating an integrated and better-informed decision-making process regarding the future distribution of activities and resources; and enabling the long-term protection and use of the marine environment.

The Shetland Islands Regional Marine Plan (SIRMP), which builds on the SIMSP, went through a public consultation period between September and December 2019. The SIRMP will replace SIMSP going forward and will be a 'stand-alone Plan for Shetland's marine environment' (Shetland Islands Marine Planning Partnership, 2019). In April 2021, the draft version of the SIRMP was submitted to Scottish Ministers for adoption and publication, however, it is yet to be formally adopted (Shetland Islands Council, 2021).

The SIMSP and SIRMP contain objectives and policies which will be considered within the studies to support the Marine Licence application for the Shetland-Yell HVAC Link.

2.3.4 Sullom Voe Harbour Area Masterplan

A draft version of the Sullom Voe Harbour Area Masterplan was submitted for consultation in 2021. This masterplan, developed by NAFC Marine Centre UHI, supports the Shetland Islands Regional Marine Plan and sets out the planning guidance for the Sullom Voe Harbour Area. The masterplan is intended to be used as non-statutory marine planning guidance for Works Licence applications.

The Shetland-Yell HVAC Link does not lie within the Sullom Voe Harbour Area itself, which has its southern border between Moss Bank on Mainland Shetland and Copister, on Yell.

2.4 Consultation

Table 2-1 below highlights consultation undertaken to date, with the exception of public consultation, which is discussed in Section 2.4.1. SHE Transmission intend to continue undertaking consultation and technical engagement activity, as appropriate, to inform the Shetland-Yell HVAC Link project. Future consultation and engagement activity will be carried out face-to-face, if permitted and informed by the appropriate government advice at the time regarding the COVID-19 pandemic. If face-to-face consultation is not permitted or advised, consultation will be carried out virtually via video calls, email and telephone.

Table 2-1 Consultation with stakeholders to date

CONSULTEE		TOPIC OF DISCUSSION	DATE
Government / Council	SIC	Project wide terrestrial and marine introduction.	20th May 2021 (Microsoft Teams)
	SIC Coastal Marine Planning	Project update and discuss Cul Ness/Burravoe preferred route.	12th August 2021 (Microsoft Teams)
	Yell Community Council	Project introduction and to present Firth Ness/Burravoe preferred route.	21st June 2021 (Microsoft Teams)
	Delting Community Council	Project Introduction and to present Cul Ness/Burravoe preferred route.	26th August 2021 (Microsoft Teams)
	Nesting Community Council	Project introduction and discussion regarding a cable route from Kergord	29 September 2021 (WebEX onlin)
Fisheries	SSMO	Project introduction and Firth Ness/Burravoe preferred route.	17th June 2021 (Microsoft Teams)
		Project update and discuss Cul Ness/Burravoe preferred route.	12th August 2021 (Microsoft Teams)
Fisheries	SFA	Project introduction and Firth Ness/Burravoe preferred route.	17th June 2021 (Microsoft Teams)
		Project update and discuss Cul Ness/Burravoe preferred route.	12th August 2021 (Microsoft Teams)
Aquaculture	Cooke Aquaculture	Project introduction and Firth Ness/Burravoe preferred route.	7th June 2021 (Microsoft Teams)
		Project update and discuss Cul Ness/Burravoe preferred route.	18th August 2021 (Microsoft Teams)
	Greigs Aquaculture	Project introduction and Cul Ness/Burravoe preferred route.	10th August 2021 (Microsoft Teams)
		Project introduction and Cul Ness/Burravoe preferred route.	13th August 2021 (Microsoft Teams)
	Blueshell Mussels Ltd.	Email exchange regarding project introduction, provided map showing preferred corridor (Cul Ness/Burravoe).	14th August 2021 (email)

	CONSULTEE	TOPIC OF DISCUSSION	DATE
Oil and Gas	EnQuest	Project Introduction and to discuss Firth Ness Landfall.	10th June 2021 (Microsoft Teams)
		Project update and to discuss Cul Ness Landfall.	17th August 2021 (Microsoft Teams)
		Meeting to discuss initial crossing design requirements.	20th January 2022 (Microsoft Teams)
	TAQA	Project introduction and initial discussions on standoff/proximity and crossing agreements.	24th August 2021 (Microsoft Teams)
		Meeting to discuss initial crossing design requirements.	20th January 2022 (Microsoft Teams)
	PX	Project introduction and initial discussions on standoff/proximity and crossing agreements.	24th August 2021 (Microsoft Teams)
		Meeting to discuss initial crossing design requirements.	20th January 2022 (Microsoft Teams)
Telecommunications	British Telecom	Project Update and to discuss crossing location of SHE Transmission over BT R100 cable.	27th May 2021

2.4.1 Public Consultation

Applicants for Marine Licences for certain prescribed classes of activities are required to carry out pre-application consultation (PAC) under The Marine Licensing (PAC) (Scotland) Regulations 2013 (the "PAC Regulations"). One of the prescribed classes of activities is the deposit of a submarine cable in the sea, or on or under the seabed from a vehicle, vessel, aircraft, marine structure or floating container, but only where that cable:

1. Exceeds 1,853 metres in length; and
2. Crosses the intertidal boundary.

Both criteria are met in relation to the Shetland-Yell HVAC Link, and therefore, PAC is required. Details of the Public Consultation events carried out to date are provided in Table 2-2. Further PAC events are planned for later in 2022. A PAC report will be developed and issued by SHE Transmission alongside the Marine Licence application.

Table 2-2 Public Consultation Carried Out to Date

LOCATION	TOPIC	DATE
Virtual	Project Introduction/Area of Interest etc. (Consultation Closed 21st August 2020)	18th July 2020
Virtual	Project Introduction/Area of Interest etc. (Consultation Closed 21st August 2020)	21st July 2020
Virtual	Preferred and Less Preferred Routes. (Consultation Closed 24th June 2021)	1st June 2021
Virtual	Preferred and Less Preferred Routes. (Consultation Closed 24th June 2021)	2nd June 2021
Lerwick Museum (Shetland Mainland)	Preferred Route and Alignment	7th September 2021
Burravoe Hall (Shetland Mainland)	Preferred Route and Alignment	8th September 2021
Vidlin Hall (Yell)	Preferred Route and Alignment	9th September 2021
Virtual	Preferred Route and Alignment	14th September 2021

2.5 Other Legislative Requirements

The Conservation (Natural Habitats, &c) Regulations 1994 (as amended in Scotland) ('The Habitats Regulations') transpose the European Habitats Directive (92/43/EEC) and Birds Directive (79/409/EEC) into Scottish Law for Scottish territorial waters. Although the Habitats Directive is no longer effective within the UK, the Habitats Regulations are still in force as per The Conservation (Natural Habitats, &c.) (EU Exit) (Scotland) (Amendment) Regulations 2019.

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 negative Likely Significant Effect (LSE) to a European site or its designated features, to be subject to an HRA by the Competent Authority, and if necessary, an Appropriate Assessment (AA). Through this process, the Competent Authority will ascertain whether a project will adversely affect the integrity of a site in view of the conservation objectives of the site. Sufficient information on the potential impacts of the project on European Sites must be provided by the applicant to enable the Competent Authority to undertake the HRA and AA.

In addition to requirements for an HRA, where a project has the potential to impact either a designated or possible Nature Conservation Marine Protected Area (NCMPA or possible NCMPA), designated under the Marine (Scotland) Act 2010, applicants are also required to provide specific information on the potential impacts of the proposed project on the conservation objectives of these sites.

3 PROJECT DESCRIPTION

3.1 Cable Specification

Electricity will be transmitted using HVAC submarine technology. It is currently anticipated that up to two separate three-core HVAC cables may be installed. This will be determined once further design studies have been undertaken.

3.1.1 Electromagnetic Fields (EMF)

EMF emissions are generated from the transmission of electricity through subsea cables. The cables produce electromagnetic fields which have both electric (E) components measured in volts per metre (V m^{-1}) and magnetic components (B) measured in micro tesla (μT). While the direct electric field is mostly blocked with the use of conductive sheathing, the magnetic field penetrates most materials and therefore are emitted into the marine environment with the resultant induced electric (iE) field.

It is commonly recommended that cable burial is used to increase the distance between the cable and the electro-sensitive species (Gill *et al.*, 2005; 2012). However, where burial is not possible; cable protection, rock placement or other similar established techniques, increases the distance between marine species sensitive to EMF and the EMF source.

SHE Transmission propose to model the EMF emissions from the cables to understand the magnitude of any EMF effects.

3.2 Installation

SHE Transmission intend to bury the cable(s) along the majority of the route, apart from in areas with unsuitable seabed characteristics (bedrock / outcrops) or where crossings of existing third-party infrastructure will be required, including three oil and gas pipelines and one telecommunications cable.

The exact details of the installation technique(s) will be confirmed when the installation contractor has been appointed. As mentioned below in Section 3.2.4, it is likely that a variety of installation and burial techniques will be necessary due to asset crossings but also the potentially variable nature of the seabed within the Scoping Boundary.

3.2.1 Marine Surveys

Marine surveys will be conducted prior to, during and following completion of installation to validate previous survey findings, inform route refinement, monitor the installation progress and determine the as-built location and condition of the subsea infrastructure. Indicative survey equipment may include:

- Multi-Beam Echo Sounder (MBES);
- Side-scan Sonar (SSS);
- Sub-Bottom Profiler (SBP);
- Magnetometer;
- Cable tracker; and
- Seabed imaging equipment for visual inspections (for example using a Remotely Operated Vehicle (ROV)).

3.2.2 Seabed Preparations

Prior to offshore cable installation, the installation contractor will clear the seabed of any obstacles from the path of the planned cable(s). Obstacles will be cleared using equipment such as:

- Pre-lay Grapnel Run (PLGR);
- Clearance of boulders using ROVs and grabs; and
- Pre-sweeping of sandwaves using Mass Flow Excavators (MFE).

Unexploded Ordnance (UXO) will be avoided wherever possible through micro-routing. If UXO clearance is required, this will be consented separately, pending outputs of UXO surveys.

3.2.3 Cable Burial

The main construction options available for cable burial include:

- Separate cable lay and burial campaigns – cable laid on seabed or in trench with post-lay burial; or
- Single simultaneous lay and burial campaign.

A minimum target depth of lowering of 0.6 m is anticipated to protect the cables from natural and anthropogenic threats, however, this is yet to be determined. A Cable Burial Risk Assessment (CBRA) will be conducted to determine the levels of cable protection required. The CBRA will consider seabed conditions and threats to the cable(s) (environmental and anthropogenic), which will inform the target depths of lowing for the cable(s).

3.2.4 Cable Burial Tools

There are a diverse range of cable burial tools available on the market capable of burying and protecting offshore cables. These include:

- Jetting systems;
- Cable burial ploughs;
- Mechanical wheel cutters; and
- Mechanical chain excavators.

3.3 Additional Cable Protection Methods

Burial will be the primary method of cable protection, and the detailed route engineering will aim to maximise burial success. However, in areas where sufficient protection through burial cannot be achieved, such in areas of untrenchable soils or for cable / pipeline crossings, additional external cable protection may be required. Options include:

- Rock placement – this technique, one of the most established methods of cable protection, is likely to be suitable for remedial cable protection and in the areas of cable / pipeline crossings, subject to detailed design;
- Concrete mattresses - frequently used to protect subsea cables and can also be used to construct crossings over existing subsea cables and pipelines. They are flexible and thus follow the contours of the seabed and existing assets;

- Sand / grout / rock bags – smaller bags filled with either sand, grout (which sets in water to the profiled shape), or rock bags can also be used to provide very localised protection, where most mechanical means such as trenchers cannot reach; and
- Tubular cable protection systems – additional protection can be provided around the cable in the form of articulated half shells. They are generally made of either polyurethane (PU) or cast-iron.

3.4 Cable Landfalls

The subsea cable(s) will be brought ashore using pre-installed HDD ducts at Burravoe.

At Cul Ness, it is likely that the cable(s) will also be brought ashore through HDD (the preferred method), however, there is the potential that an Open Cut Trench (OCT) will also be required. HDD is also the preferred option for Firth Ness.

HDD is a trenchless landfall installation technique, which involves drilling a duct from an onshore HDD compound out to an exit point on the seabed. The cable is then pulled through this duct to join the onshore cable.

OCT involves the excavation of a trench. The cable will be pulled through a duct within the trench and the trench will be subsequently backfilled.

3.5 As-Built Survey

Following the completion of the installation activities, an 'As-Built' report will be compiled by a survey contractor, part of which is the as-built drawings, imagery and video evidence that the cable(s) have been safely installed. Core to this report is the final route survey to confirm the Depth of Lowering and Depth of Cover achieved and the position of the cable(s). This will be used as the baseline for subsequent surveys and to identify any movement of the cable(s) or any changes in burial, whether it be settling or exposure through scour. The 'as-built' data will also be provided to relevant marine stakeholders including the UKHO for inclusion in Admiralty charts

3.6 Operations, Maintenance and Repair

Once buried, subsea cables do not typically require routine maintenance. However, it is likely that regular inspection surveys will be undertaken to monitor the cable's depth of burial. Where maintenance activities are deemed necessary to ensure the continued integrity of the cable(s), sufficient cable burial and or cable protection, techniques such as the application of rock protection or mattress placement will be employed. Depending on the findings from periodic surveys, some isolated works may be required to re-bury any sections of cable(s) that have become exposed and or to reinstate cable protection that has become displaced.

3.7 Decommissioning

Cables in Scottish territorial waters are installed on Crown Estate Scotland (CES) land and therefore a lease or licence is generally entered into for a set term. An Initial Decommissioning Plan (IDP) will be developed and appended to the Crown Estate Scotland's licence agreement entered into by SHE Transmission for this project. Any case for cable recovery will need to be the subject of an environmental and economic assessment in the years leading up to decommissioning and will follow industry best practice and relevant policies (e.g. equivalent to the MP_ DEV2: Decommissioning of Assets policy the Shetland Islands Regional Marine Plan) at the time.

3.8 Embedded Mitigation

Certain measures are incorporated into the Project design as adherence to best practices or embedded mitigation / management measures in accordance with standard industry practice. Details on these types of mitigation are presented in Table 3-1.

Table 3-1 Embedded Mitigation and Best Practice Relevant to the Project

MEASURE	DETAILS
Production of a Construction Environmental Management Plan (CEMP)	Measures will be adopted to ensure that the potential for environmental impact from construction, operation and decommissioning is minimised through the implementation of appropriate mitigation. This will be informed by the receptor-specific mitigation measures proposed for the project.
All project personnel will be trained and informed of their responsibility to implement the environmental and ecological mitigation outlined in the CEMP	Toolbox talks, inductions, and awareness notices will be used to disseminate this information among all relevant project personnel.
Pre-construction surveys will be conducted to inform detailed route engineering	Appropriate preconstruction surveys and visual inspection will be conducted to confirm the locations of potentially sensitive features.
Environmental Planning	The final cable route, and positioning of external protection will be optimised to avoid impacts on sensitive environmental features, including Annex 1 habitats and wrecks insofar as possible.
Production of an Emergency Spill Response Plan	An Emergency Spill Response Plan will help to ensure that the potential for release of pollutants from construction, operation and decommissioning is minimised.
Control measures and shipboard oil pollution emergency plans (SOPEP) will be in place and adhered to under MARPOL Annex I requirements for all vessels **In the event of an accidental fuel release occurring appropriate standard practice management procedures will be implemented accordingly**	As per the MARPOL 73/78 requirement under Annex I, all ships of 400 GT and above must carry an oil prevention plan as per the norms and guidelines laid down by International Maritime Organization under Marine Environmental Protection Committee act. Production of this plan will help to ensure that the potential for release of pollutants from construction, operation and decommissioning is minimised.

