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BRITISH TELECOMMUNICATIONS PLC

R100 Scottish Isles Fibre-optic Project

Technical Appendix B - Pre-Application Consultation Documentation - Orkney

P2308_R5391_Rev0_App B | October 2021

Intertek Energy & Water Consultancy Services
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1. PAC REPORT

1.1 Proposed licensable marine activity

This R100 Pre-application Consultation (PAC) report is required under the Marine (Scotland) Act 2010: Section 24. Global Marine Systems Ltd (GM) has been sub-contracted by British Telecommunications (BT) to install sixteen new fibre optic cables in the Scottish Island geographical areas of Shetland, Orkney and Inner Hebrides (See Figure 1-1, Drawing Reference No: P2308-LOC-001-C).

This report provides information on the Orkney Geographical Area PAC event held on 22nd July 2021.

Within the Orkney Geographical Area, the project consists of the installation of seven new fibre-optic marine cables as follows:

- Cable 2.5 – Eday to Westray
- Cable 2.6 – Eday to Sanday
- Cable 2.7 – Sanday to Stronsay
- Cable 2.9 – Orkney mainland to Rousay
- Cable 2.10 – Orkney mainland to Shapinsay
- Cable 2.11 – Hoy to Flotta
- Cable 2.12 – Flotta to South Ronaldsay

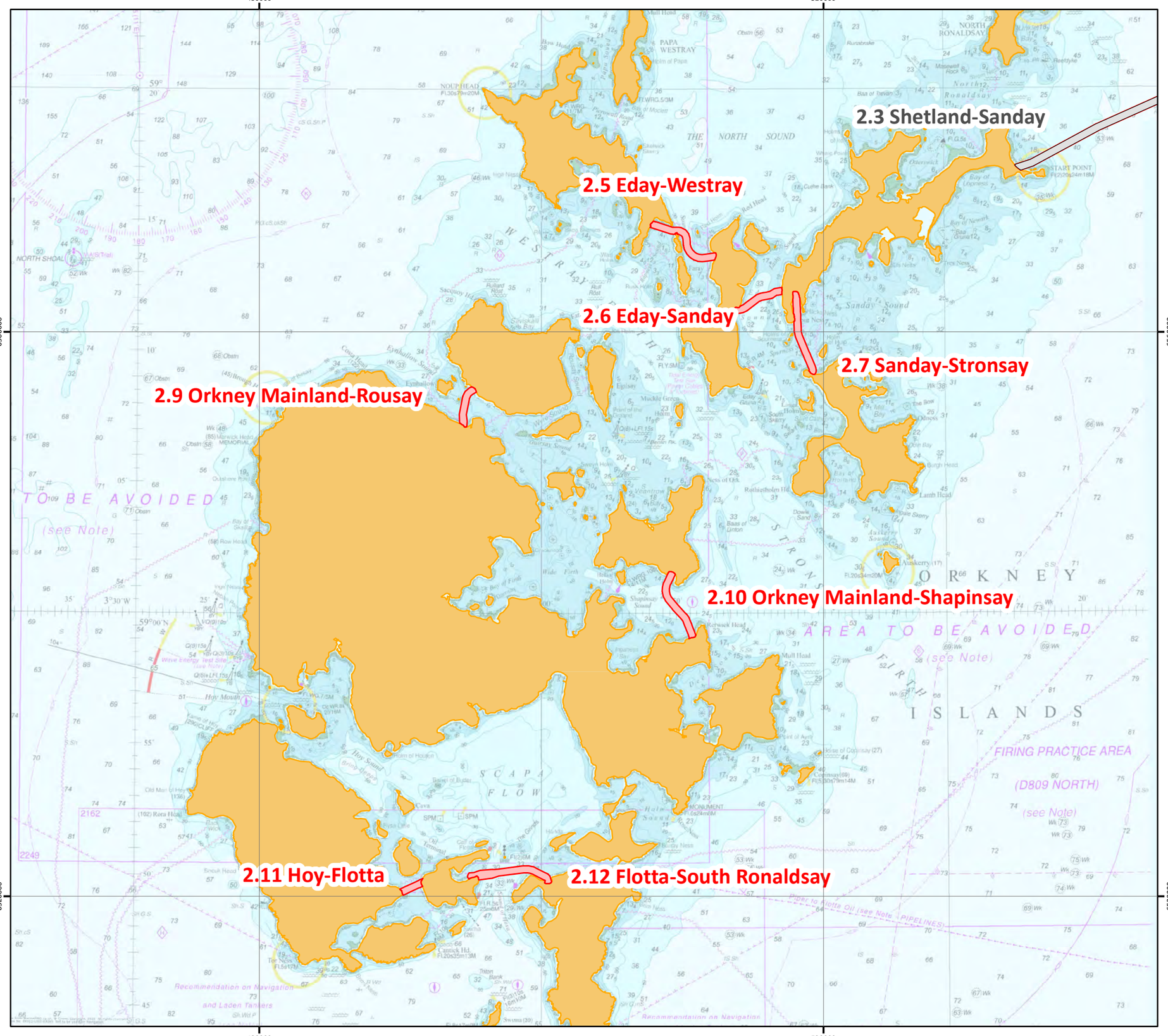
1.1.1 Installation overview

The cables will be installed using a combination of installation plough and surface lay (for sections of the cable where burial cannot be achieved). The plough is expected to proceed at a rate of up to 600 m/hr and surface lay at 2000m/hr. There are no engineered cable crossings within the Orkney Geographical Area. Nearshore sections of the R100 cables will be protected using articulated pipe and buried using a jet sled. The target burial depth is 1m offshore and 2m in the intertidal area.

No further external cable protection measures have been proposed however, contingency measures of rock bags or concrete mattressing may be used if required at the time of installation. The installation footprints and potential contingency measures are detailed within the Marine Environmental Appraisal (MEA) Section 2- Project description (Report Reference P2308_R5391_Rev0).

Due to the relatively small size of the fibre optic cables (up to 46 mm diameter) and the narrow trench cut by the plough (0.5m wide), sediment along the installation route should reconsolidate almost immediately after the cable is laid.

More detail on the proposed cable installation, burial and protection requirements along the installation corridor is provided in the MEA for the Project. Further information on the applicant and pre-application consultation undertaken for the project is provided below.



SCOTTISH ISLES FIBRE OPTIC CABLE PROJECT

LOCATION OVERVIEW
Cable Corridors - Orkney

Drawing No: P2308-LOC-002_OR | **A**

Legend

- Cable Corridor
- Not Assessed

N W E S

NOTE: Not to be used for Navigation

Date	29 September 2021
Coordinate System	WGS 1984 UTM Zone 30N
Projection	Transverse Mercator
Datum	WGS 1984
Data Source	ONS; MarineFind; ESRI;
File Reference	J:\P2308\Mxd\01_LOC\ P2308-LOC-002_OR.mxd
Created By	Jessica Harvey
Reviewed By	Emma Langley
Approved By	Paula Daglish

BT Global Marine intertek

0 3 6 9 12 km

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Source: Office for National Statistics licensed under the Open Government Licence v.3.0, Contains OS data © Crown copyright and database right (2018); Charts from MarineFIND.co.uk © British Crown and OceanWise, 2020. All rights reserved. License No. EK001-FN1001-03265 Not to be used for Navigation; ©Esri

1.2 Applicant details

David Cornelius on behalf of British Telecommunications Ltd

Project Manager

BT Centre, 81 Newgate Street

London

EC1A 7AJ

Email:david.cornelius@bt.com

British Telecommunications Limited is registered in England 1800000

1.3 Proposed licensee details

As per applicant details provided in Section 1.2

1.4 Pre-application Consultation Event

A pre-application consultation event is required under Part 4 of the Marine (Scotland) Act 2010 and The Marine Licensing (Pre-application Consultation) (Scotland) Regulations 2013. Due to the Covid 19 pandemic, The Marine Works and Marine Licensing (Miscellaneous Temporary Modifications) (Coronavirus) (Scotland) Regulations 2020 has made amendments to the existing regulations.

As it was not possible to hold a physical PAC event due to COVID-19 restrictions, three virtual PAC events were held via Zoom hosted from the Project website (R100.subseacableproject.co.uk) as described below.

Typically, a physical event is better received than a virtual one, however under the circumstances the ability to hold a virtual event was invaluable. Those that attended had the opportunity to pose specific questions regarding the project. In this sense, the virtual event was considered more effective than a physical meeting as it enabled focussed feedback and questions, with attendance from those with targeted interest.

The R100 website provided information on the project proposals ahead of the meeting. A Storymap of the project activities and information was produced and published on the site to make information accessible and easy to review and digest. The Orkney public interactive event was held via zoom on 22nd July at 13:00. The event consisted of a live presentation followed by a question-and-answer session after the live presentation, where participants were able to ask questions to the project team. The presenters were available to take questions from any late comers for the duration of the scheduled sessions.

Following the live event, a recording of the live presentation has been made available on the R100 website R100.subseacableproject.co.uk to allow interested parties access to information should they not have been able to attend the live event. Feedback forms for the event were available for download on the website to be returned by 20th August 2021.

Prior to the PAC event, a notice was prepared which provided information on the Applicant, a background to the R100 project and details of the PAC event to be held, including a link to the Zoom meeting. A copy of the PAC event notice is provided in Appendix A: Pre-application Consultation Event Notice. A statutory notice advertising the PAC event was published in the Orcadian on the 10th June 2021. A proof of the notice is provided in Appendix B.

Other media was used to share information including:

- A dedicated webpage to host information about the R100 project: R100.subseacableproject.co.uk;

- An interactive story map was made available on the R100 website; and
- Emails sent to organisations, affected stakeholders, community councils informing of the event (stakeholders listed in Annex C).

Details of the PAC event are outlined in Table 1-1 below:

Table 1-1 Summary of the R100 PAC Event

PAC Event	Date	Venue	Time	No of external Participants	No of internal Participants
Orkney	22nd July 2021	Virtual consultation event via Zoom	13:00 – 15:00	1	3 from GM (Project Manager, Permitting Manager and Permitting support) 1 from BT (Technical Lead) 1 Fisheries Liaison Officer 3 from Intertek (Permitting and Consents Senior Consultant and 2 Scientists)

Alongside this PAC event, stakeholder consultation with statutory regulators, statutory consultees, other key industry stakeholders and fish producer organisations has been ongoing. A summary of this consultation and those consulted is provided in Annex C.

1.5 Information provided by the prospective applicant at the pre-application consultation event

1.5.1.1 PAC Event

The PAC event format involved a presentation delivered by the R100 project team which covered the following aspects:

1. Team introduction
2. Telecom cables
3. Project need
4. Orkney Cables
5. Project lifecycle
6. Marine survey and route optimisation
7. Marine licence application process
8. Marine Environmental Assessment (MEA)
9. Consultation - key stakeholders
10. Fisheries liaison
11. Cable installation

12. Cable protection
13. Project timescale
14. Questions and feedback

The PAC event provided an opportunity for public involvement and encouraged participation during the Covid pandemic. The event provided attendees with direct access to the project team who were able to discuss technical and environmental questions. After attendees listened to the presentation, they were given the opportunity to directly ask any questions to the R100 project team. The presentation including the questions and answers section was made available on the R100.subseacableproject.co.uk website for those unable to attend. Furthermore, a feedback form was available on the website until the 20th August 2021 for those unable to attend to submit any questions to the R100 team following the PAC event. A copy of the feedback form is provided in Appendix D.

1.5.1.2 R100 Project Website

The project website (R100.subseacableproject.co.uk) was set up which advertised details of the PAC event and a story map summarising the details of the R100 project. The story map provided an interactive way for users to engage with project information and can be more appealing than reading through larger and more technical documentation. The R100 story map included the following information:

- Information on the R100 PAC Event
- Project overview
- Subsea telecommunications cables
- Cable installation
- Cable crossings
- Marine surveys
- Protected environmental sites
- Route development and optimisation
- Marine licence application process
- Project timeline
- Feedback form

1.6 Information received by the Prospective Applicant during the Pre-application Consultation Event

The following section summarises the information received during and post PAC event. A total of nine people attended the PAC event. No completed feedback forms have been received to date. Below are the questions provided before, or asked during the PAC event. A summary of the answers to the questions posed by the R100 project team has been provided after each question (*blue italics*).

- Will there be further cable route surveys completed during the lifetime of the cable to ensure charts are updated by the UK Hydrographic Office?

Richard H – Survey well at start of project, equipment to install is monitored so can report accurately post install. But don't re-survey unless issues, break, snag trigger potentially more surveys. If changes as a result of say a repair, records updated for routeings and passed onto UKHO and ESCA (ESCA updated on yearly basis).

- Are there any decommissioning plans at the end of the cables operational life?

Richard H – Interesting and topical Q, have high level decom plan, to align with ESCA decom guidelines on how decom should be managed. Aware of various initiatives. ESCA guideline due for update and doing work in background with company to find answer. Decom guidelines led by how cable installed and how it's been treated. Don't know where it sits in 25 years.

Worth visiting ESCA website to see how generically approach these issues.

- What has been done to ensure that the environmental impact through the protected areas has been minimised?

A desktop study was completed to optimise the route including survey data which allows us to avoid sensitive features within the 500m survey corridor. Intertek are preparing the Marine Environmental Appraisal Report for the Orkney Geographical Area which considers the 7 proposed marine cable corridors. The MEA looks to assess the impacts of the proposed R100 route installation and propose mitigation measures where relevant to minimise environmental impacts.

- Are there any areas along the cable route that will not be buried?

There is the potential for areas of cable to not be buried depending on the type of seabed (i.e. hard ground or boulder fields that may limit burial). It is the intention that all the cable will be buried, however this is yet to be determined on review of survey data.

- Will there be a lot of noisy disruption at the sites during construction - how long will the cables take to install?

During the landfall installation mini excavators will be used within the intertidal are to bury the cable within the beach and sediment for the cable tie in. Works at the landfall will take place for up to 5 days per landing site associated with the cable burial however, noisy activities will be limited to excavation noise.

- Will ongoing access be needed to maintain the cables after they have been installed? How often will access be needed?

Access will be required throughout the lifetime of the cable project and the network does need maintenance. It is difficult to determine the frequency of maintenance events, however in the event something does goes wrong, there are contractual arrangements in place that permit the undertaking of maintenance activities where required. To provide an estimate, it is suggested that maintenance may be required once every 1-2 years.

- How will the safety of others be considered – will steps be taken to ensure the cables do not pose a hazard?

