

Skye Reinforcement Project

Consultation Document:
Alignment Selection

September 2021



Scottish & Southern
Electricity Networks

TRANSMISSION

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GLOSSARY

Term	Definition
Alignment	A centre line of an overhead line, along with location of key angle structures.
Alignment (preferred)	An alignment for the overhead line taken forward to stakeholder consultation following a comparative appraisal of alignment options.
Alignment (proposed)	An alignment taken forward to consent application. It comprises a defined centre line for the overhead line and includes an indicative support structure (tower or pole) schedule, also specifying access arrangements and any associated construction facilities.
Amenity	The natural environment, cultural heritage, landscape and visual quality. Also includes the impact of SSEN Transmission's works on communities, such as the effects of noise and disturbance from construction activities.
AOD	Above Ordnance Datum
Baseline Alignment	The Baseline Alignment is the alignment identified by the OHL Contractor on the basis of it being the most technically feasible and economically viable alignment and design solution, giving due consideration to a range of technical and cost criteria over the construction and operation phases of a new OHL.
Biodiversity Net Gain (BNG)	A process intended to leave nature in a better state than it started using good practice principles established by the Business and Biodiversity Offset Programme (BBOP) and organisations including CIRIA, CIEEM and IEMA.
Conductor	A metallic wire strung from structure to structure, to carry electric current.
Consultation	The dynamic process of dialogue between individuals or groups, based on a genuine exchange of views, normally, with the objective of influencing decisions, policies or programmes of action.
Corridor	A linear area which allows a continuous connection between defined connection points. The corridor may vary in width along its length; in unconstrained areas it may be many kilometres wide.
Design Solution	The design of the transmission infrastructure (location, structure type) between Fort Augustus and Ardmore
Development Solution	Describes the technical parameter that the project is seeking to meet as part of the project need, accounting for OHL capacity and security of supply requirements.
Environmental Impact Assessment (EIA)	A formal process set down in The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 used to systematically identify, predict and assess the likely significant environmental impacts of a proposed project or development.
Fort Augustus to Skye Project	SSEN Transmission has previously promoted the Fort Augustus to Skye Project, which was based upon a design that proposed a new 132 kV wood pole OHL between Fort Augustus and Broadford with the existing steel lattice OHL remaining in place, and a replacement 132 kV wood pole OHL between Broadford and Dunvegan. This is now replaced by this Skye Reinforcement Project, in respect of which further consultation is being carried out.

Term	Definition
Gardens and Designed Landscapes (GDLs)	The Inventory of Gardens and Designed Landscapes lists those gardens or designed landscapes which are considered by a panel of experts to be of national importance.
GWDE	Ground Water Dependent Terrestrial Ecosystem
Habitat	Term most accurately meaning the place in which a species lives, but also used to describe plant communities or agglomerations of plant communities.
Kilovolt (kV)	One thousand volts.
Landscape Character Type	A defined area of consistent landscape character identified in the NatureScot National Landscape Character Assessment of Scotland.
Listed Building	Building included on the list of buildings of special architectural or historic interest and afforded statutory protection under the 'Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997' and other planning legislation. Classified categories A – C(s).
Limit of Deviation (LOD)	The area either side of the proposed alignment within which micrositing of structures may take place in accordance with the conditions of the Section 37 consent.
Micrositing	The process of positioning individual structures to avoid localised environmental or technical constraints.
Mitigation	Term used to indicate avoidance, remediation or reduction of adverse impacts.
Marine Protected Areas (MPA)	Marine Protected Areas are used to ensure protection of some of the most vulnerable species and habitats within marine ecosystems.
National Scenic Area (NSA)	A national level designation applied to those landscapes considered to be of exceptional scenic value.
New Suite of Transmission Structures (NeSTS)	A project to create and implement a new design of overhead transmission line structures.
Overhead line (OHL)	An electric line installed above ground, usually supported by lattice steel towers or poles.
Plantation Woodland	Woodland of any age that obviously originated from planting.
Reactive Compensation	Reactive compensation is the process of adding or injecting positive and/or negative power to a power system to essentially attain voltage control.
Route	A linear area of approximately 1 km width (although this may be narrower/wider in specific locations in response to identified pinch points / constraints), which provides a continuous connection between defined connection points.
Route (preferred)	A route for the overhead line taken forward to stakeholder consultation following a comparative appraisal of route options.
Route (proposed)	A route taken forward following stakeholder consultation to the alignment selection stage of the overhead line routeing process.
Routeing	The work undertaken which leads to the selection of a proposed alignment, capable of being taken forward into the consenting process under Section 37 of the Electricity Act 1989.

Term	Definition
Scheduled Monument	A monument which has been scheduled by the Scottish Ministers as being of national importance under the terms of the 'Ancient Monuments and Archaeological Areas Act 1979'.
Section	Due to the length of the project, it has been necessary to split the broad corridor into 'sections' to more easily describe, identify and assess route and alignment options. There are seven sections from Section 0 to Section 6.
Semi-natural Woodland	Woodland that does not obviously originate from planting. The distribution of species will generally reflect the variations in the site and the soil. Planted trees must account for less than 30% of the canopy composition.
Sites of Special Scientific Interest (SSSI)	Areas of national importance. The aim of the SSSI network is to maintain an adequate representation of all natural and semi-natural habitats and native species across Britain.
Skye Reinforcement Project	The current project being consulted upon.
Span	The section of overhead line between two supporting structures.
Special Area of Conservation (SAC)	An area designated under the EC Habitats Directive to ensure that rare, endangered or vulnerable habitats or species of community interest are either maintained at or restored to a favourable conservation status.
Special Landscape Area (SLA)	Landscapes designated by The Highland Council which are considered to be of regional/local importance for their scenic qualities.
Special Protection Area (SPA)	An area designated under the Wild Birds Directive (Directive 74/409/EEC) to protect important bird habitats.
Stakeholders	Organisations and individuals who can affect or are affected by SSEN Transmission works.
Study Area	The area within which the corridor, route and alignment study takes place.
System Planning Pathway	A system planning pathway looks at medium to long term network needs to determine electrical transmission infrastructure requirements (Development Pathway).
The National Grid	The electricity transmission network in Great Britain.
Underground Cable	An electric cable installed below ground, protected by insulating layers and marked closer to the surface to prevent accidental damage through later earthworks.
Variant	An alternative alignment or design solution proposed to avoid localised constraints.
Volts	The international unit of electric potential and electromotive force.
Wayleave	A voluntary agreement entered into between SSEN Transmission and a landowner upon whose land an overhead line is to be constructed for the installation and retention of the transmission equipment.
Wild Land Area (WLA)	A series of 42 mapped areas which have been identified by NatureScot as comprising the most extensive areas of high wildness within Scotland, following a process of interpretive mapping and site survey. WLA is not a statutory designation but these areas are considered to be nationally important.

PREFACE

This Consultation Document has been prepared by Scottish and Southern Electricity Networks Transmission (SSEN Transmission) with input by ASH Design and Assessment Ltd. to seek comments from all interested parties on the preferred alignment¹ and design solution identified for the proposed Skye Reinforcement Project between Fort Augustus Substation and Ardmore Substation on the Isle of Skye.

The Consultation Document is available online via the project web page at <https://www.ssen-transmission.co.uk/projects/skye-reinforcement/>

Public consultation events detailing the proposals described in this document will be held at the following times and locations:

Dunvegan Community Hall, Dunvegan	28 th September 2021	15.00 – 19.00
Broadford Village Hall, Broadford	29 th September 2021	15.00 – 19.00
Glenelg Village Hall, Glenelg	30 th September 2021	15.00 – 19.00
Kyleakin Village Hall, Kyleakin	04 th October 2021	15.00 – 19.00
Glengarry Community Hall, Invergarry	05 th October 2021	15.00 – 19.00
Fort Augustus Village Hall, Fort Augustus	06 th October 2021	15.00 – 19.00

Virtual consultation events will also be held via the project web page on 13th October 2021 between 13.00 – 15.00 and 17.00 to 19.00.

Comments on this document should be sent to:

Lisa Marchi
Community Liaison Manager
Scottish Hydro Electric Transmission PLC
10 Henderson Road
Inverness IV1 1SN
Email: lisa.marchi@sse.com
Mobile: 07825 015507

All comments are requested by 19th November 2021.

¹ An update on the proposed / preferred route is also provided for Sections 2 and 3.

EXECUTIVE SUMMARY

This Consultation Document invites comments from all interested parties on the proposals by Scottish and Southern Electricity Networks Transmission (herein referred to as 'SSEN Transmission'), operating under licence as Scottish Hydro Electric Transmission plc (herein referred to as 'SHE Transmission') to construct a new 132 kV overhead transmission line (OHL) between Fort Augustus Substation and Ardmore Substation on the Isle of Skye, Scotland. The project being promoted is known as the Skye Reinforcement Project.

The existing 132 kV OHL from Fort Augustus to Ardmore on the Isle of Skye ("the existing OHL") is the sole connection from the mainland electricity transmission system to Skye and the Western Isles. Recent studies into the condition of the existing OHL have confirmed that the section between Quoich Substation and Ardmore Substation is required to be rebuilt and, upon completion of construction of the new OHL, the existing OHL would be removed. Furthermore, as a result of an increase in the renewable energy projects for which access to the electricity transmission network is being formally requested, there is a requirement to increase the capacity of the existing OHL for the entirety of its length between Ardmore and Fort Augustus. This includes replacing the recently constructed Skye Tee and Quoich to Aberchalder OHLs between Fort Augustus and Quoich. These OHLs would be decommissioned and dismantled on completion of the new higher capacity OHL.

To facilitate this asset replacement and meet this increased capacity requirement, a new double circuit steel structure 132 kV transmission connection is required between Fort Augustus Substation and Edinbane Substation. A new single circuit trident H wood pole (H pole) OHL, is also required between Edinbane Substation and Ardmore Substation. The existing OHL between Fort Augustus Substation and Broadford Substation would be removed, as well as the existing 132 kV wood pole line between Broadford Substation and Ardmore Substation. Both sections of the new OHL are collectively referred to in this Consultation Document as "the new OHL".

In March 2020, a Consultation Document² was prepared to set out the project need and describe the Skye Reinforcement Project, seeking comments from stakeholders and members of the public on the route option studies undertaken, and the rationale for, and approach to, the selection of the preferred route. Comments received were documented in a Report on Consultation which set out the consultation process for the project between mid-November 2019 and end of June 2020, during the route option stage of the project. The Report on Consultation³ confirmed that the preferred route in Sections⁴ 0, 1, 4, 5 and 6 is being taken forward as the proposed route for the consideration of alignment⁵ options. In Section 2 (Sligachan to Broadford) and Section 3 (Broadford to Kyle Rhea), given the consultation responses received and the sensitivities and challenges present within these sections, further engineering and environmental review of the options available was deemed to be required prior to identifying a proposed route and design solution.

Work has since been carried out to seek to determine a proposed route and design solution for Sections 2 and 3 and a preferred alignment and design solution for all sections of the OHL, whilst also considering alternative OHL alignment options and design solutions in challenging or sensitive areas. The results of this work are summarised in this Consultation Document.

The preferred alignment and design solution has been selected to provide an optimum balance of environmental, technical and economic factors, and has been informed through a collaborative working approach between environmental and engineering teams, as well as preliminary input from statutory consultees. The preferred alignment is generally routed adjacent to, or within the vicinity of, the existing OHL. The preferred design solution typically comprises single circuit wood pole OHL between Ardmore and Edinbane

² Skye Reinforcement Project: Consultation Document: Route Options (March 2020), produced by SSEN Transmission

³ Skye Reinforcement Project: Report on Consultation (November 2020), produced by SSEN Transmission

⁴ For the purposes of reporting during this consultation phase, given the length of the OHL the project has been split into seven defined 'Sections' to more easily describe route and alignment options. These 'Sections' are described in paragraph 1.1.4 and shown on accompanying figures.

⁵ A centre line of an overhead line, along with the location of key angle structures.

(Section 0), and steel lattice OHL between Edinbane and Fort Augustus Substation. In two areas; approximately 14 km between Glen Varragill Forest (north of Sligachan) and Luib (Section 2); and the final 6 km on approach to Fort Augustus Substation (Section 6), the preferred design solution is underground cable to mitigate likely significant environmental effects, or to facilitate rationalisation of the electricity network.

When providing comments and feedback on this Consultation Document, SSEN Transmission would be grateful for your consideration of the questions below:

- Have we adequately explained the need for this Project?
- Are you satisfied that our approach taken to selecting the preferred alignment and design solution has been adequately explained?
- Are there any factors, or environmental features, that you consider may have been overlooked during the route and alignment selection process?
- Do you have any other comments in relation to the drivers for the project, related to the transmission infrastructure requirements, or about the preferred alignment and design solution?

1. INTRODUCTION

1.1 Overview and Purpose of Document

- 1.1.1 This Consultation Document invites comments from all interested parties on the electricity transmission project being brought forward by Scottish and Southern Electricity Networks Transmission (herein referred to as 'SSEN Transmission'), operating under licence as Scottish Hydro Electric Transmission plc (herein referred to as 'SHE Transmission') to construct a new double circuit steel structure 132 kV overhead transmissions line (OHL) between Fort Augustus Substation and Edinbane Substation and a new single circuit trident H wood pole (H pole) OHL between Edinbane Substation and Ardmore Substation. Both sections of new OHL are referred to collectively in this Consultation Document as "the new OHL".
- 1.1.2 The existing 132 kV electricity transmission OHL from Fort Augustus to Ardmore on the Isle of Skye ("the existing OHL") is the sole connection from the mainland electricity transmission system to Skye and the Western Isles. Recent studies into the condition of the existing OHL have confirmed that the section between Quoich Substation and Ardmore Substation is required to be rebuilt and, upon completion of construction of the new OHL, the existing OHL would be removed. Furthermore, as a result of an increase in the renewable energy projects for which access to the electricity transmission network is being formally requested, there is a requirement to increase the capacity of the existing OHL for the entirety of its length between Ardmore and Fort Augustus. This includes replacing the recently constructed Skye Tee and Quoich to Aberchalder OHLs between Fort Augustus and Quoich. These OHLs would be decommissioned and dismantled on completion of the new higher capacity OHL.
- 1.1.3 To facilitate this asset replacement and also meet increased capacity requirements, the new OHL represents a long-term approach in relation to planning for future transmission infrastructure requirements to Skye, particularly having regard to targets fixed by the Scottish and UK Governments to achieve net zero by 2045 and 2050 respectively. The policy objection of "net zero" is the reduction of carbon emissions by 100% from 1990 levels by 2050 in order to avoid the worst impacts of climate change and seeks to limit global warming to 1.5 degrees centigrade. This target also applies to all sectors of the economy, including energy.
- 1.1.4 Given the length of the OHL, this document splits the project into seven defined 'Sections'⁶ to more easily describe route and alignment options. These 'Sections' are broadly defined as follows:
- Section 0 – Ardmore to Edinbane;
 - Section 1 – Edinbane to North of Sligachan;
 - Section 2 – North of Sligachan to Broadford⁷;
 - Section 3 – Broadford to Kyle Rhea;
 - Section 4 – Kyle Rhea to Loch Cuaich;
 - Section 5 – Loch Cuaich to Invergarry; and
 - Section 6 – Invergarry to Fort Augustus.
- 1.1.5 This consultation exercise provides stakeholders and members of the public with the opportunity to provide feedback on the preferred alignment and design solution.

1.2 Project Background

- 1.2.1 In March 2020, a Consultation Document² (was prepared to set out the project need and describe the Skye Reinforcement Project, seeking comments from stakeholders and members of the public on the route option

⁶ Section lines should be considered as 'soft' rather than definitive lines, generally following topography and / or natural features.

⁷ Section 2 was referred to in the Consultation Document at route options stage (March, 2020) as 'Sligachan to Broadford'. This has since been amended to more accurately reflect the transition between the preferred alignment and design solution from Section 1 to Section 2 of the project.

studies undertaken, and the rationale for, and approach to, the selection of the preferred route. Comments received were documented in a Report on Consultation (November 2020)³ which set out the consultation process for the project between mid-November 2019 and end of June 2020, during the route option stage of the project.

1.2.2 The Report on Consultation (November 2020)³ also confirmed that the preferred route in Sections 0, 1, 4, 5 and 6 would be taken forward as the proposed route for the consideration of alignment⁸ options. In Sections 2 and 3, given the consultation responses received and the sensitivities and challenges present within these sections, further engineering and environmental review of the options available was required prior to identifying a proposed route, preferred alignment and design solution.

1.2.3 Work has since been carried out to seek to determine a proposed route for Sections 2 and 3 and an environmentally preferred alignment and design solution for all sections of the OHL, whilst also considering alternative OHL alignment options and design solutions. The results of this work are summarised in this Consultation Document.

1.3 Document Structure

This Consultation Document is structured as follows:

Chapter 1: Introduction - setting out the purpose of the Consultation Document as well as the project background, document structure and the next steps;

Chapter 2: Project Need and Overview - describes the need for the proposed transmission project, the proposed development solution, access requirements and the typical construction methods;

Chapter 3: Route and Alignment Selection Process - describes the SSEN Transmission Route Selection Guidance and the methodology used for the route and alignment selection process;

Chapters 4 - 11: Comparative Appraisal of Alignment Options and Design Solution - describes the preferred alignment and design solution on a Section by Section basis and identifies and summarises the reasons for the decisions. Alternative alignments for each section are also described. Decisions taken with regard to the proposed route in Sections 2 and 3 are also set out; and

Chapter 12: Consultation on the Proposals - invites comments on the alignment selection process and identification of a preferred alignment and design solution.

1.3.1 The main body of this Consultation Document is supported by a series of figures, visualisations and appendices.

1.4 Next Steps

1.4.1 As part of this consultation exercise, comments are sought from members of the public, statutory consultees and other stakeholders on the preferred alignment and design solution put forward in this report.

1.4.2 A Report on Consultation will be produced which will document the consultation responses received during this stage of the project, and the decisions made having regard to these responses.

1.4.3 Following the identification of a proposed alignment and design solution for the new OHL, further technical and environmental surveys will be undertaken as appropriate to support an Environmental Impact Assessment Report and Section 37 application, anticipated to be made in 2022.

⁸ A centre line of an overhead line, along with the location of key angle structures.

2. PROJECT NEED AND OVERVIEW

2.1 Introduction

2.1.1 An overview of the existing infrastructure, the need for the project and the work undertaken by SSEN Transmission to assess the electricity transmission infrastructure requirements (system planning pathway) has been set out in the Consultation Document at route options stage (March 2020)². Subsequently, SSEN Transmission has submitted its initial needs case to Ofgem, setting out an evidence based and economically justified case for replacement of the existing OHL between Fort Augustus and Ardmore on the Isle of Skye. An overview of the project need is provided in this Chapter. Further details on project need and consideration of other strategic reinforcement options to deliver the connection requirements are included in the initial needs case⁹, available at <https://www.ssen-transmission.co.uk/projects/skye-reinforcement>.

2.2 Existing Transmission Infrastructure

2.2.1 SSEN Transmission owns and maintains the electricity network across the north of Scotland and holds a licence under the Electricity Act 1989 to develop and maintain an efficient, co-ordinated and economical system of electrical transmission that will facilitate competition between current and new generators.

2.2.2 The existing single circuit 132 kV OHL from Fort Augustus to Ardmore on the Isle of Skye extends over 160 km in length and is the sole connection from the mainland national grid to Skye and onwards, via subsea cable to the Western Isles. The security of supply on Skye and the Western Isles is dependent on this circuit. The existing OHL to Skye is made up of distinct sections, which were constructed at different times over the last 65 years in response to changing needs. This comprises of the following (see also Plate 2.1):

1. Fort Augustus Substation to Skye Tee (near Invergarry) – a 9 km section of OHL from Fort Augustus to the Skye Tee point, of trident wood pole construction and completed in June 2017;
2. Aberchalder (Skye Tee) to Quoich – Recently constructed OHL of trident wood pole construction. This OHL has been constructed as an asset replacement to the existing single circuit 132 kV steel lattice OHL through this area which was constructed in the mid 1950's to connect the Quoich hydroelectric power station to the grid;
3. Quoich to Broadford – double circuit of steel lattice towers, strung with a single circuit 132 kV OHL constructed between 1979 and 1980; and
4. Broadford to Ardmore – single circuit of trident wood pole, strung with a single circuit 132 kV OHL constructed in 1989.

2.2.3 From Ardmore, there are two Scottish Hydro Electric Power Distribution (SHEPD) owned 33 kV subsea cables; one to Loch Carnan on South Uist and the other to the Isle of Harris. The line continues from the Isle of Harris as a 132 kV transmission circuit to Stornoway on the Isle of Lewis.

2.2.4 The security of supply on Skye and the Western Isles is dependent on the Skye circuit as the only connection to the main Great Britain electricity grid. To enhance supply security on the Western Isles, there are SHEPD owned backup diesel generators at Battery Point and Arnish (both connected at Stornoway) to support Lewis and Harris, and diesel generators at Loch Carnan and Barra to support the Uists. Additionally, SHEPD use mobile backup diesel generation to secure supplies on the Isle of Skye. Therefore, in the event of a fault on the main line, customer supplies are solely reliant on ageing backup generators, with associated impacts on greenhouse gas emissions.

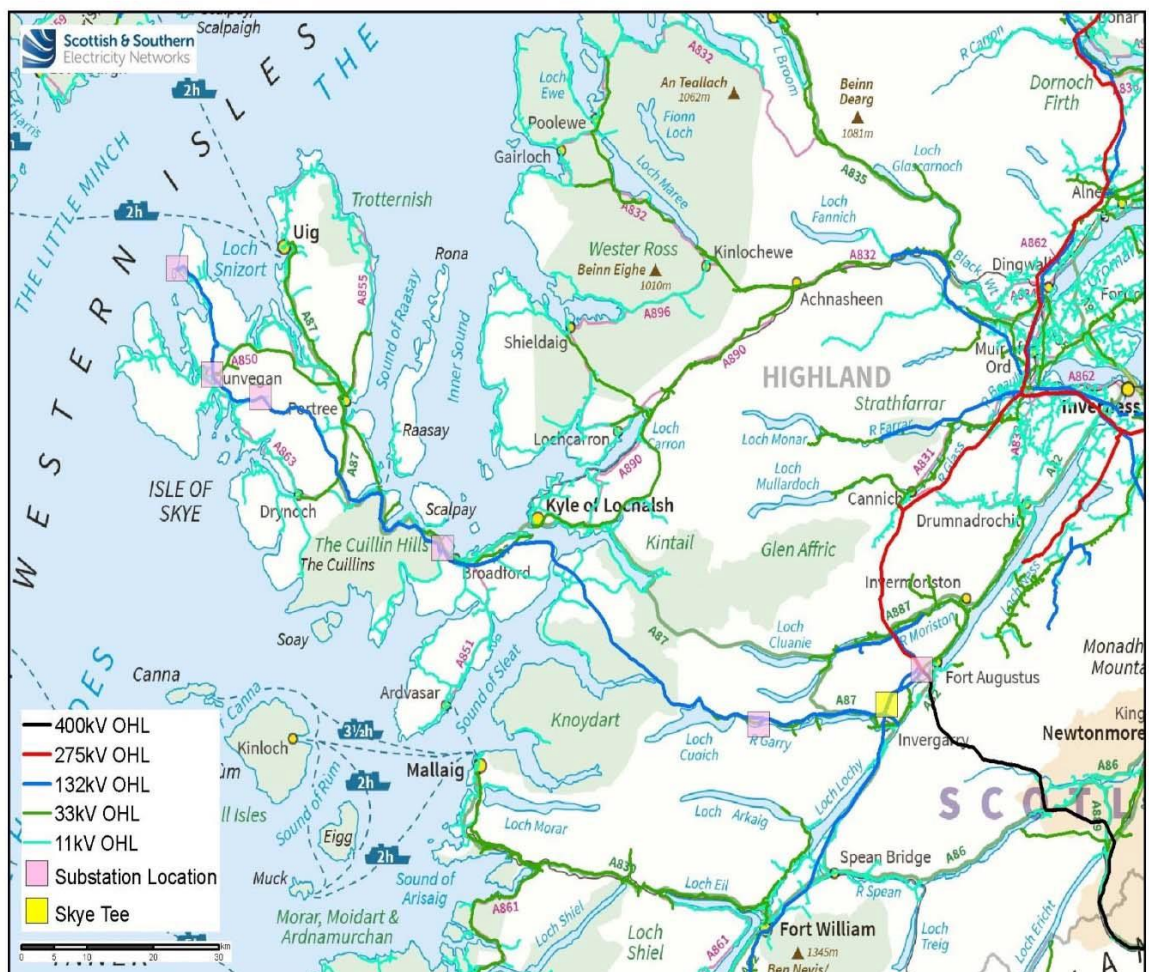
⁹ Skye 132 kV Reinforcement Initial Needs Case Submission (July 2021), produced by SSEN Transmission

2.3 The Need for the Project

2.3.1 Over the past few years, several assessments have been carried out to determine the condition of the existing OHL and associated electricity infrastructure, including existing substation equipment. In addition, more applications for the generation and demand connections on Skye have been received over that period. This has caused SSEN Transmission to review the needs case for the project and the approach for upgrading the Skye transmission network to ensure that the best sustainable long-term solutions are identified. The need for the Skye Reinforcement Project can be summarised as follows:

- The existing OHL is reaching the end of its operational life and requires replacement in order to maintain security of supply for homes and businesses on Skye, and on the Western Isles that are currently supplied via a subsea cable from the north of Skye;
- There is a requirement to connect new renewable electricity generators on Skye which results in a requirement for an increase in capacity of the existing OHL; and
- Following commitment from both the UK and Scottish Governments to achieve net zero emissions by 2050 and 2045 respectively, SSEN Transmission plans to 'future proof' the new OHL to facilitate this objective. This will allow incremental increases in capacity to support the connection of additional renewables generation when such need has been clearly demonstrated.