MEASURE	DETAILS
Vessels will be equipped with waste disposal facilities (sewage treatment or waste storage) to IMO MARPOL Annex IV Prevention of Pollution from Ships standards	Measures will be adopted to ensure that the potential for release of pollutants from construction, operation and decommissioning is minimised.
Ballast water discharges from vessels will be managed under International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (BWM Convention)	The BWM Convention, adopted in 2004, aims to prevent the spread of harmful aquatic organisms from one region to another, by establishing standards and procedures for the management and control of ships' ballast water and sediments. Measures will be adopted to ensure that the risk of Marine Non-Native Species (MNNS) introduction during construction, operation and decommissioning is minimised.
Vessels will adhere to the IMO guidelines for the control and management of ships' biofouling to minimise the transfer of invasive aquatic species (Biofouling Guidelines) (resolution MEPC.207(62)	The Biofouling Guidelines provide a consistent approach to minimising the risk of MNNS introduction via biofouling on ship's hulls.
All vessels will adhere to the Scottish Marine Wildlife Watching Code (SMWWC)	NatureScot developed the Code as part of its duties under the Nature Conservation (Scotland) Act 2004. The Code was first published in 2006 and was revised in 2017. The code aims to: • help minimise disturbance to marine wildlife; • help you to enjoy watching marine wildlife; • improve your chances of seeing wildlife; • provide a standard for the wildlife watching industry; and • help you to stay within the law.
All vessels will adhere to the Basking Shark Code of Conduct	Under Schedule 5 of the Wildlife and Countryside Act (1981) it is illegal to kill, injure or recklessly disturb Basking Sharks in British waters. By following the Code of Conduct boat handlers reduce the risk of killing, injuring or harassing basking sharks.
Project operations will adhere to Marine Scotland's (2014) Guidance on the Offence of Harassment at Seal Haul-out Sites	Seals at designated haul-outs garner strict protection under Section 117 of the Marine (Scotland) Act 2010, with the Protection of Seals (Designation of Haul-Out Sites) (Scotland) Order 2014 (as amended) specifying the sites,

MEASURE	DETAILS
	and it is an offence to cause disturbance to any seal hauled-out at such a designated site.
Crew will be made aware of all protected species within the marine environment	To ensure staff understand their responsibility to implement the mitigation measures proposed for the project.
Lighting on board installation vessels will be kept to a minimum	Lighting on-board the cable installation vessel will be kept to the minimum level required to ensure safe operations. This will minimise disturbance to seabird species.
Deployment of anchor chains on the seabed will be kept to a minimum	Reduces the potential for disturbance to benthic habitats and species including any commercial fish species which utilise the seabed.
Vessels will travel at a slow speed during survey, installation and protection works	The slow speed of installation vessels will minimise disturbance impacts to seabird and marine mammal receptors.
The duration of cable installation and protection will be minimised as much as possible	Reduces magnitude and duration of impacts on all receptors and particularly disruption in relation to commercial fisheries and other sea users.
The use of external cable protection including rock berms and/or mattresses will be minimised, and only be deployed where adequate protection of the cable(s) cannot be achieved through burial	Cable burial is the first choice for protection, as this minimises impacts on the environment and other sea users. However, when this is not possible due to existing subsea assets, or seabed conditions, other cable protection measures will be utilised to ensure the cable(s) is adequately protected.
All rock berms and external cable protection will be designed to minimise snagging, with slopes less than 1:3, and of suitable construction to prevent snagging risk	Minimising risk to other sea users and commercial fisheries resulting from the installation and operation of the cable(s).
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 a Fisheries Liaison Mitigation Action Plan	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 proposed project operations including exclusions, dates and durations.

MEASURE	DETAILS
Notice to Mariners (including local), Kingfisher bulletins, Radio Navigational Warnings, NAVTEX, and/or broadcast warnings will be promulgated in advance of any proposed works. The notices will include the time and location of any work being carried out, and emergency event procedures	Ensure navigational safety and minimise the risk and equipment snagging.
Compliance with International Regulations for the Prevention of Collision at Sea (IMO, 1972) and the International Regulations for the Safety of Life at Sea (SOLAS)	SOLAS is an international maritime treaty which sets minimum safety standards in the construction, 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 and minimise the risk of equipment snagging.
A Cable Burial Plan (CBP) will be produced outlining the proposed method statement and cable protection requirements for approval by the Regulator and discussion with fisheries stakeholders	A cable burial risk assessment will be conducted to determine the level of cable protection required to ensure that the operations of existing and future sea users can continue throughout the installation corridor, without increased risk to them or the cable(s). The CBP will outline how the required levels of protection are achieved and ensure that relevant stakeholders are aware of installation activities.
As built survey data will be provided to the UKHO and Kingfisher for inclusion on Admiralty Charts and KIS-ORCA Awareness Charts	Ensure navigational safety and minimise the risk and equipment snagging.
A Safety Management System (SMS) will be in place throughout the Project	Ensures that vessels comply with mandatory safety rules and regulations and follows appropriate codes, guidelines and standards.
Equipment and Training for Site Personnel	Site personnel will be suitably equipped and trained for work offshore including in firefighting, first aid and offshore survival.
There will be adverse weather working policies and procedures for periods of construction and maintenance	This will ensure preparations are in place for adverse weather conditions.

MEASURE	DETAILS
Crossing and Proximity agreements will be established with relevant cable and pipeline operators of other assets	These agreements will include the ability of a cable or pipeline operator to access their asset during construction if required. If such works are required to occur simultaneously, consultation with the cable or pipeline operator will be undertaken.
A communications strategy will be developed for the Project	To outline commination protocols between the Project and other marine stakeholders.
Protocol for Accidental Discoveries (PAD) of Marine Historical Assets	The Protocol will define procedures to be taken in the event of a discovery in order to avoid impact to any marine historic assets.
Avoidance of known Marine Historic Assets	Avoidance of anthropogenic contacts and anomalies is feasible, and the installation corridor is designed to do this.

4 ASSESSMENT METHODOLOGY

4.1 Introduction

This section presents an outline of the assessment methodology to be employed within the MEA for those impacts scoped into the assessment. It outlines the methodology for the identification and evaluation of potential significant environmental effects on physical, biological and human receptors. The assessment will be in line with published industry guidance (e.g. CIEEM, 2018; SNH (now NatureScot), 2018).

4.2 Assessment Approach

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 project 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 impacts in order to determine their significance has been proposed. The process considers:

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

It is important to have a common approach to impact assessment across a project, although there are definitions and issues specific to each impact that the assessment must take into account. However, where relevant the MEA will present further topic specific criteria in the impact assessment sections.

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 will be 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. As mentioned above, in carrying out individual assessments, a more specific scale of increasing sensitivity will be defined where this is appropriate.

4.2.2 Magnitude

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

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

Categorisation of the magnitude of impact will vary for specific topics, where appropriate. The magnitude categories used are negligible, minor, moderate and major.

4.2.3 Significance of Impact

The significance of potential effects will be determined by a combination of the sensitivity and value of a receptor and the magnitude of an effect. The proposed framework for assessing the significance of potential effects is outlined below in 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
Moderate	Negligible	Minor	Moderate	Moderate	Major
Major	Minor	Minor / moderate	Moderate	Major	Major

Where a range of significance is presented in Table 4-1, expert judgement will be used to consider the final impact. In general, moderate or major impacts are classified as significant and will require additional mitigation and further assessment of the residual effect.

Certain measures will be incorporated into the project design in adherence to best practices or embedded mitigation / management measures in accordance with standard industry practice (see Section 3.8).

4.2.4 Navigational Risk Assessment

A Navigational Risk Assessment (NRA) will form the Shipping and Navigation assessment chapter. This assessment process as part of the NRA differs slightly from the process outlined above in Sections 4.2.1 to 4.2.3. For the NRA, the assessment of hazards / impacts is based on UK Health and Safety Executive principles, consistent with a Formal Safety Assessment (FSA). The risk categorisation is then assigned using a risk matrix combining magnitude of effect and likelihood. Further details on this process are provided in Section 5.8, and will be expanded upon for the forthcoming MEA as required.

5 OVERVIEW OF KEY ENVIRONMENTAL CONSIDERATIONS

5.1 Overview of the Scoping Boundary

This section presents the key environmental topics with potential for interaction with the area encompassed by the Shetland-Yell HVAC Link Scoping Boundary. Each topic will outline any potential impacts that may require further consideration in the MEA that will be produced to support the application for the Shetland-Yell HVAC Link Marine Licences.

The waters between Shetland Mainland and Yell support a variety of marine wildlife including benthic species, marine mammals, birds and fish. The Scoping Boundary overlaps with the following designated sites: Yell Sound Coast Special Area of Conservation (SAC), Yell Sound Coast Site of Special Scientific Interest (SSSI) and East Mainland Coast, Shetland Special Protection Area (SPA). The Yell Sound Coast SAC (an area encompassing ~15.44 km^2) and SSSI (an area encompassing ~8.7 km^2) designated sites cover a large section of the north east coastline of Mainland Shetland and the southern coastline of Yell, including several of the skerries and smaller islands in the Yell sound. The East Mainland Coast, Shetland SPA also covers a large area (233.33 km^2) within the Yell Sound, in addition to the eastern coastlines of Shetland Mainland and Whalsay.

The Scoping Boundary overlaps with areas mapped as static fishing areas (crab and lobster and buckie pots) and fishing dredge areas (scallops) by the North Atlantic Fisheries College (NAFC) and is adjacent to several aquaculture lease areas and active aquaculture sites, as well as an anchorage area. Other existing infrastructure and other sea users in the vicinity of the corridor include pipelines, telecommunications cables, ferries and other vessel traffic.

The key environmental features and human factors associated with the Shetland-Yell HVAC Link are discussed in more detail below.

5.2 Physical Environment and Water and Sediment Quality

5.2.1 Key Data Sources to Inform this Non-Statutory Scoping Report

The key data sources used to inform the physical environment and water and sediment quality section include:

- Marine Scotland National Marine Plan Interaction Plan (NMPi);
- Scottish Environment Protection Agency (SEPA) River Basin Management Plan and Water Environment Hub Data Viewer; and
- Site-specific survey data – including data from the reconnaissance survey of the corridor undertaken in 2020.

5.2.2 Baseline Overview

Tidal current velocities within the Yell Sound are understood to be highest in the narrower channels to the west of the Scoping Boundary between the coastlines of Shetland Mainland, Yell and the islands of Samphrey, Bigga, Brother Isle and Uynarey. The currents within the Scoping Boundary are comparatively lower, reaching a maximum of 1.8 km/s in the mid-section of the corridor (Halliday, 2011).

Figure 5-1 displays the bathymetry and slope within the Scoping Boundary. On the approach to the Cul Ness landfall, steep slopes are present with areas of shallow or outcropping bedrock. At the Firth Ness landfall, steep slopes are also evident and there is presence of mobile sediments and possible slides scars. Beyond the landfall approaches,

within the central section of the southern reaches of the Scoping Boundary, seabed conditions are generally benign, with gentle slopes (0 – 4°). Steeper slopes and outcropping rock are present around the isle of Wether Holm, a small island present on the approach to the Firth Ness landfall and on the east of the Scoping Boundary, adjacent to the Lunna peninsula. In addition, a deep channel in the mid-section of the Scoping Boundary exists where the tidal current velocities are highest. Within this area, slopes increase to 4 – 20° and areas of mobile bedforms, scour and potentially shallow sediment cover are anticipated based on the higher tidal current velocities in this area and the available geophysical survey data. Beyond this area towards the Burravoe landfall, slopes generally decrease again in the centre of the Scoping Boundary, and sediment cover is expected to increase. In the east of the northern reaches of the Scoping Boundary, evidence of outcropping rock and steeper slopes are present.

According to British Geological Survey (BGS) data available to view on NMPi (2021), the corridor overlaps with an area of seabed which is predominantly gravelly sand. Localised areas of shallow or outcropping bedrock are also present along the corridor.

Scotland's water quality between MHWS and 3 NM offshore is classified by SEPA. The most recent classification results for the waters monitored by SEPA were published in 2014. The Scoping Boundary overlaps with the Swining Voe and Yell Sound Coastal water bodies, ID: 200274 and ID: 200503, respectively. Both of these coastal water bodies are categorised as being in Good overall condition (SEPA, 2015).

There are no designated bathing waters in the vicinity of the Scoping Boundary, however, three Shellfish waters protected areas lie in the vicinity:

- The Lunna Shellfish waters protected area (ID: SWPA62), partly overlaps with the southeast section of the Scoping Boundary, adjacent to the Cul Ness landfall. These waters were classified as being in Good condition.;
- The Scarvare Ayre, Dales Voe Shellfish waters protected area (ID: SWPA69) lies approximately 1 km west of the Scoping Boundary, classified as being in a Fair condition.; and
- The Hamna Voe Shellfish waters protected area (ID: SWPA18) lies approximately 1 km west of the Scoping Boundary at the Burravoe landfall approach. This site was classified as being in Good condition in 2014 (SEPA, 2015).

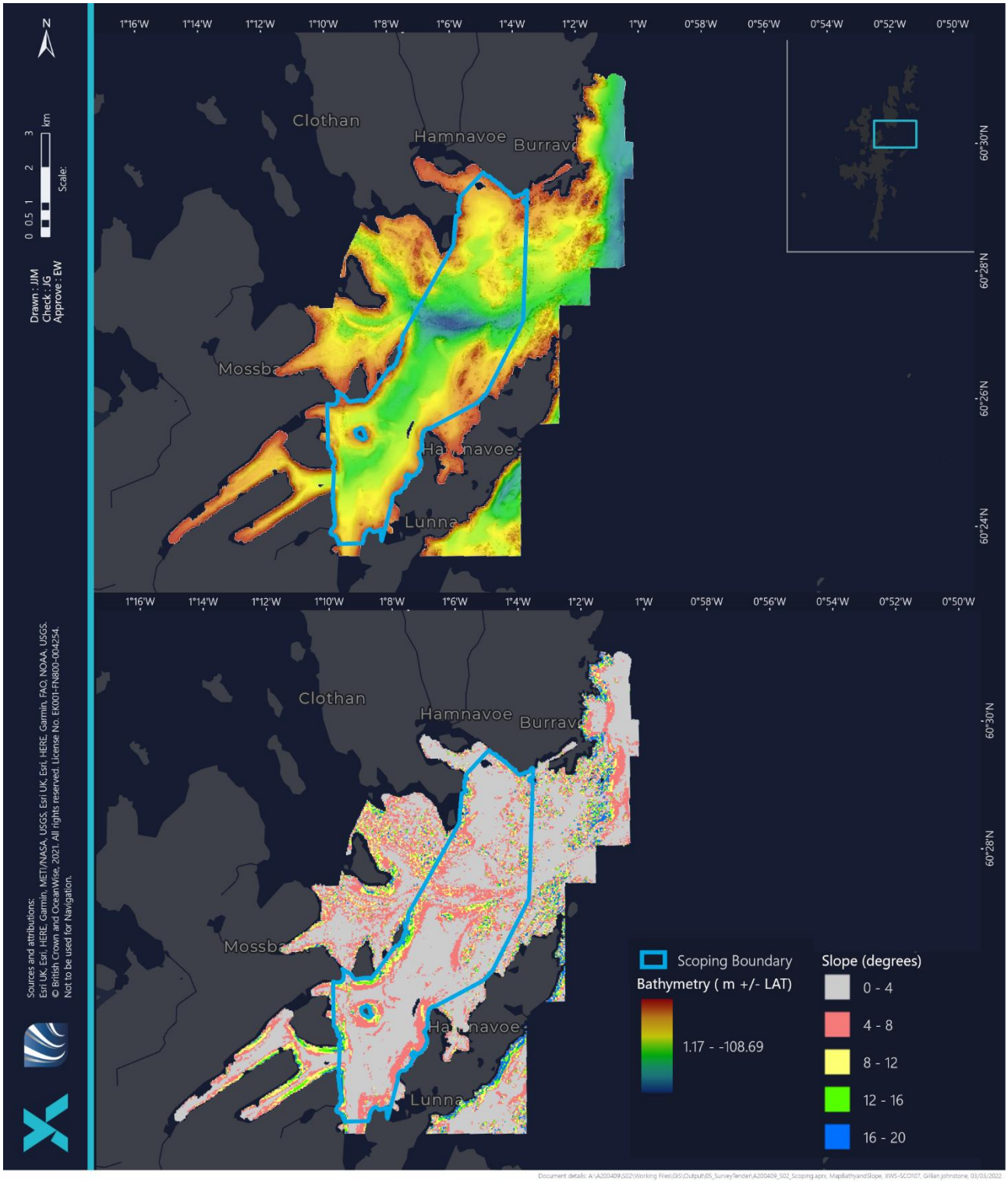

Figure 5-1 Bathymetry and Slope

5.2.3 Scoping of Potential Impacts

The potential impacts of the Shetland-Yell HVAC Link on the physical environment and sediment and water quality are presented in Sections 5.2.3.1 to 5.2.3.6. It is important to note that physical environment features may not in themselves be receptors but instead pathways with the potential to indirectly impact other receptors.