During the installation operations, notices to mariners will be issued to keep everyone aware of the works. Furthermore, the plan is to fully bury the cable, however in areas where that perhaps is not possible, mitigation measures will be implemented that prevent impacts to other seabed users. Once the cable routes are in place, the as-installed routes are forwarded to the admiralty and the cable routes are charted on all marine charts which are publicly available. The routes are included on the KISORCA website to promote marine safety. Information will be disseminated by FLO (Fisheries Liaison Officer) to various fishing stakeholders. In addition, the cables will be installed in accordance with the European Subsea Cables Association (ESCA) best practice measures.

- Will you be able to see the cables on the beach?

Both on the beach and offshore the cables will be buried, and reinstatement works means the cables will not be visible.

- How much of the beach will be affected?

A narrow trench will be excavated on the beach to install the cable; however, the rest of the beach will remain unaffected.

- Will the works disturb dolphins or other marine wildlife?

The main effects to dolphins would be from underwater noise. However, vessel noise from installation vessels is likely to be like those already operating in the area, therefore no significant effects to marine wildlife are anticipated.

- Will the cable be buried? If so, how deep will it be buried?

The plan is to bury the cable to 2m depth onshore and 1m depth for the offshore cable route. The depth of burial will be subject to seabed conditions encountered on each route.

- How long will the installation take?

The overall operation is anticipated to take approximately 20 days per cable route and are planned from April 2022. There is the potential for this to slip based on weather and sea conditions, but otherwise it is estimated that offshore operations for Orkney will be ongoing for the majority of May.

1.7 Amendments made, or to be made, to the application for a marine licence by the prospective applicant following their consideration of comments and/or objections received at the pre-application consultation event

No major comments were raised during the pre-application consultation period or PAC event. No relevant amendments to the application for a marine licence have been deemed necessary.

The proposed approach to the marine licence application and provision of supporting documents remains as follows:

- Completion of marine licence application form(s)
- Provision of an environmental assessment in the form of the R100 Marine Environmental Appraisal (MEA).
- Provision of a Navigation Risk Assessment (NRA) as part of the MEA.
- Provision of a Fisheries Liaison Mitigation Action Plan (FLMAP) as part of the MEA
- Provision of an EPS Risk Assessment and Marine Mammal Mitigation Plan
- Provision of a Protected Sites Assessment (HRA, MPA, SSSI)
- Provision of a Schedule of Mitigation as part of the MEA

1.8 Explanation of approach taken by the prospective applicant where, following relevant comments and/or objections being received by the prospective applicant at the pre-application consultation event, no relevant amendment is made to the application for a marine licence

As outlined in the preceding section, no major comments or concerns were received during the pre-application event and therefore no amendments were required in relation to the marine licence application.

1.9 Certification

Name; David Cornelius

Role: Project Manager

British Telecommunications Ltd

BT Centre

81 Newgate Street

London

EC1A 7AJ

I certify that I have complied with the legislative requirements relating to pre-application consultation and that the pre-application consultation has been undertaken in accordance with statutory requirements.

Signature [redacted] Date _____

2. ANNEX A – PRE-APPLICATION CONSULTATION EVENT NOTICE

Dear Sir/Madam,

In line with Part 4 of the Marine (Scotland) Act 2010 and The Marine Licensing (Pre-application Consultation) (Scotland) Regulations 2013, Notification is hereby given that British Telecom plc (BT) is planning to submit 16 separate applications for Marine Licences to install telecommunication cables between the following locations:

Orkney:

Eday (OS Grid Ref: 355401E, 1038029N) to Westray (OS Grid Ref: 350790E, 1040445N)
Eday (OS Grid Ref: 356310E, 1034128N) to Sanday (OS Grid Ref: 360062E, 1035556N)
Sanday (OS Grid Ref: 361023E, 1035523N) to Stronsay (OS Grid Ref: 362014E, 1029656N)
Orkney Mainland (OS Grid Ref: 337152E, 1026405N) to Roussay (OS Grid Ref: 388196E, 1028948N)
Orkney Mainland (OS Grid Ref: 353337E, 1011076N) to Shapinsay (OS Grid Ref: 351987E, 1015762 N)
Hoy (OS Grid Ref: 332441 E, 993368 N) to Flotta (OS Grid Ref: 333850 E, 993993 N)
Flotta (OS Grid Ref: 337799 E, 994404 N) to South Ronaldsay (OS Grid Ref: 342876 E, 993790 N)
Shetland (OS Grid Ref: 440296E, 1109860N) to Sanday (OS Grid Ref: 376969E, 1043894N)

Shetland:

Yell (OS Grid Ref: 454889E, 1199215N) to Unst (OS Grid Ref: 456219E, 1200691N)
Shetland (OS Grid Ref: 445107E, 1175611N) to Yell (OS Grid Ref: 449933E, 1179894N)
Shetland (OS Grid Ref: 440296E, 1109860N) to Sanday (OS Grid Ref: 376969E, 1043894N)
Fair Isle (OS Grid Ref: 422396E, 1072442N) to BU (OS Grid Ref: 426370E, 1070880N)

Hebrides:

Eigg (OS Grid Ref: 146917E, 788060N) to Mainland (OS Grid Ref: 165643E, 790431N)
Mainland (OS Grid Ref: 190191E, 745294N) to Lismore (OS Grid Ref: 189042E, 745578N)
Iona (OS Grid Ref: 128174E, 723386N) to Mull (OS Grid Ref: 129976E, 721907N)
Colonsay (OS Grid Ref: 140104E, 697535N) to Mull (OS Grid Ref: 137542E, 718844N)

Background

The marine elements of the R100 Project are to install sixteen telecommunication cables to extend superfast broadband (30Mbps+) coverage across Shetland, Orkney, and the Inner Hebrides. These new cables will form part of the Scottish Government's 'Reaching 100%' (R100) programme contracted to BT Plc. Telecommunication cables provide essential services and connectivity which is of vital importance as the demand for data and communication increases.

The attached figure shows the location of the proposed cable corridors.

Pre-application Consultation

Prospective applicants for marine licences for certain activities, including the deposit of a submarine cable into the sea or on or under the seabed where that cable is over approximately 1 nautical mile in length and where it crosses the inter-tidal boundary, are required to carry out a public pre-application consultation.

In fulfilment of the Guidance on Marine Licensable Activities Subject to Pre-Application Consultation and in following the public pre-application consultation procedure BT is required to hold at least one public event where local communities, environmental groups, NGOs and other interested parties are given the opportunity to consider and comment upon a prospective application for those marine licensable activities that are prescribed in the Regulations.

BT is also required to notify (this email) the following statutory consultees that an application for a marine licence for a prescribed activity is to be submitted to MS-LOT:

- The Commissioners of Northern Lighthouses

- The Maritime and Coastguard Agency
- The Scottish Environment Protection Agency
- Scottish Natural Heritage
- Any delegate for the relevant marine region or regions, when such delegates have been established under Section 12(1) of the Marine (Scotland) Act 2010.

Pre-application Consultation Events
Due to the current restrictions around Covid 19 Project information will be available online at this location: R100.subseacableproject.co.uk

The Pre-application consultation event for the R100 Project cables within the Orkney region will be held R100.subseacableproject.co.uk. The event will be notified to the public within The Orcadian on 10th June for cables within the Orkney area, The Shetland Times on 11th June and The Oban Times on 17th June. I have attached copies of the Public notices for your information.

Date	Location	Online Link	Time
22/07/21	Orkney cable corridors as listed above	R100.subseacableproject.co.uk	13:00
23/07/21	Shetland cable corridors as listed above		13:00
29/07/21	Hebrides cable corridors as listed above		13:00

Following the events, a pre-application report, in the form prescribed in the Regulations, will be prepared and submitted with the marine licence applications.

Further information, can be obtained concerning the proposed installation of submarine cables from:
Stuart McLaren
Environmental Consultant
Intertek Energy and Water Services
T [redacted]; [redacted]
E: stuart.mclaren@intertek.com

Persons wishing to provide comments on the proposed installation of the submarine cable can do so by writing to BT plc via the appointed environmental consultants for the Project at:
stuart.mclaren@intertek.com
Or by post to: Stuart McLaren, Prospect Business Centre, Dundee Technology Park, Dundee DD2 1TY by 20/08/21.
Comments should be dated and should clearly state the name (in block capitals) and full return email or postal address of those making comment. Comments made to the prospective applicant are not representations to the Scottish Ministers. If BT applies for a marine licence to the Scottish Ministers, opportunity will be given for representations to be made to the Scottish Ministers on the application.

3. ANNEX B – STATUTORY PUBLIC NOTICES

R100 SCOTTISH ISLES TELECOMMUNICATION CABLES
MARINE (SCOTLAND) ACT 2010
THE MARINE LICENSING (PRE-APPLICATION CONSULTATION) (SCOTLAND) REGULATIONS 2013

Notice is hereby given that British Telecommunication plc, plan to hold pre-application consultation events regarding proposed licensable marine activities within the Orkney section of the R100 Project for the installation of seven marine telecommunication cables between:

Eday (OS Grid Ref: 355401E, 1038029N) to Westray (OS Grid Ref: 350790E, 1040445N);
Eday (OS Grid Ref: 356310E, 1034128N) to Sanday (OS Grid Ref: 360062E, 1035556N);
Sanday (OS Grid Ref: 361023E, 1035523N) to Stronsay (OS Grid Ref: 362014E, 1029656N);
Orkney Mainland (OS Grid Ref: 337152E, 1026405N) to Rousay (OS Grid Ref: 388196E, 1028948N);
Orkney Mainland (OS Grid Ref: 353337E, 1011076N) to Shapinsay (OS Grid Ref: 351987E, 1015762 N);
Hoy (OS Grid Ref: 332441 E, 993368 N) to Flotta (OS Grid Ref: 333850 E, 993993 N); and
Flotta (OS Grid Ref: 337799 E, 994404 N) to South Ronaldsay (OS Grid Ref: 342876 E, 993790 N).

The marine elements of the R100 Project are to install sixteen telecommunication cables to extend superfast broadband (30Mbps+) coverage across Shetland, Orkney, and the Inner Hebrides. These new cables will form part of the Scottish Government's 'Reaching 100%' (R100) programme contracted to BT Plc. Further information can be obtained concerning the proposed submarine telecommunication cable installation at R100.subseacableproject.co.uk

Due to the current restrictions surrounding Covid 19, the cable pre-application consultation event will be held online by visiting the following link:

R100.subseacableproject.co.uk Date: 22/07/21 at 13:00.

Persons wishing to provide comments on the proposed installation of the submarine telecommunication cables can do so by writing to the prospective applicant via their appointed environmental consultants, no later than 20th August 2021.
By e-mail to: stuart.mclaren@intertek.com; or by post to: Intertek EWCS, Prospect Business Centre, Dundee Technology Park, Dundee DD2 1TY.

Comments should be dated and should clearly state the name (in block capitals) and full return e-mail or postal address of those making comment. Comments made to the prospective applicant are not representations to the Scottish Ministers. If British Telecom applies for marine licences to Scottish Ministers, an opportunity will be given for representations to be made to the Scottish Ministers on the applications.

4. ANNEX C – SUMMARY OF STAKEHOLDER CONSULTATION TO DATE

Appendix B_P2308_R5445_Rev0_Consultation Summary Orkney_FINAL.docx

APPENDIX B

Consultation Log and PAC Event Report

B.1 INTRODUCTION

This Section describes the consultation responses received for the application corridors within the Orkney geographical area, identifies where in the Marine Environmental Appraisal (MEA) the responses have been considered.

B.2 CONSULTATION

A wide range of stakeholders have been consulted in the process of drafting the R100 MEAs. The stakeholders contacted for all three geographical areas are listed below.

Table B-1 Consultation and scoping responses

Key Common Stakeholders to all R100 geographical areas	
Marine Scotland Licensing Operations Team (MS-LOT)	The Maritime & Coastguard Agency (MCA)
Crown Estate Scotland	Historic Environment Scotland (HES)
NatureScot	Marine Scotland Science
The Scottish Environmental Protection Agency (SEPA)	The Royal Yachting Association Scotland (RYAS)
Northern Lighthouse Board (NLB)	Ministry of Defence (MOD)
Orkney Stakeholders	
The Orkney Planning Partnership	Flotta Community Council
Orkney Islands Council	South Ronaldsay and Burray Community Council
St Margaret's Hope Pier Trustees	Eday Community Council
Shapinsay Community Council	Westray Community Council
Hoy Community Council	Sanday Community Council
Stronsay Community Council	Inshore Fisheries Alliance
Rousay, Egilsay, Wyre and Gairsay Community Council	Scottish White Fish Producers Association (SWFPA)
Scapa Flow Harbour	Regional Inshore Fisheries Group (RIFG)
Shapinsay Sound Harbour	Scottish Salmon Producers Organisation (SSPO)
Westray, Rapeness Harbour	Scottish Sea Farms Ltd
Scottish Creel Fishermen's Federation	Orkney Fisheries Association (OFA)
Scottish Fishermen's Federation	Orkney Islands Council
Kirkwall Fishery Office	Kirkwall Harbour Master and Orkney VTS
Scottish Fishermen's Organisation	

Table B-2 below summarises the relevant consultation responses on the marine elements of the proposed application corridors received during preparation of the Marine Environmental Appraisal.