Plate 2.1: Existing Line



2.4 Proposed Development Solution

2.4.1 To facilitate the known connection requirements, the main elements of the proposed development solution are summarised below:

- From Fort Augustus Substation to Broadford Substation, the proposed development solution is to construct a new double circuit 132 kV OHL supported by steel structures. The existing Fort Augustus to Skye Tee 132 kV trident pole wood pole OHL, the newly constructed Quoich to Aberchaldier trident wood pole OHL and the existing steel lattice tower OHL between Skye Tee and Broadford would be dismantled and removed once the new OHL is operational;
- Between Broadford Substation and Edinbane Substation, the existing single circuit wood pole trident 132 kV OHL would be replaced with a new double circuit¹⁰ 132 kV OHL supported by steel structures. The existing OHL would be dismantled and removed once the new OHL is operational; and
- Between Edinbane Substation and Ardmore Substation, the existing single circuit wood pole trident 132 kV OHL would be replaced with a new higher capacity 132 kV trident wood pole OHL. During construction, the existing OHL and its replacement would run in tandem but on energisation of the new OHL, the existing OHL would be dismantled and removed.

2.4.2 As detailed design of the project has progressed, and proposed development solutions have been considered in the context of local conditions and environmental sensitivities, consideration has been given to appropriate mitigation measures to minimise predicted likely significant effects. This has included the consideration and viability of localised underground cabling and subsea cable solutions where such mitigation could address specific issues, subject to engineering, economic and environmental considerations.

2.4.3 Due to the installation requirements, electrical characteristics, environmental considerations and economics of underground cable and subsea cable options, and associated substation equipment requirements, it would not be economically or technically viable to consider such options for the entire OHL alignment.

2.4.4 The OHL solution is also preferred as it provides reliable security of supply, with a lower return of service time than underground or subsea cable options in a fault scenario. For these reasons, the focus of the early detailed design stage of the project has been identifying optimal locations for the new OHL support structures and construction methodologies. In tandem, assessment of likely significant environmental effects has been undertaken, and this will continue through the environmental impact assessment stage of the project whereby further mitigation measures may be required in the context of predicted likely significant effects, subject to engineering and environmental considerations.

2.5 Other Related Works

2.5.1 The Skye Reinforcement Project will give rise to a need to upgrade the substations along the route of the OHL to facilitate the new OHL. Further modifications are also required to existing substations due to asset condition and the need to provide capacity to connect generation proposed on the Isle of Skye. The proposed substation works are summarised below:

- Broadford Substation: Installation of a new 132 kV indoor switching station, a new 132/33 kV transformer, outdoor circuit breakers and indoor reactive compensation measures at the existing Broadford Substation site.
- Edinbane Substation: Installation of a new 132 kV indoor switching station and establishment of a new indoor substation at the existing Edinbane Substation site.

¹⁰ The Skye Reinforcement Project: Consultation Document: Route Options (March 2020), produced by SSEN Transmission, noted that the proposed development solution between Broadford Substation and Edinbane Substation would be a replacement single or double circuit 132 kV OHL. Further generation connection requests made to SSEN Transmission have since confirmed the requirement for a double circuit between Broadford Substation and Edinbane Substation.

- 2.5.2 These works will require an application for planning permission under the Town and County Planning (Scotland) Act 1997 (as amended). The works are likely to be deemed as National Development within NPF3 and as such are categorised as Major Development within the Development Hierarchy and require to be subject to a formal Proposal of Application Notice (PAN) and associated pre-application consultation exercises. Appropriate environmental assessment work will be undertaken in support of these applications.
- 2.5.3 In addition, there would be a requirement for a new switching station at Quoich Tee, near to the existing tee off at Kingie. This project would be developed separately by SHEPD.
- 2.5.4 Modification of the existing 11 and 33 kV distribution network in some areas is also likely to be required to accommodate the new OHL.
- 2.5.5 The existing 132 kV OHL would be dismantled upon completion of the Skye Reinforcement Project, as referred to in paragraph 2.4.1.
- 2.5.6 Other related works to facilitate the construction of the project include the installation of appropriate access for construction traffic (see 2.8 below), public road improvements and restoration works following the construction phase.

2.6 Overhead Line Design Solutions

- 2.6.1 It is proposed that the supporting steel structures required as part of the development solution between Edinbane Substation and Fort Augustus Substation (i.e. Section 1 to 6) are of lattice design. Towers would be approximately 28 m in height, although tower heights may be increased where local topography dictates in order to achieve sufficient clearance distances. The span lengths between towers would vary depending on topography and altitude but would be approximately 250 m apart. Exact heights of and the distances between towers would be determined after a detailed line survey and confirmed prior to submission of an application for consent.
- 2.6.2 The proposed new H wood pole OHL between Ardmore Substation and Edinbane Substation would have a nominal height of approximately 13 m (including insulators and support), depending on ground conditions. The spacing between poles would be approximately 80 m, subject to topography, altitude and further survey. This will also be confirmed prior to submission of an application for consent.

2.7 Alternative Design Solutions

- 2.7.1 Feasibility studies for other design solutions (i.e. underground cable, subsea and NeSTS) have been undertaken where relevant in Sections 2, 3 and 6 to inform route, alignment and design solution options. These studies have enabled a fuller understanding of the technical viability, environmental impact and cost of such options, in comparison with a steel lattice OHL. This is discussed further within Chapters 7, 8 and 11 of this Consultation Document, in relation to Sections 2, 3 and 6 respectively.

2.8 Access during Construction

- 2.8.1 The construction of a new OHL approximately 160 km in length is a major undertaking, presenting significant construction challenges not just in terms of scale but also remoteness, terrain and seasonal weather conditions.
- 2.8.2 The commissioning by SSEN Transmission of an experienced OHL contractor (see 2.10 below) has enabled construction access considerations to be at the forefront of this stage in the design process. Whilst construction access details are yet to be finalised, an access track matrix has been developed by the project team considering both construction and operational access requirements, and with reference to NatureScot's good

practice guide on constructing tracks in Scottish uplands¹¹. Typical access solutions are set out below with respect to the different technology types under consideration, and will be subject to on-going review through the design process and EIA stages of the project. Further detail on construction access methods are provided in each of the relevant sections of the project (see Chapter 5 to 11).

2.8.3 In general, proposed construction site access would be taken via the existing public road network and would make use of existing forest and estate tracks as far as practicable, upgraded as required. Existing bellmouths would be utilised where possible, subject to improvements. New bell mouths would be required at a number of locations.

2.8.4 Where operational access is required, this would likely range from ATV routes with no formal track to a stone road suitable for 4x4 and waggon access. The selection of the type of track required will consider the proximity to a public road, structure type and potential maintenance activities / vehicles required in future to a given location (taking legal health & safety requirements into account). Access track details will be finalised through the EIA stage of the project and presented to illustrate where each access type will be deployed, and the rationale for that selection.

Wood Pole Construction Access

2.8.5 For wood pole construction (i.e. in Section 0), vehicle access is required to each pole location during construction, moving along the line, to allow excavation and creation of foundations and pole installation. Preference will be given to lower impact access solutions including the use of low pressure tracked personnel vehicles and trackway in boggy / soft ground areas to reduce any damage to, and compaction of, the ground. These journeys would be kept to a minimum to minimise disruption to habitats along the route.

2.8.6 It is anticipated that helicopters would be used for the delivery of materials to each pole locations for wood pole construction in Section 0. The key benefit of helicopter use for wood pole construction is that vehicular access to each pole location (as well as inline access) can be significantly reduced, with delivery of components and erection being facilitated by helicopter.

Steel Lattice OHL Construction Access

2.8.7 Typically, new temporary stone tracks are likely to be required to access each steel tower location in Sections 1 to 6, as well as the requirement for inline access between towers. Stone tracks are designed to suit the heavy plant loads required for construction works for steel towers, and to suit the varied ground conditions along the route. On completion of construction, unless required for operational access, the stone tracks would be removed and the original material reinstated. Where access to tower positions is difficult due to steep terrain, alternative methods would be proposed such as using smaller items of plant, specialist tracked plant, and in some cases using helicopters for moving materials.

2.8.8 Temporary trackways are an alternative method of providing access, dependent on ground conditions. Although there may be localised areas where trackway may be suitable, it is not considered an appropriate solution for the construction of steel lattice towers on this project in its entirety, due to the length of time they are required to be in place and the weight and size of construction plant that would be required to track over them. Stone tracks generally afford greater reliability and stability compared to trackway solutions. Similarly, the extensive use of wide tracked excavators and other plant without prior ground preparation are unlikely to be a viable solution for this project in its entirety, although they may be used for certain tasks during construction.

2.8.9 The use of helicopters for construction of steel lattice towers is feasible, however, the operational restrictions (e.g. weather, proximity to public roads and environmental factors), and the significant cost implications, for a

¹¹ Constructed tracks in the Scottish Uplands (Updated September 2015), Scottish Natural Heritage.

project of this scale are key considerations. The use of helicopters is likely to be required in more remote sections of the project, and where particular environmental or geographical constraints necessitate their use. Where helicopters are used, construction plant would still require access to each tower location to facilitate construction and erection of towers. Helicopter landing zones would also require to be identified.

Underground Cable Construction Access

- 2.8.10 Installation of an underground cable would typically require a wide construction corridor (approximately 30 m) to accommodate excavation and cable installation equipment. A construction haul road would be required for much of the cable installation route. After construction, disturbed ground can be reinstated and restored.

2.9 Access during Operation

- 2.9.1 Permanent access tracks would only be required in more remote areas where access during construction requires a higher specification track, and where long term maintenance needs require permanent access. Generally, this requirement is most relevant to Sections 3 and 4 of the project given their more remote nature (refer to Chapter 8 and 9 of this Consultation Document). It is intended however to keep requirements for permanent access tracks to a minimum. Where required, permanent tracks would be reinstated to a width suitable for 4x4 vehicles.

2.10 OHL Contractor

- 2.10.1 To inform the alignment selection stage of this project, SSEN Transmission has engaged an experienced OHL construction contractor to carry out a detailed desk-based and site walkover survey to explore the advantages, disadvantages and constructability of OHL alignment options. This has proven valuable at this early stage of the project in terms of providing confidence in the buildability of alignment options, and construction access opportunities. Whilst the full access strategy is still being developed, construction and operational access requirements have been a key consideration in informing the preferred alignment, utilising existing access where possible and identifying access routes to facilitate the OHL.
- 2.10.2 Other technical considerations such as avoiding cross overs of existing electrical infrastructure (in particular the existing 132 kV OHL) to minimise potential outages of the electricity network (resulting in cost implications and disruption to the consumer) have been a factor in the evaluation of alignment options.
- 2.10.3 Targeted ground investigation works are also being undertaken along the route of the line, which will further inform tower positions, foundation requirements and construction access requirements. This information should be available to inform the EIA stage of the project.

2.11 Biodiversity Net Gain

- 2.11.1 Biodiversity Net Gain (BNG) is a process which leaves nature in a better state than it started. Although it is an internationally recognised process and tool within the development industry, it is not a term that is widely used or implemented in Scotland¹². A small handful of businesses are making voluntary commitments to incorporating BNG into their projects, including SSEN Transmission.
- 2.11.2 SSEN Transmission has developed a BNG toolkit based upon the Natural England metric¹³, which aims to quantify biodiversity based upon the value of habitats for nature. It is an efficient and effective method for

¹² CIEEM. 2019. Biodiversity Net Gain in Scotland. CIEEM Scotland Policy Group. <https://cieem.net/wp-content/uploads/2019/06/Biodiversity-Net-Gain-in-Scotland-CIEEM-Scotland-Policy-Group.pdf>

¹³ Natural England Biodiversity Metric 2.0 <http://publications.naturalengland.org.uk/publication/5850908674228224>

demonstrating whether development projects have been able to maintain or increase the biodiversity value of a development site after construction works.

2.11.3 For BNG to be used appropriately and to generate long-term gains for nature, the good practice principles established by the Business and Biodiversity Offset Programme (BBOP)¹⁴ should be followed. These principles have been established in the context of UK development by the Construction Industry Research and Information Association (CIRIA), the Chartered Institute for Ecology and Environmental Management (CIEEM) and the Institute of Environmental Management and Assessment (IEMA)⁶.

2.11.4 BNG does not apply to statutory designated sites or irreplaceable habitats (e.g. ancient woodland¹⁵, blanket bog)¹⁶.

SSEN Transmission's Biodiversity Ambition

2.11.5 SSEN Transmission is committed to protecting and enhancing the environment by minimising the potential impacts from their construction and operational activities. As part of this approach, SSEN Transmission has made commitments within its Sustainability Strategy (2018)¹⁷, Sustainability Plan (2019)¹⁸ and RIIO-T2 Business Plan, for new infrastructure projects to:

- Ensure natural environment considerations are included in decision making at each stage of a project's development;
- Utilise the mitigation hierarchy to avoid impacts by consideration of biodiversity in project design;
- Positively contribute to the UN and Scottish Government Biodiversity strategies by achieving an overall 'No Net Loss' on new infrastructure projects gaining consent in 2020 onwards and achieving Net Gain on projects gaining consent in 2025 onwards; and
- Work with their supply chain to gain the maximum benefit during asset replacement and upgrades.

2.11.6 The design and evolution of this project will be carried out in line with these commitments.

¹⁴ Guidance Notes to the Standard on Biodiversity Offsets (2012). Business and Biodiversity Offsets Programme (BBOP). https://www.forest-trends.org/wp-content/uploads/imported/BBOP_Standard_Guidance_Notes_20_Mar_2012_Final_WEB.pdf

¹⁵ Categories 1a and 2a.

¹⁶ CIRIA, CIEEM, IEMA (2019). Biodiversity Net Gain: Good practice principles for development, A Practical Guide. <https://cieem.net/wp-content/uploads/2019/02/C776a-Biodiversity-net-gain.-Good-practice-principles-for-development.-A-practical-guide-web.pdf>

¹⁷ Delivering a smart, sustainable energy future: The Scottish Hydro Electric Transmission Sustainability Strategy (2018) <https://www.ssen-transmission.co.uk/media/2701/sustainability-strategy.pdf>

¹⁸ Our Sustainability Plan: Turning Ambition into Action. (2019) SHE Transmission. <https://www.ssen-transmission.co.uk/media/3215/our-sustainability-plan-consultation-report.pdf>

3. ROUTE AND ALIGNMENT SELECTION PROCESS

3.1 Introduction and Approach

- 3.1.1 The approach to route and alignment selection has been informed by SSEN Transmission's guidance¹⁹ which provides a framework to ensure environmental, technical and economic considerations are identified and appraised at each stage of the routeing process.
- 3.1.2 The guidance splits the routeing stage of a project into four principal stages, as follows:
- Stage 0: Routeing Strategy Development;
 - Stage 1: Corridor Selection;
 - Stage 2: Route Selection; and
 - Stage 3: Alignment Selection.
- 3.1.3 Each stage is an iterative process and involves an increasing level of detail and resolution, bringing cost, technical and environmental considerations together in a way which seeks to achieve the best balance at each stage. The stages that are carried out can vary depending on the type, nature of and size of a project and consultation is carried out at each stage of the process.
- 3.1.4 As confirmed in the Report on Consultation (November 2020)³, the preferred route in Sections 0, 1, 4, 5 and 6 has been taken forward as the proposed route to the alignment selection stage (Stage 3). Within Sections 2 and 3, further engineering and environmental studies have been undertaken to review route, alignment and design solutions within these sections.
- 3.1.5 The approach to the route and alignment selection process is set out in Appendix 1 of this Consultation Document.
- 3.1.6 A summary of the route options stage, as described within the Consultation Document at route options stage (March 2020)² and Report on Consultation (November 2020)³, is set out in Appendix 2 of this Consultation Document. This appendix provides a brief summary of the route option stage of the project on a section by section basis, including the responses received from stakeholders and the decisions made with respect to the identification of a proposed route in each section (apart from in Sections 2 and 3).

3.2 Engineering and Environmental Input

- 3.2.1 As set out in Chapter 2 of this Consultation Document, SSEN Transmission has engaged an experienced OHL construction contractor to carry out a detailed desk-based and site walkover survey to explore the advantages, disadvantages and constructability of OHL alignment options. Subsequently, an OHL alignment has been identified by the OHL contractor on the basis of it being the most technically feasible and economically viable alignment, giving due consideration to a range of technical and cost criteria over the construction and operation phases of a new OHL. This is referred to in this report as the 'Baseline Alignment'.
- 3.2.2 Alternative OHL alignment options and design solutions (referred to as 'variants') have also been considered by the OHL contractor and project environment and engineering teams as part of the iterative alignment selection process.

¹⁹ SSEN Transmission (March 2018), Procedures for Routeing Overhead Lines of 132kV and above (updated in September 2020)

- 3.2.3 In considering the potential environmental constraints of the Baseline Alignment identified by the OHL contractor, as well as alternative variants and design solutions, the following tasks have been undertaken:
- Desk-based review and targeted site survey by project landscape architects, ecologists, ornithologists, archaeologists, geologists and hydrologists to review alignment options and provide advice on variants or micro-siting opportunities for positioning of towers and indicative construction access;
 - Targeted Phase 1 / National Vegetation Classification (NVC) habitat surveys and protected species surveys to supplement existing data;
 - Review of ornithological survey data and records for the area, including requests for data held by RSPB, and targeted bird surveys to supplement existing survey data;
 - Review of comments received from stakeholders during the route options stage following publication of the Skye Reinforcement Project Consultation Document (March 2020)² as detailed within the Report on Consultation (November 2020)³;
 - Workshops with SSEN Transmission, the OHL contractor and environmental consultants to discuss alignment options and variants, prior to the identification of a preferred alignment and design solution;
 - Site reconnaissance visits by the SSEN Transmission engineering team and environmental consultants to review alignment options; and
 - Workshops with statutory consultees to present the preferred alignment and design solution, and seek preliminary feedback.

4. COMPARATIVE APPRAISAL OF ALIGNMENT OPTIONS AND DESIGN SOLUTIONS

4.1 Overview

- 4.1.1 Chapters 5 to 11 of this Consultation Document provide a summary of the alignment options and design solutions that have been considered within Sections 0-6, together with the primary reasons for the selection of a preferred alignment and design solution within each section, giving due consideration to environmental, technical and economic considerations. For Sections 2 and 3, an update on work to identify a proposed route is also provided (see Chapters 7 and 8).
- 4.1.2 The Baseline Alignment and variants, together with environmental designations and constraints within each section, are shown in Figures 2.0.1a to 2.6.3a. The preferred alignment and design solution is shown on Figures 3.0a to 3.6. Figure 1 confirms the proposed and preferred routes for each section.
- 4.1.3 For the purposes of this consultation, it should be assumed that an indicative 200 m Limit of Deviation (LOD) (i.e. 100 m either side of the line except where constraints exist e.g. the existing overhead line) would be applied to the preferred alignment to allow for further iterations during the EIA process and subsequent to the consenting process, as more detailed survey information is gathered and analysed.
- 4.1.4 As noted previously, the 'Baseline Alignment' is the alignment identified by the OHL Contractor on the basis of it being the most technically feasible and economically viable alignment and design solution, giving due consideration to a range of technical and cost criteria over the construction and operation phases of a new OHL. The term 'Variants' is used to describe alternative alignment or design solution options to the Baseline Alignment to avoid localised constraints. The preferred alignment is the alignment and design solution taken forward to stakeholder consultation, and could be a combination of the Baseline Alignment and variants.

5. SECTION 0 – ARDMORE TO EDINBANE

5.1 Introduction

5.1.1 This section of the project originates at Ardmore Substation, following a southerly direction through Waternish Peninsula before reaching Dunvegan Substation. From here, the new OHL would head in a south easterly direction, terminating at Edinbane Substation.

5.1.2 Figures and visualisations prepared as part of this Consultation Document of relevance to this section include:

Figures

- Figure 2.0.1a to 2.0.3c: Section 0: Baseline Alignment, Variants, Environmental Designations and Constraints
- Figure 3.0a to 3.0c: Section 0: Preferred Alignment and Design Solution

Visualisations

- Figure 4.0.1 (a-d) VP1 – Trumpan Church Burial Ground
- Figure 4.0.2 (a-d) VP2 – Trumpan
- Figure 4.0.3 (a-c) VP3 – Dun Hallin Broch from Knockbreck School
- Figure 4.0.4 (a-c) VP4 – Upper Feorlig

5.2 Proposed Development Solution

5.2.1 Within this section, it is proposed that the existing 132 kV wood pole OHL would be replaced with a new 132 kV wood pole (H pole) OHL. The new OHL would have a nominal height of approximately 13 m (this could range between 10 m and 16 m in height above ground level (including insulators and support), depending on local terrain and ground conditions). The spacing between poles would vary depending on topography and altitude but would be approximately 80 m apart (likely to range between 70 m and 105 m). A fibre optic cable would be strung under the conductors along the entire route for operational telecommunication purposes.

5.2.2 The wood pole (H pole) OHL solution meets the predicted capacity and load requirements between Ardmore and Edinbane and provides reliable security of supply.

5.3 Technical Considerations and Construction Access

5.3.1 The terrain throughout this section largely comprises gently undulating open moorland, at an altitude of between sea level and approximately 160 m AOD. Construction of a new OHL within this section would likely be undertaken utilising tracked excavators and rock breaking equipment. Each pole hole would be excavated to approximately 4.5 m long and 2 m wide, at a depth typically around 2.5 m. Excavated turf and sub soils would be locally stored, and replaced upon completion.

5.3.2 The H poles would be erected utilising one or two excavators, dependant on assembled weight. Stays would be installed as required to secure the pole. The use of helicopters for the delivery of materials is likely to be utilised throughout this section to minimise vehicular access to each pole location, and therefore reducing the requirement for new tracks. As a result, construction access to each pole location is likely to be achieved by all terrain vehicles and tracked excavators, maximising the use of existing tracks to facilitate access.

5.4 Baseline Alignment

5.4.1 The Baseline Alignment for Section 0 was developed by an OHL contractor on the basis of it being the most technically feasible and economically viable alignment and design solution. The Baseline Alignment for Section

0 is shown on Figures 2.0.1a to 2.0.1c. Within this Section the Baseline Alignment is typically routed adjacent to the existing OHL (which would be removed) with the exception of the following areas:

- Trumpan; here the existing OHL heads in a north easterly direction from Ardmore Substation, passing between properties as it crosses the minor road to the north east of Trumpan, and then heads in a south-easterly direction toward Upper Halistra. In contrast, the Baseline Alignment heads in a south easterly direction from Ardmore Substation and passes just to the east of Halistra Loch before heading east, crossing the minor road and meeting the existing OHL. This deviation from the existing OHL was proposed given the potential to increase the proximity of a new OHL to properties if following the existing OHL;
- Hallin; here the existing OHL is routed to the east of properties and crofts at Hallin, and to the west of Dun Hallin Broch Scheduled Monument. In contrast, the Baseline Alignment is routed to the east of Beinn na Mointich, deviating from the existing OHL for approximately 3.5 km until it meets the existing OHL within the vicinity of Waternish House, Stein. This deviation from the existing OHL was proposed as a means of moving the OHL away from properties at Hallin, given the existing OHL is situated to the rear of properties in this area; and
- Glen Heysdal; whereby the Baseline Alignment is routed approximately 450 m from the existing OHL to avoid residential properties.

5.4.2 In all other areas, the OHL contractor determined that the most technically feasible and economically viable option for the Baseline Alignment would be to generally follow adjacent to the existing OHL.

5.5 Alignment Options Appraisal

5.5.1 As part of the iterative alignment selection process, a review of the Baseline Alignment and potential variants has been carried out by the SSEN Transmission environmental and engineering teams, and environmental consultants, in close collaboration with the OHL contractor. A summary of the key elements of this review is provided below.

Baseline Alignment (Environmental Considerations)

Natural Heritage

5.5.2 Approximately 200 m of the Baseline Alignment crosses the An Cleireach Site of Special Scientific Interest (SSSI) notified for its geological features. The existing OHL also crosses the SSSI. It is considered the construction of the OHL along the Baseline Alignment could be achieved without likely significant effects on the notified features of the SSSI through the micro-siting of poles to avoid rocky outcrops. This would be undertaken in consultation with NatureScot.

5.5.3 The Baseline Alignment would generally pass through typical upland mire and heath habitats and patches of rough acid grassland pasture and marshy grassland common on Skye. Habitats along the Baseline Alignment mainly comprise areas of acid and improved grasslands, a mix of wet and dry heaths and areas of blanket bog in places. Some of these are high sensitivity habitats but opportunities exist to mitigate impacts through micro-siting of poles and minimising disturbance during construction.

5.5.4 Watercourses and water bodies within the survey area are considered suitable for supporting otters. Protected species surveys in 2020 recorded otter signs on several watercourses within the vicinity of the Baseline Alignment, mainly in the form of spraints. It is recognised that new holts or couches may appear in future which would need to be considered during pre-construction surveys.