5.2.3.1 Modification of Sediment Transport Pathways

Modification of sediment transport pathways may arise from local changes in current speeds in areas where additional protection (such as rock placement or other external protection techniques) is used. The Scoping Boundary has been developed to maximise the potential for burial wherever possible and any additional protection will result in only a small elevation of the seabed profile. The cable installation corridor will be further refined within the Scoping Boundary to maximise burial success according to survey data. Therefore, it is expected that any modification of sediment transport pathways will be highly localised and unlikely to significantly affect any sediment transport pathways. For this reason, this impact will not be included within the MEA.

5.2.3.2 Increased Suspended Sediments

During cable installation, increased suspended sediment concentrations (SSC) may arise due to sediment disturbance from seabed preparations, excavation of the OCT at Cul Ness (if required), cable trenching / burial, and from the release of small volumes of HDD drilling fluids. Suspended sediments will be deposited on the seabed as the sediments settle. This pathway, including its potential impact on water quality, benthic ecology and aquaculture will be included within the MEA.

5.2.3.3 Changes to Water and Sediment Quality from Increased Suspended Sediment and Potential Release of Contaminated Sediments

Changes to suspended sediment concentrations due to cable installation activities will be temporary and transient and are not anticipated to lead to a reduction in the waterbody status (currently in Fair or Good condition). This impact is scoped in only with respect to the potential release of sediment contaminants, with an onward impact on the chemical status om nearby water bodies. Trapped contaminated sediments may be disturbed, released and dispersed more widely into the environment with impacts on the sediment quality during construction and/or decommissioning activities. Further assessment is required to assess the impact this will have on the water and sediment quality of the area. Therefore, this impact will be included in the MEA.

5.2.3.4 Changes in Water and Sediment Quality from Accidental Releases of Hazardous Substances

Accidental release of hazardous substances, either from accidental spills from vessels or from damage to pipelines crossed by the cable(s), has the potential to degrade water and sediment quality. As stated in Section 3.8, all vessels will comply with international requirements of the International Convention for the Prevention of Pollution from Ships (MARPOL) convention, as well as best practice for works in the marine environment (e.g. preparation of Emergency Spill Response Plan) to reduce the risk and impact of any accidental spills. All crossings with pipelines will also be designed and carried out in accordance with best practice. Crossing agreements will be put in place with third-party asset owners prior to cable installation to agree crossing designs, installation techniques, and emergency response procedures in the event of any damage occurring (engagement with third-party asset owners is ongoing). Therefore, a significant effect arising from accidental release of hazardous substances is considered to be highly unlikely, and for this reason, the impact of accidental releases of hazardous substances on water quality will not be included within the MEA.

5.2.3.5 Damage to Geological Features

Two physical environment receptors which may be impacted by the Shetland-Yell HVAC Link are geological features and seabed and coastal morphology. No protected geological features have been identified within the vicinity of the Scoping Boundary and for this reason, impacts on this receptor will not be included in the MEA.

5.2.3.6 Loss or Alteration to Seabed and Coastal Morphology

Seabed morphology and features may potentially be lost or altered as a result of cable installation (e.g. from seabed disturbance and sediment deposition as a result of seabed preparation and cable burial) and operation (e.g. from scour and changes in sediment transport). However, during detailed design, micro-routing will be undertaken to avoid any areas of sandwaves, steep gradients, large boulders and rock outcrops where possible, reducing any loss or alteration to seabed morphology (see Section 3.8). In addition, any operational impact from scour or modifications of sediment transport pathways is expected to be minimal as the cable(s) will be buried, wherever possible, and any additional protection will result in only a small elevation of the seabed profile and will also be designed to minimise the potential for scour. Furthermore, if HDD is used at both landfalls, there will be a very limited impact on coastal morphology. If OCT is used at Cul Ness, there may be some limited and temporary changes in coastal morphology, however, natural backfill and remediation where required will reduce any permanent effects. For these reasons, loss or alteration of seabed and coastal morphology will not be included in the MEA.

5.2.4 Assessment Methodology

5.2.4.1 Data Sources to Inform the MEA Baseline Characterisation

In addition to the data sources listed in Section 5.2.1, the following sources will be used to inform the MEA baseline characterisation for physical environment and water and sediment quality:

- Site-specific survey data, including:
  - Geophysical and geotechnical survey outputs; and
  - Site-specific sediment analyses, including Particle Size Analysis (PSA) and contaminant analysis.

5.2.4.2 Summary and Assessment Method

A summary of the scoping of impacts and the assessment methodology for the impacts that have been scoped into the MEA is presented in Table 5-1.

Table 5-1 Potential impacts on physical environment and water and sediment quality

POTENTIAL IMPACT	PHASE[1]			PATHWAY / RECEPTOR	SCOPING RESULT	ASSESSMENT METHODOLOGY (IF SCOPED IN)
	I	O	D			
Modification of sediment transport pathways	X	✓	X	Pathway	Scoped out	-

POTENTIAL IMPACT	PHASE[1]			PATHWAY / RECEPTOR	SCOPING RESULT	ASSESSMENT METHODOLOGY (IF SCOPED IN)
	I	O	D			
Increased suspended sediments	✓	X	✓	Pathway	Scoped in to inform receptor topics including water quality, benthic ecology and other sea users (aquaculture only)	Examination of findings from project specific benthic and geophysical surveys to provide site-specific information on seabed sediment characteristics. Magnitude will be assessed using results from publicly available studies (e.g. Gooding *et al.*, 2012). This impact of this pathway will be assessed within the respective receptor topic-chapters to understand the impacts on sensitive receptors (see below).
Changes to water and sediment quality from increased suspended sediments and release of contaminated sediments	✓	X	✓	Receptor	Scoped in	The potential impacts of increased SSC on sensitive receptors, including impacts on WFD classification and nearby Shellfish Protected Waters will be assessed considering the magnitude of SSC (methodology described above) and information from WFD and Shellfish Protected Waters monitoring programmes. The potential release of contaminated sediments will be informed by the results of sediment analyses completed for sediment samples collected during pre-construction surveys.
Changes to water and sediment quality from accidental release of hazardous substances	✓	✓	✓	Receptor	Scoped out	-
Damage to geological features	✓	X	✓	Receptor	Scoped out	-
Loss or alteration to seabed and coastal morphology	✓	✓	✓	Receptor	Scoped out	-

[1] I = installation, O = operation and D = Decommissioning

5.3 Benthic and Intertidal Ecology

5.3.1 Key Data Sources to Inform this Non-Statutory Scoping Report

The key data sources used to inform the benthic and intertidal ecology section include:

- EMODnet (2019) broad-scale seabed habitat map for Europe (EUSeaMap);
- Site-specific survey data – including data from reconnaissance survey of the corridor undertaken in 2020;
- Joint Nature Conservation Committee (JNCC) (2019) Annex I Reefs in UK offshore waters; and
- NatureScot Priority Marine Feature (PMF) Maps available through NMPi (2021).

5.3.2 Baseline Overview

The benthic habitat types predicted to be present along the Shetland-Yell HVAC Link Scoping Boundary include both rocky and sediment habitat types. Rocky habitat types include A3.1 "Atlantic and Mediterranean high energy infralittoral rock' adjacent to all potential landfalls and on the west of the Lunna Peninsula, A3 'Infralittoral rock and other hard substrata' and A3.3 'Atlantic and Mediterranean low energy infralittoral rock' at the Burravoe landfall, and localised areas of A4.1 'Atlantic and Mediterranean high energy circalittoral rock' and A4.12 'Sponge communities on deep circalittoral rock' across the Scoping Boundary. Coarse sediment types, including A5.14 'Circalittoral coarse sediment', A5.13 'Infralittoral coarse sediment' and A5.15 'Deep circalittoral coarse sediment', are also present in the Scoping Boundary (EMODnet, 2019).

Localised areas of shallow and outcropping bedrock are apparent on the site-specific survey data and this is consistent with the predicted rocky habitat types in the area, as well as areas of potential Annex I bedrock and/or stony reef overlapping with the Scoping Boundary. Areas of potential Annex I reef are mainly present on the east and west of the Scoping Boundary, adjacent to nearby coastlines. The areas of potential Annex I bedrock and/or stony reef will be avoided where possible, however, there is the possibility that Annex I reef areas will be crossed.

Maerl beds have been recorded within the east of the Scoping Boundary, approximately 0.6 km off the coast of Quidan Ness on the Lunna peninsula. Maerl beds are a Priority Marine Feature (PMF) habitat and listed as an OSPAR (2008) list of threatened and/or declining habitat.

5.3.3 Scoping of Potential Impacts

The potential impacts of the Shetland-Yell HVAC Link on benthic and intertidal ecology are presented in Sections 5.3.3.1 to 5.3.3.7. This summary assumes that the cable(s) will either be buried using recognised cable trenching methods or protected using recognised additional protection techniques (such as rock placement or other external protection techniques) where trenching is not possible.

The Scoping Boundary does not lie within any designated sites with benthic qualifying features, however, there is the potential for habitats and species of conservation importance to be present, including Annex I reef and maerl beds. Baseline information on benthic species and habitats will be updated during the marine surveys, planned for 2022. Any sensitive benthic species or habitats will be avoided through micro-routing wherever possible, as stated in Section 3.8.

5.3.3.1 Loss or Disturbance of Benthic Habitats and Communities

The key potential impact of the Shetland-Yell HVAC Link on benthic and intertidal ecology is loss or disturbance of benthic habitats and communities (occurring on a temporary basis during installation and on a permanent basis where additional protection measures result in a physical change in seabed type). This impact will be included in the MEA.

5.3.3.2 Temporary increase in suspended sediments and associated smothering

Trenching activities and the placement of cable protection materials on the seabed may result in resuspension of sediments, which will settle on the seabed over a wider area. Resuspension of sediment has the potential to impact benthic communities by smothering and through temporary increases in suspended sediment concentrations. This impact will be included in the MEA.

5.3.3.3 Introduction of Hard Substrate

Additional protection measures may alter the seabed type and introduce new hard substrate for colonisation by marine fauna and flora, including species that are not currently found in the existing environment. This impact will be included in the MEA.

5.3.3.4 Accidental Releases of Hazardous Substances

Accidental releases of hazardous substances may arise as a result of accidental spills from vessels or damage to pipelines crossed by the cable(s) and have detrimental effects on benthic and intertidal habitats and organisms. However, as described in Section 3.8, adherence to international pollution prevention requirements and the implementation of Emergency Pollution Plans and appropriate emergency response procedures agreed with pipeline owners in the event of damage to pipelines occurring, will greatly reduce the risk and impact of an accidental release of hazardous substances. For this reason, this impact will not be considered in the MEA.

5.3.3.5 Introduction and Spread of Non-Native Marine Species

There is the potential that Non-Native Marine Species (NNMS) could be introduced via installation vessels. The risk of introducing NNMS will be reduced through the implementation of biosecurity measures, as described in Section 3.8, including complying measures to reduce the spread of MNNS from ballast water and biofouling. The details on how these measures will be implemented will be included within a NNMS plan. Adherence to the MNNS plan will reduce the potential risk of spreading MNNS and for this reason this impact will not be included in the MEA.

5.3.3.6 Electromagnetic Field (EMF) Effects

In addition to providing new hard substrate, when the cable(s) is operational, it has the potential to emit localised EMF. Introducing EMF into the environment can result in behavioural abnormalities and potentially an attraction to areas with higher EMF (Gill *et al.*, 2014; Copping *et al.*, 2020). There are uncertainties in the potential impact of EMF on benthic organisms and research is being carried out on this topic (e.g. Hutchison *et al.*, 2020). However, available evidence suggests that EMF effects from cables have only minor effects on benthic organisms, and mostly act as an attractant (Copping *et al.*, 2020). Notably, as discussed in more detail in Section 5.4.3, with increasing distance from the source, the effects of EMF emissions decrease and increased cable burial depth has been shown to reduce EMF impacts (Gill *et al.*, 2012). Thus, EMF effects are expected to be reduced by the fact that the cable(s) will be buried wherever possible to a sufficient depth, with additional protection measures in place where trenching is not possible. Considering the emerging evidence and concern around this topic, the impact of EMF on benthic organisms will be

included in the MEA. SHE Transmission plan on conducting a modelling study to determine the potential magnitude / extent of the EMF emissions. The impact assessment will be conducted as appropriate based on this study.

5.3.3.7 Heat Effects

For any buried portions of cable, warming of the surrounding sediment may occur, which can negatively impact demersal marine fauna (Taormina *et al.*, 2018). There is uncertainty in the magnitude of this impact as heating effects from subsea cables are not well researched. The one field study carried out so far, at the Nysted wind farm on a 166 MW cable, found that the rise in temperature did not exceed 1.4°C in 20 cm depth above the cable and no relationship was established between power transmission and temperature increase (Meißner *et al.*, 2006). Considering this, and the localised nature of this impact, this will not be included in the MEA.

5.3.4 Assessment Methodology

5.3.4.1 Data Sources to Inform the MEA Baseline Characterisation

In addition to the data sources listed in Section 5.3.1, the following sources will be used to inform the MEA baseline characterisation for benthic and intertidal ecology:

- Site-specific survey data, including:
  - Dedicated benthic survey, including grab sampling and drop down video;
  - Benthic interpretation of geophysical and geotechnical survey outputs; and
  - Site-specific sediment analyses, including Particle Size Analysis (PSA).

5.3.4.2 Summary and Assessment Method

A summary of the scoping of impacts and the assessment methodology for the impacts that have been scoped into the MEA is presented in Table 5-2.

Table 5-2 Potential impacts on benthic and intertidal ecology

POTENTIAL IMPACT	PHASE[1]			SCOPING RESULT	ASSESSMENT METHODOLOGY (IF SCOPED IN)
	I	O	D		
Loss or disturbance to benthic habitats and communities	✓	✓	✓	Scoped in	The results of the geophysical and benthic surveys (including habitat map) will be used to inform the benthic and intertidal ecology baseline, including species and habitats of conservation importance. A worst-case seabed footprint will be calculated to inform the magnitude of effect.
Temporary increase in suspended sediments and associated smothering	✓	X	✓	Scoped in	The potential impacts of increased SSC and associated deposition on benthic and intertidal ecology will be assessed using publicly available data and the geophysical and benthic survey results. The sensitivity of benthic species potentially impacted will be assessed.

POTENTIAL IMPACT	PHASE[1]			SCOPING RESULT	ASSESSMENT METHODOLOGY (IF SCOPED IN)
	I	O	D		
Accidental releases of hazardous substances	✓	✓	✓	Scoped out	-
Introduction of Invasive Non-Native Species	✓	✓	✓	Scoped out	-
Introduction of new substrate	X	✓	X	Scoped in	The potential sources of new substrate will be identified. An assessment of the potential impacts on benthic species and habitats will be made using available monitoring data from other similar developments.
EMF effects	X	✓	X	Scoped in	The potential impact of EMF will be assessed using publicly available data on the sensitivity of benthic organisms of EMF effects, as well as the modelling studies proposed by SHE Transmission to understand the magnitude of EMF emissions.
Sediment heating	X	✓	X	Scoped out	-

[1] I = Installation, O = Operation and D = Decommissioning

5.4 Fish and Shellfish Ecology

5.4.1 Key Data Sources to Inform this Non-Statutory Scoping Report

The following key data sources have been used to inform the natural fish and shellfish resources baseline:

- Fisheries statistics per ICES Rectangle (MMO, 2020);
- Marine Scotland NMPi (NMPi, 2021);
- Coull *et al.*, (1998) Fisheries sensitivity maps in British waters;
- Ellis *et al.* (2012) Spawning and nursery grounds of selected fish species in UK waters;
- MarLIN (2021). The Marine Life Information Network; and
- Malcom *et al.*, (2010) Review of migratory routes and behaviour of Atlantic salmon (*Salmo salar*), sea trout (*Salmo trutta*) and European eel (*Anguilla anguilla*) in Scotland's coastal environment: implications for the development of marine renewables.