Table B-2 Consultation and scoping responses

Stakeholder	Comment	How this has been addressed
NatureScot	Meeting 22/03/2021 Discussion on the proposals for benthic survey and assessment. During this meeting NatureScot confirmed that the proposed approach to informing the benthic baseline is pragmatic and therefore acceptable.	**MEA Section 5 –** Drop down camera/ benthic surveys were undertaken for Cable Corridor 2.10 Orkney Mainland to Shapinsay (entire corridor) as agreed with NatureScot. This is discussed within the assessment in MEA Section 5.4.
NatureScot	Meeting 17/06/21 Main points covered include: ▪ Method for relevant protected site selection was agreed with NatureScot. ▪ NatureScot advised inclusion of seal haul-out sites within Management Units (MU). ▪ A Marine Mammal Mitigation Plan (MMMP) was requested by NatureScot to include onshore and offshore elements which can cause disturbance.	**A Protected Site Assessment has been provided in Appendix C –** The sites listed by the regulator have been included in the Protected Site Assessment. **MEA Section 5 -** An assessment of seal haul-out sites has been provided in this section. **A European Protected Species (EPS) Risk Assessment has been provided in Appendix D. -**As there is no significant disturbance to marine mammals, as assessed in the EPS, no Marine Mammal Mitigation Plan has been provided.
NatureScot	Meeting 13/07/21 Main points covered include: ▪ Protected Sites Assessment list refined by NatureScot to remove sites they decided would not be affected by the installation activities. ▪ Intertek will include Cetacean and basking shark in the EPS Risk Assessment	**A Protected Site Assessment has been provided in Appendix C** - The sites listed by the regulator have been included in the Protected Site Assessment. **An EPS Risk Assessment has been provided in Appendix D.-** Basking shark and cetaceans have been included in the EPS assessment.
NatureScot	Meeting 14/09/21 Main points covered include: ▪ NatureScot advised a 500m distance for disturbance to hauled out seals. ▪ NatureScot advised that due to the slow vessel speed, and short-term nature of the works, disturbance to foraging and moulting birds will not be significant. ▪ NatureScot advised that nesting birds are most vulnerable at the beginning of breeding season, so installation works should avoid this period for activities near nesting birds.	**A Protected Site Assessment has been provided in Appendix C –** Visual disturbance was assessed for any protected sites designated for seals within 500m of the cable corridors. Advice on the sensitivity of breeding, foraging and moulting birds was considered within the assessments. **MEA Section 5 -** Visual disturbance was assessed for any designated haul-out sites within 500m of the cable corridors and project specific mitigation has been proposed to recommend that screens are used to reduce visual disturbance to seals at Cable Corridor 2.9 Orkney Mainland to Rousay, Rousay landing point.
NatureScot	Meeting 22/09/21 Main points covered include: ▪ NatureScot advised that works within 500m of seals should avoid seal pupping periods. ▪ NatureScot advised that using screens at landing points would reduce visual disturbance to seal. ▪ The Scottish Marine Wildlife Watching Code was provided by NatureScot for guidance to avoid disturbance to birds.	**A Protected Site Assessment has been provided in Appendix C.** **MEA Section 5** - It Project specific mitigation has been proposed to recommend that screens are used to reduce disturbance to seals at Cable Corridor 2.9 Orkney Mainland to Rousay, Rousay landing point. MEA Section 8 –The Scottish Marine Wildlife Watching Code has been added as Best Practice measure and for Project Specific mitigation for Cable Route 2.9 Orkney Mainland to Rousay.

Stakeholder	Comment	How this has been addressed
Northern Lighthouse Board (NLB)	Letter received 14/05/2021 ▪ Northern Lighthouse Board should be included in the Navigation Risk Assessment consultation by contacting us at navigation@nlb.org.uk. ▪ Northern Lighthouse Board are invited to the on-line Pre-Application Consultation events for each of the areas.	**A Navigational Risk Assessment has been provided in Appendix E -** A copy of the NRA shall be made available to the Northern Lighthouse Board if necessary.
The Maritime & Coastguard Agency (MCA)	Email received 11/06/2021 ▪ We would expect the NRA to detail the impact on navigation for commercial, fishing and recreational craft; including identifying traffic levels, collision risk, emergency response, lighting and marking, and mitigation measure to reduce risks to As Low As Reasonably Practicable (ALARP), with a detailed methodology.	**A Navigational Risk Assessment has been provided in Appendix E –** These areas have been considered in the NRA.
The Maritime & Coastguard Agency (MCA)	Email received 11/06/2021 ▪ Particular attention should also be paid to cabling routes and burial depth for which a Burial Protection Index study should be completed and, subject to the traffic volumes, an anchor penetration study may be necessary.	**A Navigational Risk Assessment has been provided in Appendix E –** The Burial Protection Index is not yet defined, but it is planned to bury the cable to 1m where possible.
The Maritime & Coastguard Agency (MCA)	Email received 11/06/2021 ▪ Any consented cable protection works must ensure existing and future safe navigation is not compromised, accepting a maximum of 5% reduction in surrounding depth referenced to Chart Datum. Under no circumstances should depth reductions compromise safe navigation. Consideration should be given to areas of critical depth in relation to under keel clearance where any reduction in depth will increase risk to safe navigation, such as in IMO routeing measures, highly mobile seabed depth, approaches to ports etc, and developers must discuss the tolerability of any changes to depths with MCA.	**A Navigational Risk Assessment has been provided in Appendix E –** The Burial Protection Index is not yet defined, but it is planned to bury the cable to 1m where possible. Contingencies will be carefully engineered in water depths less than 10m so that they will not reduce the depth by more than 5%.
Historic Environment Scotland (HES)	Letter received 10/06/2021 ▪ We also recommend that you seek advice from the relevant local authority archaeology and conservation services on the historic environment impacts of the proposals. Historic environment specialists from these Councils will be able to provide input on matters including undesignated terrestrial and inter-tidal archaeology, and category B and C-listed buildings.	The R100 Project will discuss the archaeological survey results and project finding post application, prior to submission of an archaeological addendum. The archaeological addendum will set out the historical environment, provide an archaeological review of the geophysical survey results and establish appropriate Archaeological Exclusion Zones. This will be discussed with HES prior to submission and finalisation.
Historic Environment Scotland (HES)	Letter received 10/06/2021 ▪ While it is difficult to determine from the resolution of the mapping provided to what extent our historic environment interests will be affected by the	

Stakeholder	Comment	How this has been addressed
	proposals, we would nevertheless expect any MEA undertaken to include an assessment of impacts on marine heritage assets caused by the laying of the fibre optic cables and, also, impacts on inter-tidal and land-based heritage assets caused by the landing of the fibre optic cables ashore. We have provided a preliminary list of potential impacts to be taken into account for each fibre optic cable in the attached Annex.	
Historic Environment Scotland (HES)	Letter received 10/06/2021 ▪ We would therefore recommend the following matters are considered as an assessment is progressed. ▪ Marine Archaeology Desk-Based Assessment ▪ Archaeological Review of Geophysical Data ▪ Consultation with Historic Environment Scotland	
Historic Environment Scotland (HES)	Letter received 10/06/2021 ▪ In addition to Marine Archaeology, any MEA should consider the potential for impacts on terrestrial and inter-tidal heritage assets located in the vicinity of the proposed landing sites for the cables. Some of the routes, particularly those in Orkney and Mull to Iona, could be constrained by the high density of known archaeological sites along the coast, many of them designated as scheduled monuments. Other routes, such as 2.14 Mainland to Lismore, will run through areas where there is a potential lack of recent survey and recording for both marine and terrestrial sites. Any Desk-Based Assessment undertaken should consider this and recommend whether further archaeological survey is necessary in some specific cases.	
Historic Environment Scotland (HES)	Letter received 10/06/2021 ▪ Your MEA should meet the requirements of Scottish Planning Policy (SPP, 2014), Scotland's National Marine Plan (2015) and the Historic Environment Policy for Scotland (HEPS, 2019). We also recommend that you should take into account of the Joint Nautical Archaeological Committee's Code of Practice for Seabed Development as part of the assessment of the impact of these proposals. The guidance in The Crown Estate Protocol for Archaeological Discoveries document will also help with the design of suitable actions and mitigation measures. Similarly, our Managing Change Guidance Notes on Setting (2016) and World Heritage (2016) will be relevant for these proposals.	

Stakeholder	Comment	How this has been addressed
	Further guidance on environmental assessment can also be found in the Cultural Heritage Appendix to the EIA Handbook (SNH, HES, 2018).	
Marine Scotland Licensing Operations Team (MS-LOT)	Email Received 02/07/2021 ▪ Regulation 7 of The Marine Licensing (Pre-application Consultation) (Scotland) Regulations 2013 ("PAC Regulations") states that the prospective applicant for a marine licence must hold at least one pre-application consultation event at which those persons mentioned in regulation 6(2), and members of the public, may provide comments to the prospective applicant as regards the licensable marine activity to which the application for a marine licence is to relate; and (b) publish in a local newspaper a notice containing. The PAC regulations define "local newspaper" as a newspaper which is likely to come to the attention of those persons who are likely to be affected by the licensable marine activity for which a marine licence is to be sought. If you are satisfied that the newspaper you have selected is likely to come to the attention of those persons who are likely to be affected by the licensable marine activity proposed (each individual cable route for which PAC is required), you could consider yourselves to fulfil the requirements of regulation 7. The PAC adverts look appropriate.	A PAC event was held on 22/07/2021, and comments addressed. It was noted that the adverts look appropriate. MS-LOT have been sent a copy of the PAC event report. The PAC Event Report has been included in this Appendix under Section B-3.
The Royal Yachting Association Scotland (RYAS)	Letter received 10/06/2021 ▪ A key mitigation measure will be publicising when and where working is taking place. Local boats should be easy to reach but as visitors may be cruising long distances it would be helpful to circulate Notices to Mariners widely to marinas and harbours. We have started encouraging recreational boaters to look at Kingfisher, which was originally set up to warn fishermen of obstacles on the seabed, but which now forms a useful depository of current Notices to Mariners.	**MEA Section 8** - A Notice to Mariners will be circulated, as per BP 2: Notice to Mariners will be published to inform sea users via Notices to Mariners, Kingfisher Bulletins and MCA and UKHO. Vessels will be requested to remain at least 1NM away from cable vessels during installation operations.

5. ANNEX D – PRE-APPLICATION CONSULTATION EVENT FEEDBACK FORM

R100 Telecommunication Cables

Pre-application Consultation Event

Feedback Form – Your Comments

1 - How did you hear about the event?

2 - Was the information provided on the website informative?

3 - If you have any comments / queries regarding the marine aspects of the above project following today's public information event please include details below:

Optional:

Contact Details:	
Please confirm if you would like to opt out of any further contact	Yes / No

Intertek may securely save your Email address as well as any other information you provide. This information may be used to contact you in the future by mail, Email, or phone to convey information about the R100 project. Your information is limited to only these purposes. Your Email and other information will not be sold to any third party and will only be kept for the duration of the marine licence application process. Intertek will abide by our GDPP.

Please return your comments by email to stuart.mclaren@intertek.com

no later than **Friday 20th August 2021**.

Thank you for your interest and co-operation.

6. ANNEX E – FLMAP

Fisheries Liaison and Mitigation Action Plan

for Global Marine Group on BT Project

R100 Project—Survey and Installation

Date: 21 July 2021

Revision	Issue Date	Comments	Reviewer/Author	Pages
0	21 July 2021		ETM	37
1	20 Aug 2021	Initial Edits	ETM	37
2	24 Aug 2021	Internal Edits	ETM	36

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Abbreviations

AIS—Automatic Identification System

ESCA—European Subsea Cables Association

FAO—Food and Agriculture Organization of the United Nations

FLMAP—Fisheries Liaison and Mitigation Action Plan

FLO—Fisheries Liaison Officer

GMG—Global Marine Group

GVA—Gross Value Added

ICES—International Council for Exploration of the Seas

ICPC—International Cable Protection Committee

MEA—Marine Environmental Appraisal

MMO—Marine Management Organisation

MPA - Marine Protected Areas

NMPi—National Marine Plan interactive

NtM—Notice to Mariners

R100—Reaching 100%

SAR—Swept Area Ratio

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Figure 3. Dredging gear typical of UK commercial scallop fishing fleet (Boulcott, 2012).

Figure 4. Overview of the four cable routes for R100 within the Inner Hebrides region.

Figure 5. Anonymised AIS vessel tracks for fishing vessels in the Inner Hebrides (MMO, 2015).

Figure 6. Otter trawl fishing intensity (based on a metric of Subsurface Swept Area Ratio (SAR) for the Inner Hebrides routes (ICES/OSPAR, 2016).

Figure 7. Dredge fishing intensity (based on a metric of Subsurface Swept Area Ratio (SAR) for the Inner Hebrides routes (ICES/OSPAR, 2016).

Figure 8. Overview of the seven cable routes for R100 within the Orkney Islands region.

Figure 9. Anonymised AIS vessel tracks for fishing vessels in Orkney (MMO, 2015).

Figure 10. Otter trawl fishing intensity (based on a metric of Subsurface Swept Area Ratio (SAR) for the Orkney routes (ICES/OSPAR, 2016).

Figure 11. Dredge fishing intensity (based on a metric of Subsurface Swept Area Ratio (SAR) for the Orkney routes (ICES/OSPAR, 2016).

Figure 12. Overview of the five cable routes for R100 within the Shetland Islands region.

Figure 13. Anonymised AIS vessel tracks for fishing vessels in Shetland (MMO, 2015).

Figure 14. Otter trawl fishing intensity (based on a metric of Subsurface Swept Area Ratio (SAR) for the Shetland routes (ICES/OSPAR, 2016).

Figure 15. Dredge fishing intensity (based on a metric of Subsurface Swept Area Ratio (SAR) for the Shetland routes (ICES/OSPAR, 2016).

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Table 5. Potential impacts on local fisheries.

Table 6. Potential impacts by local fisheries.

Table 7a. Pre-Installation Phase

Table 7b. Installation Phase

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Table 9. Key phases of stakeholder consultation undertaken to-date.

Introduction

Seagard has been contracted by Global Marine Group (GMG) and BT to develop a Fisheries Liaison and Mitigation Action Plan (FLMAP) for the Scottish Government's R100 ("Reaching 100%) project. The R100 Project is supported and funded by the Scottish government, with the goal to improve connectivity throughout the farthest reaches of Scotland and ensure that high-speed broadband internet access is more readily available to local communities.

The R100 project will involve the installation of 16 new fibre optic telecommunications cables of varying lengths in three main regions: the Inner Hebrides, Orkney Islands, and Shetland Islands. An overview of project routes can be seen in Figure 1 below.

All cable route survey and installation works for these projects will be taking place within the Scottish Isles and therefore UK territorial waters.