5.5.5 Hen harriers breed within the wider area and there are also records of corncrake and white-tailed eagle. There is potential for displacement and disturbance during construction to these species, but this could be mitigated

through timing of these activities. Moorland breeding bird surveys carried out between April and July 2021 detected no notable species of conservation concern within the vicinity of the Baseline Alignment. Similarly, scarce breeding bird surveys over the same period detected no breeding sites of scarce raptors within the vicinity of the Baseline Alignment, although flights by white tailed eagle, peregrine and merlin were recorded. A single male corncrake was also recorded holding territory at Trumpan in May 2021.

- 5.5.6 Surface water drinking protection zones are present at Trumpan, Stein and Balmeanach, and private water supply infrastructure will be present throughout this area. Further review of water supply sources and infrastructure will be required to assess potential effects and inform appropriate mitigation measures through the EIA stage of the project.

Landscape and Visual

- 5.5.7 Views from Trumpan, where the Baseline Alignment crosses coastal land to the front of properties on the approach to Ardmore Substation, may give rise to some visual effects. This is to some degree offset by the removal of the existing OHL for some receptors. This is illustrated in Visualisations included with this Consultation Document from Trumpan (see VPs 1 and 2, contained in Figures 4.0.1 and 4.0.2 a-c). Further south-east, the Baseline Alignment to the east of Dun Hallin Broch and following the edge of the forest plantation to the rear of Beinn na Mointich provides an opportunity to move the new OHL further from properties at Hallin and Lower Hallistra, albeit there is the possibility of this appearing on the skyline from some (limited) places. This is illustrated in the visualisation included with this Consultation Document (see VP 3 from Knockbreck School looking towards Dun Hallin Broch, contained in Figure 4.0.3 a-c).
- 5.5.8 Beyond Stein, the Baseline Alignment runs generally adjacent and to the east of the existing OHL to Dunvegan Substation. Localised skylining of the Baseline Alignment may affect a small number of receptors (for example near Cnoc a' Chrochaire), although the micro-siting of poles to avoid siting on localised knolls or ridgelines would help to minimise this. Similarly, between Dunvegan Substation and Edinbane Substation, some visual effects may be experienced from a small number of receptors at Balmeanach and Upper Feorlig, although generally the Baseline Alignment would appear similar to the existing OHL in these areas. Views from Upper Feorlig are illustrated in VP 4 (contained in Figure 4.0.4 a-c), included with this Consultation Document.

Cultural Heritage

- 5.5.9 The archaeological and cultural heritage baseline of this area is characterised by features typical of upland rural landscapes throughout the Highlands. On the more cultivable land, irregular fields defined by drystone walls and earthen banks enclose cultivation remains in the form of former spade-cut lazy beds and/or plough-cut rig and furrow. In the upland pasture, stock management features such as sheepfolds, drovers' tracks, shieling huts and livestock pens and enclosures are evident. Settlement remains include abandoned crofting townships, cleared and abandoned during the Highland Clearances of the late 18th and early 19th centuries, and there are traces of 18th century military roads, carried over the numerous burns by simple stone bridges.
- 5.5.10 The majority of these features most likely date to the late-medieval and post-medieval periods, although some evidence of prehistoric settlement and activity is present in the form of Iron Age brochs, hut circles and occasional chance finds of artefacts. The relative scarcity of cultivable land on suitable terrain is likely to mean that later settlement has largely continued and developed on lands exploited in prehistoric periods, and it is likely that the later activity has obscured (but not obliterated) much of the evidence of earlier settlement and occupation. The evidence suggests a long and in places continuous occupation from the Bronze Age to the

present. The landscape formed by this historic and prehistoric occupation is both extensive and well-preserved throughout much of this area.

- 5.5.11 The extent and sensitivity of these heritage assets in relation to the likely construction footprint of the Baseline Alignment mean that few of the cultural heritage remains present are likely to be at risk of disturbance, and would be subject to appropriate mitigation such as micro-siting and adoption of sensitive construction techniques (e.g. the use of low ground pressure vehicles) to minimise impact.
- 5.5.12 There are two Scheduled Monuments within the general vicinity of the Baseline Alignment; the medieval remains of Trumpan church and burial ground (SM 949), approximately 270 m north-east of the Baseline Alignment at Trumpan; and Dun Hallin (SM 916), a prehistoric broch approximately 220 m north-east of the existing OHL. Views from these two Scheduled Monuments are included in this Consultation Document (see VP 1 and 3, contained in Figures 4.0.1 and 4.0.3 a-c respectively)). No likely significant effect on the setting of these Scheduled Monuments as a result of the Baseline Alignment is anticipated.
- 5.5.13 There is one Category C Listed Building of Low sensitivity within the general vicinity of the Baseline Alignment, comprising the original early 19th century 'Fairy Bridge' (LB466) at Duirinish. Again, no likely significant effects on its setting are anticipated.

Other Environmental Considerations

- 5.5.14 Numerous properties fall within the vicinity of the Baseline Alignment at Trumpan, Halstra, Hallin, Stein, Lusta and Hornival. The Baseline Alignment also runs within the vicinity of the crofting properties at Upper Feorlig and Balmeanach. These crofting properties are linked to the use of the land in the area for agriculture. The Baseline Alignment crosses areas of agricultural land use, including land primarily suited to grassland, and land capable of use as improved grassland.
- 5.5.15 Forestry in the area is limited to plantations to the north east of Stein, and to the west of Edinbane Substation. A new or extended wayleave through commercial plantation to the west of Edinbane Substation would be required, through which the existing OHL is currently routed.
- 5.5.16 The Baseline Alignment would run within the vicinity of, or cross the Stein to Gillen, and Loch Caroy to Glen Vic Askill Core Paths, as well as two other Rights of Way and Wider Path Network paths. Public access to these paths during construction, and in the longer term, would be considered further during the EIA stage of the project, and appropriate mitigation measures developed. There are also tourist attractions and accommodation within this section, particularly on the Waternish Peninsula.
- 5.5.17 There are no current planning applications or areas allocated for future development in direct conflict with the Baseline Alignment within this section.

Variants (Environmental Considerations)

- 5.5.18 A number of variants to the Baseline Alignment have been considered to either mitigate a potential effect, or to provide an alternative for consideration by the project team during the selection of a preferred alignment and design solution. These variants are set out in Table 5.1 and shown on Figures 2.0.1a to 2.0.1c. The potential environmental constraints and opportunities of these variants in comparison to the Baseline Alignment, and with regard to the environmental topic areas set out in SSEN Transmission's routeing guidance¹⁹, is discussed in more detail in Appendix 3 (see also Figures 2.0.2a to 2.0.3c).

Table 5.1: Variants: Section 0

Variant	Description	Variant Taken forward? (Y/N)
<i>Variant 0-A (Trumpan)</i>	<p>This variant was considered as it provides a viable alternative to the Baseline Alignment, running adjacent to the existing OHL, heading northeast at Trumpan from Ardmore Substation and crossing between properties, before heading in a south easterly direction behind properties towards Halistra, where it would re-join the Baseline Alignment.</p> <p>It was considered that this could result in an increased effect on the setting of Trumpan Church SM in comparison to the Baseline Alignment, and could also bring the line closer to properties. As such, the Baseline Alignment is preferred.</p>	N
<i>Variant 0-B (Trumpan)</i>	<p>This short variant was considered as it could reduce the potential effect of poles skylining as the OHL crosses the minor (north) road to Trumpan.</p> <p>This variant is however located close to an area previously allocated for housing, and where planning permission in principle was approved for a property in 2013. The Baseline Alignment was therefore deemed preferable.</p>	N
<i>Variant 0-C (Hallin)</i>	<p>This variant was considered as it provides a viable alternative to the Baseline Alignment at Upper Halistra, running parallel to the existing OHL on its eastern side for approximately 3.5 km, where it would re-join the Baseline Alignment at Stein.</p> <p>This variant would result in the potential for visual effects on properties at Hallin, and interaction with croft land. There is also potential for increased effect on the setting of Dun Hallin Broch SM in comparison with Baseline Alignment. The Baseline Alignment was therefore deemed preferable.</p>	N
<i>Variant 0-D (Hallin)</i>	<p>This variant is routed further to the east of Beinn na Mointich in comparison with the Baseline Alignment, closer to Gillen. It would re-join the Baseline Alignment near the Waternish Forest plantation to the east of Beinn na Mointich.</p> <p>This variant would increase the length of the OHL, and result in the potential for increased visual effects on properties at Gillen. No discernible benefits in comparison to Baseline Alignment, which is preferred.</p>	N
<i>Variant 0-E (Fairy Bridge)</i>	<p>This variant at Fairy Bridge was proposed to consider the different landscape and visual effects of an alignment on the western side of the existing OHL. The variant would run generally parallel on the western side of the existing OHL for approximately 4 km.</p> <p>It is considered that there is the potential for increased landscape and visual effect of this variant in comparison with the Baseline Alignment,</p>	N

Variant	Description	Variant Taken forward? (Y/N)
	due in part to proximity to the road and road users. The Baseline Alignment was therefore deemed preferable.	
<i>Variant 0-F (Fairy Bridge)</i>	<p>A short variant at Fairy Bridge that takes a more direct route across an area of peat to the west of the existing OHL, involving two crossovers of the OHL.</p> <p>Potential effects on peat at this location are likely to be mitigated through micrositing of poles. There is a preference in landscape and visual terms for the Baseline Alignment in comparison to this variant.</p>	N
<i>Variant 0-G (Glen Heysdal)</i>	<p>This short variant to the east of Upper Feorlig was proposed to minimise effects on sensitive habitats, and potentially limit skylining of poles from properties at Upper Feorlig.</p> <p>This variant would require crossing the existing OHL twice within a short distance, and could interact with land being used for crofting. As such, the Baseline Alignment is preferred.</p>	N
<i>Variant 0-H (Balmeanach)</i>	<p>This variant, running parallel to the existing OHL on its southern side for a short distance, was proposed to reduce potential effect on sensitive habitats, and also to reduce the length of OHL crossing the SSSI (Geological).</p> <p>The variant would however result in increased proximity and visual effect from properties at Balmeanach, and interaction with croft land. It would also require two crossovers of the existing OHL.</p> <p>It is considered that potential effects on sensitive habitats and the SSSI (Geological) can be minimised through micrositing. Therefore the Baseline Alignment is preferred.</p>	N
<i>Variant 0-I (Balmeanach)</i>	<p>This variant would be routed to the south of Balmeanach, crossing both the existing OHL and the minor road. On the south side of the valley, the variant would be routed across open moorland before passing through a commercial forestry plantation prior to reaching Edinbane Substation.</p> <p>This variant has been considered to avoid the SSSI (Geological) but would result in increased length of OHL, creation of a new wayleave through plantation forestry, and potential for increased landscape and visual effects. As such, the Baseline Alignment is preferred.</p>	N

5.6 Preliminary Consultation Feedback

5.6.1 During the alignment selection process, workshops have been held with statutory consultees to seek feedback on alignment options and design solutions for the project. A summary of the feedback provided in relation to Section 0 is provided below:

- The Highland Council highlighted that the Baseline Alignment runs alongside Stein to Gillen, and Loch Caroy to Glen Vic Askill Core Paths, and that it crosses two other Rights of Way and Wider Path

Network paths. Public access will therefore need to be considered and accommodated during construction works, and where longer-term access is required;

- NatureScot highlighted that the Baseline Alignment crosses the An Cleirach SSSI. NatureScot offered to provide the Earth Science Site Documentation for the site to help guide the siting of infrastructure within the SSSI;
- Historic Environment Scotland (HES) raised some concerns with potential setting effects in relation to Trumpan Church and Dun Hallin Broch Scheduled Monuments. HES requested additional wirelines from and to these sites of the Baseline Alignment and alternative OHL variants. On receipt of this information, HES concluded that the Baseline Alignment was preferred to alternative OHL variants with respect to potential setting effects on SMS in Section 0; and
- Forestry Land Scotland and SEPA made no specific comment on Section 0 during preliminary discussions.

5.6.2 Appendix 4 provides further detail on the responses received from statutory consultees during preliminary engagement, and how these have been addressed and considered during the alignment selection process.

5.7 Preferred Alignment and Design Solution

5.7.1 In selecting the preferred alignment and design solution for this section, consideration has been given to a variety of environmental, technical and cost considerations, as detailed above, as well as the preliminary consultation responses received from statutory consultees. On balance, it was determined that the Baseline Alignment should be taken forward as the preferred alignment and design solution within this section. This would require the installation of approximately 23 km of wood pole (H pole) OHL. The existing wood pole OHL would be removed upon completion. The preferred alignment and design solution is shown on Figure 3.0a to 3.0c.

6. SECTION 1 – EDINBANE TO NORTH OF SLIGACHAN

6.1 Introduction

6.1.1 This section of the project originates at Edinbane Substation, heading generally south east towards Glenmore and Mugeary, and continuing towards Glen Varragill to the north of Sligachan.

6.1.2 Figures and visualisations prepared as part of this Consultation Document of relevance to this section include:

Figures

- Figure 2.1.1a to 2.1.3b: Section 1: Baseline Alignment, Variants, Environmental Designations and Constraints
- Figure 3.1a to 3.1b: Section 1: Preferred Alignment and Design Solution

Visualisations

- Figure 4.1.1 (a-c) VP5 – Glen Vik Askill from Dun Arkaig Broch
- Figure 4.1.2 (a-c) VP6 – Mugeary

6.2 Proposed Development Solution

6.2.1 Within this section, it is proposed that the existing 132 kV wood pole OHL would be replaced with a new double circuit steel lattice 132 kV OHL. The change from wood pole to steel lattice structure is required within this section to meet the predicted capacity and load requirements from Edinbane Substation. The steel lattice solution provides reliable security of supply, and is a cost-effective solution. A short section of underground cable to connect the OHL to Edinbane Substation is likely to be required.

6.2.2 Within this section, the existing 132 kV wood pole OHL would be removed upon completion of the new OHL.

6.3 Technical Considerations and Construction Access

6.3.1 This section generally comprises low lying topography, with soft / peaty soils and several watercourses. Generally, construction of stone access tracks is likely to be the preferred method of accessing each tower location within this section as stone tracks offer the most robust means of providing access for the heavy construction plant required. Temporary trackway is not likely to be feasible for use across large areas in this section due to ground conditions, weight of construction vehicles and length of time trackway would need to be in place, all of which could result in an adverse effect on local habitats if trackway was used extensively. Temporary trackway may be used however in localised areas. Existing forestry tracks such as those in Tungadal and Glen Varragill forests would be used where practicable. Further peat probing and habitat surveys would be undertaken during the EIA stage of the project to inform the most appropriate method and route for construction access.

6.3.2 The use of helicopters is not currently being considered for this section of the project given the good access opportunities that exist from the local road network and existing forestry tracks for the delivery of materials to site.

6.4 Baseline Alignment

6.4.1 The Baseline Alignment for Section 1 was developed by an OHL contractor on the basis of it being the most technically feasible and economically viable alignment and design solution. The Baseline Alignment for Section

1 is shown on Figures 2.1.1a to 2.1.1b. Within this section the Baseline Alignment is typically routed adjacent to the existing OHL (which would be removed) with the exception of the following areas:

- Loch Connan: due to local landform and topography, the Baseline Alignment deviates by approximately 250 m from the existing OHL; and
- Glenmore / Mugeary; here the alignment deviates from the existing 132 kV OHL and passes across open moorland at Achaleathan before following the eastern edge of Tungadal Forest. The primary driver for this has been to reduce landscape and visual effects, particularly from properties at Glenmore and Mugeary. On approach to Mugeary, the Baseline Alignment follows the contour around the lower slopes and crosses through the forest block to the west of Mugeary. South of Mugeary, the Baseline Alignment crosses back to the east of the existing OHL.

6.5 Alignment Options Appraisal

6.5.1 As part of the iterative alignment selection process, a review of the Baseline Alignment and potential variants has been carried out by the SSEN Transmission environmental and engineering teams, and environmental consultants, in close collaboration with the OHL Contractor. A summary of the key elements of this review is provided below.

Baseline Alignment (Environmental Considerations)

Natural Heritage

- 6.5.2 Within this section, the Baseline Alignment would pass through approximately 1 km of the Cuillins Special Protection Area (SPA), for which golden eagle is a qualifying feature, as it runs to the east of Glen Varragill Forest. As the Baseline Alignment would generally follow the existing OHL through this part of the SPA, through a lower lying area and adjacent to plantation forestry, it is considered that the Baseline Alignment should present a low risk to golden eagles. Further discussion on the Cuillins SPA with respect to Section 2 and 3 of this project is included in Chapters 7 and 8 of this Consultation Document.
- 6.5.3 The Sligachan Peatlands Special Area of Conservation (SAC) / Site of Special Scientific Interest (SSSI) is located to the west of the A87 on approach to Sligachan, but as the Baseline Alignment is located to the east of the A87 in this area direct impacts on this designation would be avoided. The Baseline Alignment would cross watercourses that are upstream of the SAC/SSSI, and appropriate mitigation to avoid silt and pollution entering these watercourses during construction would be required to avoid indirect effects on the SAC/SSSI.
- 6.5.4 The Baseline Alignment would traverse areas of blanket bog, wet heath, wet modified bog, dry modified bog and small patches of acid grassland habitats. There is the potential for areas of deeper peat and priority peatland habitats, particularly across the moorland at Achaleathan and to the west of Glenmore. The Carbon and Peatland Map 2016 identifies areas of Class 1 peatlands in this section. Peat probing along the route of the Baseline Alignment within Section 1 has confirmed that peat depths are often below 1 m, albeit there are some areas where deeper peat exists. One of these areas is where the OHL would cross the moorland at Achaleathan. Here, peat depths generally exceed 2 m, and in some places are greater than 4 m. Much of this is also intact and active blanket bog habitat.
- 6.5.5 Known ornithological sensitivities include white-tailed eagle, golden eagle, hen harriers, red-throated diver and greenshank, all of which frequent the area. Nest sites for some of these species are known to exist within the wider area and bird survey work has been continuing through 2021 to inform alignment selection, and to further inform appropriate mitigation measures. Moorland breeding bird surveys within this section between May and July 2021 detected greenshank, golden plover and curlew within the area, and flights of white-tailed eagle and red throated diver. Flight activity surveys for golden eagle and white-tailed eagle have been carried out in 2021, supplementing existing survey data. Flights of both species were recorded throughout this area. A focus on

identifying known nest sites for birds of conservation concern during 2021 surveys has helped inform the alignment selection process.

- 6.5.6 The Baseline Alignment passes the north eastern tip of a surface water drinking protection zone supplying Bracadale, and private water supply infrastructure could be present in limited areas throughout the section. Further review of water supply sources and infrastructure will be required to assess potential effects and inform appropriate mitigation measures through the EIA stage of the project.

Landscape and Visual

- 6.5.7 Whilst the Cuillin Hills NSA designation does not extend into this section, the Cuillin mountains form a notable focus of views from areas within Section 1 and the appreciation of the NSA in views from this area is a recognised Special Quality of the NSA.
- 6.5.8 More generally across this section, the patchwork landscape of moorland and forest is considered to provide reasonable opportunity to accommodate this type of development if well aligned.
- 6.5.9 Visual receptors comprise residents of crofting properties at Glenmore and Mugeary where properties are mostly orientated to take advantage of elevated westerly views across the valley. The Baseline Alignment, situated along the edge of the forest would help to mitigate potential significant visual effects from visual receptors at Glenmore, given the distance and the backcloth effect of the forest, despite being in the main view. At Mugeary, the landform results in the Baseline Alignment being closer to properties. Although closer, this Baseline Alignment reduces the potential for skylining in views from these properties. This is illustrated in the visualisation included with this Consultation Document (see VP 6, contained in Figure 4.1.2 a-c). A further visualisation of relevance to this section is included with this Consultation Document in VP 5 (contained in Figure 4.1.1 a-c), near Glen Vic Askill.
- 6.5.10 Residents, visitors and tourists utilising the local road network would gain views of the Baseline Alignment, particularly the A87 between Portree and Sligachan, and the B885, crossing between Bracadale and Portree.

Cultural Heritage

- 6.5.11 In this section, Dun Arkaig Broch Scheduled Monument is located approximately 1.3 km from the Baseline Alignment at its closest point, as illustrated in VP 5 (contained in Figure 4.1.1 a-c), included with this Consultation Document. No likely significant effect on the setting of these assets as a result of the Baseline Alignment is anticipated.
- 6.5.12 Few non-designated heritage assets have been recorded within the vicinity of the Baseline Alignment, partly reflecting the upland nature of the landscape and partly a lack of archaeological investigation. Recorded features are mostly post-medieval, such as buildings, field boundaries, and cultivation remains. Direct impacts on these should be avoided through micro-siting.

Other Environmental Considerations

- 6.5.13 Agriculture in this section, and intersected by the Baseline Alignment, predominantly consists of rough grazing, dominated by plant communities of low grazing value.
- 6.5.14 Forestry includes plantations at Glen Vic Askill, Glen Tungadal and Glen Varragill. The Baseline Alignment would avoid felling any plantation forestry at Glen Vic Askill, but would require a new wayleave through approximately 1 km of the eastern block of Glen Tungadal forest at Mugeary. Similarly, the Baseline Alignment

would require some limited felling and the creation of a short new wayleave through Glen Varragill as the Baseline Alignment crosses the A87.

6.5.15 Core paths include the Loch Caroy to Glen Vic Askill Core Path. Public access to paths during construction, and in the longer term, would be considered further during the EIA stage of the project, and appropriate mitigation measures developed.

6.5.16 The northern part of the Baseline Alignment is within the vicinity of the consented Glen Ullinish Wind Farm. There are no current planning applications or areas allocated for future development in direct conflict with the Baseline Alignment within this section.

Variants (Environmental Considerations)

6.5.17 A number of variants to the Baseline Alignment have been considered to either mitigate a potential effect, or to provide an alternative for consideration by the project team during the selection of a preferred alignment and design solution. These variants are set out in Table 6.1 and shown on Figures 2.1.1a to 2.1.1b. The potential environmental constraints and opportunities of these variants in comparison to the Baseline Alignment, and with regard to the environmental topic areas set out in SSEN Transmission's routeing guidance¹⁹, is discussed in more detail in Appendix 3 (see also Figures 2.1.2a to 2.1.3b).

Table 6.1: Variants: Section 1

Variant	Description	Variant Taken forward? (Y/N)
<i>Variant 1-A (Edinbane to Glen Vik Askill Forest)</i>	<p>This variant has been proposed to maintain sufficient clearance distances from the consented Glen Ullinish Wind Farm which are not achieved with the Baseline Alignment. This would require a new wayleave to be created through forestry at Glen Vic Askill.</p> <p>Given the technical requirement to maintain sufficient clearance distances from the consented Glen Ullinish Wind Farm, this variant is preferred.</p>	Y
<i>Variant 1-B (Achaleathan)</i>	<p>This variant has been proposed following additional NVC surveys and a peat probing exercise throughout Section 1, which identified areas of blanket bog and deep peat along the Baseline Alignment across moorland at Achaleathan. This necessitated a change to the Baseline Alignment to minimise effects on peatland habitats and avoidance of areas of deeper peat where practicable. Whilst further review of this variant will be required during the EIA process to minimise effects on deeper areas of peat and peatland habitats, this variant is preferred over the Baseline Alignment.</p>	Y
<i>Variant 1-C (Glenmore / Mugeary)</i>	<p>This variant would run adjacent, and to the west of the existing OHL, passing in front of properties at Glenmore and Mugeary.</p> <p>It presents a viable alternative to the Baseline Alignment and would reduce effects on sensitive habitats and areas of deeper peat at Achaleathan. It would however result in likely significant landscape and visual effects at Glenmore and Mugeary, and as such the Baseline Alignment is preferred.</p>	N

Variant	Description	Variant Taken forward? (Y/N)
<i>Variant 1-D (Glenmore / Mugeary)</i>	<p>This variant, to the east and to the rear of properties at Glenmore and Mugeary, was primarily considered in relation to the potential landscape and visual effects of an OHL alignment in this area.</p> <p>It was deemed that such an alignment would result in likely significant landscape and visual effects at Glenmore and Mugeary. As such, the Baseline Alignment is preferred.</p>	N
<i>Variant 1-E (Glen Varragill Forest)</i>	<p>This variant was considered as it takes a shorter and more direct route through the Glen Varragill Forest plantation, either side of the A87. This variant would require the creation of a new wayleave. The Baseline Alignment was preferred as it would minimise felling.</p>	N

6.6 Preliminary Consultation Feedback

6.6.1 During the alignment selection process, workshops have been held with statutory consultees to seek feedback on alignment options and design solutions for the project. A summary of the feedback provided in relation to Section 1 is provided below:

- The Highland Council highlighted that the Baseline Alignment crosses the Loch Caroy to Glen Vic Askill Core Path (also part of Wider Path Network path). Public access will therefore need to be considered and accommodated during construction works, and where longer term access is required;
- NatureScot highlighted that the Baseline Alignment crosses watercourses that are upstream of the Sligachan Peatlands SAC and SSSI, avoiding silt and pollutants entering these watercourses will be key. Also highlighted by NatureScot was Class 1 peatland habitat within much of Section 1. NatureScot recommended peat and vegetation surveys to guide the siting of infrastructure and construction tracks;
- HES confirmed they were content that significant impacts on the setting of Dun Arkaig Broch Scheduled Monument are not likely as a result of the Baseline Alignment; and
- Forestry Land Scotland and SEPA made no specific comment on Section 1.