5.4.2 Baseline Overview

According to commercial fisheries landings within the Shetland Exclusive Economic Zone (EEZ), landings are dominated by pelagic fish, mainly herring (*Clupea harengus*) and mackerel (*Scomber scombrus*), and to a lesser extent

demersal fish such as cod (*Gadus morhua*), haddock (*Melanogrammus aeglefinus*), hake (*Merluccius merluccius*), monkfish (*Lophius spp*.), saithe (*Pollachius virens*) and whiting (*Merlangius merlangus*) (Napier, 2020). Within ICES rectangle 49E8, within which the Scoping Boundary resides, there are a number of commercially exploited fish and shellfish species. Mackerel are dominant in terms of landed weight. Together with cod, herring, scallops (*Pectinidae spp.)* and haddock, these species representing 89% of the total landings between 2016 and 2020 (MMO, 2021). Shellfish species such as brown crab (*Cancer pagurus*), velvet crab (*Necora puber*), lobsters (*Homarus gammarus*) and whelks (*Buccinum undatum*) are also known to be present in inshore Shetland waters (SSMO, 2016).

Data from Coull *et al.* (1998) and Ellis *et al.* (2012) indicate that the Scoping Boundary may overlap with suitable habitat for sandeel (*Ammodytes spp.*) spawning and nursery grounds for cod and herring – all of which are potentially sensitive to impacts caused by the installation, operation and decommissioning of cable infrastructure due to seabed dependence (sandeel, herring) or noise sensitivity (herring, cod). Other spawning and nursery grounds which overlap with the Scoping Boundary are provided in Table 5-3. It should be noted that the spawning and nursery grounds identified by Coull *et al.*, (1998) and Ellis *et al.*, (2012) are based on predictions, and therefore, may be spatially and temporally variable. The probability of 0-group fish aggregations (i.e. fish species in the first year of their life) is low for all species in the vicinity of the Scoping Boundary with the exception of whiting which is medium to the east of Cul Ness in East Lunna Voe, Norway pout, which is medium to the south east of Yell, horse mackerel, which is medium to the east of Yell and cod, which is medium around the Lunna peninsula (Aires *et al.*, 2014). It should be noted that the coverage of the Aires *et al.*, (2014) data does not include the areas of the Yell Sound to the west of the Scoping Boundary.

Table 5-3 Spawning and nursery grounds of fish and shellfish species that overlap with the Scoping Boundary (Coull et al., 1998 and Ellis et al., 2012)

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Anglerfish (*Lophius piscatorius)*	N	N	N	N	N	N	N	N	N	N	N	N
Cod (*Gadus morhua*)	N	N	N	N	N	N	N	N	N	N	N	N
Common skate (*Dipturus batis*)	N	N	N	N	N	N	N	N	N	N	N	N
European hake (*Merluccius merluccius*)	N	N	N	N	N	N	N	N	N	N	N	N
Haddock (*Melanogrammus aeglefinus*)	N	S*/N	S*/N	S*/N	S/N	N	N	N	N	N	N	N
Herring (*Clupea harengus*)	N	N	N	N	N	N	N	N	N	N	N	N
Lemon sole (*Clupea harengus*)	N	N	N	S/N	S/N	S/N	S/N	S/N	S/N	N	N	N

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Ling (*Molva molva*)	N	N	N	N	N	N	N	N	N	N	N	N
Mackerel (*Scomber scombrus*)	N	N	N	N	N	N	N	N	N	N	N	N
Norway pout (*Scomber scombrus*)	S/N	S/N	S/N	S/N	N	N	N	N	N	N	N	N
Saithe (*Pollachius virens*)	N	N	N	N	N	N	N	N	N	N	N	N
Sandeel (*Ammodytidae spp.*)	S/N	S/N	N	N	N	N	N	N	N	N	S/N	S/N
Spotted ray (*Raja montagui*)	N	N	N	N	N	N	N	N	N	N	N	N
Spurdog (*Squalus acanthias*)	N	N	N	N	N	N	N	N	N	N	N	N
Whiting (*Merlangius merlangus*)	N	S/N	S/N	S/N	S/N	S/N	N	N	N	N	N	N

S = Spawning, N = Nursery, S/N = Spawning and Nursery; * = peak spawning

There is the potential for several elasmobranch species to be present along the Scoping Boundary. The Scoping Boundary overlaps with potential nursery grounds for common skate complex, spotted ray and spurdog and there are over 30 elasmobranchs present in Scottish waters, several of which are listed as PMFs in Scotland (Baxter *et al.*, 2011). Basking shark may also be present in Shetland waters and are listed on Schedule 5 and 9 of the Wildlife and Countryside Act 1981. However, Shetland's coastal waters do not support high densities of basking shark, with this species only being a rare or infrequent visitor to the region (Paxton *et al.*, 2014; Austin *et al.*, 2019).

Migratory species, mainly Atlantic salmon, sea trout and European eel, may use the waters within the vicinity of the Scoping Boundary for migration. There are several rivers on Mainland Shetland and Yell which potentially have salmon present, including at the Burn of Tronister, Burn of Quahamn and the Burn of Sandgarth on Mainland Shetland and at the Burn of Hamnavoe and the Burn of Arisdale on Yell (Marine Scotland, 2016). There are no SACs for which Atlantic salmon is a qualifying feature on Shetland.

5.4.3 Scoping of Potential Impacts

The potential impacts of the Shetland-Yell HVAC Link on fish and shellfish ecology are presented in Sections 5.4.3.1 to 5.4.3.6.

5.4.3.1 Loss of or Disturbance to Habitat

Potential loss or disturbance to habitats associated with direct seabed disturbance during cable installation may negatively impact species that are sensitive to this impact, due to the species being dependent on the seabed for some or all of its life cycle. The Scoping Boundary overlaps with sandeel spawning and nursery grounds. Sandeel require specific habitat conditions (sandy sediments with a low silt content) for spawning and for the burrows which they inhabit for much of their juvenile and adult life (Holland *et al.*, 2005). Where the cable(s) is buried, this disturbance will be temporary. Where additional protection measures are required, this may represent permanent loss of habitat. Additional protection measures are expected to be used mostly in areas of hard or rocky seabed, with the exception of pipeline crossings, and these habitat types are not characteristic of preferred sandeel habitat. Furthermore, any loss of habitat would be extremely localised, representing a small proportion of the available habitat for this species. For this reason, and the fact that most fish are mobile and able to navigate away from any disturbance, loss of or disturbance of habitat will not be included in the MEA.

5.4.3.2 Increased Suspended Sediment

Some fish and shellfish species may also be sensitive to increased suspended sediment concentrations and associated sediment deposition. Most fish species able to navigate away from high sediment loads and sandeel are expected to be relatively tolerant to increases in suspended sediment loads due to the high-energy nature of their environments (Behrens *et al.*, 2007). For these reasons, and the fact that any increased suspended sediment concentrations will be temporary and highly localised to the cable installation activities, the impact of increased suspended sediments and associated deposition on fish and shellfish ecology will not be included in the MEA.

5.4.3.3 Accidental Releases of Hazardous Substances

Accidental releases of pollutants may arise as a result of accidental spills from vessels or other equipment and have detrimental effects on fish and shellfish. However, the risk and impact of accidental releases of hazardous substances will be reduced through the implementation of the embedded mitigation measures presented in Section 3.8, making any risk posed by the release of hazardous substances low. For this reason, this impact will not be considered in the MEA.

5.4.3.4 Underwater Noise

Some fish species are potentially sensitive to noise impacts and the most likely noise impact to fish from Shetland-Yell HVAC Link project activities will result from underwater noise generated by pre- and post-installation surveys and cable installation vessels, including those involved in trenching and cable laying activities. Studies of previous cable installation projects have shown that noise emissions associated with trenching and cable installation are typically broad band, with source levels in the region of 178dB re 1µPa (rms) at 1 m from the source (frequency range of 0.7 to 50 kHz) observed by Nedwell *et al.*, (2003) and 188.5 dB re 1 µPa (frequency at 11 kHz) at 1 m from the source by Bald *et al.*, 2015. Due to these low source levels, noise from cable laying and protection works does not have any potential for adverse effects on fish.

Noise impacts from the pre-and post-installation surveys (e.g. geophysical equipment and USBL positioning equipment) will be limited to the cable installation corridor and will be for a short duration only. Considering this, any noise impacts form the pre-construction surveys are not expected to result in any population-level effects. For these reasons, underwater noise impacts on fish and shellfish ecology will not be included in the MEA.

5.4.3.5 EMF Effects

EMF may impact sensitive species, including elasmobranchs, teleost fish (i.e. flat fish, salmonids and gadoids) and crustaceans (e.g. brown crab (Scott *et al.*, 2018; Scott *et al.*, 2021)) by altering foraging or migratory behaviour (Hutchison *et al.*, 2020). The magnitude of this impact will depend in part on the cable burial depth and the cable protection measures which are utilised. Given that the cable(s) will be buried or protected for most of its length (in line with SHE Transmission's overarching objective for installation of subsea cable) the potential for significant impacts due to EMF emissions are minimal and unlikely to occur. Therefore, the EMF effects on fish and shellfish ecology will be included in the MEA.

5.4.3.6 Barriers to Migratory Fish

It is understood that there is the potential for migratory fish species, such as Atlantic salmon and European eel to be impacted by activities during installation of the Shetland-Yell HVAC Link. Several rivers in the vicinity of the Scoping Boundary are classified as having salmon present. However, the overall footprint of any physical barriers (e.g. an installation vessel) or indirect barriers such as noise will be localised and the duration temporary. Indirect effects from operational EMF are expected to be negligible and mitigated by effective burial and other embedded design mitigations of the cable(s) itself, as described above in Section 3.8. Therefore, the potential for significant impacts due to barrier effects are minimal and unlikely to occur for all species concerned and therefore this impact will not be included within the MEA.

5.4.4 Assessment Methodology

5.4.4.1 Data Sources to Inform the MEA Baseline Characterisation

In addition to the data sources listed in Section 5.4.1, the following sources will be used to inform the MEA baseline characterisation for natural fish and shellfish ecology to inform the potential suitability as a spawning habitat for fish and shellfish:

- Site-specific survey data, including:
  - Dedicated benthic survey, including grab sampling and drop down video;
  - Benthic interpretation of geophysical and geotechnical survey outputs; and
  - Site-specific sediment analyses, including Particle Size Analysis (PSA).

No site-specific surveys are planned for fish and shellfish due to the relatively abundant publicly available information on fish and shellfish populations in Scotland.

5.4.4.2 Summary and Proposed Assessment Method

A summary of the scoping of impacts and the assessment methodology for the impacts that have been scoped into the MEA is presented in Table 5-4.

Table 5-4 Potential impacts on fish and shellfish ecology

POTENTIAL IMPACT	PHASE[1]			SCOPING RESULT	ASSESSMENT METHODOLOGY (IF SCOPED IN)
	I	O	D		
Loss of or disturbance to habitat	✓	✓	✓	Scoped out	-
Temporary increases in suspended sediment concentrations and associated sediment deposition	✓	X	✓	Scoped out	-
Accidental release of hazardous substances	✓	X	✓	Scoped out	-
Underwater noise	✓	X	✓	Scoped out	-
EMF	X	✓	X	Scoped in	The potential impact of EMF will be assessed using publicly available data on the sensitivity of benthic organisms of EMF effects, as well as the modelling studies proposed by SHE Transmission to understand the magnitude of EMF emissions.
Barrier effects to migratory species	✓	X	✓	Scoped out	-

[1]I = installation, O = operation and D = Decommissioning

5.5 Ornithology

5.5.1 Key Data Sources to Inform this Non-Statutory Scoping Report

Key data sources for ornithology include:

- Protected site information (e.g. SiteLink, JNCC, NatureScot);
- Seabird foraging distances (Woodward *et al.*, 2019);
- Vulnerability of seabird populations (Furness *et al.*, 2013; Wade *et al.*, 2016);
- An atlas of seabird distribution in north-west European waters;
- The distribution of seabirds and marine mammals in the Atlantic Frontier, north and west of Scotland (Pollock *et al.*, 2000); and
- Seabird Populations Trends and Causes of Change: 1986 – 2019 Report (JNCC, 2021).

5.5.2 Baseline Overview

The Scoping Boundary overlaps with the East Mainland Coast, Shetland SPA (Figure 5-2). This SPA covers the northeast coastal waters of Mainland Shetland from Aith Ness in the south to Samphrey in the north (NatureScot, 2017). The Scoping Boundary overlaps with the most northerly section of the SPA.

The East Mainland Coast, Shetland SPA is designated for the following Annex 1 species:

- Breeding:
  - Red-throated diver (*Gavia immer*);
- Non-breeding:
  - Great northern diver (*Gavia stellata*); and
  - Slavonian grebe (*Podiceps auratus*).

Although not qualifying features of the site, the East Mainland Coast, Shetland SPA also supports migratory populations of European importance of the following species:

- Common eider (*Somateria mollissima faeroeensis*);
- Long-tailed duck (*Clangula hyemalis*); and
- Red-breasted merganser (*Mergus serrator*).

The breeding season for red-throated diver occurs between April and September and the wintering period for great northern diver and Slavonian grebe occurs between October and June and September and May, respectively (NatureScot, 2020).

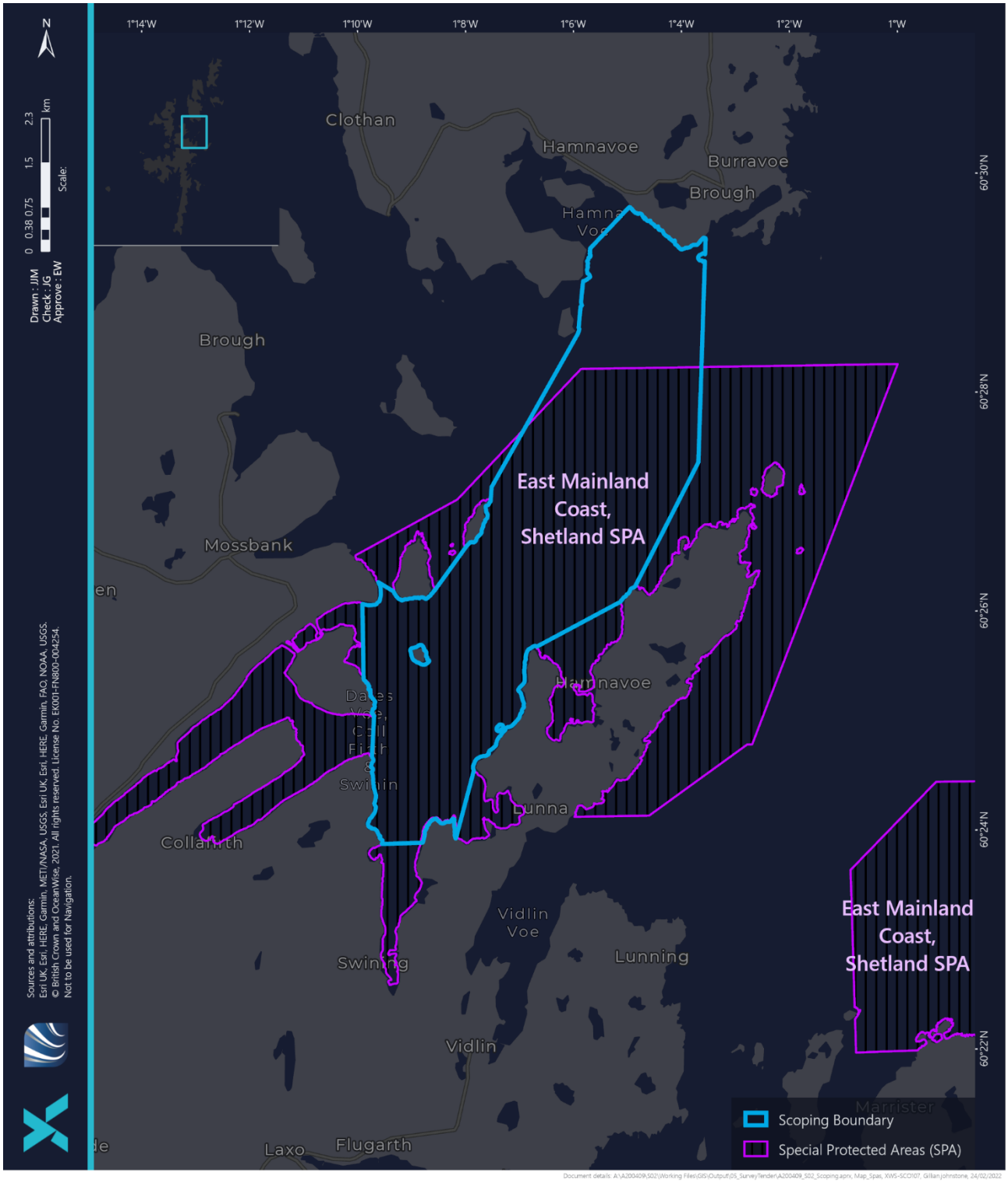

Figure 5-2 SPAs in the Vicinity of the Scoping Boundary

5.5.3 Scoping of Potential Impacts

The potential impacts of the Shetland-Yell HVAC Link on ornithology are presented in Sections 5.5.3.1 to 5.5.3.4.