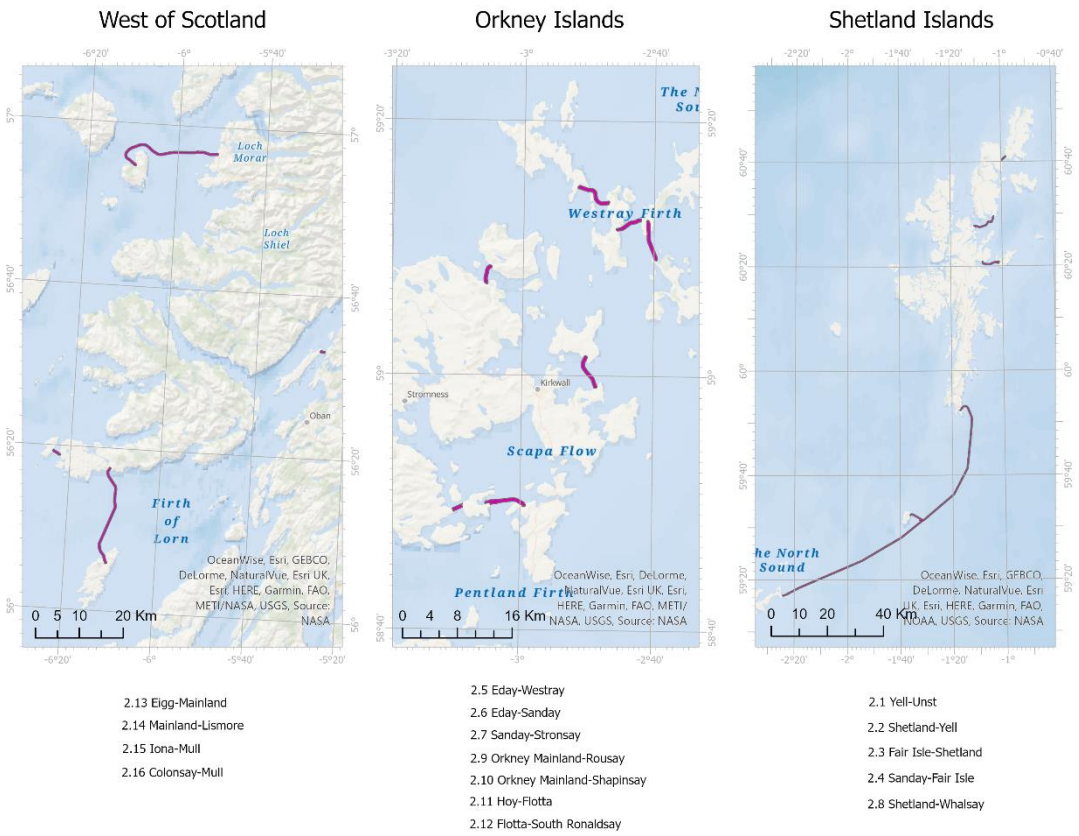

Figure 1. Overview of proposed cable site corridors as provided by GMG (July 2021).

Project Description

BT is proposing to install and operate 16 new telecommunications cables to extend superfast broadband (30Mbps+) coverage in three geographical regions of Scotland: Orkney Islands, Shetland Islands and the Inner Hebrides. These new cables will form part of the Scottish Government's 'Reaching 100%' (R100) programme contracted to BT. The licensing application is being prepared in conjunction with GMG and Intertek, with Seagard contributing the FLMAP. A project timeline can be seen in Table 1 below. As this project is sponsored by the Scottish Government, it must be delivered within the agreed timespan. As such, early and thorough stakeholder engagement has been extremely valuable, both for dissemination of project information and for gathering local knowledge on the project areas and any environmental or social factors which may influence the project and/or the local communities.

Project installation is planned to commence upon receipt of the marine licences in April 2022. Installation operations will generally be short-term and specific to the cable route. Most of the offshore cable lay works will be completed using a cable plough, with a target burial depth of 1m. The plough used for these works will have a subsurface component only 0.5m in width. In areas where burial is incomplete or unachievable, additional surface protection measures such as pinning, rock placement or rock bags may be utilised (if applicable) along the cable route. At cable crossings (5 in Shetland region, 0 in Orkney and 1 in the Inner Hebrides) uraduct and mattresses may be used to provide additional cable protection.

For most inshore installation works, the cable will be floated ashore from the ship into the trench. Once secured, the cable floats will be removed, and the cable will sink to the seabed where it will be buried with a jet trenching tool. Due to the relatively small size of the fibre optic cables (approximately 50mm diameter) and the narrow trench cut by the plough, soft sediments along most of the trench should reconsolidate almost immediately after the cable is laid. Benthic areas consisting of fine sands may take up to 24 hours to consolidate, while areas with thick clays may take longer. A similar project in the region exhibited complete sediment recovery, with all traces of ploughing gone within 14 days of burial (Kraus & Carter, 2018).

Table 1. Timeline of project operations.

Phase	Date
Preparation of Licensing Application	January 2021—September 2021
Marine Survey	May 2021—September 2021
FLO Outreach and Preparations	February 2021—Ongoing
Application Submission	End of 2021
Marine Licence Issued	April 2022
Installation of R100	April 2022

Document Structure

The following FLMAP document will include three subdivisions, one for each of the three focal regions: the Inner Hebrides, Orkney Islands, and Shetland Islands. While the main body of the background text (timeline, methodology, consultation and mitigation strategies, etc.) is applicable to all regions, the spatial and temporal trends in fishing, aquaculture, and shipping and transit activities differ geographically. As such, the "Intersection of Marine Users" section will be divided geographically to allow consideration of regional specifics.

Purpose of Fisheries Liaison and Mitigation Action Plan

The following Fisheries Liaison and Mitigation Action Plan (FLMAP) details the measures to be implemented regarding the R100 project. As this project falls entirely within UK territorial waters, all mitigation and action measures will follow stringent national and international guidelines regarding maritime usage. Seagard works to ensure that safe and effective communication measures are maintained at every step of the process and will place particular emphasis on clear and effective communication in these roles relating to Fisheries Liaison works.

This document provides a concise summary of the potential impacts of the proposed R100 subsea telecommunication cables on commercial fisheries and other maritime users, while also detailing plans for swift and effective mitigation measures, should they be required. Specifically, this plan outlines the responsibilities of the Fisheries Liaison Officer, potential guard vessels, and cable installation team.

Amendments to this document may be added as additional stakeholder information becomes available. As we work to continually increase efficiency and streamline our services, any additional changes will be outlined in future revisions.

Intersection of Marine Users

Given the geography of these regions, the marine users among these island communities are varied and numerous. There is significant daily ferry activity servicing the island communities in each of these three regions, as well as plentiful leisure and sport activity, including diving, sailing, and angling, particularly along the West Coast. Most marine users associated with these categories should neither cause nor face much disruption during the R100 Project installation phase. Through clear and early communication, any potential localised disruptions should be avoided.

Fisheries form an integral part of the fresh food supply chain throughout Scotland and many communities rely heavily on fishing not only for their livelihoods, but also as a key component of local culture and tradition. Scottish island and coastal communities in particularly have close ties to the ocean and boast fishing traditions that span generations. In 2019, there were nearly 2,100 active Scottish fishing vessels, employing nearly 4,900 fishers (Marine Scotland, 2020a).

Across Scotland, the three most valuable species landed for 2019 were Mackerel, Nephrops, and Haddock (Marine Scotland, 2020a). Mackerel is a pelagic target species typically caught with midwater trawl nets, while Haddock is demersal and requires the use of benthic trawl nets to target effectively (Figure 2). Nephrops are a species of prawn that may be caught using benthic mobile trawl gear or static creels, depending on the region and existing fishing pressures. Scallops were nearly as lucrative as Haddock in 2019 (Marine Scotland, 2020a). In order to catch scallops, bottom dredge gear, which is designed to penetrate the upper layers of the seafloor sediments, is utilised (Figure 3). Other key targets of the mobile gear industries include cod, hake, and monkfish. Fishing gear that penetrates the seafloor poses a higher risk of potentially snagging or damaging an exposed subsea cable (Carter *et al.* 2009), so it is important to understand the spatial and temporal trends surrounding these industries.

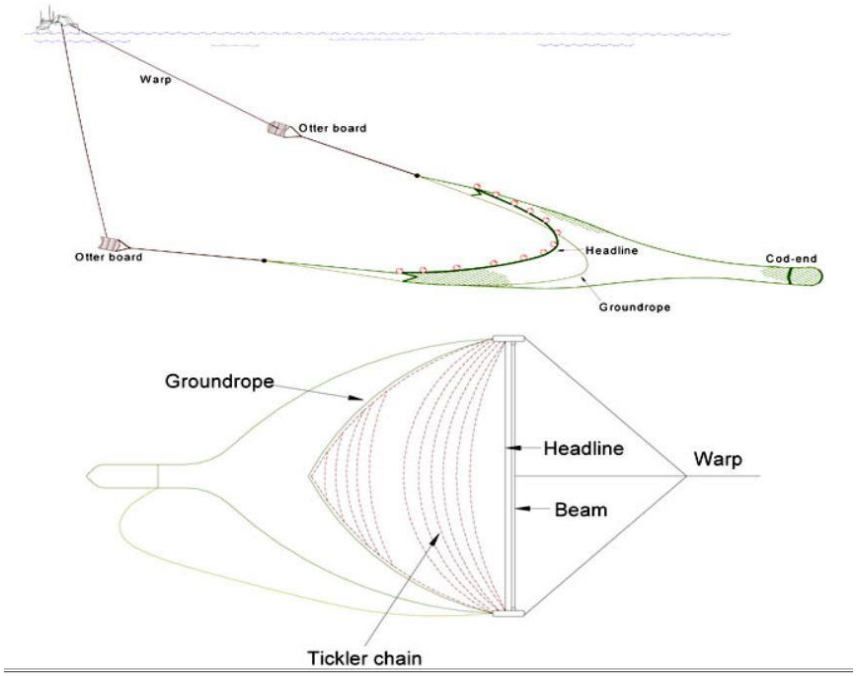

Figure 2. Depiction of otter trawl gear (top) and beam trawl gear (bottom (FAO, 2005).

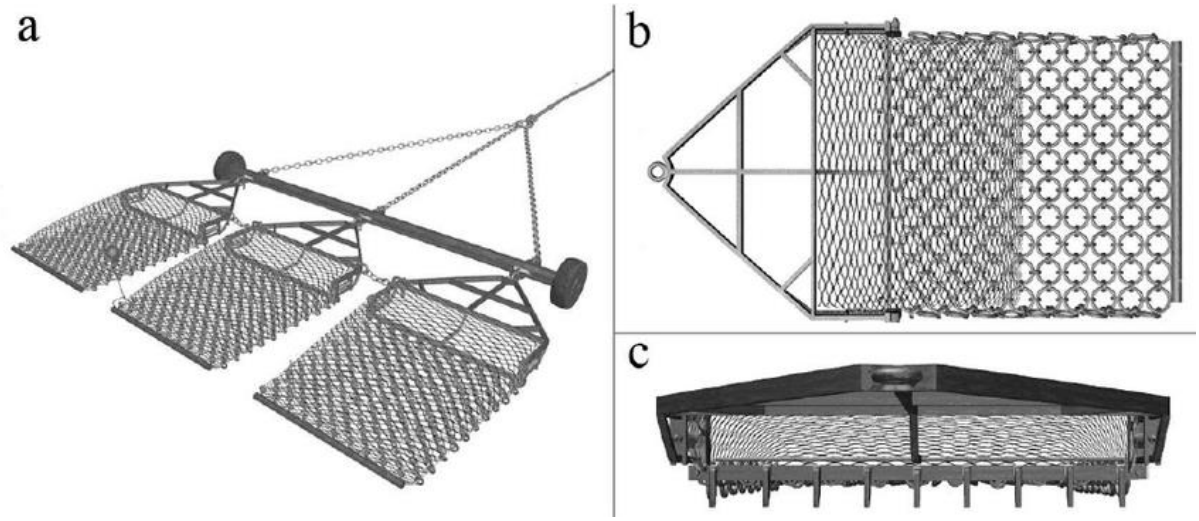

Figure 3. Dredging gear typical of UK commercial scallop fishing fleet (Boulcott, 2012).

Creel or static gear fisheries are very active along the proposed cable corridors. Of the nearly 2,100 Scottish fishing vessels listed above, 1,559 of these fall into the ten metre and under fleet (Marine Scotland, 2020a), most of which will be primarily operating static gear. The key target species for the static gear fleet include Nephrops (mentioned above) as well as crab, lobster, and buckie (whelk). While static gear fisheries do not typically pose a risk to established subsea cables, open and clear communication will be key to ensuring that any tensions or frictions during the installation phase are mitigated effectively.

In addition to these longstanding mobile and static gear fishing industries, Scotland also boasts a booming aquaculture sector, with the industry's Gross Value Added (GVA) more than tripling to £354 million in the ten-year period of 2008-2017 (Marine Scotland, 2020b). Aquaculture production is dominated by Atlantic salmon, accounting for 97% of the total marine aquaculture value; the key target species for shellfish production remains mussels, which account for 95% of all shellfish produced in 2018 (Marine Scotland, 2020b). The industry continues to grow and must be considered when contemplating both present and future interactions with the subsea cable industry.

While the R100 Project will have a relatively small spatial and temporal impact on other marine users in the region, it is important to place this project in the context of other pressures these industries are already facing. Notably, the COVID-19 pandemic still continues to impact many lives day-to-day and has significantly dampened the market for exporting seafood to what would otherwise be very popular holiday destinations. In addition to this, Brexit has complicated fresh seafood exports from the UK to the European Union, effectively decreasing a market on which many fishers have relied upon. All of this plus the pressure on fisheries and aquaculture to comply with increasingly stringent conservation measures has complicated markets in the region. As such, clear communication and mitigation strategies for the R100 Project will go a long way towards limiting potential disruption.

Inner Hebrides

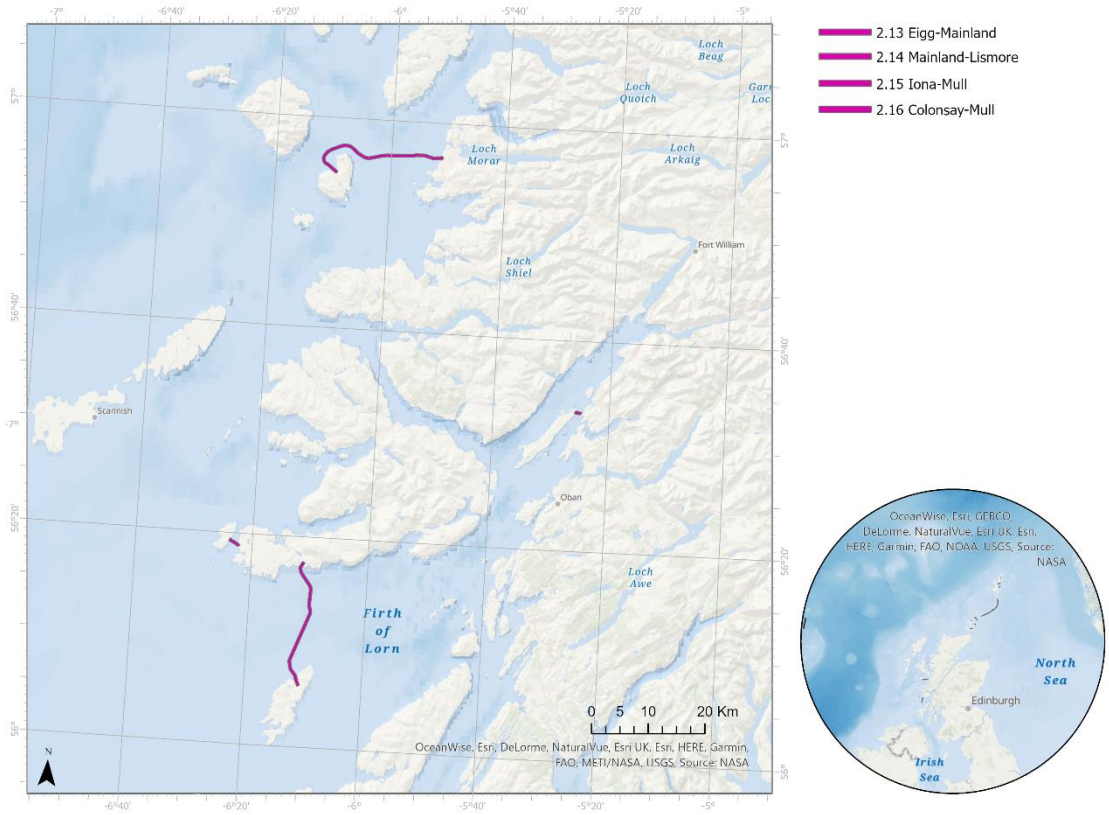

Figure 4. Overview of the four cable routes for R100 within the Inner Hebrides region.