6.6.2 Appendix 4 provides further detail on the responses received, and how these have been addressed and considered during the alignment selection process.

6.7 Preferred Alignment and Design Solution

6.7.1 In selecting the preferred alignment and design solution for this section, consideration has been given to a variety of environmental, technical and cost considerations, as detailed above, as well as the preliminary consultation responses received from statutory consultees. On balance, it was determined that Variant's 1-A and 1-B would be taken forward given the requirement to ensure sufficient clearance distances to the consented Glen Ullinish Wind Farm (Variant 1-A) and minimising effects on deeper areas of peat where practicable (Variant 1-B), in combination with the Baseline Alignment in all other areas. The existing wood pole OHL would be removed upon completion. The preferred alignment and design solution is shown on Figure 3.1a to 3.1b.

7. SECTION 2 – NORTH OF SLIGACHAN TO BROADFORD SUBSTATION

7.1 Introduction

7.1.1 As has been noted previously, whilst a preferred route for Section 2 was identified within the Consultation Document at route options stage (March 2020)², given the consultation responses received and the environmental sensitivities and technical challenges present within this section, further engineering and environmental review of available options has been required prior to identifying a proposed route and design solution.

7.1.2 This Chapter will set out the key environmental considerations, alternative technology and route options considered for this section of the project, prior to exploring alignment options and confirming the proposed route, preferred alignment and design solution within Section 2.

7.1.3 Figures and visualisations prepared as part of this Consultation Document of relevance to this section include:

Figures

- Figure 2.2.1a to 2.2.3b: Section 2: Baseline Alignment, Variants, Environmental Designations and Constraints
- Figure 3.2a to 3.2b: Section 2: Preferred Alignment and Design Solution

Visualisations

- Figure 4.2.1 (a-d) VP7 – A87 at Sligachan Camp Site
- Figure 4.2.2 (a-d) VP8 – A87 in Gleann Torra-mhichaig
- Figure 4.2.3 (a-d) VP9 – Moll Minor Road near Kinloch Ainort
- Figure 4.2.4 (a-d) VP10 – A87 overlooking Loch Ainort

7.1.4 Appendix 5 (LVA of OHL Baseline Alignment within Section 2) is also of direct relevance to this section.

7.2 Summary of Key Environmental Considerations

7.2.1 Section 2 is characterised by the mountains of the Black and Red Cuillin ranges which rise steeply from the shore providing a prominent landscape and visual focus, and the long fjord-like sea-lochs of Loch Sligachan and Loch Ainort which cut deeply inshore to the feet of the mountains. This is a sensitive and dramatic landscape and the accessibility provided by the A87 trunk road, which winds around the bases of the mountains and around the heads of the lochs, results in this area being highly popular with tourists and visitors.

7.2.2 The majority of the preferred route follows the A87 and skirts the edge of the Cuillin Hills National Scenic Area (NSA) and Cuillins Wild Land Area (WLA). In terms of an overhead solution, although the steel lattice towers would replace existing wood poles, the greater prominence of these structures in relation to the sensitivity of the landscape is considered likely to result in significant landscape effects. It is considered that structures may be distracting in valued mountain views and may lead to a barrier effect across the base of the mountains, particularly when seen from the A87.

7.2.3 New OHL structures would be potentially visible to the rear of properties at Sconser, Luib and Strollamus and would be potentially prominent and distracting in views from parking laybys and tourist sites along the A87 at

Loch Sligachan and Loch Ainort, from Peinachorrain and from the Raasay Ferry on the approach to Sconser. There is the potential for some of these visual effects to be significant (see Appendix 5).

- 7.2.4 The preferred route would also pass through the Cuillins SPA for much of its length, for which golden eagle is a qualifying feature (supporting 8 pairs). However, as the route would generally follow the existing line it is considered that a new OHL replacing the existing OHL should present fewer potential risks to golden eagles.

Preliminary Consultation Feedback

- 7.2.5 During the alignment selection process, workshops have been held with statutory consultees to seek feedback on alignment options and design solutions for the project. A summary of the feedback provided in relation to Section 2 is provided below:
- The Highland Council and NatureScot both suggested it was important to consider subsea and underground cable options, and the potential use of NeSTS, and for information on these options to be provided in order for consultees to understand how these have been fully explored;
 - The Highland Council also highlighted that the preferred route crosses a number of core paths, rights of way and wider path network paths;
 - NatureScot suggested that an assessment of the Special Qualities of the NSA should be carried out on alignment options to tease out the differences; and
 - NatureScot highlighted the crossing of Loch Sligachan, around Glamig and the head of Loch Ainort as key areas where alternatives should be explored.

- 7.2.6 Appendix 4 provides further detail on the responses received, and how these have been addressed and considered during the alignment selection process.

7.3 Alternative Technology Options

- 7.3.1 Given the sensitive nature of this section, and to mitigate likely significant landscape and visual effects, further review into alternative design solutions has been undertaken in order to find an acceptable route, alignment and design solution through this section. This has included investigating the feasibility of cabling options within this section (both subsea and land), as well as the potential to use alternative steel structures (NeSTS) in targeted areas (e.g. at the heads of lochs). This review is summarised below and has enabled a fuller understanding of the technical viability, environmental impact and cost of such options, in comparison with a steel lattice OHL.

NeSTS

- 7.3.2 New Suite of Transmission Structures (NeSTS) are a series of steel pole structures that have been developed as part of a Network Innovation Competition (NIC) innovation project to design an OHL structure that aims to lower the environmental impact of OHLs. The design of these structures has been developed in close consultation with key statutory bodies, utilising visualisations and 3d modelling to seek comment on their appearance and potential utilisation on the transmission network.
- 7.3.3 The use of NeSTS has been considered in Section 2 between Sligachan and Broadford as an alternative design solution to the steel lattice OHL.
- 7.3.4 The technology comprises of a series of pole sections making up the main body of the structure, with the cross arms that hold the conductor and associated fittings/components, attached to the top section. The pole is made up from sheet steel folded on a press plate with 12 sides to a pole, each section is lifted into position with a crane and positioned over the one below with an overlap on the taper to create a slip joint. The joint is pulled

together with hydraulic pulling rams to a predetermined stress, using gravity and friction to keep each joint in place. Typically, a pole suitable for the Skye circuit would have 3 sections. **Plate 7.1** provides an example of a NeSTS pole.

Plate 7.1: Example of NeSTS pole with larger 400m+ spans



- 7.3.5 The construction toolset for NeSTS is similar to that of lattice towers, and requirements for access tracks, foundation types and environmental constraints are weighed up to develop the optimum alignment through the design phase.
- 7.3.6 The NeSTS structures have been designed to enable larger spans, and therefore to enable OHLs to comprise fewer structures in response to stakeholder request.
- 7.3.7 The installation of NeSTS poles within this area would be a viable alternative in technical terms to a steel lattice OHL, and the longer span lengths that are possible with the NeSTS poles would enable more direct alignment options around the heads of Lochs Ainort and Sligachan to be explored.
- 7.3.8 Whilst the NeSTS option could offer some advantages to the steel lattice OHL solution in terms of increased span lengths to navigate challenging terrain through this section, and result in fewer structures in an OHL design, it is considered that both NeSTS and steel lattice OHL structures would likely result in significant landscape and visual effects on the Cuillins National Scenic Area, and that these effects could justify the increased cost to customers and increased substation footprints required for an underground cable solution.
- 7.3.9 Whilst the use of taller towers with a wider span would theoretically lead to fewer towers within the NSA and surrounding areas, the more solid appearance of the NeSTS towers would have similar, if not more prominence than the steel lattice towers in the landscape. Taller towers of either structure type would continue to form a barrier effect around the edge of the NSA and in views from the A87 and settlement areas featuring the mountains and coast. In addition, the taller towers would have greater potential to skyline in views and to reduce the apparent scale and grandeur of the landscape.

7.3.10 The NeSTS option is therefore not being progressed as an alternative design solution within Section 2 as it would not mitigate likely significant landscape and visual effects on the NSA and other receptors.

7.3.11 Further consultation with stakeholders on the NeSTS poles has commenced separately following the completion of the NeSTS trial OHL at Loch Cuaich in 2021.

Wood Pole OHL

7.3.12 To replace the existing 132 kV wood pole with another wood pole solution that met the capacity requirements of the Skye Reinforcement Project would require the construction of four double trident wood poles. This was not deemed a practicable alternative on technical or environmental grounds due to topography, the constrained nature of this section and likely significant environmental effects (in particular landscape and visual effects). This alternative design solution was therefore not considered further.

Underground Cables

7.3.13 Underground cable technology has been used within SSEN Transmission and the wider UK transmission industry for many years. Key considerations in relation to its installation relate to topography, ground conditions, access and other environmental considerations (e.g. watercourse crossings, sensitive habitats etc.), as well as the requirement for reactive compensation at connected substations.

7.3.14 The viability of an underground cable as an alternative design solution within part of Section 2 of the Skye Reinforcement Project has been informed by feasibility studies and walkover surveys by specialist cable engineers to evaluate its constructability.

7.3.15 An underground cable solution for this project would comprise of a double circuit, with a cable rating required to match the corresponding OHL at 348 Mega Volt Amps (MVA). The cables would be terminated at a Cable Sealing End (CSE) compound, which would allow for transition between underground cable to OHL (an example is shown in Plate 7.2 below). A permanent access track would be required at each CSE compound.

Plate 7.2: Example of a Cable Sealing End Compound



- 7.3.16 The overall cable construction corridor would need to be approximately 30 m wide to accommodate excavation and cable installation equipment and store excavated materials during construction for reinstatement once the installation process is complete. A haul road would be constructed along the length of the cable section during the construction phase, with the circuits installed on either side. Similarly, access points and tracks from existing public roads to the proposed haul road would likely be required.
- 7.3.17 To facilitate a more efficient installation cables would be installed via ducts. These plastic ducts would be installed prior to the cable pull job to minimise open ground works / excavations. The high voltage cable would then be pulled into place at each joint bay location, required at intervals of approximately 800-900 m along each cable circuit route.
- 7.3.18 The installation of an underground cable within Section 2 would present a number of technical and environmental challenges, a summary of which are noted below:
- Potential effects on the surface water and hydrogeological regime, and subsequent effects on Groundwater Dependent Terrestrial Ecosystems (GWDTE);
 - Effects on soils and peat. Ground conditions are likely to be variable throughout Section 2, with rock close to the surface in some areas, and deeper areas of peat in others. Such conditions would need to be established prior to finalising a cable route, and areas of deeper peat avoided as far as practicable;
 - A number of watercourse crossings would be required, including at the heads of Loch Sligachan and Loch Ainort. It is likely these would be achieved by Horizontal Directional Drill (HDD);
 - During construction the establishment of a 30 m wide cable corridor would result in disruption to predominantly wet heath and some bog habitats, which are found throughout Section 2;
 - Potential for landscape and visual effects during the construction phase, albeit these should be short term, subject to appropriate and carefully planned reinstatement; and
 - In areas where the cable route would be within the vicinity of the A87, or require crossing the road (or other minor roads), there would likely be a requirement for road closures and traffic management systems to be put in place.
- 7.3.19 The mitigation of these effects during construction would be key to the success of an underground cable route within part of Section 2 of the Skye Reinforcement Project. It is anticipated that standard and best practice mitigation measures in relation to the construction effects of an underground cable would be covered in a project specific Construction Environment Management Plan (CEMP) and Construction Method Statements, that would be developed in accordance with industry best practice guidance, including Pollution Prevention Guidance (PPGs). A Peat Management Plan and Site Restoration Plan would also be required to set out procedures for stripping, handling, storage and re-use of soil and peat. Drainage design of the temporary haul road would also require careful consideration to preserve the natural hydrological regime as much as possible. This would be set out in the Construction Method Statements. Where interaction with the local road network occurs, a Traffic Management Plan would be required.
- 7.3.20 Other technical and economic factors to consider include:
- Fault finding, which is typically more complex, time consuming and costly on underground cable systems in comparison to OHLs. General visual inspection and maintenance is more challenging as accessibility is naturally restricted;
 - Power losses, which can be a key consideration and limiting factor in terms of the maximum length of an underground cable solution that could be installed. Initial studies have suggested that reactive compensation measures (comprising additional works at linked substation sites (i.e. Edinbane and

Broadford), consisting of a similar installation to a new grid transformer and associated bay) would be required to facilitate an underground cable route of greater than 7 km in this section; and

- Due to higher installation costs compared to an OHL, and the requirement for reactive compensation measures at substation sites on the transmission network, an underground cable solution would result in a considerable increase in the cost of the project as a whole.

7.3.21 Despite the number of constraints and challenges associated with the installation of an underground cable, as well as additional cost, an underground cable solution would provide the opportunity to mitigate the long term likely significant landscape and visual effects of an OHL solution through parts of Section 2, in particular the likely significant effects on the Cuillins National Scenic Area and on other landscape and visual receptors within the vicinity (see Appendix 5).

7.3.22 Further consideration of an underground cable solution has therefore been undertaken during the detailed alignment selection process, and is discussed further in this Chapter.

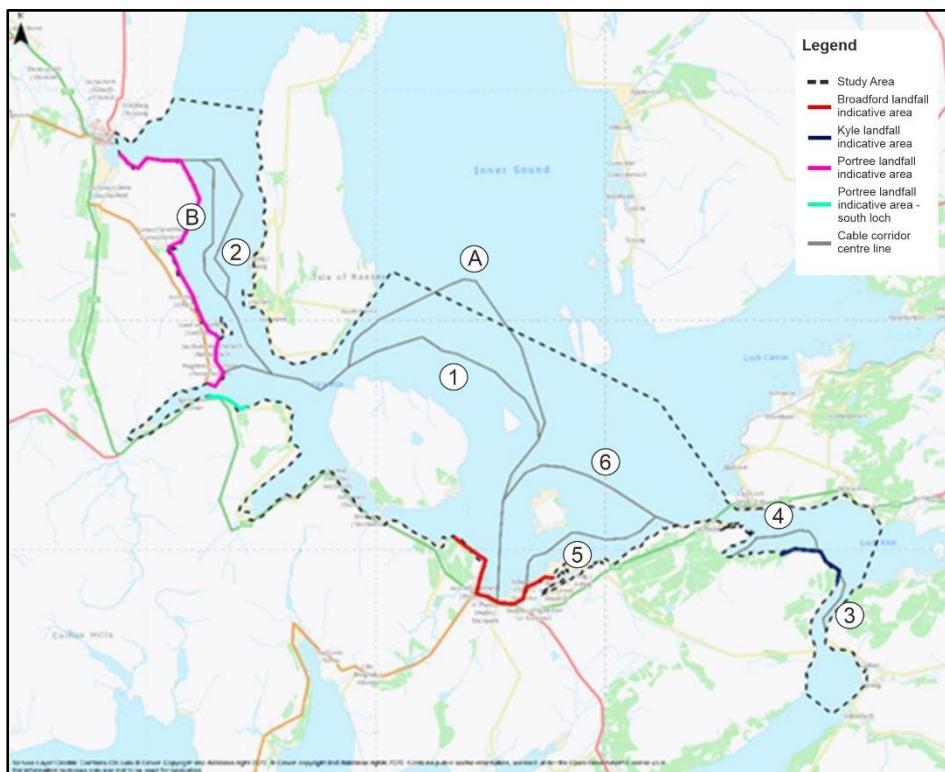
Subsea Cables

7.3.23 A desktop study of potential subsea cable options and indicative landfall locations has been undertaken between Portree and Broadford on the Isle of Skye, covering much of Section 2 of the Skye Reinforcement Project. Consideration was also given to potential subsea cable options between Broadford and Kyle Rhea (i.e. Section 3 of the Skye Reinforcement Project), and this is summarised in Chapter 8 of this Consultation Document.

7.3.24 The desktop study included a review of a wide variety of data, covering the physical environment, environmental and ecological factors, and other sea users. Following this, identification and charting of potential subsea cable routes and constraints were mapped and assessed, with potential for mitigation or avoidance of particular constraints considered.

7.3.25 Plate 7.3 shows indicative landfall locations and cable routes covering both Section 2 and 3.

Plate 7.3 – Indicative Landfall Locations / Subsea Cable Routes

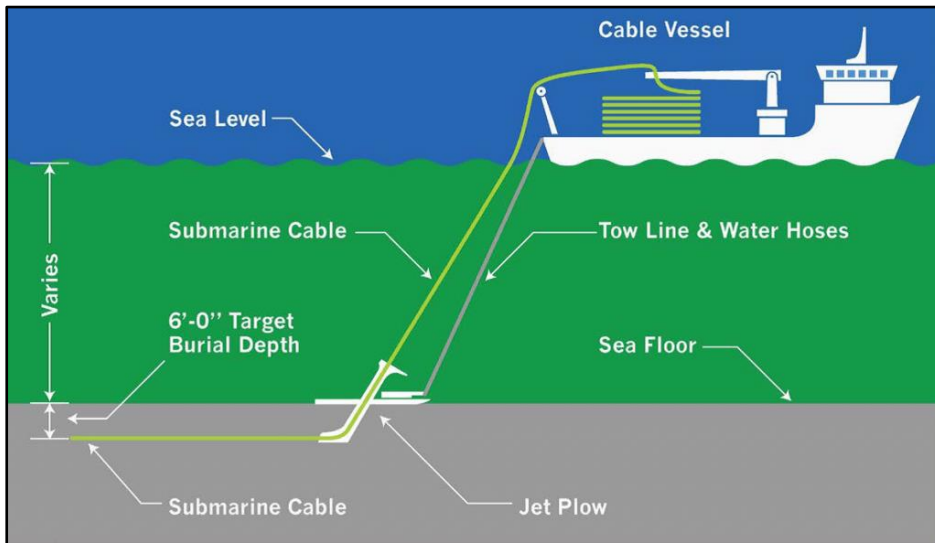


7.3.26 A subsea cable solution for this project would comprise of a double circuit, with a cable rating required to match the corresponding OHL at 348MVA. This would either involve four 132 kV cables, requiring CSE compounds (see **Plate 7.2**) at either landing point location, or two 220 kV cables which, due to the rating change required, would mean the electrical equipment required to step the voltage up and down at the transition point between OHL and subsea cables would be similar in scale to a 132 kV transmission substation site.

7.3.27 There are a few key technical parameters to consider when assessing the suitability of subsea cable routes. The first of these is water depth. Due to the repair criteria a separation distance must be a minimum of 1.5 x water depth, so the deeper the cable is installed the greater the separation requirements between different circuits. Second is the thermal rating of cable circuits in shallow water, which could affect the cable cross section required. Third is the interface with other sea uses, particularly fishermen, as installing subsea cable in areas of higher activity increases the risk of anchor strike in shipping lanes. Lastly are the seabed conditions, which will determine the required burial depth on the sea floor and method of cable protection if required burial depths cannot be met via typical methods.

7.3.28 Submarine cables are generally installed by a cable laying ship with the aid of robots used to control cable laying on the sea bed. Due to their cost to install and strategic value, high voltage electrical cables are generally buried on the sea floor to protect them from general wear and risk of damage. There are various techniques used to undertake this, with popular methods being hydro jet burial or ploughing. **Plate 7.4** shows a diagram of the process using a cable plough.

Plate 7.4 – Subsea Cable Installation Method



7.3.29 Table 7.1 provides a description of the subsea cable routes considered, the key constraints and overall suitability. The subsea cable routes within Section 2 comprise two main routes (referred to as Option 1 and Option 2 below), and two alternative sub-options (referred to as Sub-option A and B below). Sub-options do not form options in their own right, but form alternative options within each of the two main routes.

Table 7.1: Subsea Cable Options between Portree and Broadford

Subsea Cable Option	Description of Route	Constraints	Overall Suitability
Option 1 Broadford – north of Scalpay –	Water depths vary between 25 m and 104 m though data coverage is incomplete. Bathymetry indicates large areas of exposed bedrock, with	Major constraints concern the MPA, both in terms of its qualifying features (flapper skate) and the potential to result in a barrier effect	Low

Subsea Cable Option	Description of Route	Constraints	Overall Suitability
Peinchorran (24 km in length)	<p>some accumulation of sediments in depressions. North of Pabay the seabed becomes irregular with high gradients associated with marine escarpments. Mapped tidal velocities peak at 3 knots.</p> <p>This route passes through the Red Rocks and Longay Urgent Marine Protected Area (MPA), and the Inner Hebrides and the Minches SAC. It also crosses areas of identified biogenic reef.</p> <p>A historic munition's disposal site is located approximately 800 m to the northeast of the cable corridor centre line in an area of deep water.</p>	<p>for elasmobranch species as a result of Electromagnetic Field (EMF) avoidance behaviour. In addition, there is the potential for adverse effects on embryonic flapper skate, alongside a number of other likely pressure pathways.</p> <p>Other constraints concern topography and geology, particularly from Broadford to north of Pabay where the presence of Jurassic sandstone at seabed will likely preclude subsea cable burial for parts of this route.</p> <p>The munitions disposal site also presents a major potential risk to cable installation works.</p>	
<p>Option 2</p> <p>Broadford – north of Scalpay – Portree (34.5 km in length)</p>	<p>As per Option 1, until deviation north towards Portree through Sound of Raasay.</p> <p>Through the Sound of Raasay, water depths vary between 19 m and 80 m though data coverage is incomplete. Bathymetry indicates large relatively smooth seabed and sandy mud within the Sound of Raasay. Mapped tidal velocities peak at 3 knots.</p> <p>The route crosses the Skye - Raasay SSEN Distribution subsea power cable.</p> <p>Low density of commercial fisheries, but shipping activity around Peinchorran and Portree is higher than elsewhere in the study area.</p>	<p>Major constraints similar to those identified for option above and concern the MPA, topography and geology north of Pabay.</p> <p>Within the Sound of Raasay, the seabed is generally smooth and more gently angled, with depressions in the centre of the channel indicating gas or fluid release.</p>	Low
<p>Sub-Option A</p> <p>North of Scalpay northern extension (15 km in length)</p>	<p>Water depths range between 28 m and 180 m. Between Longay and Pabay, water depths increase with areas of seabed of moderate to steep gradients. Further north the areas of deeper water are characterised by smooth seabed (indicating a sandy or muddy bottom) between steep-sided</p>	<p>Major constraints concern the MPA, both in terms of its qualifying features (flapper skate) and the potential to result in a barrier effect for elasmobranch species as a result of EMF avoidance behaviour. In addition, there is the potential for adverse effects on embryonic</p>	Low

Subsea Cable Option	Description of Route	Constraints	Overall Suitability
	<p>escarpments. Mapped tidal velocities peak at 3 knots.</p> <p>An historic munition's disposal site is located approximately 500 m to the east of the cable route.</p> <p>The route passes through the Red Rocks and Longay Urgent MPA and is entirely within the Inner Hebrides and the Minches SAC</p> <p>This route option also encroaches into the Sound of Raasay Ministry of Defence (MoD) Exercise and Danger Area, and a moderate density of commercial fisheries is present in the area with high value potting activity. Fishing activity is likely to be more prevalent within the deeper water channels.</p>	<p>flapper skate, alongside a number of other likely pressure pathways.</p> <p>The proximity of the munitions disposal site also presents a major potential risk to seabed works.</p> <p>Constraints associated with the Sound of Raasay MoD Exercise and Danger Area would require further investigation.</p>	
<p>Sub-Option B</p> <p>Sound of Raasay deep water channel (6.8 km in length)</p>	<p>An alternative deep-water route within the Sound of Raasay, with water depths ranging from 47 m to 123 m.</p> <p>Whilst BGS data coverage is incomplete, seabed substrate is interpreted as sandy mud across much of the route within the deep-water channel., with gentle to moderate gradients. Mapped tidal velocities peak at 3 knots.</p> <p>This route option is entirely within the Inner Hebrides and the Minches SAC. The route also crosses the Skye - Raasay SSEN Distribution subsea power cable. A low density of commercial fisheries is present in the area. Shipping activity around Peinchorran and Portree is higher than in much of the study area.</p>	<p>Given the less challenging topography and the absence of designated areas, from a cable installation perspective this route potentially poses fewer constraints than other route options and, thus, is considered as having Medium suitability.</p>	<p>Medium</p>

7.3.30 The results of the study indicated that subsea cable installation in Section 2 is likely to be very challenging, with a variety of adverse factors that include strong tidal currents, designated marine habitats, areas of rugged/complex bedrock at seabed, a historic munitions disposal site and a MoD Exercise and Danger Area. Commercial fisheries in the area will also need to be taken into consideration. Recent identification of the

flapper skate nursery and designation of the Red Rocks and Longay Urgent MPA provide further constraints to a number of potential subsea cable routes.

- 7.3.31 It was concluded that none of the subsea cable options discussed above would be considered suitable for subsea cable installation when considered in combination. Whilst Sub-Option B is considered as having medium suitability, it requires to be combined with a main route to form a complete subsea route option. As such, it is not proposed to give further consideration to subsea cable as an alternative design solution within Section 2.