5.5.3.1 Disturbance and Displacement Due to Vessel Presence

Disturbance during the installation, maintenance and decommissioning of a subsea cable (vessel presence and activity) may displace birds from an area of sea, effectively amounting to habitat loss during the period of disturbance (Drewitt and Langston, 2006). Project activities may directly disturb and/or displace birds from foraging or loafing areas, thus causing the birds to move elsewhere and potentially affecting breeding productivity or survival rates of an individual or population. A single disturbance event does not have an immediate effect on the survival or productivity of an individual bird. Repeated disturbance over an extended period can affect the survival and productivity of a bird. Disturbance would be restricted to the cable installation corridor and at any one time to the immediate vicinity of the project vessels when they are operating. Furthermore, it should be noted that the East Mainland Coast, Shetland SPA is a marine SPA and there will be no overlap of the landfall or onshore works with this SPA, reducing any potential impact on this SPA with regards to disturbance at breeding sites. However, given the importance of the area for seabirds, including the qualifying features of the SPA, disturbance and displacement due to vessel presence will be included in the MEA.

5.5.3.2 Disturbance / displacement Due to Increased Turbidity as a Result of Increases in Suspended Sediment

The increases in SSC during cable installation may increase turbidity levels, impairing the foraging abilities of seabirds. However, the increases in SSC will be temporary and localised to the vicinity of the cable installation works, representing a small proportion of the available foraging habitat. For this reason, any increase in turbidity levels is not expected to result in significant disturbance to seabirds and this impact will not be included in the MEA.

5.5.3.3 Accidental Release of Hazardous Substances

Accidental releases of pollutants may arise as a result of accidental spills from vessels or other equipment and have detrimental effects on seabirds. However, the risk and impact of accidental releases of hazardous substances will be reduced through the implementation of the embedded mitigation measures presented in Section 3.8, making any risk posed by the release of hazardous substances low. For this reason, this impact will not be included in the MEA.

5.5.3.4 Indirect Effects Due to Changes in Habitats / Prey

Changes in the distribution of seabird prey species (for example fish and shellfish described in Section 5.4) has the potential to have indirect effects on seabirds. The main impacts on prey species are likely to be as a result of construction noise and physical disturbance from cable installation. Some of the more mobile prey species such as most fish species are expected to be able to rapidly vacate the area of impact and are not expected to be significantly affected. The more sessile or sedentary prey species, such as some crustaceans and molluscs who are unable to vacate the area of physical disturbance from the cable installation have the potential to be impacted, however, this will be highly localised and temporary. As described in Section 5.4, there are no significant impacts on fish and shellfish expected from the project. For this reason, this impact will not be included in the MEA.

5.5.4 Assessment Methodology

5.5.4.1 Data Sources to Inform the MEA Baseline Characterisation

No specific marine surveys are planned for ornithology. The baseline within the MEA will draw on publicly available information in the area, including survey data gathered for the East Mainland Coast, Shetland SPA as well as onshore bird surveys at Cul Ness undertaken in 2021. Therefore, the baseline characterisation will be informed by publicly available data sources, such as those presented in Section 5.5.1, as well as the site-specific onshore data, where appropriate.

5.5.4.2 Summary and Assessment Method

A summary of the scoping of impacts and the assessment methodology for the impacts that have been scoped into the MEA is presented in Table 5-5.

Table 5-5 Potential impacts on ornithology

POTENTIAL IMPACT	PHASE[1]			SCOPING RESULT	ASSESSMENT METHODOLOGY (IF SCOPED IN)
	I	O	D		
Disturbance / displacement due to vessel presence	✓	✓	✓	Scoped in	Publicly available data will be reviewed to inform the baseline in the MEA. The potential disturbance / displacement from vessels will be assessed using information on the sensitivities of key species, including seasonality, habitat use etc..
Disturbance / displacement due to increased turbidity as a result of increases in suspended sediment	✓	X	✓	Scoped out	-
Accidental releases of hazardous substances	✓	X	✓	Scoped out	-
Indirect effects due to changes in habitats / prey	✓	✓	✓	Scoped out	-

[1] I = installation, O = operation and D = Decommissioning

5.6 Marine Mammals

5.6.1 Key Data Sources to Inform the Non-Statutory Scoping Report

- Estimates of cetacean abundance in European Atlantic waters in summer 2016 from the SCANS-III aerial and shipboard surveys (Hammond *et al.*, 2021);
- Habitat-based predictions of at-sea distribution for grey and harbour seals in the British Isles (Carter *et al.*, 2020);

- Scientific Advise on Matters Related to the Management of Seal Populations: 2020; EReport to the National Environment Research Council (SCOS, 2020);
- Regional baselines for marine mammal knowledge across the North Sea and Atlantic areas of Scottish waters (Hague *et al.*, 2020);
- Second Report by the UK under Article 17 on the implementation of the Habitats Directive from January 2011 to December 2006 (JNCC, 2007);
- NAFC Map 11 - on Important Marine Species – Otters (NAFC, 2017a); and
- An estimate of numbers and habitat preferences of otters *Lutra lutra* in Shetland, UK (Kruuk *et al.*, 1989).

5.6.2 Baseline Overview

Marine mammal species which are regularly expected to occur within the Yell Sound include grey seal (*Halichoerus grypus*), harbour seal (*Phoca vitulina*), otter (*Lutra lutra*), harbour porpoise (*Phocoena phocoena*), minke whale (*Balaenoptera acutrostrata)*, white-beaked dolphin (*Lagenorhynchus albirostris*), Atlantic white-sided dolphin (*Lagenorhynchus acutus*), Risso's dolphin (*Grampus griseus*), killer whale (*Orcinus orca*), long-finned pilot whale (*Globicephala melas*) and fin whale (*Balaenoptera physalus*) (Hammond *et al.*, 2021; Hague *et al.*, 2020). Of the species expected to regularly occur within the Yell Sound, grey seal, harbour seal, otter, harbour porpoise, minke whale, white-beaked dolphin and white-sided dolphin are anticipated to be observed most frequently (Hammond *et al.*, 2021).

The Cul Ness landfall overlaps with the Yell Sound Coast SSSI, designated for otter and the Yell Sound Coast SAC, designated for harbour seal and otter (Figure 5-3). The Cul Ness landfall, as well as the Lunna peninsula and Copister which are adjacent to the Scoping Boundary, are recorded as being of high importance for otters (NAFC, 2017a). There are also several seal haul-out sites in the vicinity of the Yell Sound, however, the closest to the corridor is Skerries of Neapaback, 1.5 km to the east of the Scoping Boundary, and Sligga Skerry & North End of Bigga, 5.5 km northwest.

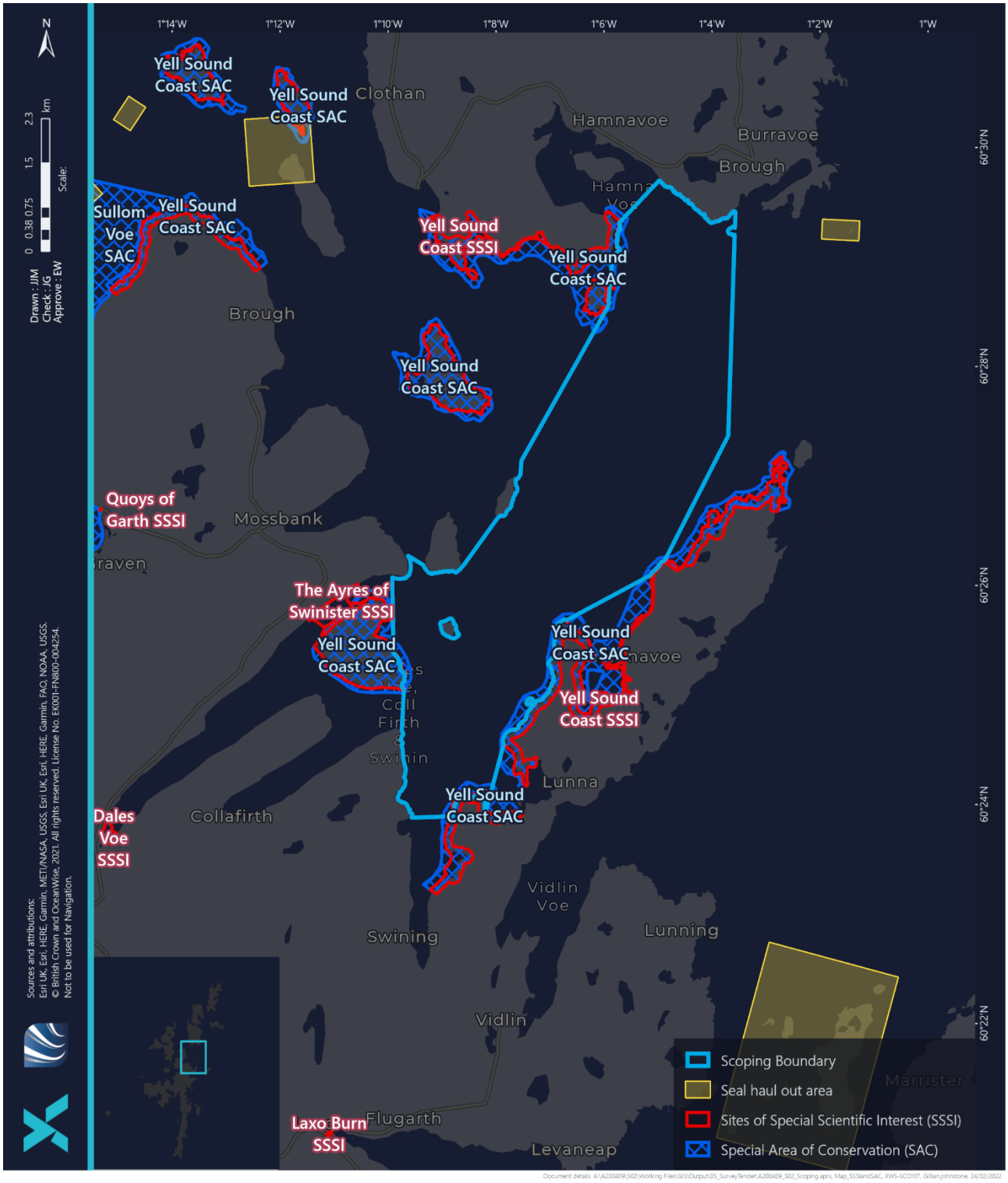

Figure 5-3 Yell Sound Coast SSSI, Yell Sound Coast SAC and Seal Haul Outs

5.6.3 Scoping of Potential Impacts

The potential impacts of the Shetland-Yell HVAC Link on marine mammals are presented in Sections 5.6.3.1 to 5.6.3.5.

5.6.3.1 Underwater Noise

The most likely potential impact to cetaceans and seals from Shetland-Yell HVAC Link project activities is disturbance resulting from underwater noise generated by pre- and post-installation surveys and cable installation vessels, including those involved in trenching and cable laying activities. The underwater noise emissions from cable laying, trenching, jetting or burial activities are generally considered to be negligible. Studies of previous cable installation projects have shown that noise emissions associated with trenching and cable installation are typically broad band, with source levels in the region of 178 dB re 1µPa (rms) at 1 m from the source (frequency range of 0.7 to 50 kHz) observed by Nedwell *et al.*, (2003) and 188.5 dB re 1 µPa (frequency at 11 kHz) at 1 m from the source by Bald *et al.*, 2015. Due to these low source levels, noise from cable laying and protection works does not have any potential for adverse effects on marine mammals, as individuals would have to remain within close range of the activities for an extended period of time for any significant disturbance or injury to occur. Any disturbance from vessel noise is also anticipated to be minimal, in the context of existing vessel activity in the area. Therefore, it is not expected that the installation vessels will elevate noise levels to a point which could cause significant disturbance or injury to marine mammal receptors and so noise. Therefore, the potential for significant impacts on marine mammals from cable installation and vessel noise sources is considered to be negligible, hence these activities will not be included within the MEA.

The most significant noise sources from the Shetland-Yell HVAC Link are expected to arise from noise generating survey activities, including MBES, SSS, SBP survey equipment, and Ultrashort Baseline (USBL) positioning equipment. These activities will be limited to within the cable installation corridor and are expected to be of short duration, meaning that potential impacts on marine mammals will be spatially and temporally limited, and are not anticipated to result in local or population level effects. It is acknowledged that underwater noise emissions can propagate beyond this boundary of the corridor and this will be adequately considered within the EPS licence application for disturbance that will be obtained prior to the deployment of any survey equipment. However, considering the sensitivity of marine mammals to underwater noise impacts, potential impacts of noise from geophysical surveys and USBL positioning equipment will be included within the MEA.

5.6.3.2 Disturbance from Nearshore Activities on Seals

Physical presence of vessels in the nearshore, landfall survey activities and possible open cut trenching at Cul Ness may potentially disturb seals. The Cul Ness landfall overlaps with the Yell Sound Coast SAC, designated for harbour seal.

It is also an offence to disturb seals at designated haul-outs under the Protection of Seals (Designation of Haul-Out Sites) (Scotland) Order 2014 (as amended). Considering the nearest seal haul-out is approximately 1.5 km from the Scoping Boundary, no significant disturbance to seals at this haul-out is expected and vessel movements close to any haul-outs would adhere to Marine Scotland's (2014) 'guidance on the offence of harassment at seal haul-out sites' to reduce the potential for any offence. However, considering the fact that there are expected to be high densities of seals in the area, disturbance from landfall activities will be included in the MEA.

5.6.3.3 Disturbance from Nearshore Activities on Otters

Otters may also be impacted by nearshore activities. As noted above, the Cul Ness landfall overlaps with the Yell Sound Coast SAC and SSSI, designated for otters.

Any disturbance to otters from the onshore activities will be considered as part of the onshore consenting process. Coastal otters are thought to forage in very shallow marine environments and generally do not utilise habitats beyond the 15 m depth contour. Given their intermittent use of the very nearshore marine environment, marine impacts to otters from cable lay activities are expected to be limited. However, it is acknowledged that the potential for disturbance to otters remains in the nearshore environment. Therefore, disturbance to otters from nearshore activities will be included in the MEA.

5.6.3.4 Increased Turbidity as a Result of Increases in Suspended Sediment Concentrations

Cable laying activities comprise the primary pathway which may influence water quality through disturbed sediments. Changes in turbidity due to cable laying are short-lived, with resettlement taking place within hours or days. Cetaceans, pinnipeds and otters regularly occupy waters with varying levels of turbidity, including exceptionally murky tidal waters, for extended periods without any important impacts to their biology or behaviour. Marine mammals have adapted to utilise other sense organs as their primary sensory modality in their marine environment, with pinnipeds using tactile information via their vibrissae (whiskers), cetaceans using sound (including echolocation) and otters also supplementing visual cues with tactile features (enhanced facial sensitivity through vibrissae) to successfully survive in the ocean. For these reasons, in conjunction with the highly localised and temporary changes in water quality from sediment disturbance will not generate important impacts to marine mammals and this impact will not be included in the MEA.