Fisheries

Under current UK regulations, vessels under 15m in length are not required to transmit data via AIS; as such, many available datasets regarding fishing intensity will overly represent the larger mobile gear vessel fleets, while excluding or underrepresenting smaller vessels, including most of the static gear fleet. As such, local knowledge, gathered through personal communications and stakeholder consultations, will be highly valuable in determining which regions are likely to have heightened static gear fishing activity that may interact with the installation of the R100 subsea cables.

As expected, the longer Inner Hebrides routes (2.13 Eigg-Mainland and 2.16 Colonsay-Mull) will be subject to some degree of mobile gear fishing activity while the two shorter routes will likely not see this effect (Figures 5-7).

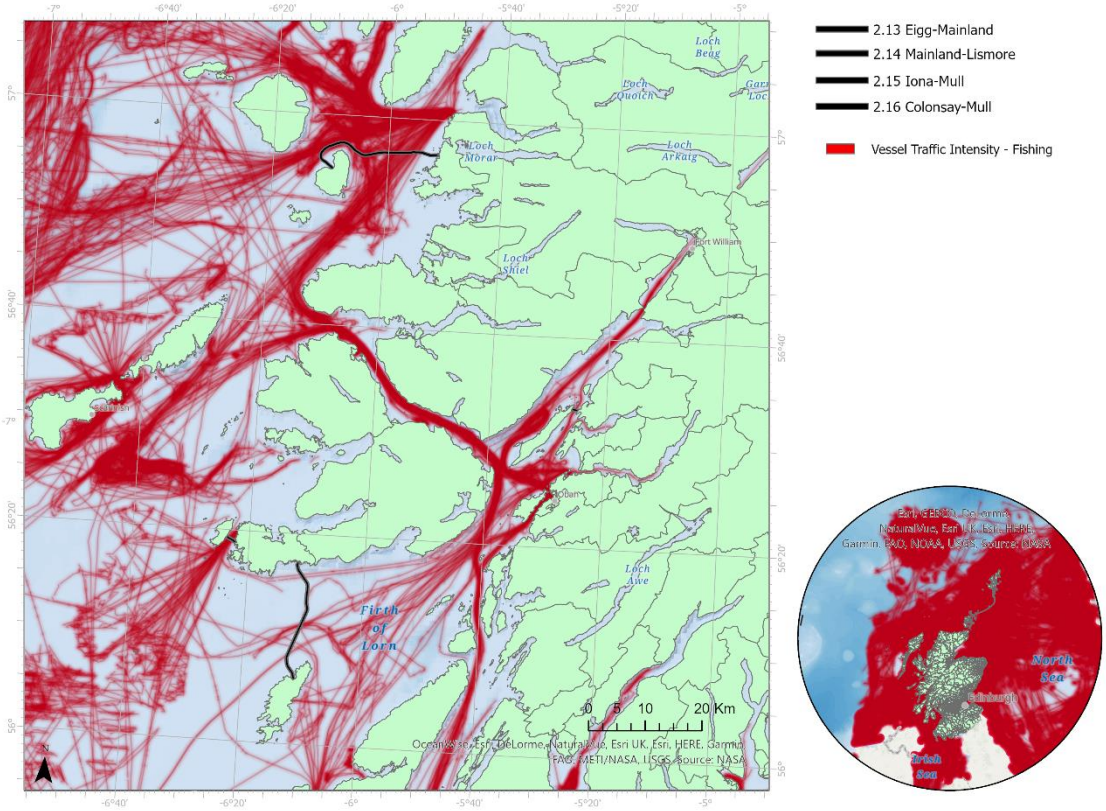

Figure 5. Anonymised AIS vessel tracks for fishing vessels in the Inner Hebrides (MMO, 2015). Contains public sector information licensed under the Open Government Licence v3.0.

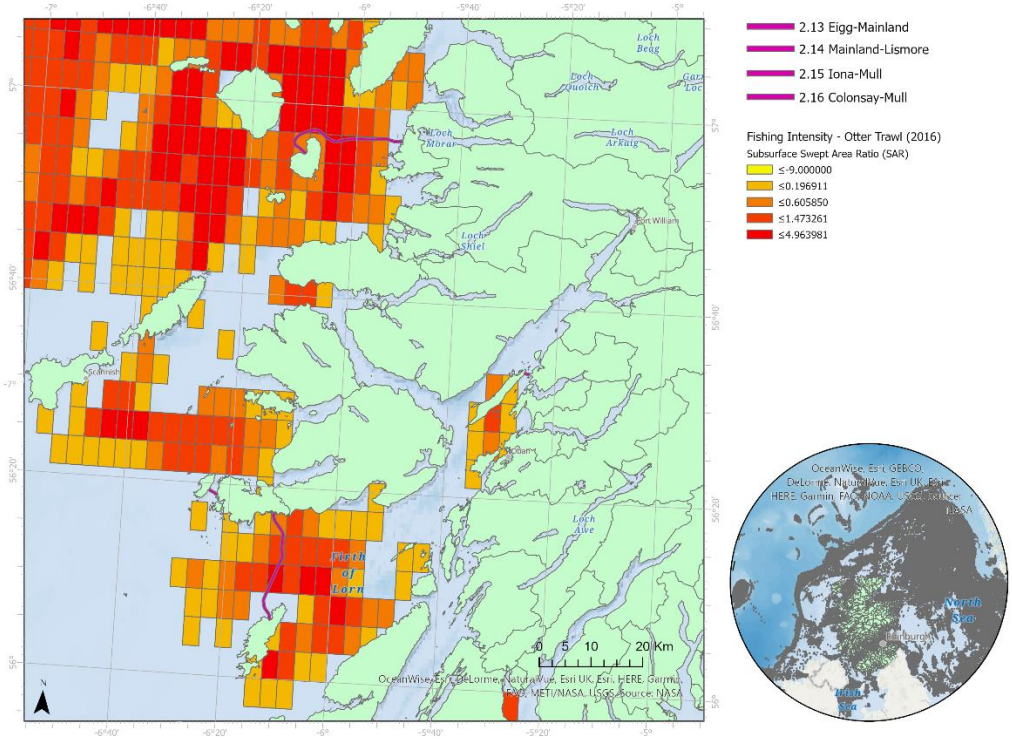

Figure 6. Otter trawl fishing intensity (based on a metric of Subsurface Swept Area Ratio (SAR) for the Inner Hebrides routes (ICES/OSPAR, 2016).

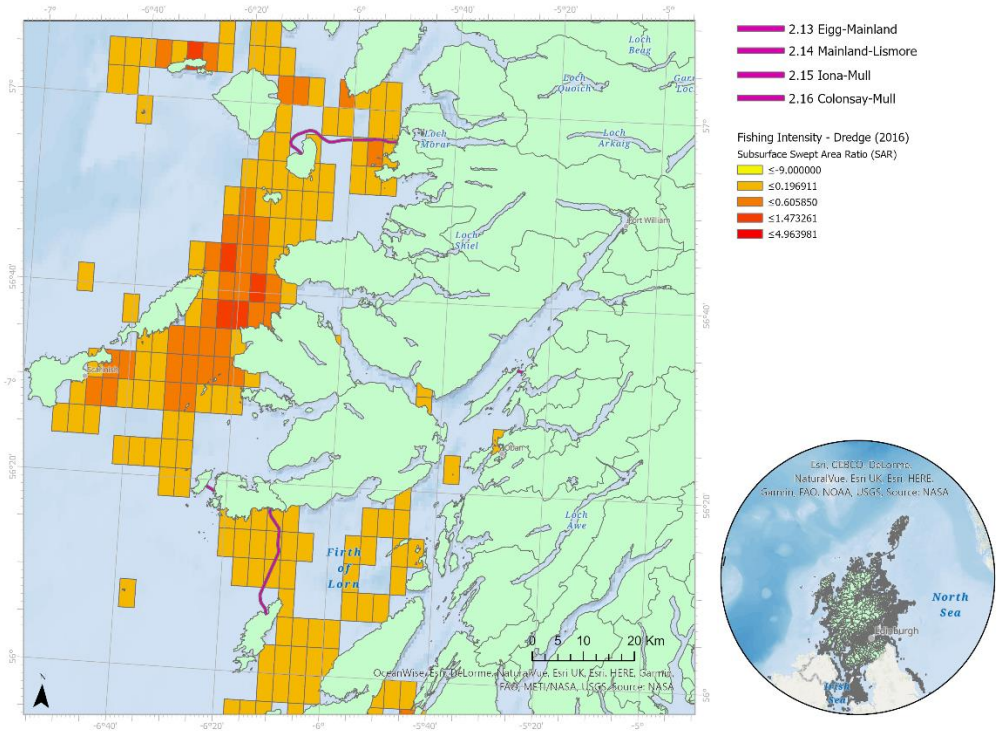

Figure 7. Dredge fishing intensity (based on a metric of Subsurface Swept Area Ratio (SAR) for the Inner Hebrides routes (ICES/OSPAR, 2016).

Aquaculture

Table 2. Presence of aquaculture sites in the Inner Hebrides region.

Route	Product	Site	Operator
2.14 Mainland-Lismore	Salmon	Lismore East	Scottish Sea Farms Ltd
2.16 Colonsay-Mull (Colonsay side)	Salmon	Colonsay	Mowi Scotland

All stakeholders above were contacted during the consultation phase and gave feedback regarding their sites and potential sensitivities. Neither of the sites listed in Table 2 will be impacted by cable installation or operation works on the R100 Project.

Additional Route-Specific Notes

2.13 Eigg-Mainland

The Eigg-Mainland route is notably the most contentious of the West Coast routes to-date. This area hosts significant mobile gear fishing activity, primarily around the Northern side of Eigg, with Nephrops being the key target species. However, static gear fishers also work the area, including the middle portion of the route, targeting Nephrops in tandem with the mobile gear fisheries. Static gear activity also occurs near both cable landing sites. Alternative landing points were considered but were not feasible due to physical constraints; however, the cable route took stakeholder feedback into account during the macroengineering stage and was able to route around some of the more heavily fished banks in the North of Eigg.

2.14 Mainland-Lismore

The Mainland-Lismore route is among the shortest of the planned R100 cable routes. This route is located well removed from the open ocean and as such, no fishing activity is expected in the area. There is a pier near the East side of the route that is frequently used by fish farm vessels looking to service their farms on the North and West of Lismore. While the aquaculture sites themselves are well removed from the planned cable route, clear communications with these service vessels will be key to limit local disturbance.

2.15 Iona-Mull

The Iona-Mull route is another short cable route and consultations have not produced any significant notes on this location. Some creel vessels may be present, but other than that, fishing over the route should be very limited.

2.16 Colonsay-Mull

The Colonsay-Mull route is another longer route on the West Coast. Key concerns in this region will be the operation of mobile gear fisheries, including benthic trawlers and scallop dredgers. The route itself is fairly direct but will require good burial due to the presence of mobile gear fishing in the region. It is also worth noting that some finfish aquaculture sites are present on the Southeast of Mull, but the operators have been consulted and will not be impacted by this project. Additionally, static gear fishers are active near both landing points, particularly around the South of Mull.

Orkney Islands

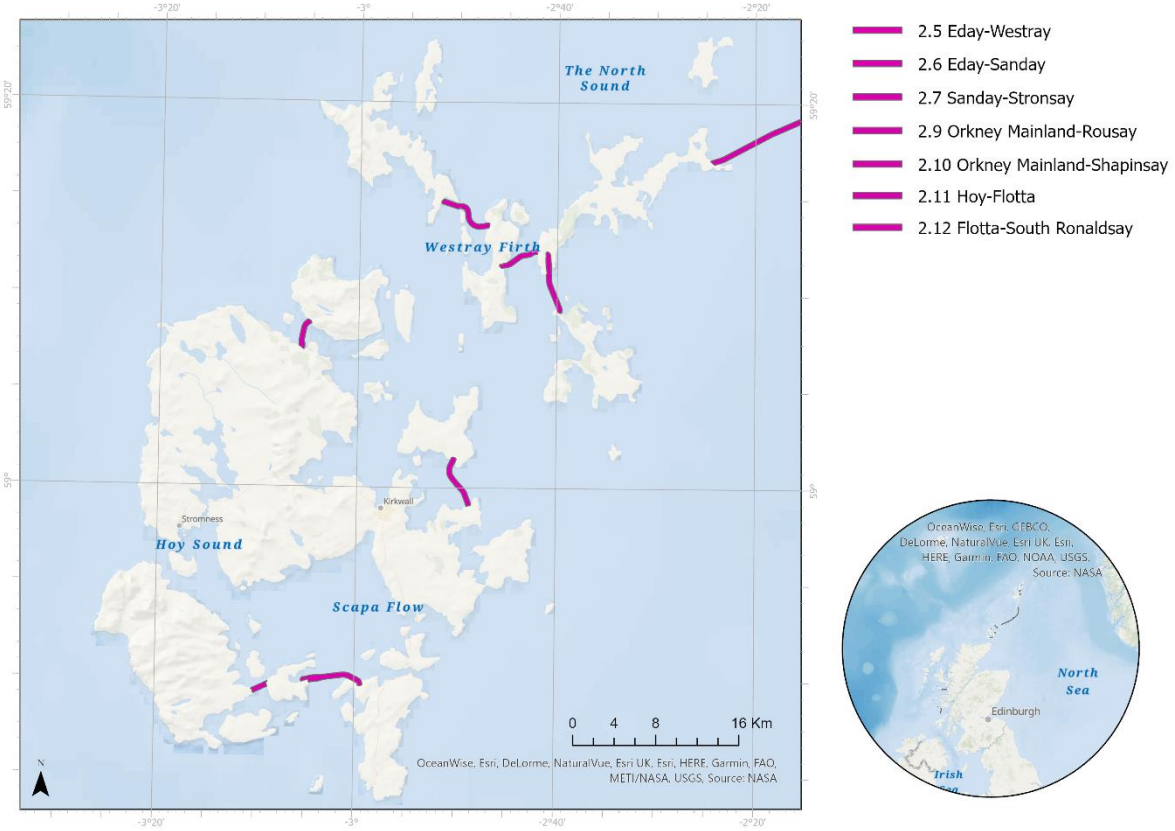

Figure 8. Overview of the seven cable routes for R100 within the Orkney Islands region. The Fair Isle route exiting to the Northeast will be treated as part of the Shetland package and is discussed in the relevant section below.