7.4 Consideration of Alternative Route Option

- 7.4.1 As noted in the Consultation Document at route options stage (March 2020)²⁷ and in parallel with the review of alternative design solutions noted above, consideration has also been given to how such solutions could be applied to an alternative route option; Route Option 2B. This route option departs from Route Option 1A to the south of Glen Varragill Forest, crossing moorland to the north of Ben Lee before heading south to Peinchorran, crossing Loch Sligachan before re-joining Route Option 2A. The potential for an alternative crossing point at Loch Ainort has also been given consideration.
- 7.4.2 The focus of considering Route Option 2B and the alternative crossing point at Loch Ainort has been the crossing of Loch Sligachan and Loch Ainort, given that these would be the most technically and environmentally challenging aspects of this alternative route option.
- 7.4.3 Two types of technology were considered to cross the lochs. Firstly, using large steel crossing towers in order to span the entire distance with OHL, and secondly, with use of Hydraulic Directional Drill (HDD) in order to install cables under the sea loch bed and connect to OHL towers at each side. Direct burial via laying of subsea cables into the sea floor was not considered as feasible due to the shallow water depth (<20m) presented at the loch crossings, with large areas of the seabed graded as unsuitable in these areas.

Loch Crossing Using Towers

- 7.4.4 The crossing of Loch Sligachan for the alternative route option (Route Option 2B) would be close to the mouth of the loch making use of two prominent elevated positions on either side at Peinachorran and Sconser to allow for clearances to be maintained that allow vessels to pass safely under the conductors. The towers would have to be of a specialist design in order to meet the crossing requirements of the loch, with the span being around 1200 m. The towers would need to be circa 90 m in height at either side of the loch, with a smaller reinforced anchor tower situated behind the crossing towers to provide the required support. The indicative location for crossing Loch Sligachan as part of Route Option 2B is shown in Plate 7.5.
- 7.4.5 An alternative crossing of Loch Ainort has been considered near to the mouth of the loch. This is the narrowest point of the loch but would require a crossing of approximately 1500 m in length. This would require larger crossing towers of around 106 m in height. The indicative location for crossing Loch Ainort as part of an alternative crossing of the loch is shown in Plate 7.6.
- 7.4.6 Due to the size of crossing towers, large foundations would be needed in the form of concrete pours for each leg. In order to erect the towers a crane pad would also need to be constructed, meaning a flat area on either side of the lochs would need to be constructed to allow for a crane to lift the tower parts into place from a stable platform. Finally, the conductors would likely be installed with the help of cable drums, towing vessels and helicopters.

Plate 7.5 – Potential Overhead Crossing of Loch Sligachan

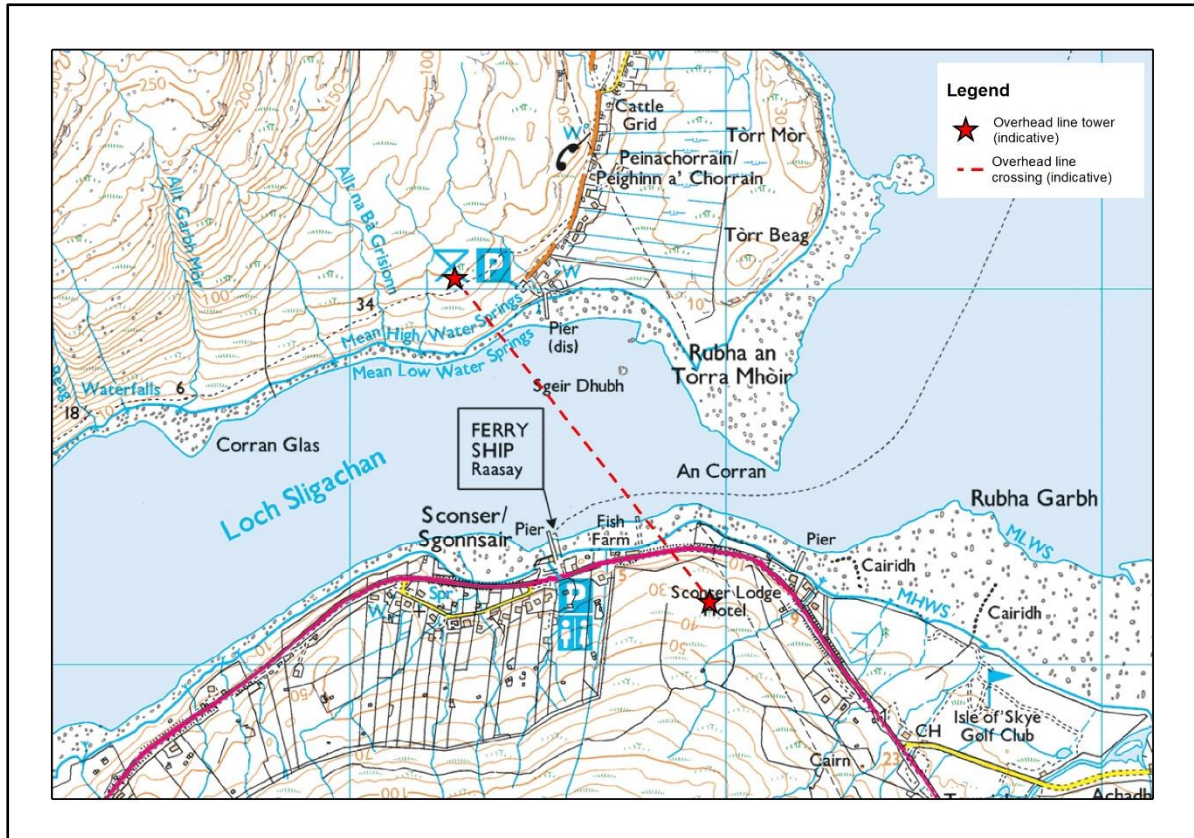
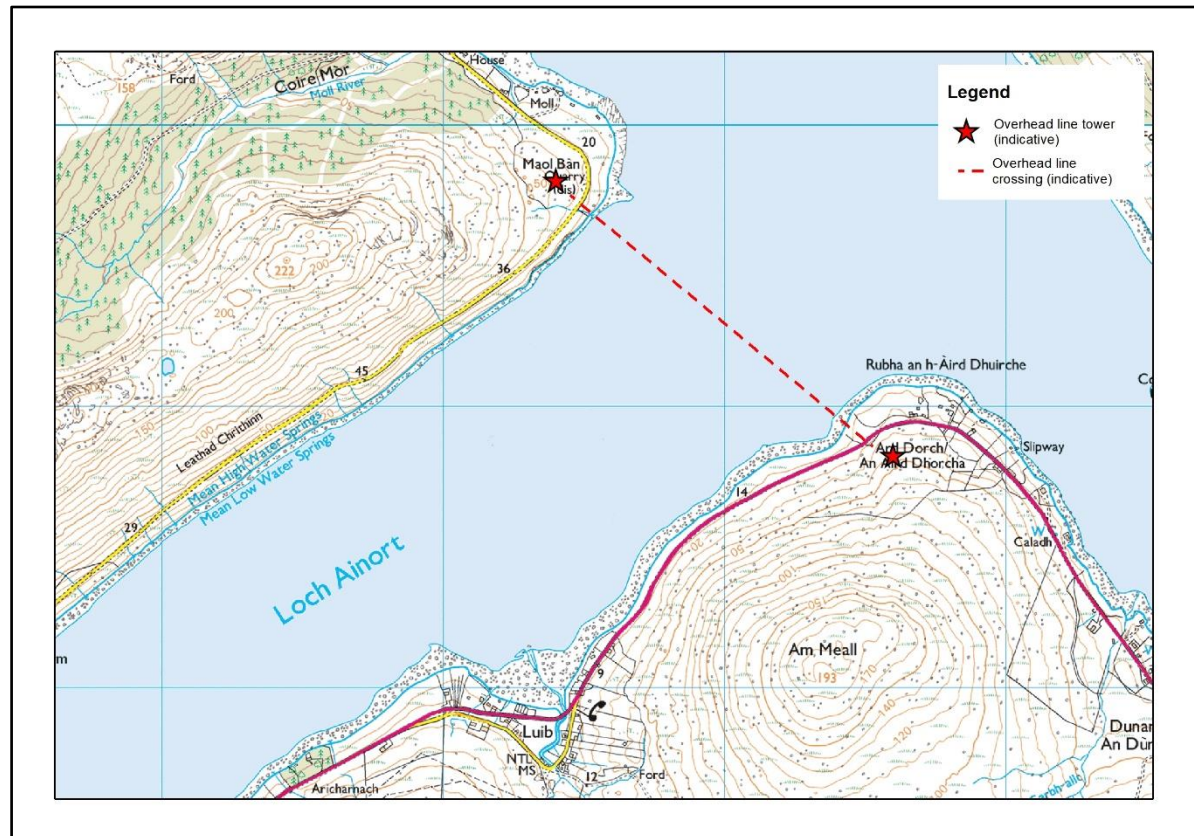


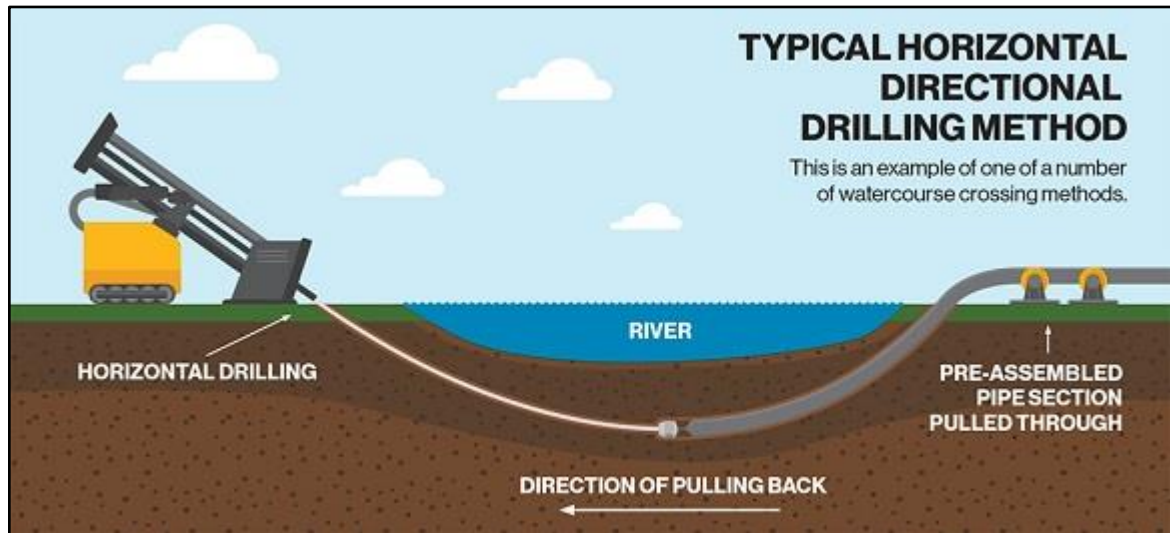
Plate 7.6 – Potential Overhead Crossing of Loch Ainort



Loch Crossing Using HDD

7.4.7 Horizontal Directional Drilling (HDD) is a method of installing underground pipelines, cables and service conduit through trenchless methods. It involves the use of a directional drilling machine, and associated attachments, to accurately drill along the chosen bore path and back ream the required pipe. See **Plate 7.7** below.

Plate 7.7 – Typical HDD method



7.4.8 The scale and complexity of undertaking this work at these loch crossings is a significant challenge. The crossing of Loch Sligachan at its narrowest point would mean that the HDD would surface on the north side of the loch in front of the settlement of Peinchorrain. From here there was little by way of a feasible method for routing an OHL or cable out of this location without having a direct impact on the settlement itself. The crossing of Loch Ainort is even more complex, requiring an HDD of approximately 1500 m, far beyond the scale of previous HDD works SSEN Transmission has undertaken on previous projects. Other key considerations to make in reference to an HDD option for crossing the lochs is the competency of bedrock presented for drilling and the risk of frack out of drilling fluids into the marine ecosystem, which would be very difficult to seal quickly with such long drilling lengths.

Summary

7.4.9 With respect to the crossing of both of these locations by tall overhead line towers, while technically feasible, it is considered that the scale of these structures would have a dominating effect in the local area and would undoubtedly result in likely significant effects on the NSA and other landscape and visual receptors throughout Section 2, and particularly for receptors at Peinchorrain, Sconser and Loch Ainort.

7.4.10 In terms of HDD use, given the distance of the loch crossings that have been considered, there are technical complexities, high risk and high cost involved in utilising this solution in these locations. The transition to OHL also presents technical challenges at these locations, and does not offer the opportunity to mitigate likely significant landscape and visual effects on the NSA and other landscape and visual receptors within Section 2.

7.4.11 Given these constraints, it is not proposed to consider this alternative route option further. As such, Route Option 2A is confirmed as the proposed route option (see sub-section 7.8).

7.5 Baseline Alignment

- 7.5.1 In parallel to the consideration of alternative design solutions within Section 2, the appointed OHL contractor developed a Baseline Alignment within the proposed route (Route Option 2A) on the basis of it being the most technically feasible and economically viable alignment and design solution.
- 7.5.2 The Baseline Alignment through Section 2 is typically routed adjacent to the existing OHL (which would be removed), reflecting the topography and constrained nature of this section. The OHL crossing at the head of Loch Sligachan, the descent towards Loch Ainort and a short section to the south of Luib all necessitated a slight departure from the existing OHL to facilitate the most technically viable option.

7.6 Technical Considerations and Construction Access

- 7.6.1 Section 2 comprises hilly terrain, with steep hillsides and rock encountered at shallow depths. Construction of stone access tracks would likely be the preferred method of accessing each tower location within this section as they offer the most robust means of providing access for the heavy construction plant required. Temporary trackway is not likely to be feasible for use across large areas in this section due to ground conditions, weight of construction vehicles and length of time trackway would need to be in place, all of which could result in an adverse effect on local habitats if trackway was used extensively. Temporary trackway may however be utilised in localised areas. Proximity to the A87 provides opportunities to minimise the length of new tracks from the local road network. Existing accesses would be utilised where possible.
- 7.6.2 The use of helicopters is not currently being considered for installation of OHL towers within this section of the project due predominantly to the proximity to the A87.

7.7 Alignment Options Appraisal

- 7.7.1 As part of the iterative alignment selection process, a review of the Baseline Alignment and potential variants has been carried out by the SSEN Transmission environmental and engineering teams, and environmental consultants, in close collaboration with the OHL contractor. A summary of the key elements of this review is provided below.

Baseline Alignment (Environmental Considerations)

Natural Heritage

- 7.7.2 The Baseline Alignment would pass through the Cuillins SPA for much of its length, for which golden eagle is a qualifying feature (supporting 8 pairs). As the Baseline Alignment would generally follow the existing OHL, it is considered that this would present limited risks to golden eagles.
- 7.7.3 High sensitivity habitats are extensive throughout this route, with large expanses of wet heath and smaller pockets of blanket bog in places, and potential for areas of deeper peat.
- 7.7.4 Otter, a European Protected Species, are likely to be present and using the coast, watercourses and waterbodies within the vicinity of the route.
- 7.7.5 As the area is underlain by an impermeable bedrock the majority of the water will be shed as surface water flow, hence a large number of fast flowing streams prevail along the entire route, all orientated perpendicular to slope and generally flowing into Loch Ainort or Loch Sligachan. It is anticipated there will be private water supplies and sources along the route.

Landscape and Visual

- 7.7.6 This section is a sensitive and dramatic landscape and the accessibility provided by the A87 trunk road, which winds around the bases of the mountains and around the heads of the lochs, results in this area being highly popular with tourists and visitors.
- 7.7.7 The majority of the Baseline Alignment follows the A87 and skirts the edge of the Cuillin Hills NSA and Cuillins WLA. Visual receptors in this section comprise residents located in settlement areas around Loch Sligachan at Sconser and Peinachorrain, around Loch Ainort at Luib, and south along the coast including Dunan and Strollamus. Tourism development at Sligachan is also highly sensitive including a hotel and campsite and there are numerous recreational routes leading into the mountains and around the coast which are used by walkers and cyclists. Transport receptors include those using the A87 and other rural roads, and the ferry between Sconser and Raasay. There are numerous stopping points and viewpoints set along these routes including parking bays around Loch Ainort and Loch Sligachan and a picnic area and viewpoint at Peinachorrain.
- 7.7.8 To inform the alignment selection process, a landscape and visual appraisal of the Baseline Alignment has been carried out to determine the likely significant effects on landscape and visual receptors within this section. The results of this appraisal is provided within Appendix 5, and summarised below.
- 7.7.9 The landscape and visual appraisal undertaken for the Baseline Alignment concluded that significant effects to the landscape and visual resource would be likely, including likely significant effects to the Cuillin Hills NSA, visual receptors at settlement and tourist areas throughout Section 2 and a number of road and recreational routes, including the popular A87 trunk road. Further significant effects to Wild Land Area 23. Cuillin, as well as other residential and recreational visual receptors within the study area are also considered possible.
- 7.7.10 Visualisations to illustrate the Baseline Alignment throughout this section are appended to this Consultation Document (see VPs 7, 8, 9 and 10, contained in Figures 4.2.1 to 4.2.4 a-d respectively).

Cultural Heritage

- 7.7.11 The archaeological and cultural heritage baseline of this area is characterised by features typical of upland rural landscapes throughout the Highlands. Designated cultural heritage sites within this section are limited to Listed Buildings at Luib, and the B listed Sligachan Old Bridge.
- 7.7.12 Cultivable land is relatively scarce in this area, and settlement is mostly concentrated in the crofting townships of 'Sconser', 'Luib' and 'Strollamus'. In and around these townships, and on low-lying, flatter land along the coast, irregular fields defined by drystone walls and earthen banks enclose cultivation remains in the form of former spade-cut lazy beds and/or plough-cut rig and furrow. In the steeper uplands, the land is largely used as rough pasture and/or wild grazing. Stock management features such as sheepfolds, drovers' tracks, shieling huts and livestock pens and enclosures are evident. Settlement remains include abandoned crofting townships, cleared and abandoned during the Highland Clearances of the late 18th and early 19th centuries.
- 7.7.13 The majority of these features most likely date to the late-medieval and post-medieval periods, although some evidence of prehistoric settlement and activity is present in the form of Iron Age hut circles. The landscape formed by this historic and prehistoric occupation is both extensive and well-preserved along much of the route. Of the heritage assets recorded in this section, it is anticipated that direct impacts could generally be avoided through micro-siting and appropriate mitigation.

Other Environmental Considerations

- 7.7.14 There are properties that fall within the vicinity of the Baseline Alignment at Sconser, Luib, Dunan and Strollamus. Agriculture is predominantly rough grazing, with some areas of improved grassland at Sconser.
- 7.7.15 Forestry is present to the east of Gleann Torra-mhichaig, and again at Broadford as the Baseline Alignment connects into Broadford Substation.
- 7.7.16 In terms of recreation, Sligachan is an important tourist hub with a hotel, a campsite and the start of a large number of hill walking routes. The Baseline Alignment in this section would also run parallel to a core path between Luib and Dunan.
- 7.7.17 Planning permission in this section has been granted for the partial change of use of an agricultural shed to the creation of four holiday letting units at the head of Loch Ainort off the Moll Road (19/02676/Ful). Other planning applications, typically housing related are not anticipated to be in direct conflict with the Baseline Alignment.

Variants (Environmental Considerations)

- 7.7.18 A number of variants to the Baseline Alignment have been considered to either mitigate a potential effect, or to provide an alternative for consideration by the project team during the selection of a preferred alignment and design solution. These variants are set out in Table 7.2 and shown on Figures 2.2.1a to 2.2.1b. The potential environmental constraints and opportunities of these variants in comparison to the Baseline Alignment, and with regard to the environmental topic areas set out in SSEN Transmission's routeing guidance¹⁹, is discussed in more detail in Appendix 3 (see also Figures 2.2.2a to 2.2.3b).

Table 7.2: Variants: Section 2

Variant	Description	Variant Taken forward? (Y/N)
<i>Variant 2-A (Underground Cable; North of Sligachan to Luib)</i>	<p>This variant comprises approximately 14.5 km of underground cable from the north of Sligachan to Luib. The underground cable would follow a similar alignment to that of the Baseline Alignment, with a CSE required at either end of the underground cable. Reactive compensation would be required at Broadford Substation.</p> <p>This variant and alternative design solution has been proposed to mitigate the likely significant effects on landscape and visual receptors within this section, including the Cuillin Hills NSA and Cuillins WLA. As a result, this variant is deemed to be preferred in comparison with the Baseline Alignment (OHL).</p>	Y
<i>Variant 2-B (Sligachan Hotel)</i>	<p>This variant diverges from the Baseline Alignment to the south of Glen Varragill Forest, and heads in a southerly direction toward Sligachan Hotel, crossing the A87 before reaching the hotel. The variant is routed to the rear of the hotel, crosses the A863 before heading northeast on the south side of the A87 where it would re-join the Baseline Alignment. The variant has been considered to minimise landscape and visual effects in easterly views of the Baseline Alignment from Sligachan. However, the variant is anticipated to result in likely significant environmental effects, particularly landscape and visual effects on receptors at Sligachan, and on the NSA. As such, this variant is not preferred.</p>	N

Variant	Description	Variant Taken forward? (Y/N)
<i>Variant 2-C (Sligachan)</i>	This variant crosses the tidal area closer to the existing OHL and has been proposed to increase the distance between a new OHL and receptors at Sligachan. It is considered that this would result in some improvement from a landscape and visual perspective, but unlikely to mitigate the likelihood for significant effect. There are also technical challenges with routeing a new OHL through the tidal area. This variant is therefore not preferred.	N
<i>Variant 2-D (Sconser)</i>	This variant has been considered to minimise potential landscape and visual effects of a new OHL, particularly from receptors at Peinnachorran. Whilst this would result in an improvement in appearance of a new OHL for receptors at Peinnachorran in landscape and visual terms, it would increase proximity and likelihood for significant effect for receptors at Sconser. This variant is therefore not preferred.	N
<i>Variant 2-E (Gleann Torra-mhichaig - West)</i>	This variant, to the west of the existing OHL through Gleann Torra-mhichaig for approximately 2 km, has been considered as it would result in a slight improvement from a landscape and visual perspective through Gleann Torra-mhichaig. However, significant landscape and visual effects are still likely and therefore this variant is not preferred.	N
<i>Variant 2-F (Gleann Torra-mhichaig - East)</i>	This variant crosses the A87 at Sconser and passes to the east of the A87 and Gleann Torra-mhichaig, past Druim Nan Cleochd, before re-joining the Baseline Alignment around the head of Loch Ainort. It has been considered as it would remove the OHL from much of Gleann Torra-mhichaig. There is however potential for skylining of some towers, and likely significant landscape and visual effects around Sconser and Loch Ainort would remain. This variant is therefore not preferred.	N

7.8 Identification of Proposed Route and Design Solution

- 7.8.1 The review and study of alternative design solutions within Section 2 to mitigate likely significant effects on the NSA and other landscape and visual receptors has helped inform a decision by SSEN Transmission to proceed with Route 2A as the proposed route within this section. This decision has been taken due to a lack of other viable 'route' options through this section.
- 7.8.2 With respect to the Proposed Route (Route Option 2A), it is proposed that the design solution would comprise the installation of an underground cable from the north of Sligachan for approximately 14.5 km to Luib. From Luib to Broadford, the design solution would revert to steel lattice OHL.
- 7.8.3 The proposed design solution to underground the OHL through part of this section is being promoted to mitigate likely significant effects on the NSA, particularly those effects that would have been experienced between Sligachan and Loch Ainort with a steel lattice OHL solution.
- 7.8.4 The identification of an underground cable alignment is at an early stage, and it is recognised that the potential for likely significant effects during the construction phase could occur. Further engineering studies are on-going

to determine the underground cable alignment, and these studies will be supported by environmental survey data and assessment during the EIA stage of the project to seek to mitigate likely significant effects and to set out robust mitigation (see para. 7.3.19) and habitat restoration measures to ensure effects are minimised and the successful long term restoration of the cable route can be achieved.

7.9 Preferred Alignment and Design Solution

- 7.9.1 In selecting the preferred alignment and design solution, consideration has been given to a variety of environmental, technical and cost considerations relevant to this section, as detailed above, as well as the preliminary consultation responses received from statutory consultees.
- 7.9.2 The preferred alignment and design solution comprises an underground cable solution (Variant 2-A) from Sligachan to Luib. At Luib, the design solution reverts to OHL and continues along the Baseline Alignment to Broadford Substation. The preferred alignment and design solution is shown on Figure 3.2a to 3.2b. The Visualisations included of relevance to this section (VPs 7, 8, 9 and 10, contained in Figures 4.2.1 to 4.2.4 a-d respectively), comprise both the Baseline OHL Alignment (as page 'c' of each figure) and the preferred alignment and design solution (as page 'd' of each figure).