5.6.3.5 Accidental Releases of Hazardous Substances

All marine mammal species are considered to possess some level of sensitivity to accidental pollution events. However, the potential for an unplanned fuel release to result in an accidental pollution event from the proposed project activities is very low. As described in Sections 3.8, 5.2.3 and 5.3.3, pollution prevention measures will be in place and appropriate standard management practices will be implemented in the event of an accidental release of hazardous substances. For these reasons, this impact will not be included in the MEA.

5.6.4 Assessment Methodology

5.6.4.1 Data Sources to Inform the MEA Baseline Characterisation

No specific marine surveys are planned for marine mammals. The baseline within the MEA will draw on publicly available data, including the sources presented in Section 5.6.1.

5.6.4.2 Assessment Method

A summary of the scoping of impacts and the assessment methodology for the impacts that have been scoped into the MEA is presented in Table 5-6.

Table 5-6 Potential impacts on marine mammals

POTENTIAL IMPACT	PHASE[1]			SCOPING RESULT	ASSESSMENT METHODOLOGY (IF SCOPED IN)
	I	O	D		
Injury or disturbance from underwater noise	✓	✓	✓	Scoped in (geophysical and USBL equipment only)	The environmental baseline will be characterised using available public literature. Noise emissions will be modelled to understand the risk of injury and disturbance to marine mammals, taking into account published noise impact thresholds (e.g. Southall *et al.*, 2019).
Disturbance to seals from nearshore activities	✓	✓	✓	Scoped in	The environmental baseline will be characterised using available public literature. The sensitivity of seals to this impact will be characterised using available desktop studies and the significance of impact will be assessed considering the existing environment.
Disturbance to otters from nearshore activities	✓	✓	✓	Scoped in	The environmental baseline will be characterised using available public literature. The sensitivity of seals to this impact will be characterised using available desktop studies and the significance of impact will be assessed considering the existing environment.
Increased turbidity as a result of increases in suspended sediment concentrations	✓	X	✓	Scoped out	-

POTENTIAL IMPACT	PHASE[1]			SCOPING RESULT	ASSESSMENT METHODOLOGY (IF SCOPED IN)
	I	O	D		
EMF effects	X	✓	X	Scoped out	-
Accidental release of hazardous substances	✓	✓	✓	Scoped out	-

[1] I = installation, O = operation and D = Decommissioning

5.7 Commercial Fisheries

5.7.1 Key Data Sources to Inform this Non-Statutory Scoping Report

- MMO (2020) ICES rectangle landings and effort statistics;
- NAFC Marine Centre UHI (now a part of University of the Highlands and Islands Shetland) static gear fishing grounds, dredge fishing grounds and squid gear fishing grounds which informed the Shetland Islands Marine Spatial Plan;
- Consultation data (e.g. annotated fishing grounds); and
- Marine Scotland (2019) Average intensity (hours) of fishing using Vessel Monitoring System (VMS) data sets.

5.7.2 Baseline Overview

The Scoping Boundary overlaps with ICES rectangle 49E8. Over 10 m vessels operating demersal trawls dominated the landings values and weights for this ICES rectangle between 2016 and 2020 (MMO, 2021).

Marine Scotland VMS data averaged between 2009 and 2016 indicates that fishing effort by > 15 m vessels operating bottom trawls and dredge fishing within the Scoping Boundary is low (less than 12 hrs annually for both methods), with higher levels of fishing effort by vessels operating these fishing methods to the east and west of Mainland Shetland, outwith the Yell Sound (Marine Scotland, 2019).

Based on spatial data on fishing grounds provided by the NAFC Marine Centre UHI in 2020, relevant for smaller vessel sizes (aka. inshore vessels of < 15 m which are not included within the Marine Scotland VMS data), the Scoping Boundary overlaps with static fishing grounds for creels (i.e. pots and traps) targeting crab and lobsters on both shore-ends, and scallop dredge grounds for much of the cable length, with the exception of approximately 3 km of the mid-section of the Scoping Boundary (Figure 5-4). SHE Transmission engaged with Shetland Shellfish Management Organisation (SSMO) and the Shetland Fishermen (SFA) for the survey areas for the site investigation surveys. Further clarity was sought from Yell Sound fishers to clarify where areas of high intensity or high value fishing occur. Feedback gained through consultation with local fishers has indicated that scallop fishing occurs mainly on either shore-end. Fishing grounds for vessels operating Buckie pots (targeting common whelk (*Buccinum undatum*)) also overlap with the east Scoping Boundary, north of the Ness of Setter.

It is therefore expected that the Scoping Boundary is mostly targeted by smaller inshore vessels or < 15 m in length. Due to the limited spatial information available for smaller inshore vessels, this will be a focus of the consultation to be undertaken ahead of the Marine Licence application to inform the MEA.

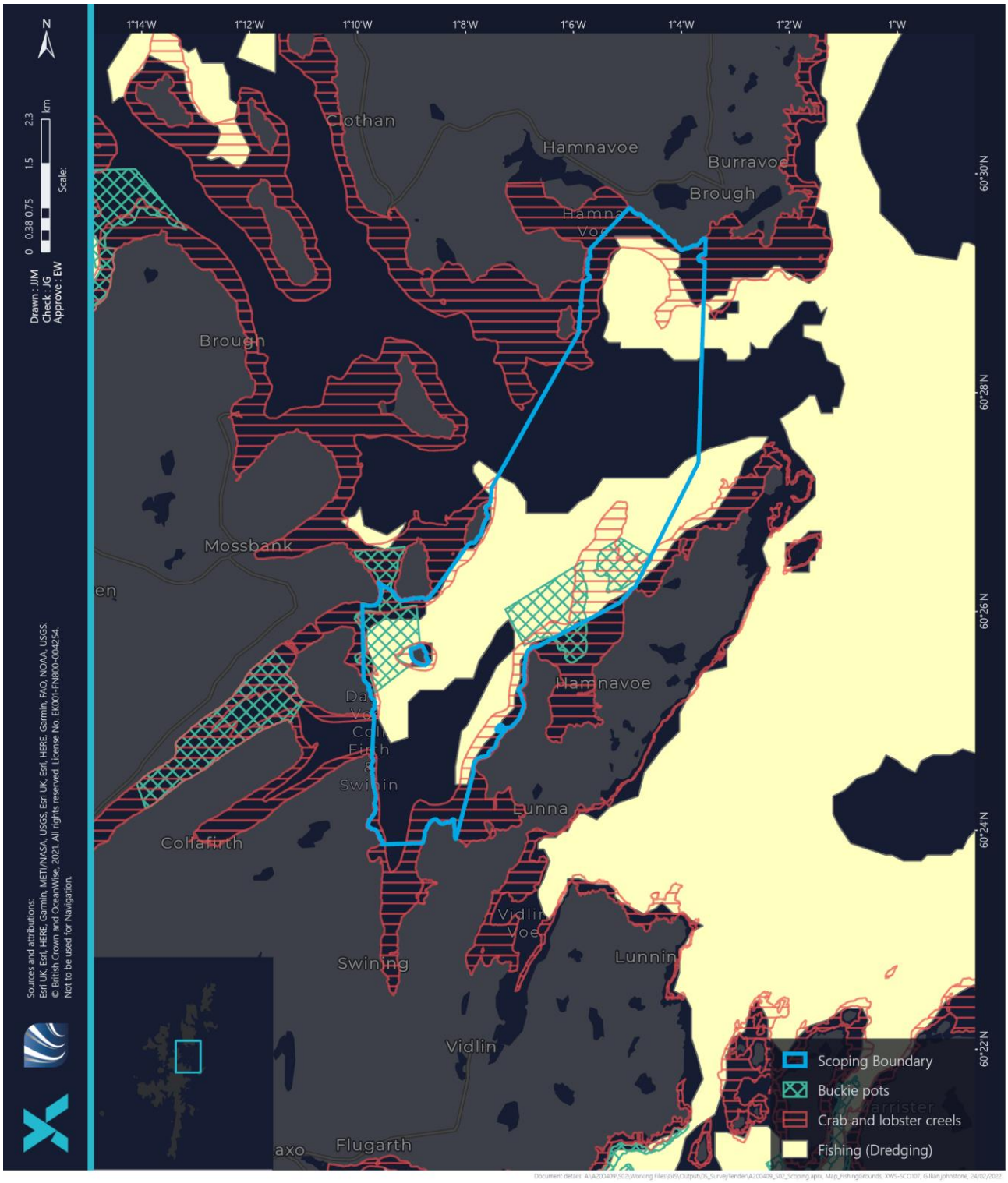

Figure 5-4 Commercial Fishing Grounds (NAFC, 2020)

5.7.3 Scoping of Potential Impacts

The potential impacts of the Shetland-Yell HVAC Link on commercial fisheries receptors are provided in Section 5.7.3.1 to 5.7.3.5.

5.7.3.1 Loss or Restricted Access to Fishing Grounds

The presence of cable installation vessels may restrict access to fishing grounds. Vessels operating static gear will be required to relocate their gear for the duration of the cable installation works, and temporary safety zones around construction vessels will restrict access for vessels operating mobile gear. Communication and liaison with the commercial fishing sector following best practice will reduce this impact. As described in Section 3.8, an FLO will be appointed for the project to liaise with the fishing industry. Nevertheless, acknowledging the sensitivity of fishing receptors to loss or restricted access to fishing grounds, this impact will be included in the MEA.

5.7.3.2 Displacement of Fishing Effort

Loss or restricted access to fishing grounds may lead to displacement in fishing effort to alternative fishing grounds, potentially resulting in increased competition and gear conflict. It is acknowledged that this displacement may be long-term if fishers avoid trawling over the cable(s), which may result in permanent displacement effects. SHE Transmission maintain that it is unsafe to fish over subsea cables, whether buried or unburied, or potential areas that could present a risk of snagging, such as associated external cable protection. SHE Transmission does not condone trawling over subsea cables, and this is consistent with relevant recent industry guidance and best-practice, such as the recent European Subsea Cables Association (ESCA) position statement on vessels operating in the vicinity of subsea cables (ESCA, 2022).

The displaced effort will be localised to the immediate vicinity of the cable(s). However, acknowledging the sensitivity of fishing receptors to displacement of fishing effort grounds, this impact will be included in the MEA.

5.7.3.3 Interference with Fishing Activity (Navigational Conflict)

The presence and transiting of installation vessels may have the potential to cause interference with fishing activity, including fouling of static gear surface markers that have been required to relocate their gear from the cable installation corridor. Communication and liaison with the commercial fishing sector and vessel operators, following best practice guidance, will greatly reduce the likelihood of significant interference with vessels operating static gear and a FLO will be appointed for the project, as detailed in Section 3.8. Furthermore, only a small number of vessels are expected to be required during installation, reducing potential for interference with fishing activity. With regards to vessels operating mobile gear, where the gear is not left unattended on the seabed, interference with fishing activity from vessels is anticipated to be unlikely. For these reasons, this impact will not be included in the MEA.

5.7.3.4 Increased Steaming Times

During installation, construction safety zones may exclude passage of fishing vessels and consequently increase steaming times to reach fishing grounds. During operation, any maintenance works could similarly increase steaming times, although to a lesser extent when compared to construction. However, due to the temporary, transient and localised nature of any construction safety zones, no significant increase in steaming times is expected, as any adjustments to transit routes to access fishing grounds is expected to be negligible. For these reasons, this impact will not be included in the MEA.

5.7.3.5 Safety Issues

Safety issues for fishing vessels, include vessel-vessel collision and snagging risk. Dropped objects may create a snagging risk in addition to any areas of the cable awaiting burial during installation and any areas of cable which become exposed over time. Due to the potential severity of this impact, this impact will be considered in the MEA. However, this impact will be considered within the Navigational Risk Assessment (NRA) and not specifically within the commercial fisheries chapter.

5.7.4 Assessment Methodology

5.7.4.1 Data Sources to Inform the MEA Baseline Characterisation

In addition to the data sources presented in Section 5.7.1, the following data sources will be used to characterised the commercial fisheries baseline within the MEA:

- Automatic Information System (AIS) data collected for the Navigational Risk Assessment (see Section 5.8);
- UK fishing vessel list (MMO, 2022); and
- Other publicly available datasets and information received from consultation. SHE Transmission has already engaged with local fishing organisations and individual fishers and will continue to do so as the project progresses. The key consultees include, but are not limited to:
  - Shetland Fishermen's Association (SFA);
  - North Atlantic Fisheries College (NAFC);
  - Scottish Fishermen's Federation (SFF);
  - Scottish White Fish Producers Association (SWFPA);
  - Shetland Shellfish Management Organisation (SSMO); and
  - Local fishing vessel operators.

No site-specific surveys are planned to inform the commercial fisheries baseline within the MEA.

5.7.4.2 Summary and Assessment Method

A summary of the scoping of impacts and the assessment methodology for the impacts that have been scoped into the MEA is presented in Table 5-7.

Table 5-7 Potential impacts on commercial fisheries

POTENTIAL IMPACT	PHASE[1]			SCOPING RESULT	ASSESSMENT METHODOLOGY (IF SCOPED IN)
	I	O	D		
Loss or restricted access to fishing grounds	✓	✓	✓	Scoped in	Commercial fishing receptors will be identified and described through desk-based sources and consultation. Loss or restricted access to fishing grounds will be assessed on a fleet-by-fleet basis to consider the extent that the project activities will impact fishing grounds.
Displacement of fishing effort	✓	✓	✓	Scoped in	Commercial fishing receptors will be identified and described through desk-based sources and consultation. The impact of displacement of fishing effort will be assessed on a fleet-by-fleet basis with a consideration of the potential displacement impacts, such as increased competition and gear conflict, particularly for the scallop dredge and creel fleets.
Interference with fishing activities (navigational conflict)	✓	✓	✓	Scoped out	-
Increased steaming times	✓	X	✓	Scoped out	-
Safety issues (collision risk and snagging)	✓	✓	✓	Scoped in (considered within Section 5.8 only)	Risk of collision and gear fouling will be considered as part of the Navigation Risk Assessment.

[1] I = Installation, O = Operation and D = Decommissioning

5.8 Shipping and Navigation

5.8.1 Key Data Sources to Inform this Non-Statutory Scoping Report

- Anonymised Automatic Identification System (AIS) derived vessel transit data (MMO, 2018);
- Marine Scotland National Marine Plan Interaction (NMPi), 2021;
- Publicly available data on nearby ports and harbours; and
- Relevant admiralty charts.

5.8.2 Baseline Overview

The Burravoe landfall on Yell, lies approximately 1 km southwest of the Burravoe marina. This is a small harbour which provides access for mooring and anchoring for small vessels. The larger ports in the Yell Sound at Toft (Mainland Shetland) and Ulsta (Yell) are approximately 4 km west of the corridor. These ports offer regular ferry trips between Shetland Mainland and Yell with an average weekly density of vessel traffic of > 100 vessels per day per 2 km^2 in this area (ABPmer, 2020). The Statutory harbour limits for Sullom Voe are adjacent to the Scoping Boundary and extend across the North Yell Sound. SIC operate the Sullom Voe Harbour as the Harbour Authority and the harbour was created for vessels transiting to and from the Sullom Voe oil and gas terminal. The harbour is a deep-water harbour which can accommodate large vessels between 140 and 365 m (Shetland Islands Council, 2022). In recent years, the number of vessels transiting to and from the Sullom Voe oil and gas terminal has reduced (NAFC Marine Centre, 2021).

Key navigational features in the vicinity of the Scoping Boundary include an anchorage area immediately to the east of the landfall approach at Cul Ness, an anchorage area at Hamna Voe, approximately 1.5 km north west of the Scoping Boundary on its approach to Burravoe landfall. There are no other key navigational features present in the vicinity of the corridor, including International Maritime Organisation (IMO) shipping routes, deep water routes or vessel traffic separation schemes.