Fisheries

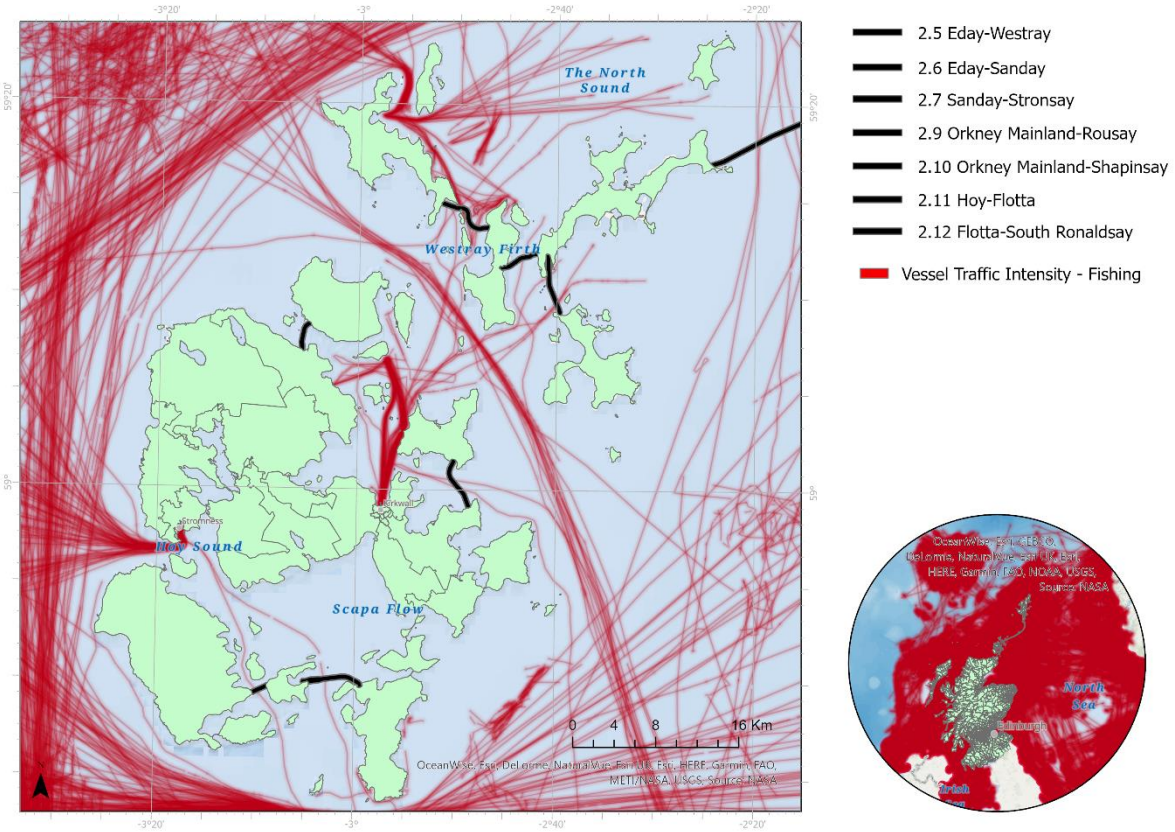

Figure 9. Anonymised AIS vessel tracks for fishing vessels in Orkney (MMO, 2015). Contains public sector information licensed under the Open Government Licence v3.0.

While fishing activity appears sparse over the existing cable corridors, Figure 9 only details AIS records which are typically generated by vessels larger than 15m in length. With that in mind, trends based on AIS data will underrepresent fishing activities in the region. Most of the anticipated fishing intensity within the Orkney routes will be comprised of the smaller static gear vessels, which will target Brown Crab, Green Crab, Velvet Swimming Crab and European Lobster (Intertek, 2021). There are some indications that mobile gear vessels may occasionally operate near route 2.10 Orkney Mainland-Shapinsay, likely targeting Scallops (Figures 10 and 11). Smaller dive fisheries may also be targeting Scallops in the area (Intertek, 2021).

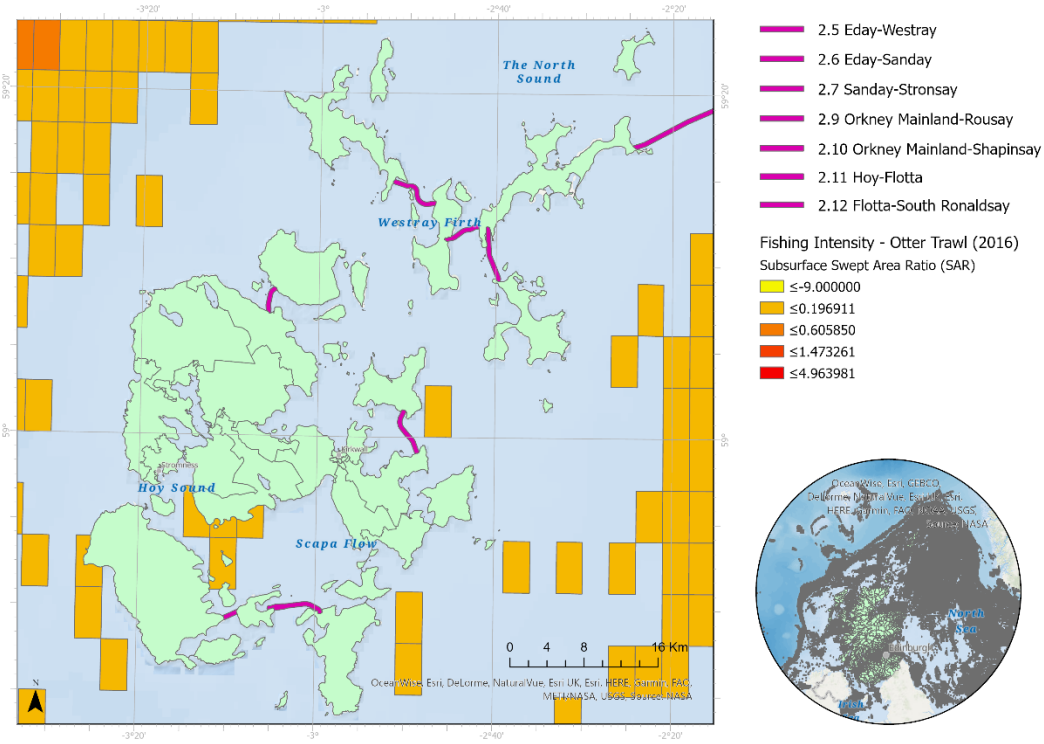

Figure 10. Otter trawl fishing intensity (based on a metric of Subsurface Swept Area Ratio (SAR) for the Orkney routes (ICES/OSPAR, 2016).

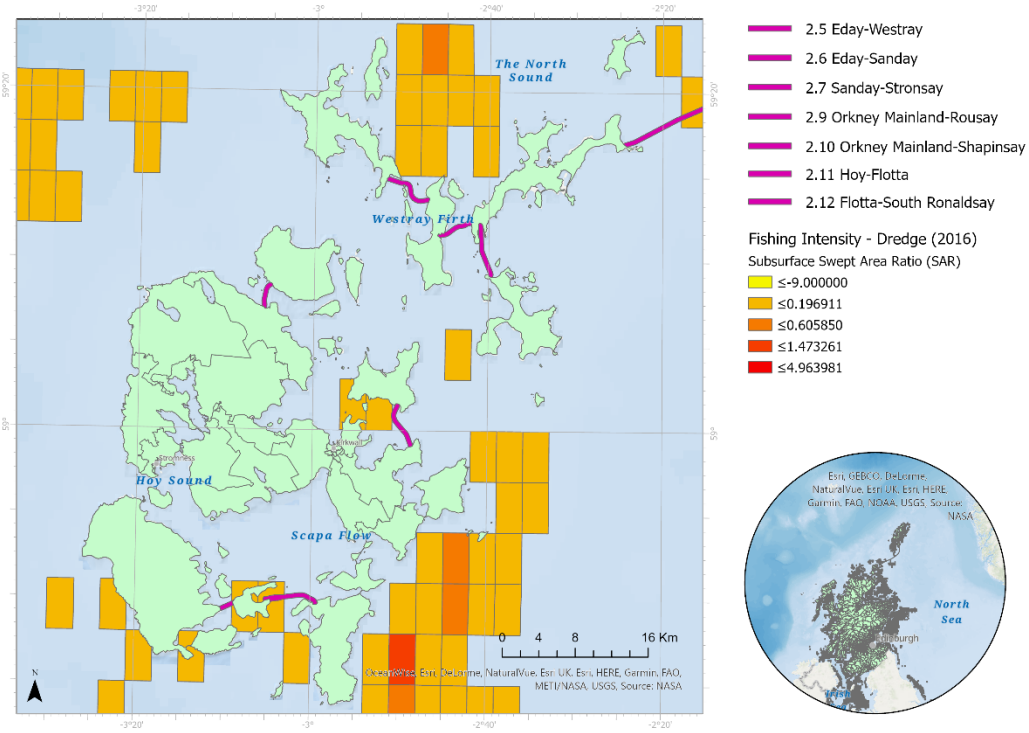

Figure 11. Dredge fishing intensity (based on a metric of Subsurface Swept Area Ratio (SAR) for the Orkney routes (ICES/OSPAR, 2016).

Aquaculture

Table 3. Presence of aquaculture sites in the Orkney region.

Route	Product	Site	Operator
2.6 Eday-Sanday	Salmon	Eday	Scottish Sea Farms Ltd
2.12 Flotta-South Ronaldsay	Salmon	South Ronaldsay	Scottish Sea Farms Ltd

All stakeholders above were contacted during the consultation phase and gave feedback regarding their sites and potential sensitivities. The sites listed in Table 3 will not be impacted by cable installation or operation works on the R100 Project.

Additional Route-Specific Notes

2.5 Eday-Westray

As with many of the planned routes within Orkney, the Eday-Westray is relatively short and does not boast much mobile fishing activity between the islands; however, the presence of dredge fisheries in the exposed waters to the North should be noted. There are several static gear fishers operating in the area and they will be kept well informed of the project as it progresses.

2.6 Eday-Sanday

The Eday-Sanday route is likewise relatively short and primarily hosts static gear fishing vessels. As with the other routes on this project, there should not be any long-term impacts on the static gear fishers in the area. Though Scottish Sea Farms Ltd does have an aquaculture operation on Eday, it is located on the lower East side, south of this proposed route and should not be impacted by the R100 Project, though the installation team will be aware that aquaculture service vessels may be operating in the vicinity.

2.7 Sanday-Stronsay

The Sanday-Stronsay route also hosts small static gear fishing vessels. The target species for vessels in this area are primarily lobsters.

2.9 Orkney Mainland-Rousay

This site is among the shortest of the Orkney routes, but its Westward exposure also means stronger tides and potential shifting of static fishing gear even after it has been placed in an area.

2.10 Orkney Mainland-Shapinsay

The Orkney Mainland-Shapinsay route hosts a handful of creel vessels as well. The presence of dredging and trawling activities on either side of this route may also be possible to an extent, as seen in the ICES/OSPAR data for the region.

2.11 Hoy-Flotta

The Hoy-Flotta route is very short but is a target area for creel fishers and to some extent dredging vessels.

2.12 Flotta-South Ronaldsay

The Flotta-South Ronaldsay route likewise represents key fishing grounds for static gear fishers and potentially dredgers as well. Additionally, there is a dive site just North of the route that appears to be popular, so it will be important to keep the local port authorities informed throughout the installation process to ensure that the dive site can be avoided if possible. Scottish Sea Farms Ltd operate a finfish farm on the North side of South Ronaldsay, but it is located East of the cable landing site and should not be impacted by installation works.

Shetland Islands

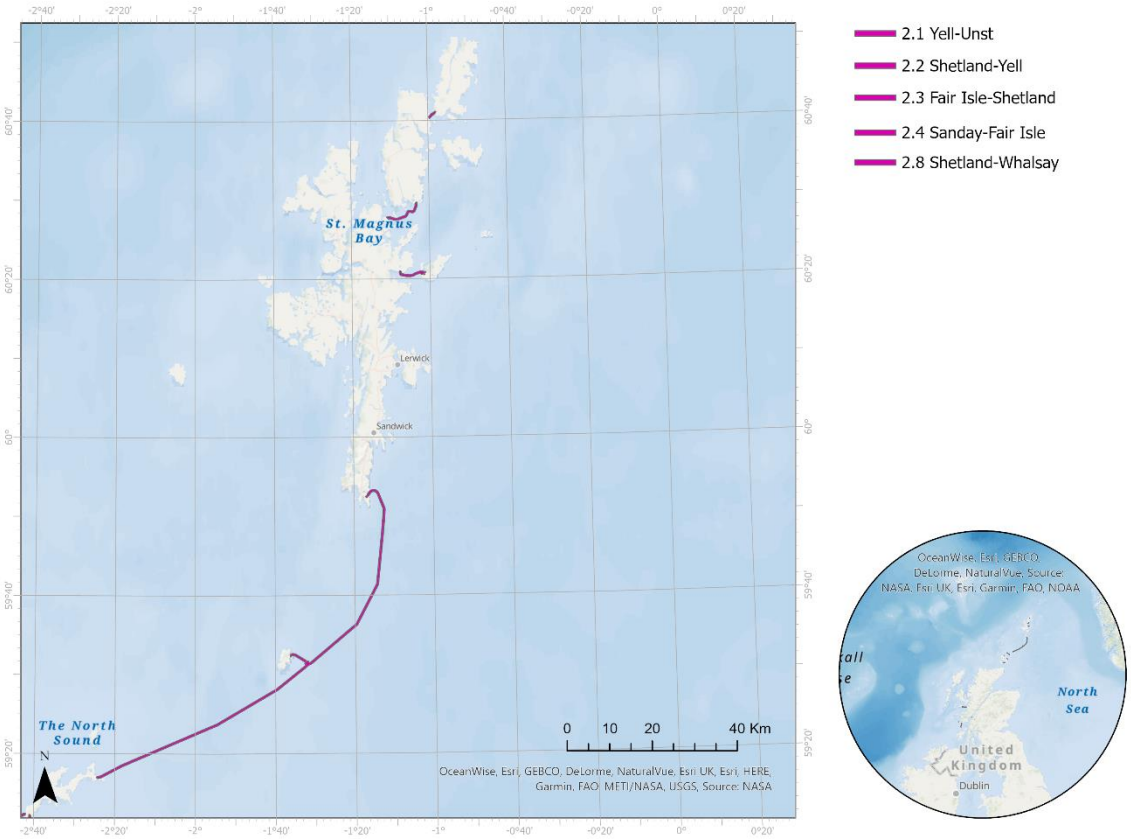

Figure 12. Overview of the five cable routes for R100 within the Shetland Islands region.