8. SECTION 3 – BROADFORD SUBSTATION TO KYLE RHEA

8.1 Introduction

- 8.1.1 The preferred route put forward for Section 3 within the Consultation Document at route options stage (March 2020)² was Route Option 3A (Western Extent) and Route Option 3B (Glen Arroch). The primary reasons for selection of the preferred route at this stage was based on the anticipated increased technical challenges of other route options within Section 3, and the likely effects on the qualifying features of the Kinloch and Kyleakin Hills SAC, in particular the western acidic oak woodland qualifying feature (which is also classified as ancient woodland), which were considered to be less for the preferred route. However, the preferred route would still need to cross various other qualifying habitats of the SAC and could result in an adverse effect on site integrity, whilst also expected to result in likely significant landscape and visual effects to and from Glen Arroch. It was also considered at this stage that the minor road through Glen Arroch provided good access opportunities for Route Option 3B.
- 8.1.2 The Consultation Document at route options stage (March 2020)² stated that further engineering and environmental survey work would be carried out to find an acceptable alignment and design solution through this sensitive landscape and environment, which could result in a review of the preferred route.
- 8.1.3 Consultation responses received from statutory and non statutory consultees²⁰ highlighted contrasting views and opinions on the preferred route put forward in this section. There was strong opposition to the preferred route from the local community and community representatives, as well as RSPB. Concerns were focussed on the sensitivities of the landscape and environment of Glen Arroch and Kylerhea, with many expressing the view that Route Option 3A should be reconsidered. Given the potential for adverse effects on site integrity of the SAC, NatureScot however were of the view that, based on the information available at the time, the preferred route (Route Option 3B) was considered the least worst option, albeit this may also lead to an adverse effect on site integrity and an objection from NatureScot.
- 8.1.4 Further review of Route Option 3A and 3B has therefore been carried out by SSEN Transmission since the previous consultation exercise, supported by an OHL contractor and environmental teams, to explore alignment options and design solutions within both routes.
- 8.1.5 This Chapter sets out the key environmental and technical considerations for this section of the new OHL, and describes the alternative technologies that have been considered. It then looks at the potential implementation of these within both route options, and the key sensitivities to be considered when developing an OHL alignment in this section. The Chapter then provides an update on the preferred route, and the preferred alignment and design solution therein.
- 8.1.6 Figures and visualisations prepared as part of this Consultation Document of relevance to this section include:

Figures

- Figure 2.3.1a to 2.3.2b: Section 3: Baseline Alignment, Variants, Environmental Designations and Constraints
- Figure 3.3a to 3.3b: Section 3: Preferred Alignment and Design Solution

Visualisations

- Figure 4.3.1 (a-c) VP11 – From A851 looking towards Broadford
- Figure 4.3.2 (a-c) VP12 – Donald Murchison's Monument

²⁰ Reported in the Report on Consultation (November 2020)

8.2 Summary of Key Issues

- 8.2.1 From the existing Broadford Substation this section initially traverses a relatively flat area of open moorland and commercial forestry plantation to the south of the populated A87 corridor, comprising the towns of Broadford, Harrapool, Skulamus and Breakish. Where the section enters Glen Arroch and the Kinloch and Kyleakin Hills SAC / SSSI the terrain turns mountainous with areas of steep gradient before reaching the existing OHL steel lattice towers supporting the OHL crossing at Kyle Rhea.
- 8.2.2 All route options considered through this section have to cross the Kinloch and Kyleakin Hills SAC / SSSI, and minimising potential effects on the qualifying features of the SAC (which include alpine and sub alpine heaths, blanket bog, dry and wet heaths, mixed woodland on base rich soils associated with rocky slopes, western acidic oak woodland and otter) has been central to the consideration of route, alignment and design solutions through this section.
- 8.2.3 The preferred route identified in the Consultation Document at route options stage² (Route Option 3B) also passes through a sensitive landscape, albeit not one that is covered by a landscape designation. Minimising potential landscape and visual effects through Glen Arroch, for communities at Kylerhea and Glenelg (on the mainland) and on other recreational receptors is a key consideration. Potential effects on landscape character and visual amenity for other routes within this section could also occur. Effects on ornithology and felling of commercial plantation and woodland are also important factors.
- 8.2.4 It should also be noted that the terrain through this section, particularly for the alternative route option (Route Option 3A) is particularly challenging for the construction of an OHL. This has been closely scrutinised by the OHL contractor to develop practicable construction access solutions that give due consideration to the environmental sensitivities through this section, particularly within the SAC. This has included review of the suitability of the minor road through Glen Arroch for construction access purposes.

Preliminary Statutory Consultee Feedback during the Alignment Selection Stage

- 8.2.5 The evaluation and analysis of practicable options through this section has taken considerable time, and as such there has been little opportunity for preliminary discussions with statutory consultees during the alignment selection stage of the project in the same way as there has been with other sections. A workshop was held with NatureScot and The Highland Council in September 2021 to provide an update on route and alignment selection. SSEN Transmission will use this alignment consultation exercise as a means to gather views and discuss the preferred alignment and design solution with statutory and non-statutory consultees, prior to confirming the proposed alignment.

8.3 Alternative Technology Options

- 8.3.1 The consideration of alternative technology options within Section 3 of the Skye Reinforcement Project has focussed on viable and practicable alternative solutions to a steel lattice OHL that could mitigate likely significant effects on the SAC, as well as landscape and visual effects. This has primarily focussed on investigating the feasibility of cabling options within this section (both subsea and land).
- 8.3.2 The use of alternative steel structures (NeSTS) has not been considered within this section as it is considered that this alternative technology would not mitigate the site specific likely significant effects noted within this section; i.e. the likely significant effects on qualifying features of the SAC, and landscape and visual effects.
- 8.3.3 The review of alternative technology options is summarised below and has enabled a fuller understanding of the technical viability, environmental impact and cost of such options, in comparison with a steel lattice OHL.

Underground Cables

- 8.3.4 Chapter 7 (paragraphs 7.3.13 to 7.3.17) of this Consultation Document describes the use of underground cable generally within the UK transmission industry, and the key considerations and requirements for its installation.
- 8.3.5 The viability of an underground cable as an alternative design solution within part of Section 3 of the Skye Reinforcement Project has been informed by feasibility studies and walkover surveys by specialist cable engineers to evaluate its constructability. Consideration for its use has been focussed on the Glen Arroch and Kylerhea settlement part of Route Option 3B only, as an opportunity to mitigate against likely significant landscape and visual effects through this area. The use of underground cable is not deemed to be a practicable or appropriate technology choice for Route Option 3A (eastern extent) within the SAC given the steep terrain (in places) and sensitive habitats present within that part of the route option. The installation of an underground cable here would almost certainly result in likely significant effects on the SAC and its qualifying features due to the extent of the construction corridor required.
- 8.3.6 The installation of an underground cable through Glen Arroch and Kylerhea (Route Option 3B) would present a number of technical and environmental challenges, a summary of which are noted below:
- Likely significant effects on the Kinloch and Kyleakin Hills SAC due to disruption to peatland habitats and qualifying features of the SAC given a working corridor of approximately 30 m (including haul road). Such effects are likely to be much greater for an underground cable in comparison to a steel lattice OHL given a much larger working corridor and habitat loss, increasing the potential for pollution events and watercourse crossings within the SAC, as well as potential hydrological and hydrogeological effects;
 - A number of watercourse crossings would likely be required given proximity to the Abhaimm Lusa, Allt Mor and Kylerhea River watercourses;
 - Effects on soils and peat. Ground conditions are likely to be variable throughout Section 3, with rock close to the surface in some areas, and deeper areas of peat in others. Such conditions would need to be established prior to finalising a cable route, and areas of deeper peat avoided as far as practicable;
 - Potential for landscape and visual effects during the construction phase, albeit these should be short term, subject to appropriate and carefully planned reinstatement;
 - Requirement for reactive compensation at Broadford and Fort Augustus Substations, resulting in additional works being required at these substations to account for power losses inherent in underground cables; and
 - Due to higher installation costs compared to an OHL, and the requirement for reactive compensation measures at substation sites on the transmission network, an underground cable solution would result in a considerable increase in the cost of the project as a whole.
- 8.3.7 Mitigation measures for environmental effects of underground cabling in Section 2 (see Chapter 7, paragraph 7.3.17) would also be relevant here, and key to the success of an underground cable route within part of Section 3 of the Skye Reinforcement Project.
- 8.3.8 Despite these challenges, the installation of an underground cable as part of the design solution within Route Option 3B could provide the opportunity to mitigate long term likely significant landscape and visual effects of an OHL solution through Glen Arroch and Kylerhea. As such, further consideration of an underground cable solution was undertaken during the alignment selection stage of the project to inform both route and alignment selection decisions in Section 3. This is discussed further in sub-section 8.4 of this Consultation Document.

Subsea Cables

- 8.3.9 A desktop study of potential subsea cable options and indicative landfall locations has been undertaken between Broadford and Kyle Rhea, covering Section 3 of the Skye Reinforcement Project. Those potential subsea cable options of relevance to Section 2 of the Skye Reinforcement Project are discussed in Chapter 7 of this report.
- 8.3.10 The desktop study included a review of a wide variety of data, covering the physical environment, environmental and ecological factors, and other sea users. Following this, identification and charting of potential subsea cable routes and constraints were mapped and assessed, with potential for mitigation or avoidance of particular constraints considered.
- 8.3.11 Chapter 7 (paragraphs 7.3.23 to 7.3.28) of this Consultation Document describe the subsea cable requirements on this project, and the key considerations and requirements for its installation.
- 8.3.12 Table 8.1 provides a description of the subsea cable routes considered, the key constraints and overall suitability in relation to Section 3 of the Skye Reinforcement Project. The subsea cable routes within Section 3 comprise four main routes (referred to as Options 3 to 6 below, see also Plate 7.3).

Table 8.1: Subsea Cable Options within Section 3

Subsea Cable Option	Description of Route	Constraints	Overall Suitability
Option 3 Existing OHL on the Scottish mainland – Kyle Landfall Indicative Area (3 km in length)	<p>Water depths vary between 12 m and 36 m. The 15 m bathymetric contour is very close to shoreline, and the area is characterised by steep-sided rocky slopes. Away from steep flanks, seabed gradients are generally low and the morphology suggests a hard substrate with current scour. Tidal velocities are high with peaks of 8 knots.</p> <p>Located entirely within two SACs.²¹ It is also within very close proximity of a NCMPA.²²</p> <p>No significant interaction with existing seabed infrastructure and a low density of commercial fisheries in the area.</p>	<p>Main constraint is the extremely high tidal current velocity present (peak flows of 8 knots), likely to preclude cable lay vessels that operate using dynamic positioning, meaning that anchor positioning would be required with associated additional anchor handling vessels and anchor impacts on the seabed.</p> <p>Route is also entirely within two SACs and near one NCMPA. There will likely be direct impacts through habitat loss and/or disturbance to sensitive benthic habitats and species.</p>	Low
Option 4 Kyle Landfall Indicative Area	<p>Water depths vary between 39 m and 115 m. The 15 m bathymetric contour is very close to shoreline. On the slopes descending to the middle of the Loch, gradients are generally</p>	<p>The main constraint to laying subsea cable(s) in this location is the high tidal current velocity present (peak flows of 3 knots), likely to preclude cable lay vessels</p>	Low

²¹ the Inner Hebrides and Minches SAC (designated for harbour porpoise *Phocoena phocoena*), and the Lochs Duich, Long and Alsh Reefs SAC (designated for Annex I reef habitat).

²² the Lochs Duich, Long and Alsh Nature Conservation Marine Protected Area (NCMPA) (designated for burrowed mud and flame shell beds).

Subsea Cable Option	Description of Route	Constraints	Overall Suitability
<p>– Loch na Beiste</p> <p>(4.7 km in length)</p>	<p>>20°. Tidal velocities are high with peaks of 3 knots.</p> <p>Located entirely within the two SACs and is also located within the NCMPA as mentioned for Option 3. Due to this, the route is near burrowed mud and recorded flame shell (<i>Limaria hians</i>) beds. Extensive Flame shell beds are rare and of conservational importance.</p> <p>No significant interaction with existing seabed infrastructure, but a moderate density of commercial fisheries in the area with high levels of shipping activity in the vicinity of Skye bridge.</p> <p>A number of wrecks have also been recorded in the area surrounding the western landfall within Loch na Beiste. A SSEN Distribution subsea power cable also runs adjacent to this route to the northwest.</p>	<p>that operate using dynamic positioning, meaning that anchor positioning would be required with associated additional anchor handling vessels and anchor impacts on the seabed.</p> <p>The NCMPA and SAC designated areas are major constraints. There will be likely direct impact through habitat loss and/or disturbance to sensitive benthic habitats and species.</p> <p>Wrecks and a nearby SSEN Distribution cable may also be constraints.</p>	
<p>Option 5</p> <p>West of Skye bridge – Harrapool (8.7 km in length)</p>	<p>Water depths vary between 11 m and 23 m though data coverage is incomplete. Where data is available, bathymetry indicates exposed bedrock escarpments. Mapped tidal velocities have peaks of 2 knots. The route option is entirely within the Inner Hebrides and the Minches SAC and it also passes through a designated seal haul-out site at Pabay and Ardnish Peninsula. There is no significant interaction with existing seabed infrastructure and a low density of commercial fisheries in the area, though potting activity is likely to be present in the vicinity.</p>	<p>The major constraints for this route option concerns the shallow water, designated areas and rock escarpments, together with incomplete data, all of which increases the installation risk of subsea cables. Bathymetric data identifies regions of infralittoral rock and biogenic reef.</p>	<p>Low</p>
<p>Option 6</p> <p>West of Skye bridge – north of Pabay – Broadford</p>	<p>The water depths in the east of this route range between 11 m and 91 m. North and northwest of Pabay the seabed is irregular with locally high gradients associated with escarpments (generally <12° though data coverage incomplete). The</p>	<p>Water depths may cause difficulties in the cable laying operation due to the draft of the cable lay vessel limiting access. Extensive areas of exposed bedrock will likely preclude cable burial and increases the need for rock protection. Similarly,</p>	<p>Low / Medium</p>

Subsea Cable Option	Description of Route	Constraints	Overall Suitability
(13.5 km in length)	<p>approach to Broadford is more gently sloped. Bathymetric data indicates extensive areas of exposed bedrock. Mapped tidal velocities peak at 2 knots.</p> <p>The route option is entirely within the Inner Hebrides and the Minches SAC and a moderate density of commercial fisheries is present in the area.</p>	<p>localised high seabed gradients associated with escarpments also increases the risk of cable burial and/or installation.</p>	

8.3.8 The results of the study indicated that subsea cable installation in the area is likely to be very challenging, with a variety of adverse factors that include strong tidal currents, designated marine habitats and areas of rugged/complex bedrock at seabed.

8.3.9 It was concluded that none of the subsea cable options discussed above would be considered suitable for subsea cable installation within Section 3 of the Skye Reinforcement Project. As such, it is not proposed to give further consideration to subsea cable as an alternative design solution within Section 3.

8.4 Consideration of Alignment Options and Design Solutions within the Preferred Route (Route Option 3B) Identified within the Consultation Document (March 2020)

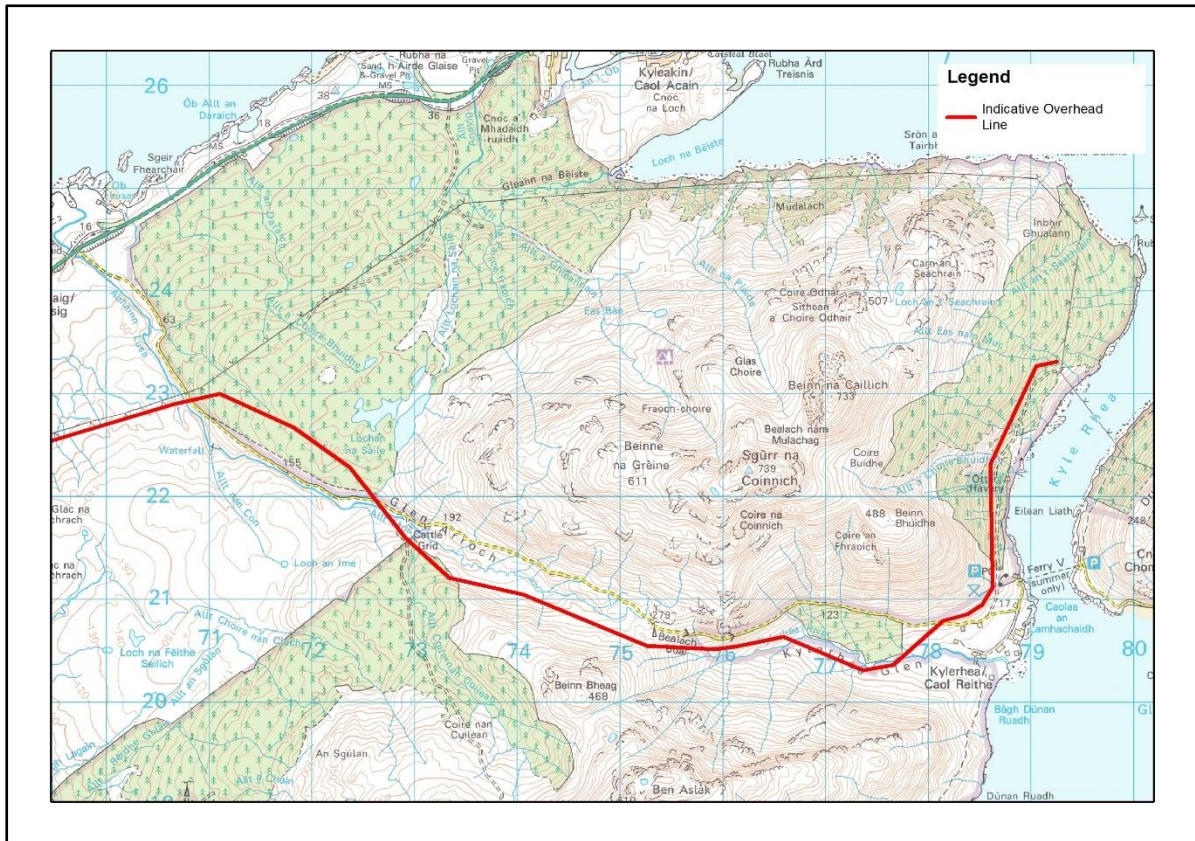
8.4.1 As noted above, Route Option 3B was put forward as the preferred route in the Consultation Document at route options stage (March 2020)², albeit the environmental sensitivities of this route were acknowledged and subject to more detailed review during the alignment selection stage. Contrasting views from statutory and non statutory consultees, as well as the local community, emphasised the sensitivities of this section of the project.

8.4.2 Whilst both route options (3A and 3B) cross the Kinloch and Kyleakin Hills SAC, one of the key differences between the two route options is that Route Option 3B would largely avoid areas of woodland and larger areas of blanket bog (Annex 1 priority habitats and qualifying features of the SAC), and primarily traverses wet heath habitats and smaller pockets of dry heath (Annex 1 habitats and also qualifying features of the SAC).

8.4.3 Distinct OHL alignment options within Route Option 3B are very limited due to topography. The presence of the minor road through Glen Arroch and the community at Kylerhea are also factors. An initial OHL alignment was developed by the OHL contractor, and whilst changes to the alignment were put forward and for the most part adopted, these were generally of a minor nature. Plate 8.1 provides an indicative illustration of an OHL alignment within Route Option 3B.

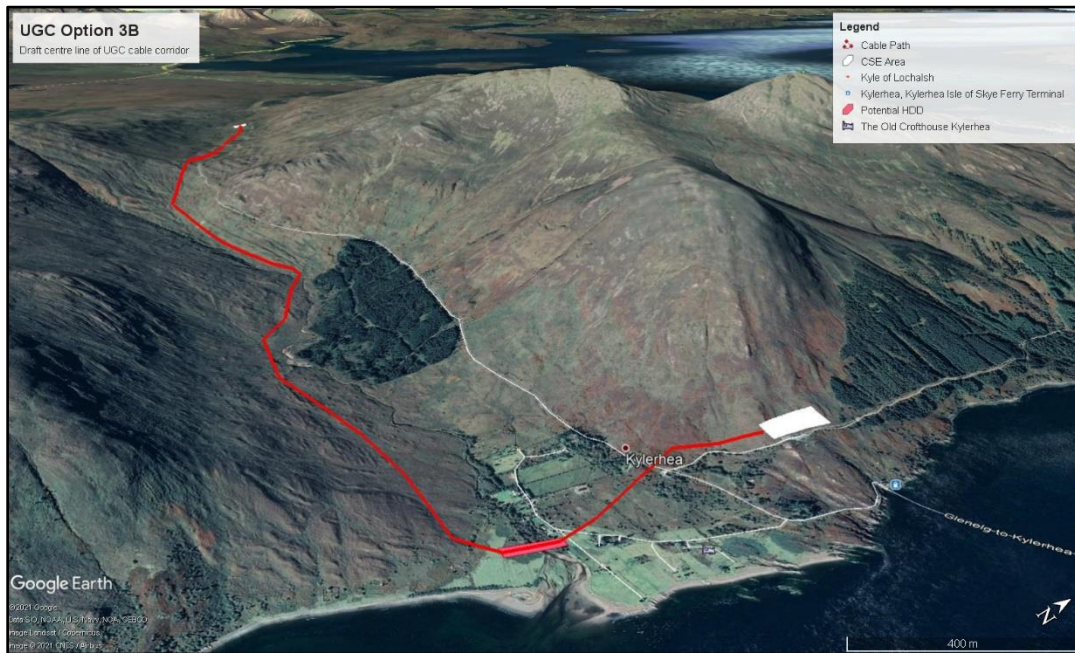
8.4.4 Given the restrictions to viable OHL alignment options within Route Option 3B, there is a limit to what can be achieved to minimise, or mitigate, likely significant landscape and visual effects of a new steel lattice OHL within this landscape. Suggestions were made to aid in this objective where possible, although it was clear that to successfully mitigate such effects could only be achieved through the consideration of undergrounding parts of the route.

Plate 8.1: Indicative Overhead Line within Route Option 3B



- 8.4.5 Review of construction access requirements for an OHL alignment within Route Option 3B determined that the current minor road is not suitable for construction access traffic. Therefore, a new construction haul road would be required along an OHL alignment to facilitate construction for much of Route Option 3B. The new haul route would typically run parallel to the OHL alignment, be of stone construction, and would require to be used throughout the construction phase through this part of the route. It is likely that this track would require to be made permanent to facilitate operational access, albeit reinstated to a track suitable for ATVs.
- 8.4.6 Engineering studies were undertaken into the technical viability and extent of underground cable options within Route Option 3B. These studies concluded that the viability of an underground cable through part of Route Option 3B would be limited to an area from approximately Bealach Udal to Kylerhea (RSPB hide) (approximately 5 km in length), as indicatively illustrated on Plate 8.2. Opportunities for undergrounding beyond these areas were restricted by topography and ground conditions, together with technical limitations on the viable length of cable route possible.
- 8.4.7 Whilst offering the potential to mitigate likely long term significant landscape and visual effects, an underground cable solution as part of the design solution within Route Option 3B would be a considerable challenge given the steepness of slope and ground conditions. Likely significant landscape and visual effects in the short term could occur given the width of the construction corridor and requirements for a haul road. There would also be the requirement for CSE compounds at either end of the cable route, prior to transitioning back to OHL, which would result in likely significant landscape and visual effects. The underground cable would also pass through part of the SAC, with the potential to adversely affect site integrity.

Plate 8.2: Indicative Underground Cable Route within Route Option 3B



8.4.8 Due to the technical limitations and challenges of installing an underground cable route within this part of Route Option 3B, coupled with the likely significant effects on the SAC, and landscape and visual receptors both in the short term (construction) and long term (likely significant effects of the sealing end compound and OHL infrastructure beyond the underground cable), it was concluded that underground cabling should not form part of a viable design solution within Route Option 3B. Therefore, steel lattice OHL is the only viable design solution within Route Option 3B.

8.5 Consideration of Alignment Options and Design Solutions within Route Option 3A (Alternative Route Option)

8.5.1 Route Option 3A (eastern extent) was not put forward as the preferred route option within the Consultation Document at route options stage (March 2020)² due to the technical challenges in building a new OHL within this location and the potential to adversely affect the primary qualifying features of the SAC. However, given the sensitive nature of this section, and similar challenges with Route Option 3B, consideration of both route options has continued through the alignment selection stage of the project. As noted in paragraph 8.3.5, the use of underground cable is not deemed to be a practicable or appropriate technology choice for Route Option 3A (eastern extent) within the SAC given the steep terrain (in places) and sensitive habitats present within that part of the route option. As such, only a new OHL has been considered.

8.5.2 The existing OHL is routed within the vicinity of this route option, following a route which is in part very close to the coastline of Loch na Beiste. Built before the SAC was designated, the existing OHL requires the management of a wayleave corridor through dense ancient woodland prevalent along part of its route. Route Option 3A is located further to the south, and typically at a higher elevation to the existing OHL due primarily to technical constraints of building a new OHL immediately adjacent to the existing OHL, as well as the impact this would have on ancient woodland. The existing OHL would be dismantled upon completion of the Skye Reinforcement Project, with the managed wayleave allowed to regenerate.