Automatic Identification System (AIS) data available from ABPmer (2020) indicates that the vessel densities along the Scoping Boundary are low to moderate, with the highest densities observed on the approach to Dales Voe, Coll Firth and Swining Voe where average weekly densities in 2017 were 20 – 100 vessels per 2 km^2. Although AIS is a useful tool for understanding vessel traffic, it should be noted that errors in may arise due to transmission errors from vessels to receiving stations, or due to the voyage data input being primarily user entered, as this inherently increases the chance of inaccuracy (MMO, 2014). The most common vessel types which overlap with the Scoping Boundary are cargo vessels and fishing vessels, which travel through Yell sound (e.g. to and from Sullom Voe oil terminal) or to and from the inner Voes that lie proximal to the Scoping Boundary (ABPmer, 2020). It is also recognised that some recreational vessel boating occurs along the corridor, which is considered in Section 5.10.

5.8.3 Scoping of Potential Impacts

An NRA will be undertaken for the project and will form the Shipping and Navigation assessment chapter within the MEA. The potential impacts of the Shetland-Yell HVAC Link on shipping and navigation that will be included within the NRA are provided in Sections 5.8.3.1 to 5.8.3.6.

5.8.3.1 Displacement of Vessels

Regular vessel traffic will be required to alter their planned route due to the presence of construction vessels with limited manoeuvrability. Since this will cause disruption to shipping activity, to mitigate this potential impact, Notice to Mariners (NtMs) will be issued on a frequent basis before and during the cable installation period, as described in Section 3.8. This impact will be assessed further in the NRA, and therefore, will be considered within the MEA.

5.8.3.2 Increased Vessel-Vessel Collision Risk

An increased collision risk is created during the construction phase for all passing traffic due to the presence of the vessels associated with the construction of the cable(s). This risk is greatest in high traffic density locations. The embedded mitigation presented in Section 3.8, such as the promulgation of NtMs will reduce this risk, as described in Section 3.8. This impact will be assessed further in the NRA, and therefore, will be considered within the MEA.

5.8.3.3 Interaction with Vessel Anchors and Anchor Activity

Anchorage areas are located to the east of the Cul Ness landfall and to the west of the Burravoe landfall. The cable installation corridor will be routed to avoid designated anchorage areas. However, vessels may drop anchor in the vicinity of the cable(s), which may present a risk for anchor dragging across the cable(s). Mitigation measures include marking of the cable(s) on Admiralty Charts and suitable protection of the cable(s), as described in Section 3.8. This impact will be assessed further in the NRA, and therefore, will be considered within the MEA.

5.8.3.4 Interaction with Fishing Gear

Fishing activity, including scallop dredging, occurs within the Scoping Boundary. Continuous towing of fishing along the seabed presents a snagging risk if the cable(s) becomes exposed or is not adequately protected. It is proposed that the minimum depth of burial is 0.6 m to reduce the potential for fishing gear snagging on the cable(s). However, the target depth of burial will be informed by a CBRA, as discussed in Section 3.2.3. This impact will be assessed further in the NRA, and therefore, will be considered within the MEA. The NRA will evaluate the types and intensity of fishing in the context of the CBRA to understand the snagging risk.

5.8.3.5 Reduced Under Keel Clearance

The cable(s), and associated protection, may lead to a reduction in under keel clearance. Considering the highly localised nature of the operational cable(s), along with the expectation of maximising burial where possible, with any protections following legislative requirements and the CBRA, the impact of reduced under keel clearance is expected to be minimal. However, this will be assessed within the NRA and will be included within the MEA.

5.8.3.6 Interference with Marine Navigational Equipment

The EMF emissions created by buried direct current cable(s) has the potential to create interference on a vessel's magnetic compass, in particular on smaller recreational vessels, as such vessels may lack more sophisticated navigational equipment on-board. As previously discussed, the cable(s) will be buried where possible and adequately elsewhere, and so the expected EMFs emitted by the operational cable(s) are expected to be minimal. This impact will be considered further in the NRA and will be included in the MEA.

5.8.4 Assessment Methodology

It is proposed that the NRA will form the Shipping and Navigation assessment chapter within the MEA. The NRA will comprise:

- Marine Traffic Survey (MTS), in accordance with the Maritime and Coastguard Agency (MCA) MGN 654 Offshore Renewable Energy Installations (OREI) Safety Response; and
- Formal Safety Assessment, in accordance with MCA MGN 654 and International Maritime Organisation (IMO) Guidelines for Formal Safety Assessment (FSA) - MSCMEPC.2/Circ.12/Rev.2 (9 April 2018).

The MTS will be the main source to characterise the Shipping and Navigation baseline within the MEA and further details on this are provided in Section 5.8.4.1 below.

The FSA process is similar to the assessment methodology presented in Section 4 and involves evaluating the baseline shipping patterns and navigational features alongside stakeholder consultation to identify hazards or impacts. The hazards and impacts are then characterised in terms of magnitude and likelihood to provide a risk categorisation, with additional mitigation measures proposed for impacts

Specifically, the NRA will utilise the baseline characterised using the data collected through MTS and will be carried out in the following steps:

1. Hazard Identification – a list of hazards / impacts are identified (e.g. Section 5.8.3) based on the project activities / components and the baseline characterisation;
2. Risk Assessment – the hazards / impacts are assessed using specific criteria to assign a magnitude (e.g. severity of consequence) and likelihood (e.g. frequency of occurrence), with the consideration of the embedded mitigation presented in Section 3.8. These criteria reflect UK Health and Safety Executive Principles of As Low as Reasonably Practicable (ALARP) and are consistent with the IMO guidelines for FSA. A risk matrix is used to ascertain the risk tolerability level of either Unacceptable, Tolerable or Broadly Acceptable. Unacceptable or tolerable risks are considered to be significant.;
3. Identification of mitigation measures – additional risk mitigation measures are proposed for significant risks (unacceptable or tolerable).;
4. Cost-Benefit Analysis – Additional mitigation measures are subject to a qualitative cost-benefit comparison to justify the measure and establish a residual risk categorisation.; and
5. Cumulative Effects and Future Case – future projects are reviewed to understand any potential increase in vessel traffic density in the area. The potential for cumulative impacts for the hazards / impacts identified in step one are then qualitatively evaluated. Further mitigation will be proposed as needed.

It will be necessary to agree specific safety measures with the MCA, Northern Lighthouse Board (NLB) and other relevant navigational bodies, such as SIC who act as the Sullom Voe harbour authority, and for these to be communicated with the Royal Yachting Association (RYA), Royal National Lifeboat Institute (RNLI) and other mariners.

5.8.4.1 Data Sources to Inform the MEA Baseline Characterisation

The MTS will be the main source of information for the baseline characterisation within the MEA. The MTS will involve the analysis of AIS data within the vicinity of the Scoping Boundary from three months in summer and three months in winter. In addition to the MTS and the sources presented in Section 5.8.1, the following sources that will be used to characterise the shipping and navigation baseline within the MEA will include:

- Maritime incident data for the Royal National Lifeboat Institute (RNLI) and Search and Rescue Helicopter (SARH);
- The RYA UK Coastal Atlas of Recreational Boating; and
- Sailing and pilot books;
- Other relevant publicly available information and information gained through consultation. Consultees will include but are not limited to:
  - NLB;
  - MCA;
  - Chamber of Shipping;
  - RYA;
  - Commercial fisheries consultees (see Section 5.7); and
  - Sullom Voe Harbour Authority (part of SIC).

5.8.4.2 Summary and Assessment Method

A summary of the scoping of impacts and the assessment methodology for the impacts that have been scoped into the MEA is presented in Table 5-8.

Table 5-8 Potential impacts on shipping and navigation

POTENTIAL IMPACT	PHASE[1]			SCOPING RESULT	ASSESSMENT METHODOLOGY (IF SCOPED IN)
	I	O	D		
Displacement of vessels due to rerouting	✓	X	✓	Scoped in	The NRA will assess all potential impacts of the development on navigational safety which will be informed by consultation with relevant navigational bodies. The NRA will form the Shipping and Navigation assessment chapter within the MEA.
Increased vessel-vessel collision	✓	✓	✓	Scoped in	
Interaction with anchors and anchoring activities	✓	✓	✓	Scoped in	
Reduced under keel clearance	X	✓	X	Scoped in	
Interference with fishing gear	✓	✓	✓	Scoped in	
Interference with marine navigational equipment	X	✓	X	Scoped in	

[1] I = installation, O = operation and D = Decommissioning

5.9 Marine Archaeology

5.9.1 Key Data Sources to Inform this Non-Statutory Scoping Report

- UKHO wreck register and relevant nautical charts;
- Site-specific survey work; and
- The Historic Environment and Cultural Heritage data available from NMPI (e.g. National record of the Historic Environment (Canmore) (2021).

5.9.2 Baseline Overview

There are no charted wrecks within the Scoping Boundary. The Canmore Maritime Records note 10 potential wreck sites or obstructions that overlap or lie in the vicinity of the Scoping Boundary (HES, 2021). This includes the following:

- 5 anchors or obstructions (Canmore ID's: 102920, 102976, 102921, 325174 and 325173) (all classified as obstructions)
- A craft vessel of unknown identity (Canmore ID: 325933) (classified as an unspecified obstruction);
- Three 19th century vessels of unknown identity (lost between 1858 and 1870) (Canmore ID: 253903; 239445 and 290550) (classified as crafts); and
- Reliance – fishing vessel which sank in 1993 (Canmore ID: 320997) (classified as a motor fishing vessel).

Importantly, the locations of all of the above are arbitrary and confirmation of the presence of the features would be subject to additional surveys. Therefore, there is little certainty in the presence of these archaeological features in the Scoping Boundary, however, this will be informed by the marine surveys planned for 2022.

5.9.3 Scoping of Potential Impacts

The potential impacts of the Shetland-Yell HVAC Link on marine archaeology are presented in Sections 5.9.3.1 and 5.9.3.2.

5.9.3.1 Direct Disturbance or Loss of Marine Archaeological Features

Direct disturbance or loss of marine archaeological features may arise from seabed disturbance associated with the cable installation works. No charted wrecks were recorded in the Scoping Boundary and no archaeological features have been identified in the available bathymetric data for the area. Although it is recognised that there is the potential for unknown archaeological artefacts to be present within the Scoping Boundary, as there are few known records in the vicinity, this is considered unlikely. Considering this and the implementation of mitigation measures including the avoidance of wrecks by an appropriate buffer and the implementation of a Protocol for Archaeological Discoveries (PAD) (as described in Section 3.8), the risk of direct damage to marine archaeological features is considered to be low. For this reason, this impact will not be included in the MEA.

5.9.3.2 Indirect Disturbance or Loss of Marine Archaeological Features

Indirect disturbance to marine archaeological features may result from changes in sediment transport pathways and scour (e.g. increased erosion). As noted above, there are no charted records within the Scoping Boundary. Additionally, any indirect disturbance is expected to be highly localised to the cable(s). For this reason, this impact will not be included in the MEA.

5.9.4 Assessment Methodology

A summary of the scoping of impacts is presented in Table 5-9. No impacts have been scoped in for marine archaeology.

Table 5-9 Potential impacts on marine archaeology

POTENTIAL IMPACT	PHASE[1]			SCOPING RESULT
	I	O	D	
Direct disturbance or loss of marine archaeological features	✓	X	✓	Scoped out

POTENTIAL IMPACT	PHASE[1]			SCOPING RESULT
	I	O	D	
Indirect disturbance to marine archaeological features	✓	✓	✓	Scoped out

5.10 Other Sea Users

5.10.1 Key Data Sources to Inform this Non-Statutory Scoping Report

- Kingfisher Information Service – Offshore Renewable & Cable Awareness Project (KIS-Orca);
- Oil and Gas Authority (OGA): Oil and gas digital data;
- Marine Scotland National Marine Plan Interactive (NMPi);
- Spatial data available from the Crown Estate Scotland (e.g. offshore lease areas for shellfish and aquaculture); and
- Engagement with third-party asset owners.

5.10.2 Baseline Overview

The Scoping Boundary overlaps or is in close proximity to several existing assets or other sea users (Figure *5-5*).

The inner voes of the Yell Sound support several aquaculture sites and this is generally consistent with majority of the sheltered waters on the Shetland coastline. There are 13 aquaculture lease areas and 11 active aquaculture sites within or in the vicinity of the Scoping Boundary, the majority of which are finfish sites. Shellfish aquaculture lease areas are located in Swining Voe and Skeo Ness, south and east of the Cul Ness landfall, respectively, and one lease area at Sand Wick, west of Cul Ness, is categorised as 'other'. A shellfish aquaculture lease area is also located in Swinister Voe to the west of the Firth Ness landfall. Aquaculture sites will be avoided and SHE Transmission are already engaging with aquaculture operators to understand future activities and plans for nearby sites, and will continue to do so throughout the MEA process.

The Scoping Boundary overlaps with three oil and gas pipelines, including the Ninian Short Water Crossing pipeline (PL10) runs from Cul Ness to Firth Ness. The Scoping Boundary also crosses the SIRGE Firths Voe to MCP01 30" gas export pipeline (PL2764) and the 36" Cormorant A to Sullom Voe oil pipeline (PL4) at an approximately perpendicular angle. The Scoping Boundary does not cross any power cables, with the closest being the Moss Bank – Yell Scottish Hydro Electric Power Distribution (SHEPD) power cables, at 2.5 km northeast of the Scoping Boundary. However, SHE Transmission are aware that the BT R100 telecommunications cable (Shetland to Yell) will be installed within the Yell Sound, which the Shetland-Yell HVAC Link will cross. The marine licence application for the BT R100 telecommunications cable (Shetland to Yell) was submitted in October 2021 and details that the installation works were scheduled for Q2 2022 – end of 2022 (Intertek, 2021). SHE Transmission have agreed an approximate crossing point.

Two dredge disposal sites lie in proximity to the Scoping Boundary, including the Toft and Ulsta dredge disposal areas (both active), approximately 0.5 and 3 km west of the Scoping Boundary, respectively.

Several recreational areas overlap with the Scoping Boundary, including the Burravoe recreational sail racing area and the Burravoe rowing area (associated with the Burravoe marina) which cover the waters from Burravoe to Hamna Voe. The Burravoe and Firth Ness landfalls also overlap with sea angling areas (NAFC, 2017b).

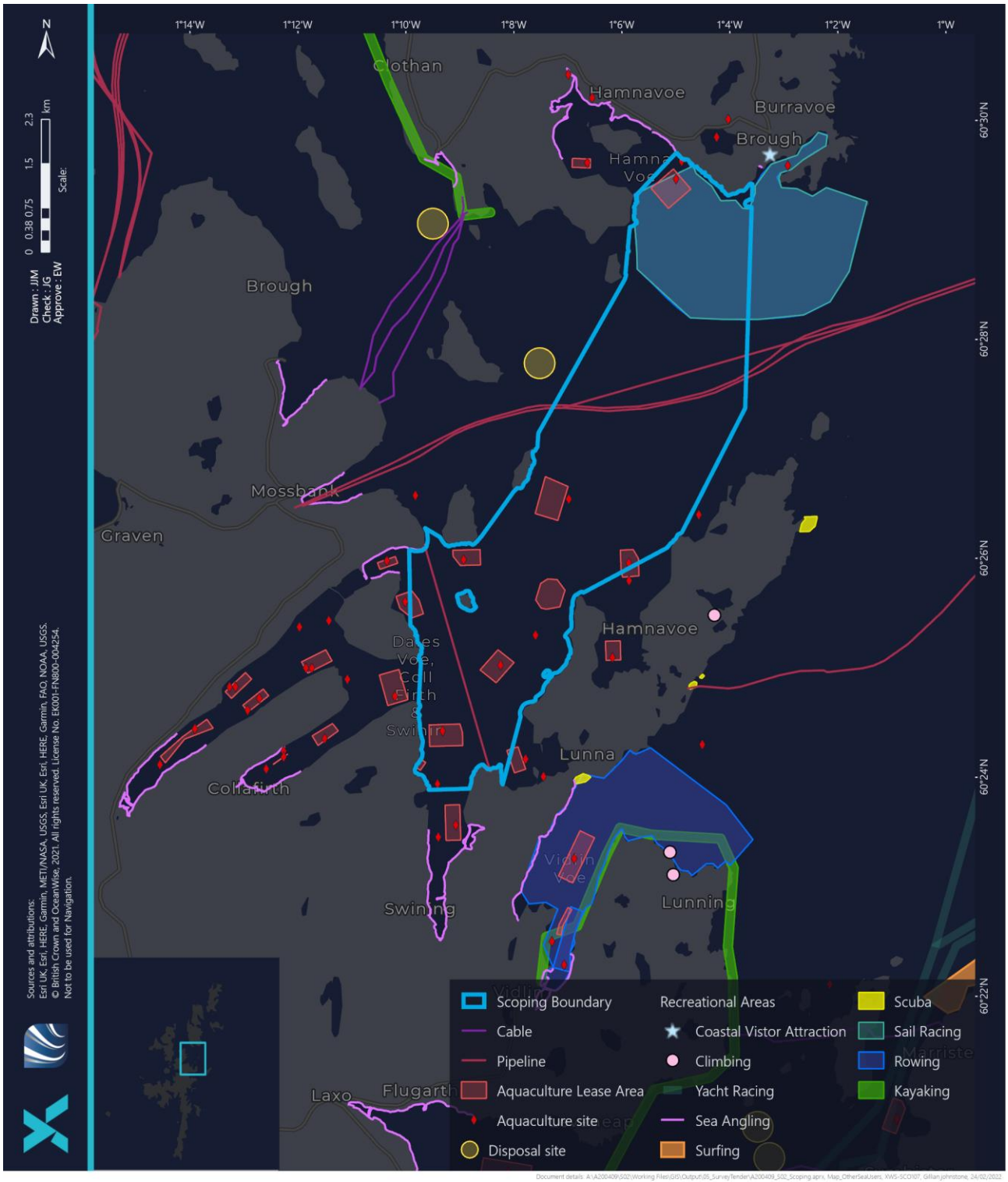

Figure 5-5 Other Sea Users in the Vicinity of the Scoping Boundary

5.10.3 Scoping of Potential Impacts

The potential impacts of the Shetland-Yell HVAC Link on other sea users are presented in Sections 5.10.3.1 to 5.10.3.4.