Fisheries

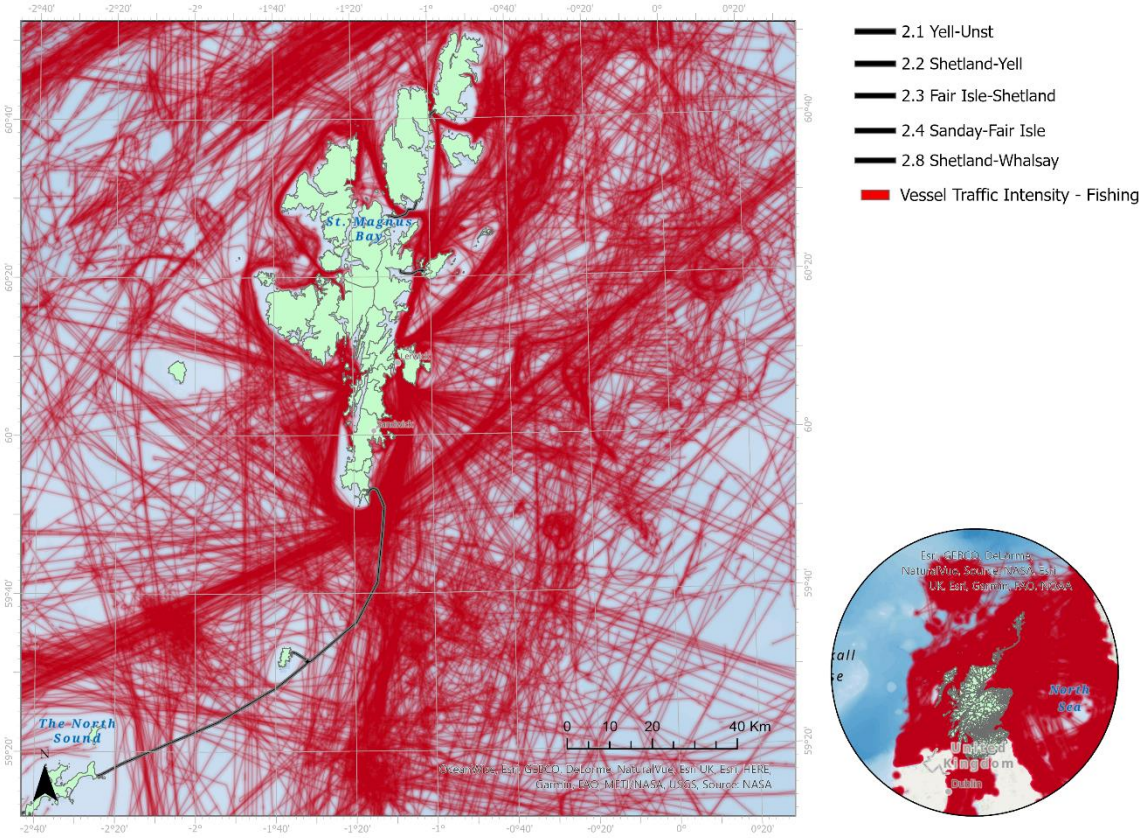

Figure 13. Anonymised AIS vessel tracks for fishing vessels in Shetland (MMO, 2015). Contains public sector information licensed under the Open Government Licence v3.0.

Shetland has a much higher concentration of AIS readings for fishing vessel tracks relative to the other areas of interest. It is possible that many larger vessels are transiting through the region to access fishing grounds farther offshore. Additionally, heavy trawling and some dredging is anticipated around the islands, including over the current Fair Isle route corridors (Figure 13-15). The interisland routes are also likely to have some localised trawling and dredging activities (Figure 13); we have had reports on this regarding the 2.2 Shetland-Yell route as well as the 2.8 Shetland-Whalsay route.

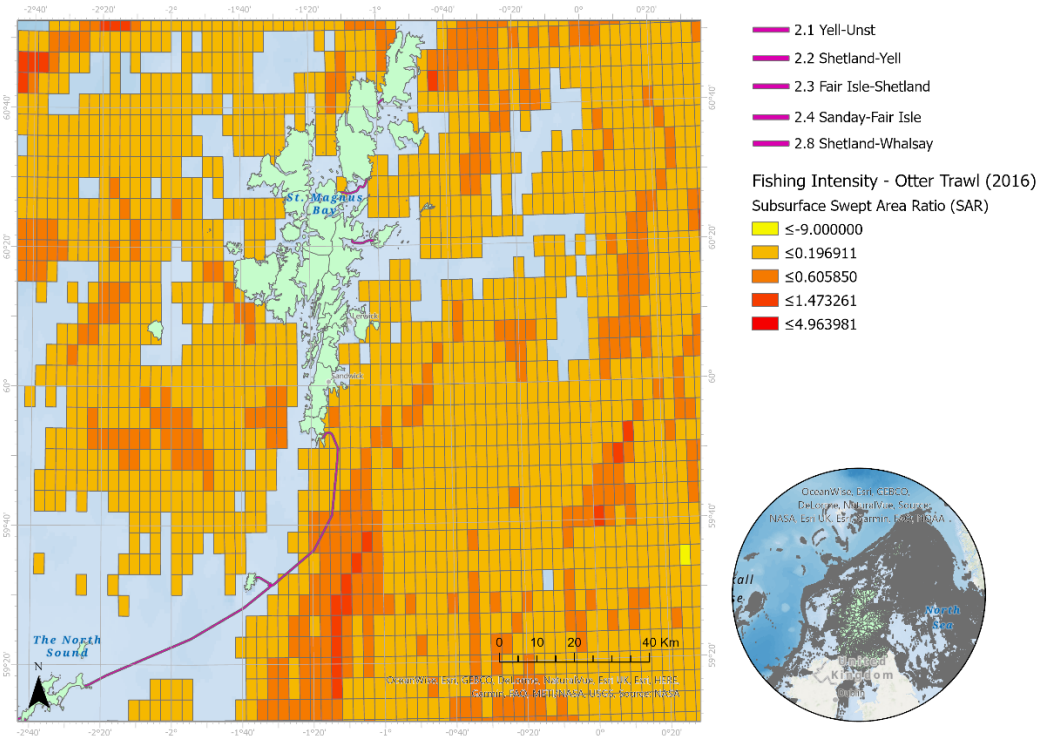

Figure 14. Otter trawl fishing intensity (based on a metric of Subsurface Swept Area Ratio (SAR) for the Shetland routes (ICES/OSPAR, 2016).

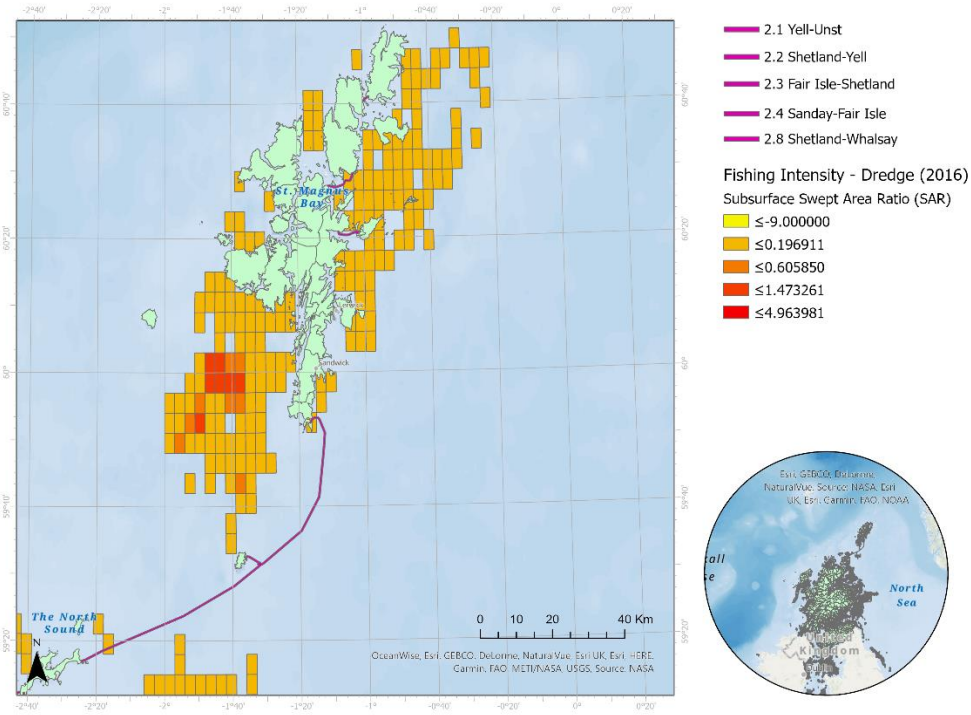

Figure 15. Dredge fishing intensity (based on a metric of Subsurface Swept Area Ratio (SAR) for the Shetland routes (ICES/OSPAR, 2016).

Aquaculture

Table 4. Presence of aquaculture sites in the Shetland region.

Route	Product	Site	Operator
2.1 Yell-Unst (Unst side)	Salmon	Uyea Isle	Cooke Aquaculture
2.1 Yell-Unst (Unst side)	Salmon	Burkwell (East of Holm Heogland)	Cooke Aquaculture
2.1 Yell-Unst (Unst side)	Salmon	Vee Taing	Cooke Aquaculture
2.1 Yell-Unst (Unst side)	Salmon	Winna Ness	Cooke Aquaculture
2.1 Yell-Unst (Unst side)	Salmon	Turness	Cooke Aquaculture
2.1 Yell-Unst (Unst side)	Mussels	Croo Taing	Unst Shellfish
2.1 Yell-Unst (Unst side)	Mussels	Hawksness	Unst Shellfish
2.1 Yell-Unst (Yell side)	Salmon	Sandwick	Cooke Aquaculture
2.1 Yell-Unst (Yell side)	Mussels	Southwick, Cullivoe	C. & A. Thomason
2.1 Yell-Unst (Yell side)	Mussels	3 sites in Basta Voe	C. & A. Thomason
2.2 Shetland Mainland—Yell (Yell side)	Salmon	Ness of Copister	Cooke Aquaculture
2.2 Shetland Mainland—Yell (Yell side)	Mussels	Hamnavoe	C. & A. Thomason
2.2 Shetland Mainland—Yell (Shetland Mainland side)	Salmon	5 sites in close proximity	Grieg Seafood
2.2 Shetland Mainland—Yell (Shetland Mainland side)	Mussels	7 sites in close proximity	Blueshell Mussels and Hunter Shellfish
2.8 Shetland Mainland—Whalsay (Mainland side)	Salmon	Bight of Bellister, Dury Voe	Grieg Seafood
2.8 Shetland Mainland—Whalsay (Mainland side)	Mussels	East of Little Ness	Blueshell Mussels
2.8 Shetland Mainland—Whalsay (Whalsay side)	Salmon	North Voe	Grieg Seafood

All stakeholders above were contacted during the consultation phase and gave feedback regarding their sites and potential sensitivities. The sites listed in Table 4 will not be impacted by cable installation or operation works on the R100 Project. More details on site-specific discussions can be found in the Route-Specific Notes section on the following pages.

Additional Route-Specific Notes

2.1 Yell-Unst

The original Yell-Unst route was designed to skirt south of Linga before crossing the channel to the North; this route option provided lower tidal intensities and was preferable for achieving firm, long-term burial. However, the route has since been shifted to a more direct alternative, following the routes of existing cables across this channel. This shift was chosen for several reasons, including the following.

Early on in the consultation process, members of the Shetland Fishermen's Association (SFA) and Shetland Shellfish Management Organisation (SSMO) alerted the FLO to an area of conservation closures on the South side of Linga; these areas are closed to conserve the delicate mussel and maerl bed ecosystems found in the area (SSMO, 2020).

Additionally, there were many aquaculture sites present in the vicinity of the original planned cable route (Table 4). By shifting the cable route to a more direct approach, the conservation areas and existing aquaculture sites were able to be avoided.

The SFA also made the FLOs aware of existing buckie fishing ground South of Linga and Uyea; both areas were avoided by shifting the cable route to the newer option. However, there is still an expectation of some creel activity across the existing planned route, as short as it is.

2.2. Shetland-Yell

Local reports indicate that there will be significant tide and currents along this cable route. The FLOs have also been made aware that there is scallop fishing along this route and as such, the cable will necessitate good burial.

A particular challenge for planning this route was the presence of a large finfish aquaculture farm at the original Hamna Voe landing point. The operators of this site expressed concerns regarding cable project proximity, anchor placement, and the likelihood of future expansions. With this in mind, the R100 team was able to select an alternative landing point on Yell, although it necessitated the crossing of another planned subsea cable asset. With this shift in place, no impacts on or by aquaculture sites in the area are anticipated.

2.3 Fair Isle-Shetland

The two Fair Isle routes connecting Orkney and Shetland are the longest cables included in the R100 Project scope. A higher degree of mobile fishing is anticipated along this route, particularly from trawlers. Static gear vessels are still expected to operate nearer the landing points. It will also be important to consider the ferry routes in this region as installation works get underway.

2.4 Sanday-Fair Isle

As mentioned regarding route 2.3 above, a high degree of mobile fishing is expected on this route, with static gear fisheries factoring in predominantly near the landing sites.

2.8 Shetland-Whalsay

The Shetland-Whalsay route crosses a variety of fishing and aquaculture industries. The following fishing types have been reported in the area: mobile gear (dredging for scallops), static gear (lobster, buckie, various species), and both finfish and shellfish aquaculture operations. With scallop dredgers operating along much of the route, the target burial depth of 1m will be achieved wherever practical.

Several different aquaculture operators were consulted in determining the feasibility of this route, as fish farms were present near both the Shetland and Whalsay landing points. In order to avoid any potential proximity impacts or project limitations, new landing points were selected for both the Shetland and Whalsay sides, with the former shifting from near Bellister to near Skelberry, and the latter now targeting a landing point adjacent to Symbister Bay. With these changes in place, all existing aquaculture sites should be avoided, without placing further pressures on the static or mobile gear fisheries.