- 8.5.3 Put simply, there are two questions that need to be addressed with respect to developing a new OHL within Route Option 3A:
- is there a viable and constructable OHL alignment; and
 - If so, what are the likely effects on the Kinloch and Kyleakin Hills SAC / SSSI.
- 8.5.4 To help address the first of these points, SSEN Transmission commissioned an OHL contractor to investigate OHL alignment options. Following multiple site visits, helicopter fly through and detailed desk-based review, the OHL contractor was able to establish that there is a viable OHL alignment within Route Option 3A.
- 8.5.5 This resulted in SSEN Transmission's environmental and engineering teams working with the OHL contractor to iteratively review alignment options and tower positions to minimise adverse effects on the qualifying features of the SAC as far as practicable. A key objective to this has been identifying an OHL alignment that keeps felling of ancient woodland within the SAC, noted as a primary qualifying feature of the SAC and an Annex 1 Priority Habitat, to an absolute minimum, both during the construction phase and as part of any operational wayleave requirement. SSEN Transmission believe this objective can be met.
- 8.5.6 Another key objective has been to develop a construction and operational access strategy that also seeks to minimise effects on all qualifying features of the SAC, but particularly Annex 1 Priority Habitat (i.e. the woodland and blanket bog qualifying features of the SAC). The access strategy is still evolving and requires engineering, ecological and geo-technical expertise to ensure the construction access approach is developed in accordance with the habitat types, peat depth, slope and ground conditions present at the site in order to achieve the best practicable environmental option with appropriate controls, mitigation and monitoring.
- 8.5.7 To minimise construction traffic within the SAC, it is proposed that a number of towers would be constructed by helicopter. Whilst this construction technique does not avoid the requirement for temporary track infrastructure, it does considerably reduce the frequency of track use by construction vehicles, thus minimising potential damage to habitats. To further minimise adverse effects on habitats within the SAC, it is proposed to reduce the construction time within the SAC to as short as practicable. As such, it is estimated this could be completed in 6 to 9 months.
- 8.5.8 For operational access, SSEN Transmission would seek to minimise new permanent tracks within the SAC. Where existing tracks or paths are present, these would be utilised where possible, and upgraded as required to allow maintenance access by ATV.
- 8.5.9 The construction and operational access strategy will be developed and assessed through the EIA and Habitats Regulation Appraisal (HRA) process, and will be discussed in consultation with NatureScot and Forestry Land Scotland (as landowner). To that end, a preliminary shadow HRA is being produced which considers the likely significant effects on SAC qualifying features in more detail, and which will be used to inform whether there will likely be adverse effects on site integrity. The results of this will be discussed with NatureScot.
- 8.6 Identification of Preferred Route**
- 8.6.1 Having considered the potential constraints and opportunities of both route options, SSEN Transmission have concluded that Route Option 3A should be progressed as the preferred route. This decision to change from the previously preferred route (Route Option 3B) has been made following a review of both route options from an engineering and environmental perspective, and consideration of the consultation responses received during the previous consultation exercise at route options stage.
- 8.6.2 A detailed alignment selection process established that a technically viable OHL alignment could be constructed within Route Option 3A, that would keep felling of ancient woodland within the SAC, noted as a

primary qualifying feature of the SAC and an Annex 1 Priority Habitat, to an absolute minimum, both during the construction phase and as part of any operational wayleave requirement.

- 8.6.3 Further work is however required to establish a construction and operational access strategy that seeks to minimise adverse effects on the site and the respective qualifying features as far as practicable.
- 8.6.4 In terms of the previously preferred route (Route Option 3B), it has been determined that the minor road through Glen Arroch is not suitable for construction traffic, and therefore a new haul road would be required to be constructed adjacent to the OHL. It is likely that this track would require to be made permanent to facilitate operational access, albeit reinstated to a track with a narrower running width and suitable for ATVs. As a result, adverse effects on the SAC are likely to occur. Furthermore, the likely significant landscape and visual effects within this sensitive landscape could not be mitigated. The sensitivity of the visual receptors using the remote road through Glen Arroch and Kylerhea Glen which is popular with visitors taking the small ferry crossing from Glenelg, the community at Kylerhea, and visitors to the nearby Otter Haven RSPB reserve were key reasons in the selection of Route Option 3A as the preferred route in this section.
- 8.6.5 Notwithstanding these conclusions, it is acknowledged that the sensitivities of Section 3 of the project through the Kinloch and Kyleakin Hills SAC are such that both route options must remain under consideration whilst the adverse effects on the SAC, and other factors, are fully determined. As such, Figure 1 confirms the preferred route to be taken forward is Route Option 3A, whilst Route Option 3B is illustrated as an alternative route option under consideration.

8.7 Baseline Alignment

- 8.7.1 The remaining parts of this Chapter discuss the Baseline Alignment developed within the revised preferred route (i.e. Route Option 3A).
- 8.7.2 Within this Section, the Baseline Alignment is initially routed adjacent to the existing 132 kV OHL (which would be removed) past Broadford, Harrapool, Sculamus and Breakish. As the Baseline Alignment continues east, it travels up to approximately 0.8 km to the south of the existing OHL through Kinloch and Kyleakin Hills SAC / SSSI. The existing OHL is also routed through this part of the SAC / SSSI, often very close to the coastline and requiring a managed wayleave through ancient woodland. By remaining to the south of the existing OHL, the Baseline Alignment remains generally to the south of the ancient woodland at Mudalach. Where woodland is within the vicinity of the Baseline Alignment, it is anticipated that the OHL could span across it, with felling kept to an absolute minimum. After Mudalach, the Baseline Alignment runs parallel once again to the existing OHL to the existing towers crossing Kyle Rhea.

8.8 Alignment Options Appraisal

- 8.8.1 As part of the iterative alignment selection process, a review of the Baseline Alignment and potential variants has been carried out by the SSEN Transmission environmental and engineering teams, and environmental consultants, in close collaboration with the OHL contractor. A summary of the key elements of this review is provided below.

Baseline Alignment (Environmental Considerations)

Natural Heritage

- 8.8.2 To the south of Broadford, the Baseline Alignment would skirt the very edge of the Cullins SPA, adjacent to the existing OHL. Further to the east, the Baseline Alignment would span the northern tip of the Mointeach nan Lochain Dubha SAC / SSSI, whereby it is anticipated that new towers would be located outwith the SAC

boundary. For both of these European designated sites, a HRA is likely to be required upon submission of a consent application, albeit no adverse effect on site integrity for either site is anticipated.

- 8.8.3 The eastern extent of the Baseline Alignment would also pass through the Kinloch and Kyleakin Hills SAC and SSSI. The qualifying features of the SAC are noted in Table 8.2 below.

Table 8.2: Qualifying Features of the Kinloch and Kyleakin Hills SAC

Feature	Identified Pressures	Condition & Date Last Assessed	Description
Alpine and subalpine heaths	Overgrazing (deer)	Unfavourable Recovering 17 Feb 2015	Annex I habitat
Blanket bog	No negative pressures	Favourable Maintained 13 Nov 2014	Annex I priority habitat
Dry heaths	Invasive species (bracken)	Favourable Maintained 17 Feb 2015	Annex I habitat
Mixed woodland on base-rich soils associated with rocky slopes	Invasive species Overgrazing	Unfavourable Recovering 9 Oct 2013	Annex I priority habitat
Western acidic oak woodland	Invasive species Overgrazing	Unfavourable Declining 9 Oct 2013	Annex I habitat
Wet heathland with cross-leaved heath	Overgrazing	Unfavourable Declining 11 Sept 2009	Annex I habitat
Otter	Dumping/storage of materials Forestry operations Other	Favourable Maintained 21 Aug 2011	Annex II species

- 8.8.4 The habitats along, or within the vicinity of the Baseline Alignment within the SAC are dominated by broadleaved woodlands, dry heaths, wet heaths, blanket bogs, and bracken (or various mosaics thereof, particularly mosaics of blanket bog and wet heath). The majority of habitats along and surrounding this alignment are qualifying features of the SAC. Habitat components of note include the stands of broadleaved woodland which contain mature trees along the watercourses west of Mudalach, and the expanse of woodland along the unnamed watercourse west of the Allt Mor Ghuaidhre, which lies to the east of Mudalach. These larger woodland stands all lie in deeply incised gorges. The Baseline Alignment also traverses several small areas of blanket bog and wet heath/blanket bog mosaics. Dry heaths are generally avoided along the majority of the Baseline Alignment, with the remainder generally crossing wet heath areas.
- 8.8.5 The SAC also supports an otter population, although the citation notes otter was not a primary reason for SAC site selection. The population within the SAC is representative of the Scottish west coast and encompasses a large number of holts used for shelter and breeding, intertidal and inland feeding areas, and freshwater pools. Recent surveys have confirmed that evidence of otter was predominantly recorded along the coast, with little evidence found inland in suitable habitat, e.g. along watercourses and in boulder piles, beyond 50 m from the shore.
- 8.8.6 A HRA will be required to be carried out by the Competent Authority upon submission of a consent application for the Kinloch and Kyleakin Hills SAC. As noted in paragraph 8.5.10, a preliminary shadow HRA is being developed to inform likely significant effects and adverse effects on site integrity. The results of this will be discussed with NatureScot.

- 8.8.7 Other constraints include protected species, with otter, a European Protected Species, likely to be present and using the coast, watercourses and waterbodies within the vicinity of the Baseline Alignment.
- 8.8.8 The Baseline Alignment crosses over a surface water drinking protection zone near Harrapool. Properties within the vicinity of the Baseline Alignment could be served by private water supplies from watercourses crossed by or within the vicinity. Neither are expected to pose a development constraint.
- 8.8.9 Priority peatland mapping suggests that this route would pass through or skirt the edges of some areas of Class 1 (strong likelihood of deep peat and priority peatland habitats). Areas of open moorland and coniferous plantation with a number of watercourse crossings to consider, some of which comprise steep ravines.

Landscape and Visual

- 8.8.10 The initial part of Section 3, commencing at Broadford Substation is on the boundary of The Cuillin Hills NSA. However, the existing forestry plantations around the substation create a clear transition between the designated and non-designated landscape. Moving away from the NSA, the Baseline Alignment would be adjacent to and replace an existing steel lattice OHL to the south of Broadford and surrounding communities, resulting in an effective like-for-like replacement with likely minimal landscape effects and little to distinguish it from the existing OHL in views from residential properties and routes in this area.
- 8.8.11 To the east of the Baseline Alignment within Section 3, the landscape is characterised by rough, rocky hills with limited access and a steep and complex rocky shoreline to Loch Alsh and Kyle Rhea. Forestry plantation occupies areas of more accessible lower slopes whilst the remote, rugged coastal slopes along the south of Loch Alsh are colonised by native woodlands. Settlement in this area is limited, with Kyleakin and Kyle of Lochalsh situated to the north on either side of the Skye Bridge, and the community at Kylerhea over 2 km to the south of the existing OHL crossing towers at Kyle Rhea.
- 8.8.12 The existing steel lattice alignment following the remote coastal edge of Loch Alsh into the crossing location at Kyle Rhea can be seen from the northern shore of Loch Alsh from the A87, including various stopping and viewing locations, and from residential areas such as Balmacara and some outlying parts of Kyleakin and Kyle of Lochalsh. However, these comprise relatively distant views and towers are not prominent, with their perceptibility depending on lighting conditions. The Baseline Alignment would be set higher on the hill, above the existing woodland and would therefore be likely to appear more visible, although seen by a similar range of receptors. However, the towers would be similarly distant in views and likely to have a comparable range of perceptibility depending on lighting. As the alignment would be sited entirely above the existing native woodland, there would be no visible wayleave.
- 8.8.13 Access and construction works though this area would be likely to appear more visible than towers and have a greater landscape impact, but it is anticipated that these features would be temporary and subject to restoration.
- 8.8.14 Visualisations to illustrate the Baseline Alignment throughout this section are appended to this Consultation Document (see VPs 11 and 12, contained in Figures 4.3.1 and 4.3.2 a-c).

Cultural Heritage

- 8.8.15 The archaeological and cultural heritage baseline of this area is characterised by features typical of upland rural landscapes throughout the Highlands. Designated cultural heritage sites within this section include the Scheduled Monument of Chambered Cairns (Old Corry cairns, SM 13673), located close to the Baseline Alignment near Broadford / Ath Leathann. Other Scheduled Monuments include Broadford Bay, chambered

cairn (SM 13724), Ashaig church (remains) and burial ground (SM 13720) and Ashaig burnt mound (SM 13721).

- 8.8.16 There are a small number of non-designated heritage assets recorded in the Historic Environment Record within the vicinity of the Baseline Alignment, although it is anticipated that direct impacts could generally be avoided through micro-siting and appropriate mitigation.

Other Environmental Considerations

- 8.8.17 There are properties that fall within the vicinity of the Baseline Alignment at Sconser, Luib, Dunan and Strollamus. Agriculture is predominantly rough grazing, dominated by plant communities of low grazing value. Minor interaction with sections of improved grassland (5.1 and 5.3) may occur around Broadford.

- 8.8.18 There will be some removal of forestry likely to be required to accommodate a new wayleave at Broadford and through plantation to the south of Kyleakin before the Baseline Alignment enters the Kinloch and Kyleakin Hills SAC / SSSI.

Variants (Environmental Considerations)

- 8.8.19 The eastern extent of Route Option 3A was subject to a number of iterations during the alignment selection process. Given the technical challenges of constructing an OHL through this route, alignment variants were extremely limited. Instead, the iterations focussed on potential tower locations, micro-siting these to minimise effects on the higher sensitivity habitats within the SAC where practicable (i.e. the woodland and blanket bog habitats, qualifying features of the SAC and Annex 1 Priority Habitats). As these were inherently minor changes, they are not shown as variants in the table below as they did not constitute a notable change to the Baseline Alignment. Any notable changes to the Baseline Alignment within the eastern extent of Route Option 3A were either not possible due to technical restrictions, or would have resulted in woodland removal.
- 8.8.20 Only one variant to the Baseline Alignment within this section has therefore been considered to either mitigate a potential effect, or to provide an alternative for consideration by the project team during the selection of a preferred alignment and design solution. This variant is set out in Table 8.3 and shown on Figures 2.3.1a to 2.3.1b. The potential environmental constraints and opportunities of these variants in comparison to the Baseline Alignment, and with regard to the environmental topic areas set out in SSEN Transmission's routing guidance (SSEN Transmission, September 2020 update), is discussed in more detail in Appendix 3.

Table 8.3: Variants: Section 3

Variant	Description	Variant Taken forward? (Y/N)
<i>Variant 3-A (Broadford)</i>	<p>This variant is routed to the north side of the existing OHL on departure from Broadford Substation, and has been proposed to facilitate the connection of the OHL infrastructure with Broadford Substation.</p> <p>It also has the benefit in comparison to the Baseline Alignment and the existing OHL of being further from the Old Corry Cairns Scheduled Monument.</p>	Y

8.9 Preferred Alignment and Design Solution

8.9.1 The preferred alignment and design solution comprises an OHL connection, utilising a combination of Variant 3A and the Baseline Alignment.

8.9.2 It is acknowledged that careful consideration will need to be given to this section of the OHL, particularly through the SAC to ensure potential effects are minimised as far as practicable. This will occur through the EIA and HRA process, and will involve consultation with NatureScot and Forestry Land Scotland (as landowner).

8.9.3 Whilst the preferred alignment and design solution has been identified (see Figures 2.3.1a to 2.3.1b), it is acknowledged that the sensitivities of Section 3 of the project through the Kinloch and Kyleakin Hills SAC are such that both route options must remain under consideration whilst the adverse effects on the SAC, and other factors, are fully determined. As such, Figure 1 confirms the preferred route to be taken forward as Route Option 3A, whilst Route Option 3B is illustrated as an alternative route option under consideration.

9. SECTION 4 – KYLE RHEA TO LOCH CUAICH

9.1 Introduction

9.1.1 This section of the project is approximately 40 km in length, running north west to south east between the east landing point of the Kyle Rhea crossing on the mainland to Loch Quoich dam.

9.1.2 Figures and visualisations prepared as part of this Consultation Document of relevance to this section include:

Figures

- Figure 2.4.1a to 2.4.2c: Section 4: Baseline Alignment, Variants, Environmental Designations and Constraints
- Figure 3.4a to 3.4c: Section 4: Preferred Alignment and Design Solution

Visualisations

- Figure 4.4.1 (a-c) VP13 – Glenmore
- Figure 4.4.2 (a-c) VP14 – Gleandubhlochain (looking north west)
- Figure 4.4.3 (a-c) VP15 – Road Above Kinloch Hourn
- Figure 4.4.4 (a-c) VP16 – Loch Coire Shubh

9.2 Proposed Development Solution

9.2.1 Within this section, the existing 132 kV steel lattice OHL would be replaced with a new double circuit 132 kV OHL supported by steel lattice structures approximately 28 m in height, depending on topography. A double circuit steel lattice OHL solution is the preferred technology choice for this section as it meets the predicted capacity and load requirements, provides reliable security of supply, and provides a cost effective solution through technically challenging terrain.

9.2.2 The span lengths between towers would vary depending on topography and altitude but would be approximately 250 m apart. Exact heights of and distances between towers would be determined after a detailed line survey and confirmed following micrositing prior to construction.

9.3 Technical Considerations and Construction Access

9.3.1 The terrain throughout this section is technically challenging for construction of an OHL, dominated by extensive areas of mountainous topography, with exposed steep to very steep rock. Access is restricted to a small number of existing single track minor roads at Glenelg and Kinloch Hourn. The area between Balvraid and Kinloch Hourn has no public road access at all, although there are some forestry and estate tracks, as well as walkers paths through this remote part of the route.

9.3.2 In general, new temporary stone tracks are likely to be required to access many of the towers within this section. However, there are a number of forestry and estate tracks, as well as walkers paths through the more remote section between Balvraid and Kinloch Hourn, and the construction access strategy has focussed on utilising existing tracks and paths where possible. Some of these would require upgrading, but would be reinstated (either fully or partially) upon completion. Where access to tower positions is difficult due to steep terrain, of particular consideration in this section, alternative methods would be proposed such as using smaller items of plant, specialist tracked plant and in some cases using helicopters for moving materials.

9.3.3 The area around Druim Iosal is a particular pinch point given the presence of the existing OHL and local topography. As such, it was considered the best option at Druim Iosal is to build on the route of the existing

OHL for a short section up and over the hill. This would require outages. Construction access to this part of the new OHL is anticipated to be made from Glen More, utilising existing forestry tracks through Moyle Wood (to be upgraded) prior to a new track being required, and Balvraid, whereby the existing track (also a core path) would be upgraded. New bridges may be required in this area to facilitate construction access, and this access point would form the primary access for the remote section of the new OHL from here towards Kinloch Hourn.

- 9.3.4 Between Balvraid and Kinloch Hourn, given the complex topography and terrain, some cross overs of the existing OHL are inevitable, which would require outages. Construction access into this area would be from the north west, as described in the paragraph above. Consideration of developing access from Arnisdale / Corran has been discounted following site walkovers due to the difficulties in upgrading existing accesses.
- 9.3.5 On approach to Kinloch Hourn, the steepness of the topography and terrain is such that the most viable option is to utilise the existing alignment. This would require new towers to be built approximately 15 – 20 m from the existing towers (or where terrain is favourable) and would again require outages. The descent into Kinloch Hourn is considered too steep for standard construction vehicles, meaning alternative methods of construction would be required such as the use of helicopters for the delivery of materials and the use of wide-tracked excavators.
- 9.3.6 Between Balvraid and Kinloch Hourn, operational access will be required due to the remoteness and length of this part of the route. It would be intended to reinstate the construction access to a width suitable for 4x4 vehicles.
- 9.3.7 At Quoich bridge, significant engineering and ground clearance works would be required to locate an OHL adjacent (and to the south) of the existing OHL. As such, opportunities to route a new OHL were limited to immediately north of the bridge, or on its southern side.

9.4 Baseline Alignment

- 9.4.1 The Baseline Alignment for Section 4 is shown on Figures 2.4.1a to 2.4.1c. The Baseline Alignment was developed by the OHL contractor to be the most technically feasible and economically viable option. Within this section the Baseline Alignment is typically routed adjacent, or close to, the existing OHL (which would be removed) with the exception of the following areas:
- Scallisaig (Glen More); the Baseline Alignment passes further to the north of the existing OHL and at a higher elevation in parts to facilitate a crossing at Glen More that maintains sufficient distance from properties;
 - Kinloch Hourn and Loch Coire Shubh; due to extremely steep gradient and very limited opportunities for construction access, there is a technical necessity for the Baseline Alignment to diverge from the existing OHL for approximately 4 km between Kinloch Hourn, Loch Coire Shubh and Loch an Doire Dubh. In this area, the existing OHL has been constructed on rock outcrops and it is not technically feasible, given current Health and Safety legislation, to construct a new OHL over a similar alignment. Therefore, after crossing the Allt Coire Sgoireadal, the Baseline Alignment would head in a southerly direction toward Loch Coire Shubh. Here, the Baseline Alignment is routed to the west of Loch Coire Shubh, and to the east of the minor road. Options to the east of Loch Coire Shubh were ruled out on technical grounds due to steep, and / or wet ground, rocky outcrops and extremely challenging construction access. The Baseline Alignment remains on the eastern side of the minor road before re-joining the alignment of the existing OHL within the vicinity of Loch a' Choire Bheithe; and
 - Loch Cuaich; to the north of Loch Cuaich, at Glen Quoich, the Baseline Alignment passes to the south of the bridge rather than the north as the existing OHL does. Passing to the south of the bridge is deemed preferable in terms of constructability. The Baseline Alignment would then remain on the south and lower side of the existing OHL to Quoich dam.

9.5 Alignment Options Appraisal

9.5.1 A review of the Baseline Alignment and all potential variants has been carried out against a variety of environmental, technical and economic considerations. A summary of the key elements of this review is provided below.

Baseline Alignment (Environmental Considerations)

Natural Heritage

- 9.5.2 The Baseline Alignment would cross the Druim Iosal Geological Site of Special Scientific Interest (SSSI) and Geological Conservation Review (GCR) Site. The route through Druim Iosal is a particular pinch point with the best constructable option being to utilise the path of the existing OHL alignment, requiring a small number of towers to be built adjacent to existing tower positions, requiring outages. Two of these towers are located within the eastern extent of the SSSI and GCR boundary.
- 9.5.3 Notwithstanding the Lochs Duich, Long and Aish Reefs SAC crossed by the existing OHL at Kyle Rhea, there are no other nationally or internationally designated sites for nature conservation within the vicinity of the Baseline Alignment. Given the nature of the works, effects on the qualifying features of the SAC are not likely.
- 9.5.4 Habitats along the route are predominantly wet heath with patches of dry heath and blanket bog. Grassland and stands of bracken can be found in some areas, and there are isolated areas of mixed and broadleaved woodland. These woodlands comprise native woodland, predominantly classified as upland birchwood, and ancient woodland. Some of this woodland may require removal to accommodate the new OHL.
- 9.5.5 There are no ornithological designations covering the Baseline Alignment, but potential sensitivities exist such as golden eagle, white tailed eagle, black throated diver, red throated diver and greenshank. European Protected Species include potential for otter, bat, red squirrel and pine marten.

Landscape and Visual

- 9.5.6 The Baseline Alignment would pass through a very remote, rugged landscape with steep complex topography and high scenic qualities. This is reflected in large parts of this area being designated for landscape, namely Knoydart NSA, Kinloch Hourn, Knoydart and Morar WLA, and Moidart, Morar and Glen Shiel Special Landscape Area (SLA). Whilst the existing OHL runs through this area and has an influence in reducing landscape sensitivity of this route, the narrow valleys, steep slopes and complex topography, particularly around Kinloch Hourn and Loch Coire Shubh, present difficulties and challenges in achieving a new alignment for a replacement OHL (including earthworks and construction access) which would not have greater impacts. There is also the potential for loss of native woodland through these areas which contributes to the appreciation and value of these landscapes.
- 9.5.7 Sensitive visual receptors include those residents within properties and travelling on the public road through Glen More between Glenelg and Shiel Bridge, although there is also potential benefit in this area for some receptors as a result of the Baseline Alignment where the existing OHL would be removed. There is also potential for modified views from areas around Glenelg and Glen Bernera.
- 9.5.8 Passing through the mountain interior the Baseline Alignment would be regularly visible from recreational and walking routes up through Gleann Beag, and from Kinloch Hourn and Arnisdale. These comprise Core Paths, Scottish Hill Tracks and longer distance hill tracks. Further views would be obtained by travellers and recreational users on the minor road to Kinloch Hourn which is a popular route for tourists seeking a remote experience. Additional route and landform complexity between Kinloch Hourn and Loch Cuaich has the

potential to increase the level of visual impact from this new OHL. There could also be potential for increased visual impact in views from properties, a car park and popular viewpoints at Kinloch Hourn.

- 9.5.9 Existing paths through this area and the minor road to Kinloch Hourn are very much part of the experience and values obtained within this part of the landscape. The road to Kinloch Hourn is highlighted in the Special Qualities of the NSA for its sense of remoteness, and is recognised as an important access point for further access into, and appreciation of, the WLA. As such, construction and operational access through this area will require careful consideration (see sub-section 9.3).

Cultural Heritage

- 9.5.10 There are two Scheduled Monuments near Balvraid in Gleann Beag; Dun Grugaig (SM 914), a stone-walled dun or fort, approximately 840 m south-west of the Baseline Alignment on a steep knoll alongside the Abhainn a'Ghlinne Bhig; and approximately 2 km north-west along Gleann Beag, two neighbouring brochs together comprise SM 90152. Dun Telve stands near the river, around 1.7 km south-west of the Baseline Alignment, and Dun Troddan is set on a terrace in the hillside, a little further east and 1.3 km south-west of the Baseline Alignment. A full setting assessment from these Scheduled Monuments will be required. However, initial appraisal suggests that no significant effects upon their setting as a result of the Baseline Alignment is anticipated.
- 9.5.11 One other designated heritage asset is located within the vicinity of the Baseline Alignment: Quoich Dam and Intake Gatehouse Towers (LB51704), a Category B Listed Building of Medium sensitivity.
- 9.5.12 The majority of the cultural heritage features along Section 4 most likely date to the late-medieval and post-medieval periods, although some evidence of prehistoric settlement and activity may be present, in the form of possible settlement platforms on the slopes above Inner Loch Hourn. The damming of Loch Cuaich in the late 1950s resulted in the rise of the water level, flooding the original shoreline. A number of settlements and features recorded on historic Ordnance Survey mapping have been submerged, and it could also be the case that any surviving prehistoric evidence along the lochside was similarly flooded.