5.10.3.1 Impacts on Aquaculture Sites from Increased Suspended Sediments

The key impact of the Shetland-Yell HVAC Link is considered to be the potential impacts on aquaculture, given the importance of this industry in Shetland and the close proximity of the Scoping Boundary to several existing and planned aquaculture sites. The key impact on aquaculture sites is reduced water quality, due to increased suspended sediments during installation. This impact will be included in the MEA.

5.10.3.2 Impacts on Aquaculture from EMF Effects

As described previously in Sections 5.3.3 and 5.4.3, available evidence suggests that EMF effects are mostly minor in nature. Any effects will be minimised by the fact that the cable(s) will either be buried to a sufficient depth or adequately protected in areas where trenching is not possible, reducing the EMF impacts and the potential for behavioural anomalies of physiological effects to occur. These will be further reduced by the fact that there will be a separation distance between the aquaculture sites and the cable(s). However, acknowledging the value of this industry in the area and the proximity of the Scoping Boundary to aquaculture sites, this impact will be included in the MEA. SHE Transmission are committed to modelling the EMF emissions from the cable(s) to understand any impacts on aquaculture sites.

5.10.3.3 Influence on Future Aquaculture Expansion

Third party developments in the proximity of the Scoping Boundary will be required to consider the cable infrastructure associated with the Shetland-Yell HVAC Link for any future expansion plans. This may limit the potential for further aquaculture site expansion in the region, in particular, which is the primary industry present within and in the vicinity of the Scoping Boundary. This impact will be included in the MEA. Disruption to Other Sea Users and Recreational Activities During Cable Installation

There is the potential that installation vessels will result in disruption to other sea users in the vicinity of the Scoping Boundary, including the use of the Toft and Ulsta dredge disposal sites and recreational activities, such as rowing, sailing and sea angling. However, considering the temporary and localised nature of the works during installation, any disruption would be for a short duration only, and SHE Transmission commits to issuing NtMs and broadcast warnings prior to the proposed works to promote navigational safety and ensure other users are aware of the works and to enable co-existence with other sea users (see Section 3.8). For these reasons, any disruption to dredge disposal sites and recreational activities is expected to be minimal and these impacts will not be included in the MEA.

5.10.3.4 Disruption or Damage to Third-Party Cables or Pipelines

At crossing points with cable and pipeline infrastructure, there is the possibility of disruption or damage to the third-party asset. The BT R100 telecommunication cable is planned to be installed in 2022and SHE Transmission are already in consultation with BT regarding the potential crossing. Three existing pipelines may also be crossed. Any impacts to BT or the respective pipeline operator will be managed through mutually agreed crossing and proximity agreements (as required) that will be in place prior to installation. Considering this, any disruption or damage to telecommunications cables and pipelines is expected to be low and this will not be included in the MEA.

5.10.4 Assessment Methodology

5.10.4.1 Data Sources to Inform the MEA Baseline Characterisation

No site-specific surveys are planned to inform the other sea users baseline characterisation in the MEA. Engagement with nearby asset operators, including pipeline, cable and aquaculture operators will continue as the project progresses to gather information on future activities.

5.10.4.2 Assessment Method

The proposed assessment methodology for the impacts that have been scoped into the MEA is presented in Table 5-10.

Table 5-10 Potential impacts on other sea users

POTENTIAL IMPACT	PHASE[1]			SCOPING RESULT	ASSESSMENT METHODOLOGY (IF SCOPED IN)
	I	O	D		
Suspended sediment and reduced water quality impacts on aquaculture	✓	X	✓	Scoped in	This impact will use the results of the assessment of increased suspended sediment concentrations on water quality (see Section 5.2.3) to assess the potential for significant effects on the water quality at aquaculture sites.
EMF effects on aquaculture	X	✓	X	Scoped in	The potential impact of EMF will be assessed using as the modelling studies proposed by SHE Transmission to understand the magnitude of EMF emissions. This will be considered along with the distance between the cable(s) and the aquaculture sites to understand the magnitude of effect.
Disruption to future expansion of aquaculture sites	X	✓	X	Scoped in	SHE Transmission will continue to consult with aquaculture operators in the vicinity of the Scoping Boundary to understand future plans for site expansion. This information will be used to determine the likelihood of the cable(s) limiting any future expansion of the aquaculture sites.
Disruption to other sea users and recreational activities	✓	X	✓	Scoped out	-
Disruption or damage to telecommunications cables	✓	✓	✓	Scoped out	-

POTENTIAL IMPACT	PHASE[1]			SCOPING RESULT	ASSESSMENT METHODOLOGY (IF SCOPED IN)
	I	O	D		
Disruption or damage to oil and gas pipelines	✓	✓	✓	Scoped out	-

[1] I = Installation, O = Operation and D = Decommissioning

6 PROPOSED SUPPORTING INFORMATION REQUIRED FOR MARINE LICENCE APPLICATION

6.1 Marine Environmental Appraisal

An MEA will be developed to support the Shetland-Yell HVAC Link Marine Licence application. This will build upon the information and conclusions provided within this report. Table 6-1 provides a summary of the potential impacts that will be considered further in the MEA.

Table 6-1 Summary of impacts to be considered in the Marine Environmental Appraisal

POTENTIAL IMPACTS	RELEVANT PHASE		
	INSTALLATION	OPERATION	DECOMMISSIONING
Physical environment and sediment and water quality			
Increased suspended sediments (to inform impacts on water quality, benthic and intertidal ecology and aquaculture sites)	✓	X	✓
Changes to water and sediment quality from increased suspended sediments and release of contaminated sediments	✓	X	✓
Benthic and intertidal ecology			
Loss or disturbance to benthic habitats and communities	✓	✓	✓
Temporary increase in suspended sediments and associated smothering	✓	✓	✓
Introduction of new substrate	✓	✓	✓
EMF effects	X	✓	X
Ornithology			
Disturbance / displacement due to vessel presence	✓	✓	✓

POTENTIAL IMPACTS	RELEVANT PHASE		
	INSTALLATION	OPERATION	DECOMMISSIONING
Marine mammals			
Disturbance from underwater noise (from geophysical surveys and USBL positioning equipment only)	✓	✓	✓
Disturbance to seals from nearshore activities	✓	✓	✓
Disturbance to otters from nearshore activities	✓	✓	✓
Commercial fisheries			
Loss or restricted access to fishing grounds	✓	✓	✓
Displacement of fishing effort	✓	✓	✓
Safety Issues (collision risk and snagging)	Refer to Shipping and Navigation		
Shipping and navigation			
Displacement of vessels due to rerouting	✓	X	✓
Increased vessel-vessel collision	✓	✓	✓
Interaction with anchors and anchoring activities	✓	✓	✓
Reduced under keel clearance	✓	✓	✓
Interference with fishing gear	X	✓	X
Interference with marine navigational equipment	X	✓	X
Disruption to anchorages	✓	✓	✓
Other sea users			
Suspended sediment and reduced water quality impacts on aquaculture	✓	X	✓

POTENTIAL IMPACTS	RELEVANT PHASE		
	INSTALLATION	OPERATION	DECOMMISSIONING
EMF effects on aquaculture	X	✓	X
Disruption to future expansion of aquaculture sites	X	✓	X

6.2 Digital Marine Environmental Appraisal (dMEA)

A large volume of information is generated throughout the MEA process to help inform the assessment of potential impacts on a diverse range of receptors whilst the close scrutiny of the marine consenting process tends to lead to a various supporting data sources, and studies. The use of digital tools, and specifically the adoption of a digital MEA, provides a number of distinct advantages to help aid the marine consenting process.

6.2.1 What is Digital Environmental Appraisal?

Most simply, this means the adoption of digital practices throughout the impact assessment process to help support an improved experience for all those involved – or interested in – the assessment of potential impacts; this may include the project proponent, the regulator or the general public, among others.

There is no definitive form of or process behind dMEA and this is an evolving topic; notwithstanding, SHE Transmission is committed to maximising the potential benefits on the Shetland-Yell HVAC project.

6.2.2 What are the advantages?

There are a range of advantages to the use of dMEA for those involved or interested in the impact assessment process; this includes:

- Accessibility: dMEA tools can help present information in a highly accessible and user-friendly manner; for some users, this can mean interpretation of data and information associated with the appraisal is far easier;
- User Experience: dMEA allows for integration of geospatial information systems, such as interactive mapping, alongside more conventional text-based assessment; this can help give a stronger context to the user compared to, for example, traditional 'static' figures;
- Time: by investing time in the development of dMEA, SHE Transmission can help make it quicker and easier for the regulator and stakeholders to access information relevant to their decision-making process or area of interest;
- Resources: historically, there has been an emphasis on paper-based environmental appraisal; shifting toward a digital approach reduces this resource requirement substantially; and
- Demonstratable Performance: digital impact assessment tools have been used successfully to support a number of recent UK development consent applications.

6.2.3 How is a record of the appraisal retained if the data is online?

In the same way that a traditional 'hard' copy MEA is retained by the regulator, the digital materials provided by SHE Transmission can be downloaded and retained by bodies such as MS-LOT and SIC. To alleviate any potential queries

or concerns during this initial use of the dMEA, SHE Transmission will provide a hard copy alongside the dMEA; this is discussed further below.

6.2.4 How will dMEA work for this project?

SHE Transmission proposes that in addition to a conventional 'hard copy' of the MEA, a digital MEA (dMEA) will be presented to Marine Scotland and SIC. The dMEA will be presented in an ESRI StoryMap platform as an effective way of presenting the MEA which is accessible to a broad range of users.

SHE Transmission plans to make the dMEA available online, however, the overall layout / approach is yet to be determined and will be shaped through discussions with Marine Scotland and SIC. It is anticipated that the overarching StoryMap will use the 'Classic Map Series' layout template, allowing content to be organised by horizontally arranged tabs representing MEA themes/sections (see example layout in Figure 6-1). SHE Transmission welcomes feedback on this dMEA approach from MS-LOT and SIC.

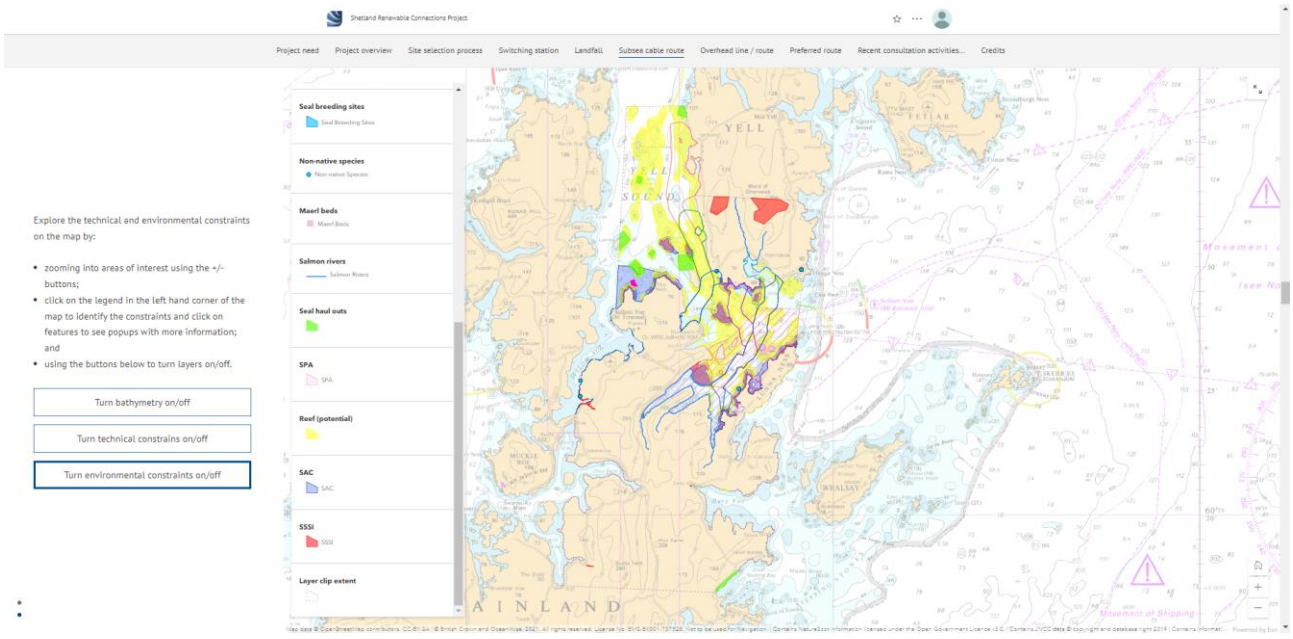

Figure 6-1 dMEA StoryMap Mock-up (showing ecological constraints by example, not anticipated to be included in dMEA)

As mentioned in Section 1.4, SHE Transmission have already been using StoryMaps for public engagement to communicate the route refinement and site selection process.

6.2.5 How can I find out more and what are the next steps?

The Institute for Environmental Management and Assessment (IEMA) provide further guidance on the use of digital impact assessment tools (IEMA, 2021).

SHE Transmission intend to make the dMEA available online, once complete and on submission of the dMEA, MS-LOT will publish the application via the usual channels; the exact method of sharing the dMEA is to be determined with MS-LOT but may include a weblink to the StoryMap platform, for users to access.

6.3 Nature Conservation Appraisal

In support of the Marine Licence Application, a Nature Conservation Appraisal (NCA) will also be produced and submitted as an appendix to the MEA. The NCA will consider the potential effects to key protected sites and species. This will provide competent authorities with the information they require in order to undertake a HRA and a NCMPA appraisal (as required). The NCA will incorporate the following:

- HRA as required under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended):
  - Screening to determine whether there is a potential for a LSE on designated European Sites, and consideration of proposed SPAs and candidate SACs; and
  - If an LSE is identified, then the HRA will provide additional information in order to allow Marine Scotland and SIC to carry out an appropriate assessment.
- NCMPA Appraisal as required under the Marine (Scotland) Act 2010:
  - Initial screening to determine whether a project is reasonably capable of affecting a protected site; and
  - If it is concluded that a project is capable of affecting a protected site, the main assessment to determine whether the exercise of a function would or might significantly hinder, or there is or may be a significant risk of the act hindering the achievement of the conservation objectives.

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