Summary of Potential Impacts

Potential Impacts on and by Fisheries

Table 5. Potential impacts on local fisheries.

Impact	Gear Type	Spatial Extent	Temporal Extent
Loss of access to fishing grounds	Benthic Mobile	Within ~ 500 m of vulnerable cable areas	Installation and operational periods
Loss of access to fishing grounds	Static	Immediate cable vicinity	Installation periods only
Target species distribution shifts	Benthic Mobile/Static	Immediate cable vicinity	Installation periods only
Avoidance of surface lay measures	Benthic Mobile	Immediate vicinity of surface lay measures	Operational period

Table 6. Potential impacts by local fisheries.

Gear Type	Action	Result
Scallop Dredge Beam Trawler Otter Trawler	Snags exposed/shallow cable	Resultant fault and repair, potential damage to fishing vessel and safety of crew
Static Gear	Presence impedes installation/repair work	Agreement must be made to shift static gear from cable site during installation periods
All vessel types	Improper anchoring	May lead to cable damage and subsequent repairs; may also lead to vessel damage and endanger the crew

As seen in the tables above, the majority of potential fisheries disruption will occur during installation periods. Static gear fishers working along the installation corridor will likely be asked to shift their pots for the duration of the install period (typically only 2-3 days for a given route). The entire installation process is expected to take approximately 3 months, so individual areas along that installation track are unlikely to be impacted for more than a few days at a time. Cable burial to 1 meter is targeted for all routes, subject to seabed conditions in the local area. A temporary protection zone of 1NM around the cable vessel may apply during the installation period, as accorded through the Telegraph Act (1885). Following installation, the cable may be exposed in some limited areas, or the trench may not have backfilled. Fishers should be aware that the cables may pose a hazard and charted submarine cables should be avoided.

Mitigation Plan

Table 7a. Pre-Installation Phase

Action	Date	Details
Initial Stakeholder Engagement Workshops	February 2021	Informational sessions held for each of the 3 regions to inform local stakeholders and discuss concerns.
Fisheries Consultations on FLMAP	March 2021 – ongoing	Feedback on FLMAP and the project is contributed via consultations with fisheries stakeholders (static and mobile gear, aquaculture).
FLMAP is prepared	May-July 2021	Mitigation plan is crafted according to regional trends and data as well as industry standards for best practice.
FLMAP is refined	August 2021	Stakeholder feedback is incorporated prior to document submission.
FLO undertakes port tours	Round 1: Summer 2021 Round 2: Early Spring 2022	Distributes media regarding cable details, safety requirements, and ongoing survey operations.
Notices to Mariners (NtMs) are issued	2 weeks prior to installation	NtMs are issued to all relevant contacts to ensure mariners are aware of the upcoming works in each area.

Table 7b. Installation Phase

Action	Details
FLO convenes with affected fishers	Mitigation strategies are employed and clear communication is maintained; any disturbance claims will be handled in accordance with ESCA standard operating practices.
FLO is on call	Should any confusion or delay in the project installation arise, the FLO will be available to reconcile the situation.
Vessels are coordinated	Installation vessels are coordinated and deployed so that cable installation proceeds as safely and efficiently as possible.
Updates are sent to stakeholders	As installation progresses, updates are sent to stakeholders to ensure that clear communication and information sharing continue to streamline the process.

Protection zones are agreed	FLO, BT/GMG, and monitoring team may agree any "special protection zones" due to limited cable burial or other vulnerability.
HM Coastguard are informed of work	Maritime Safety Information (MSI) broadcasts are issued as appropriate.

Table 7c. Operational Phase

Action	Details
Updates are sent to stakeholders	NtMs are distributed informing stakeholders that installation is complete, and the cables are operational.
Post-lay cable burial assessment	Post-lay cable burial is assessed.
Inform mariners of any potential dangers in the region	When potential hazards are identified along the cable route, stakeholders will be notified via NtM and/or Kingfisher to ensure that safety is upheld.

Fisheries Liaison and Mitigation Strategies

Port tours are a core element of a successful Fisheries Liaison and Mitigation Strategy. Not only are the FLOs able to speak directly with fishers who may be impacted by project works, but they are also able to gauge activity levels in each region (gear types, seasonality, etc.) and disseminate key information on the upcoming subsea cable project. Stakeholder feedback gathered during port tours is incorporated into each Port Tour Report document, which then feeds back into the Consultation Plan and finally the FLMAP document, ensuring that all feedback gathered is discussed and incorporated into the ongoing mitigation plan.

Table 8 below lists the port tours which were undertaken during Summer 2021 in preparation for survey works to commence. The FLO team hopes to be able to conduct additional port tours prior to the cable installation scheduled for April 2022, pending safety considerations and feasibility related to the ongoing COVID-19 pandemic.

Table 8. Dates and locations of FLO port tours undertaken to-date. Additional open days and port tours may be scheduled for the early spring pending the status of COVID-19 regulations.

Date	Location
06 May 2021 (Thursday)	Stromness, St. Margaret's Hope, Flotta-Mainland landing site visit
07 May 2021 (Friday)	Kirkwall, Stromness, Mainland-Rousay landing site visit
08 May 2021 (Saturday)	Stromness, St. Margaret's Hope, Burray, Tingwall Quay
14 May 2021 (Friday)	Hoy, Stromness
15 May 2021 (Saturday)	Landing points Hoy/Flotta, St, Margaret's Hope
16 May 2021 (Sunday)	Kirkwall
17 May 2021 (Monday)	Kirkwall, Scapa VTS Centre, Burray Quay
18 May 2021 (Tuesday)	Kirkwall, Sanday
19 May 2021 (Wednesday)	OFA Office, Burray
20 May 2021 (Thursday)	OFA meeting, Meet with Individual Fisher
31 May 2021 (Monday)	Oban, Mallaig, Lismore-Mainland landing
01 June 2021 (Tuesday)	Mallaig, Skye, Elgol
02 June 2021 (Wednesday)	Isle of Mull, Tobermory, Bunessan, Fionnphort
03 June 2021 (Thursday)	Oban
07 June 2021 (Monday)	Sumburgh, Aith Voe
08 June 2021 (Tuesday)	Lerwick, Yell, Unst
09 June 2021 (Wednesday)	Northern Ports, Shetland
30 June 2021 (Wednesday)	Oban
1 July 2021 (Thursday)	Mallaig
2 July 2021 (Friday)	Oban

Fisheries & Aquaculture Stakeholders	IH	OI	SI
Scottish Fishermen's Federation (SFF)	X	X	X
Scottish White Fish Producers Association (SWFPA)	X	X	X
Regional Inshore Fisheries Group (RIFG)	X	X	X
Scottish Creel Fishermen's Federation (SCFF)	X	X	X
Mallaig & North-West Fishermen's Association (MNWFA)	X	X	X
Scottish Salmon Producers Organisation (SSPO)	X	X	X
Scottish Sea Farms Ltd	X	X	X
Ross, Sutherland, Skye & Lochalsh Fishermen's Association (RSSLA)	X		
Western Isles Fishermen's Association	X		
West of Scotland Fish Producers Organisation (WSFPO)	X		
Mowi Scotland	X		
Cooke Aquaculture		X	X
Orkney Fisheries Association (OFA)		X	
Shetland Shellfish Management Organisation (SSMO)			X
Seafood Shetland			X
Shetland Fishermen's Association (SFA)			X
Grieg Seafood			X
Unst Shellfish			X
C. & A. Thomason			X
Blueshell Mussels			X
Hunter Shellfish			X

Project Partners
Cable Client (BT)
Cable Installation Contractor (GMG)
MEA/FAS Authors (Intertek)

Additional Maritime Stakeholders
Marine Scotland
Orkney Islands Council
Shetland Islands Council
Local Harbour Masters and Port Authorities
Local Coast Guard Authorities
Additional Individual Fishers

Figure 16. List of all relevant stakeholders for the Fisheries Liaison side of the project; abbreviations in the table columns are representative of that region (IH = Inner Hebrides, OI = Orkney Islands, SI = Shetland Islands), and the "X" symbols below are indicative of that stakeholder's relevance to the given region. The FLO will serve as key liaison between regional stakeholders and the cable installation team during installation works.

The FLMAP document is a reciprocal document, detailing the information given to stakeholders regarding the project plan while also outlining the major points raised by stakeholders during the consultation period. The local knowledge on fishing trends and intensities, seabed characteristics, and existing regional infrastructure (noted in the individual route section notes of this document) is a valuable resource that has allowed the cable engineering team to re-route and alter several of the planned cable routes to increase compatibility for marine users in the region while still staying within the physical limitations of the cable technology.

Fisheries Liaison Officers

Contact Details:

Aaron Mair	a.mair@porthillarine.co.uk	[redacted]
Emma Martin	e.martin@seagard.org	[redacted]
Taku Masenhu	t.masenhu@seagard.org	[redacted]

Aaron Mair is an R100 Project FLO and is the dedicated fisheries liaison adviser to the European Subsea Cables Association. Aaron has also worked for DEFRA and the MMO and has been involved in 26 cable lay projects to date as well as being successful in his own commercial fishing vessels for 20 years. Aaron has a unique combination of both fishing and offshore industry related work experience, which has given him a clear understanding of offshore industries' needs and how to deliver these requirements.

Emma Martin is also an R100 Project FLO and has a background in Marine Policy and Sustainable Development. She manages fisheries liaison works and data analysis across several projects underway in and around the UK.

The FLO will undertake port visits (as required by BT) prior to the work taking place. These will include visits to maritime stakeholders such as large fishing organisations, local harbour authorities, and individual fishers on the quayside. The FLOs will continue to build good working relationships with these groups and will work to ensure effective communication of project updates to all stakeholders, promoting understanding of the project at the highest level.

NtMs will be issued regularly to alert local fishers of upcoming installation activities; these notices will include charts of the project scope and contact details for the FLOs and other relevant parties, as agreed with BT.

During the installation phase, there will be a designated FLO available 24/7 during R100 operations. The FLO will be able to record the location and extent of any surface cable protection measures (if required) so that these can be accurately mapped and swiftly communicated to fisheries stakeholders to ensure the safety of local mariners.

The FLO will handle all fishing related responsibilities such as managing project teams and stakeholders, issuing updates, speaking directly with stakeholders and project managers, and facilitating the shifting of any fishing gear as requested by the installation team. The FLO will facilitate necessary communications between the offshore installation team, project management team, and other relevant bodies. Whenever possible, NtMs will be issued with at least 10-14 days' notice of upcoming operations.

Stakeholder Consultations

Stakeholder consultations were undertaken through several key phases of outreach, as seen in Table 9. Fisheries stakeholder consultations were conducted during March 2021 and conversations continued throughout the survey phase of the project and the development of the FLMAP document. The initial sessions served to build a communication network and provide local context for potential pinch points or concerns with the proposed cable installation project. A total of 21 fishery and aquaculture groups were contacted for initial comments (Figure 16), all of which were included in initial consultation calls. The stakeholder feedback gained from these calls helped to inform the FLMAP draft document and ensure that any potential concerns were raised and addressed early in the project timeline.

Table 9. Key phases of stakeholder consultation undertaken to-date.

Consultation Phase	Date
Harbour Authority Engagement Workshops	February 2021
Key Stakeholder Engagement Workshops	February 2021
Initial FLO Consultations	March 2021
Stakeholder Introduction to the Project	May 2021
Pre-Application Consultation (PAC) Events	July 2021
Opportunity to Comment on the FLMAP	August 2021

Moving forward, clear and efficient communication remains a top priority to ensure mutual satisfaction and proper safety measures are followed during and after the installation process. NtMs will be distributed prior to all project phases to ensure that local mariners are made aware of any work in the region or potential safety hazards that may arise.

Stakeholders also have the opportunity to comment on the final version of this document prior to its submission as part of the licensing package; suggestions and comments will be taken into account for incorporation into this final version.

Potential Guard Vessels

If required, the R100 Project may look to utilise guard vessels as a mitigation strategy during the installation phase. Where practical, local vessels would be chosen to serve in this capacity. Incorporating local mariners into the installation phase would foster community engagement with the project while also providing a knowledgeable and local crew, many of whom have successfully completed work as guard vessels on similar projects in the past.

If used, guard vessels will be stationed alongside or in close proximity to the installation vessels through appropriate periods of the installation. If any mariners approach the working zone too closely (per any determined protection zones), guard vessels will ensure that they will be redirected around the working zone at a safe distance, avoiding any potential vessel collisions or cable risks.

Additional guard vessels may be deployed as needed to cover high risk cable areas during the installation; these sensitive areas may include areas of high fishing concentrations, exposed cable sections, and asset crossings.

Once the installation process has concluded, guard vessels may remain on site in some areas to ensure the safety of all marine users and the cables.

If guard vessels are used, prior to departure from port, skippers will be briefed on their expected duties and given further information on updated charts and timelines. Regular updates on vessel sightings, interactions, and operations will be compiled by the guard vessel crew(s) and sent to BT and installation partners as needed.

During guard vessel operations, the crew will utilise AIS, RADAR, and visual detection to identify and monitor potential vessels of interest; monitoring will continue round the clock until installation operations have ended or as otherwise agreed. Similarly, guard vessels stationed over vulnerable cable areas will remain on 24/7 monitoring duties until such a time that this is deemed no longer necessary.

In addition to the NtM regarding cable installation that will have been previously distributed, mariners in the installation area will receive broadcast updates via radio, including updates on location and installation status. Vessels will be able to transit over the cables once they have been successfully installed and buried. Any benthic contact activities such as anchoring and seabed trawling/dredging in the vicinity should be avoided until cable burial or other protection has been ensured. The project goal is to achieve as much cable burial extent as possible to minimise the impacts on fishers and other marine users in the region.

Protection Zones

The monitoring team may work with BT to create protection zones along the cable route to monitor vessel activity if appropriate. The behaviour of vessels operating within the protection zones can be analysed against a set of protection zone rules to assess their potential for causing interference with the cable laying operation.

Concluding Remarks

The R100 Project will bring highspeed broadband internet access to communities throughout the three target regions and will continue to serve as critical infrastructure throughout the coming decades. With early communication and efficient coordination, project installation will be streamlined as much as possible.

With a rapid installation timeline and a narrow installation footprint, the R100 Project aims to minimise disruptions to local fishers and other maritime users. However, as with any subsea infrastructure installation project, there is a potential for this project to overlap spatially and/or temporally with other marine activities. The FLO team will work collaboratively throughout each project phase to ensure that stakeholder relationships are built around efficient and transparent communication pathways. In doing so, the Project team aims to minimise and largely mitigate impacts on others in the industry.

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