Other Environmental Considerations

- 9.5.13 There are few properties within the vicinity of the Baseline Alignment in this section, restricted to properties at Glen More and Kinloch Hourn.
- 9.5.14 In terms of agriculture, this section comprises predominantly rough grazing, dominated by plant communities of low grazing value. The Baseline Alignment would have minor interaction with small areas of land capable of supporting mixed agriculture at Glen More.
- 9.5.15 Generally limited removal of commercial forestry would be required for the Baseline Alignment in this Section. An extension to the existing wayleave would be required at Druim na Leitire, east of Kyle Rhea. The Baseline Alignment also passes through an area identified for pinewood regeneration by Scottish Forestry.
- 9.5.16 The Baseline Alignment crosses several core paths and Scottish Hill Tracks, and runs parallel to a longer distance hill track between Kinloch Hourn and Glen Elg. Passing through the mountain interior the Baseline Alignment would be regularly visible from parts of these routes.
- 9.5.17 There are no current planning applications or areas allocated for future development in direct conflict with the Baseline Alignment within this section.

Variants (Environmental Considerations)

Variants Overview

9.5.18 A number of variants to the Baseline Alignment have been considered to either mitigate a potential effect, or to provide an alternative for consideration by the project team. These variants are set out in Table 9.1 and shown on Figures 2.4.1a to 2.4.1c. The potential environmental constraints and opportunities of these variants in comparison to the Baseline Alignment, and with regard to the environmental topic areas set out in SSEN Transmission's routing guidance¹⁹, is discussed in more detail in Appendix 3 (see also Figures 2.4.1a to 2.4.1c).

Table 9.1: Variants: Section 4

Variant	Description	Variant Taken forward? (Y/N)
<i>Variant 4-A (Druim na Leitire)</i>	This short deviation to the Baseline Alignment at Druim na Leitire was proposed to minimise potential landscape and visual effects of one prominent tower. This variant offered advantages over the Baseline Alignment, but was superseded by Variant 4C.	N
<i>Variant 4-B (Bernera forestry track)</i>	Diverges from the Baseline Alignment, in the forestry to the north of Galtair and would keep to the south side of the Bernera forestry track (which is a core path) before re-joining the Baseline Alignment upon leaving the eastern edge of the forest. This variant would bring the OHL lower down the hill and minimise landscape and visual effects from Glen Bernera in comparison with the Baseline Alignment. This variant offered advantages over the Baseline Alignment, but was superseded by Variant 4C.	N
<i>Variant 4-C (Glenmore)</i>	This variant has been proposed to more closely follow the existing OHL from the Kyle Rhea crossing point to Glen More and avoid potential land use constraints associated with the Baseline Alignment at Scallisaig. This variant offers some advantages over the Baseline Alignment in that the landscape and visual effects will be similar to that of the existing OHL. There is potential for some removal of native woodland, albeit the existing OHL wayleave corridor through the same woodland would be reinstated. On balance, given the land use constraints associated with the Baseline Alignment, this variant is preferred.	Y
<i>Variant 4-D (Glenmore)</i>	A short deviation from the Baseline Alignment to follow flatter ground through Coire a' Bheoil-airigh before re-joining the Baseline Alignment near Loch a' Mhuilinn. This was proposed to minimise landscape effects, but was superseded by Variant 4C.	N
<i>Variant 4-E (Druim losal)</i>	This variant at to the south of Druim losal was proposed to minimise the likely prominence of one tower.	N

Variant	Description	Variant Taken forward? (Y/N)
	However, as noted in paragraph 9.3.3, this is a particular pinch point and it was considered by the OHL contractor that the only viable solution is to build on the current alignment of the existing OHL, with new towers built adjacent to existing towers. This would require an outage of the transmission network. Given technical constraints, this variant is not preferred.	
<i>Variant 4-F (Druim Eileasaig)</i>	This variant was proposed on landscape and visual grounds between Bealach Aoidhdailean and Gleandubhlochain as it was felt that an alignment to the north of the existing OHL would be better back clothed and close to ground already disturbed by the existing rough argo track, in comparison with the Baseline Alignment. As a result, this variant is preferred.	Y
<i>Variant 4-G (Kinlochhourn Forest)</i>	This variant stemmed from the consideration of towers skylining above Kinlochhourn as the Baseline Alignment rose up and over the hillside. The variant reduces the effects of skylining in this location by keeping to the south side of the existing line. By remaining on the south side of the existing OHL, this variant is also at a lower elevation in parts and follows the existing argo track more closely. It is therefore considered preferable to the Baseline Alignment.	Y
<i>Variant 4-H (Loch Coire Shubh)</i>	This variant has been put forward to minimise landscape and visual effects within this area as far as practicable. It aims to do this by taking an alignment that crosses, and is then routed to the west of the minor road for approximately 2 km, prior to crossing the road again to re-join the Baseline Alignment. In comparison to the Baseline Alignment this variant was considered preferable on landscape and visual grounds.	Y
<i>Variant 4-I (Loch Cuaich)</i>	This variant was considered to minimise landscape and visual effects from the minor road and Glen Quoich bridge. Whilst the Baseline Alignment is technically easier to build in this location, it was considered the adverse effects on views of Loch Cuaich from the minor road and bridge warranted a change to the Baseline Alignment in this location. This variant is therefore preferred.	Y

9.6 Preliminary Consultation Feedback

9.6.1 During the alignment selection process, workshops have been held with statutory consultees to seek feedback on alignment options and design solutions for the project. A summary of the feedback provided in relation to Section 4 is provided below:

- The Highland Council queried whether NeSTS and steel lattice are being considered for Section 4;
- NatureScot suggest that it is likely that the Baseline Alignment will result in significant adverse impacts on the special qualities of the Knoydart NSA and the Kinlochhourn – Knoydart – Morar WLA. Suggested close scrutiny of alignment and tower positions at the Bealach at Cadha Mor (Kinlochhourn), Loch Coire Shubh and Glen Quoich bridge;

- NatureScot highlighted potential interaction with Druim Iosal SSSI and Quoich Spillway SSSI which are both sites of interest for their Moine geology;
- NatureScot also referenced peatland, woodland, ornithology and other protected species that may be present within this section;
- HES highlighted the Scheduled Monument of Bernera Barracks, which views from and to Glen More are important to the monument's cultural significance, as well as Dun Telve and Dun Troddan, brochs, Glenelg (SM 90152) & Dun Grugaig, dun Gleann Beag (SM 914); and
- Forestry Land Scotland highlighted that the Baseline Alignment cuts through some smaller forestry blocks that the existing line avoids and asked whether these could be avoided. Forestry Land Scotland also queried if existing wayleave would be used.

9.6.2 Appendix 4 provides further detail on the responses received, and how these have been addressed and considered during the alignment selection process.

9.7 Preferred Alignment and Design Solution

9.7.1 In selecting the preferred alignment, consideration has been given to a variety of environmental, technical and cost considerations relevant to this section, as detailed above. As a result of the technical challenges and environmental sensitivities of this section, alignment selection has been through numerous iterations to achieve the right balance between technical viability and due consideration to the sensitive environment. A focus during the alignment selection process has been to minimise potential landscape and visual effects through the Knoydart NSA, Kinloch Hourn, Knoydart and Morar WLA, and Moidart, Morar and Glen SLA. As such, the preferred alignment comprises the Baseline Alignment, with Variants 4-C, 4-F, 4-G, 4-H and 4-I. The preferred alignment is shown on Figures 3.4a to 3.4c.

10. SECTION 5 – LOCH CUAICH TO INVERGARRY

10.1 Introduction

10.1.1 This section is routed west to east, from Quoich dam, and following to the north of Loch Pouлары and Loch Garry prior to crossing the A87 and heading towards Loch Lundie, to the north of Invergarry.

10.1.2 Figures and visualisations prepared as part of this Consultation Document of relevance to this section include:

Figures

- Figure 2.5.1a to 2.5.2c: Section 5: Baseline Alignment, Variants, Environmental Designations and Constraints
- Figure 3.5a to 3.5c: Section 5: Preferred Alignment and Design Solution

Visualisations

- Figure 4.5.1 (a-c) VP17 – Loch Quoich Dam

10.2 Proposed Development Solution

10.2.1 Within this section, the existing 132 kV wood pole OHL would be replaced by a new double circuit 132 kV OHL supported by steel lattice structures approximately 28 m in height. A double circuit steel lattice OHL solution is the preferred technology choice for this section as it meets the predicted capacity and load requirements, provides reliable security of supply, and provides a cost effective solution.

10.2.2 The span lengths between towers would vary depending on topography and altitude but would be approximately 250 m apart. Exact heights of and distances between towers would be determined after a detailed line survey and confirmed following micrositing prior to construction.

10.2.3 The existing 132 kV steel lattice OHL through this section would be dismantled. This is in part being undertaken through 2021 as the existing OHL is deemed to have come to the end of its operational life. A short term replacement in the form of a new wood pole OHL has recently been constructed to maintain supply through this area. The remaining parts of the existing steel lattice OHL, and the recently constructed wood pole OHL would both be removed upon completion of the new OHL.

10.2.4 Also, three new NeSTS poles are currently being constructed near Quoich dam as a permanent replacement to the existing towers following a landslide in 2018. The new OHL would connect with these poles and continue eastwards, to the north of the minor road toward Inchlaggan and Loch Garry.

10.3 Technical Considerations and Construction Access

10.3.1 Given the presence of the existing OHL, the newly constructed Quoich to Aberchalder 132 kV wood pole OHL, and commercial forestry, there are many existing access tracks through this area. These existing tracks would be utilised where possible to minimise the requirement for new stone tracks. Should new stone tracks be required, this section of the project comprises largely favourable ground conditions for their construction.

10.3.2 The use of helicopters is not currently being considered for this section of the project due to the proximity to public roads in this area and presence of existing tracks.

10.4 Baseline Alignment

10.4.1 The Baseline Alignment for Section 5 is shown on Figures 2.5.1a to 2.5.1c. The Baseline Alignment was developed by the OHL contractor to be the most technically feasible and economically viable option. Within this

section the Baseline Alignment generally follows close to the routes of the existing wood pole OHL and / or the existing 132 kV steel lattice OHL (which would both be removed). Exceptions to this include at Inchlaggan, whereby the Baseline Alignment is routed to the rear of properties, as opposed to in front of properties as per the existing OHL, and at Achadh-luachrach, north of Loch Garry, where land use constraints require a deviation to the south of the existing OHL.

10.5 Alignment Options Appraisal

10.5.1 A review of the Baseline Alignment and all potential variants has been carried out against a variety of environmental, technical and economic considerations. A summary of the key elements of this review is provided below.

Baseline Alignment (Environmental Considerations)

Natural Heritage

10.5.2 The Baseline Alignment runs within close proximity of the West Inverness-shire lochs Special Protection Area (SPA), which is classified for 6.6 pairs (on average) of black-throated divers and 7.8 pairs (on average) of common scoter. Black-throated divers and common scoters may fly between the composite lochs of the SPA and could be vulnerable to collision from overhead lines between the lochs. There is some potential collision risk for birds flying between these lochs, although as the new OHL would be predominantly through forestry and follows the existing OHL, the risk will be lower.

10.5.3 Other ornithological sensitivities include black grouse and an active golden eagle territory within the vicinity of the route, and black grouse, greenshank and osprey also nest along the route and potential disturbance due to construction activities may occur and will require mitigation if nests are located within possible disturbance distances.

10.5.4 Habitats along the Baseline Alignment are predominantly wet heath, with patches of dry heath and blanket bog (with potential for deep peat in some areas). Forestry plantation is common to the east of this section, and there are areas of native woodland, particularly to the north of Loch Garry.

10.5.5 The Quoich Spillway Geological SSSI and GCR is located to the south of the minor road at Quoich dam, but is not anticipated to be impacted by the new OHL.

Landscape and Visual

10.5.6 The landscape of Section 5 is characterised by areas of open moorland and forestry within Glen Garry, which contains Loch Garry, Loch Poulary, River Garry, Gearr Garry and Kingie Pool. The landscape is relatively enclosed, contained by landform and / or vegetation with some longer-range scenic views channelled along Glen Garry. There is a perception of separation and relative remoteness in comparison with the busier Great Glen but the presence of various man-made features (settlement, roads, commercial forestry, wind turbines, electricity infrastructure) contributes to a rural settled sense of place.

10.5.7 Quoich Dam is situated at the western end of Section 5, while other man-made features are situated along the valley including Quoich Power Station and steel lattice and wood pole electrical infrastructure. Residential settlement consists of properties around Invergarry and dispersed dwellings along the lower slopes of Glen Garry. This is a sparsely settled rural area connected by the minor public road to Kinlochhourn and the A87 road that leads northward to Loch Loyne. Recreational routes are largely situated in the vicinity of Invergarry as well as connecting Loch Garry with other nearby villages.

10.5.8 To the west falls the Moidart, Morar and Glen Shiel SLA. It is not anticipated that the Baseline Alignment would lead to an increased level of impact of the Special Qualities of the SLA, particularly considering the presence of other OHLs in the landscape. Other protected / designated landscapes in the area include the Kinlochourn-Moidart-Morar WLA to the west and south of the Baseline Alignment, and the Loch Lochy and Loch Oich SLA to the south and south-east. Adverse effects to these areas are not expected as a result of the Baseline Alignment.

10.5.9 Visual receptors within Section 5 include residents of Invergarry and dispersed dwellings along the lower slopes of Glen Garry, including at Tomdoun, Poulary, Inchlaggan and Garrygualach. Many views from properties in Glen Garry are oriented to look across or along the valley, over the loch or river. Receptors would also include those on Core Paths and popular walking routes, the minor road in Glen Garry, and the A87. There is also a natural stopping point at Loch Quoich Dam, where visual receptors have views along Glen Garry.

Cultural Heritage

10.5.10 There is one designated heritage asset within the vicinity of the Baseline Alignment within Section 5; Quoich Dam and Intake Gatehouse Towers (LB51704), a Category B Listed Building of Medium sensitivity.

10.5.11 There are also 26 non-designated cultural heritage assets recorded on The Highland Council HER within 500 m either side of the Baseline Alignment, and a further eight features were identified during a desktop study of historic mapping and aerial photography.

10.5.12 The majority of the cultural heritage features along Section 5 most likely date to the late-medieval and post-medieval periods, although some evidence of prehistoric settlement and activity may be present (the HER records the chance find of a Bronze Age pot near Ardochy in the 1900s. The evidence suggests activity, if not occupation, from the prehistoric period to the present-day. The landscape formed by this activity is moderately well-preserved along parts of Section 5, although commercial forestry has been established (mostly in the latter part of the 20th century) in the eastern part of the section.

Other Environmental Considerations

10.5.13 Properties along Glen Garry, at Tomdoun and Poulary and at Munerigie and Achadh Luachrach are within the vicinity of the Baseline Alignment in this section.

10.5.14 Agriculture within this section is predominantly rough grazing, dominated by plant communities of low grazing value. There could be some minor interaction with sections of improved grassland (5.3) to the north of Loch Garry.

10.5.15 A new or extended wayleave would be required through commercial forestry to the north of Loch Garry.

10.5.16 There are no current planning applications or areas allocated for future development in direct conflict with the Baseline Alignment within this section.

Variants (Environmental Considerations)

Variants Overview

10.5.17 Given that the Baseline Alignment closely follows the route of the existing steel lattice OHL, this is generally deemed to be the most appropriate alignment. As such there are no variants to the Baseline Alignment currently being considered to either mitigate a potential effect, or to provide an alternative for consideration by the project team.

10.6 Preliminary Consultation Feedback

10.6.1 During the alignment selection process, workshops have been held with statutory consultees to seek feedback on alignment options and design solutions for the project. A summary of the feedback provided in relation to Section 5 is provided below:

- NatureScot highlight that Section 5 passes close to Loch Poulary, Loch Garry and Loch Lundie, which are all part of the SPA which is protected for breeding black-throated divers and common scoter. They advise that following a route closest to the existing overhead line is likely to present the lowest risk of increased impacts to scoters and divers;
- NatureScot also referenced peatland, woodland, ornithology and other protected species that may be present within the Section;
- HES suggested that in Section 5, there is no potential to affect assets within their remit;
- Forestry Land Scotland queried if existing wayleave would be used; and
- The Highland Council and SEPA made no specific comments relating to Section 5.

10.6.2 Appendix 4 provides further detail on the responses received, and how these have been addressed and considered during the alignment selection process.

10.7 Preferred Alignment and Design Solution

10.7.1 In selecting the preferred alignment, consideration has been given to a variety of environmental, technical and cost considerations relevant to this section, as detailed above. Given that the Baseline Alignment closely follows the route of the existing OHL, this is generally deemed to be the most appropriate alignment and is therefore put forward as the preferred alignment and design solution in this section.

11. SECTION 6 – INVERGARRY TO FORT AUGUSTUS

11.1 Introduction

11.1.1 This section heads north east from north of Invergarry towards Auchterawe and Fort Augustus Substation.

11.1.2 Figures prepared as part of this Consultation Document of relevance to this section include:

Figures

- Figure 2.6.1a to 2.6.3a: Section 6: Baseline Alignment, Variants, Environmental Designations and Constraints
- Figure 3.6: Section 6: Preferred Alignment and Design Solution

11.2 Proposed Development Solution

11.2.1 It is proposed that this section would comprise the installation of a new double circuit 132 kV OHL supported by steel lattice structures approximately 28 m in height. A double circuit steel lattice OHL solution is the preferred technology choice for this section as it meets the predicted capacity and load requirements, provides reliable security of supply, and provides a cost-effective solution.

11.2.2 Within this section, the existing 132 kV wood pole OHL would be removed upon completion of the new OHL.

11.3 Technical Considerations and Construction Access

11.3.1 Existing access tracks are present within this section, typically to provide access to existing power lines, are well maintained and likely to be able to provide suitable construction access for this project with minimal upgrade requirements. Should new stone tracks be required, this section of the project comprises largely favourable ground conditions for their construction.

11.3.2 The use of helicopters is not currently being considered for this section of the project due to the presence of existing tracks.

11.3.3 Given the presence of the existing OHL and other OHL infrastructure, minimising cross overs of the new OHL with the existing OHL is a key technical consideration during the alignment stage. Cross overs can lead to the requirement for outages on the network which has cost implications and disruption for the consumer.

11.4 Baseline Alignment

11.4.1 The Baseline Alignment for Section 6 is shown on Figure 2.6.1a. The Baseline Alignment was developed by the OHL contractor to be the most technically feasible and economically viable option. Within this section the Baseline Alignment generally follows that of the existing Fort Augustus to Skye Tee 132 kV wood pole OHL (which would be removed), past Loch Lundie before entering Inchnacardoch Forest. The alignment rises through forested ground to the west of Auchterawe before meeting the Beauly to Denny 400 kV wayleave routed adjacent to the existing OHL. From this point, an underground cable connection into Fort Augustus Substation would be required.

11.4.2 The Baseline Alignment deviates slightly from the existing OHL at Loch Lundhie, Lònn Mòr and Auchterawe Wood.

11.5 Alignment Options Appraisal

11.5.1 A review of the Baseline Alignment and all potential variants has been carried out against a variety of environmental, technical and economic considerations. A summary of the key elements of this review is provided below.

Baseline Alignment (Environmental Considerations)

Natural Heritage

11.5.2 The Baseline Alignment would border the West Inverness-shire lochs SPA at Loch Lundie. Black-throated divers and common scoters may fly between the composite lochs of the SPA (SSSIs) and so may be vulnerable to collision from OHLs between the lochs. The new OHL is not between the main SPA lochs, and survey work associated with the Fort Augustus to Skye T OHL did not identify a potentially significant risk with diver species flying to the east from Loch Lundie, although potential disturbance issues would remain.

11.5.3 Habitats along the Baseline Alignment are predominantly heather moorland, peatlands and areas of native woodland / commercial forestry.

Landscape and Visual

11.5.4 The landscape of Section 6 is characterised by areas of open moorland near Loch Lundie, contrasting with dense coniferous forestry of Inchnacardoch Forest. Settlement is sparse in the vicinity of the alignment, with the exception of a bothy at Achadh-nan-Darach and the settlement of Auchterawe. Existing electrical infrastructure is present in the area, including the woodpole 'Skye-T' OHL and a steel lattice OHL between Loch Lundie and Fort Augustus Substation, via Auchterawe. The Baseline Alignment would not affect any designated or protected landscapes.

11.5.5 The landscape of moorland and forest is considered to have reasonable opportunity to accommodate the Baseline Alignment.

11.5.6 Visual receptors within Section 6 include those on core paths near Loch Lundie and within Inchnacardoch Foresty, as well as those in the bothy at Achadh-nan-darach and settlement of Auchterawe.

Cultural Heritage

11.5.7 Torr Dhuin Scheduled Monument (SM 794), a stone-walled dun, or fort is located approximately 1.3 km south-east of the Baseline Alignment near Auchterawe. The monument is located on a steep, forested knoll overlooking the River Oich and is visible from the valley floor to the east over which it looks. A full settings assessment will be required to determine potential effects. However, initial appraisal suggests that any potential effects on its setting are not likely to be significant.

11.5.8 There are five non-designated cultural heritage assets recorded on The Highland Council HER within 500 m either side of the Baseline Alignment, and another two features were identified during the desktop study of historic mapping and aerial photography.

11.5.9 There is almost no cultivable land in this section, and land use is dominated by commercial forestry plantations at Auchterawe and east of Loch Lundie. Settlement is very sparse, confined to the small township around Auchterawe House. The cultural heritage features along Section 6 most likely date to the late-medieval and post-medieval periods, although some evidence of prehistoric settlement and activity may be present. The scarcity of cultivable land on suitable terrain is likely to mean that settlement has largely continued and developed on lands previously exploited in prehistoric periods, and it is likely that the later activity has obscured

much of the evidence of earlier settlement and occupation. A collection of heritage assets remain in a group around the Invervigar Burn and are evidently perhaps all associated remains of the small, Dail a' Chuirn / Achadh-nan-darach township settlement (MHG32910).

11.5.10 In general, it should be relatively straightforward to mitigate any potential direct impacts to heritage assets in this section, through design modifications and the use of micrositing to avoid structural remains of former buildings and other standing structures. Where it is not possible to avoid direct impacts upon heritage assets through micrositing, impacts can be reduced through adoption of sensitive construction techniques within the vicinity of these assets.

Other Environmental Considerations

11.5.11 There are a number of properties at Auchterawe which fall within the vicinity of the Baseline Alignment in the section, and the potential for constraint is increased by the presence of existing electricity infrastructure.

11.5.12 Agriculture consists predominantly of rough grazing, dominated by plant communities of low grazing value.

11.5.13 An extension to the existing wayleave would be required through Inchnacardoch Forest.

11.5.14 There are core paths around Loch Lundie (three routes).

Variants (Environmental Considerations)

Variants Overview

11.5.15 A number of variants to the Baseline Alignment have been considered to either mitigate a potential effect, or to provide an alternative for consideration by the project team. These variants are set out in Table 11.1 and shown on Figure 2.6.1a. The potential environmental constraints and opportunities of these variants in comparison to the Baseline Alignment, and with regard to the environmental topic areas set out in SSEN Transmission's routeing guidance¹⁹, is discussed in more detail in Appendix 3 (see also Figures 2.6.1 to 2.6.3).

Table 11.1: Variants: Section 6

Variant	Description	Variant Taken forward? (Y/N)
<i>Variant 6-A (Loch Lundie)</i>	This variant has been suggested to minimise potential effects on the qualifying species of the West Inverness-shire Lochs SPA present at Loch Lundie. This variant follows more closely the alignment of the existing OHL, in comparison to the Baseline Alignment. As such, this variant is preferred.	Y
<i>Variant 6-B (Auchterawe)</i>	Approximately 6 km of underground cable to connect into Fort Augustus Substation. This variant has been put forward to facilitate rationalisation of existing OHL infrastructure within the area, and in light of likely future connection requirements. This variant is preferred.	Y

11.6 Preliminary Consultation Feedback

11.6.1 During the alignment selection process, workshops have been held with statutory consultees to seek feedback on alignment options and design solutions for the project. A summary of the feedback provided in relation to Section 6 is provided below:

- NatureScot highlight that Section 6 passes close to Loch Lundie, which is part of the West Inverness-shire Lochs SPA, protected for breeding black-throated divers and common scoter. NatureScot advise that following a route closest to the existing overhead line is likely to present the lowest risk of increased impacts to scoters and divers;
- HES highlight the Baseline Alignment's proximity to the Scheduled Monument of Torr Dhuin, fort, Fort Augustus (SM 794). HES suggest a key consideration for this is whether the new towers associated with the Baseline Alignment would adversely impact important views to the fort from the Great Glen and from the fort along the Great Glen. HES have offered advice on viewpoint locations and continue to recommend that visualisations should be produced illustrating impacts on both outward and inward views from and to the fort;
- Forestry Land Scotland have expressed some concern regarding the Baseline Alignment through Inchnacardoch Forest; and
- The Highland Council and SEPA made no specific comments relating to Section 6.

11.6.2 Appendix 4 provides further detail on the responses received, and how these have been addressed and considered during the alignment selection process.

11.7 Preferred Alignment and Design Solution

11.7.1 In selecting the preferred alignment, consideration has been given to a variety of environmental, technical and cost considerations relevant to this section, as detailed above. It is proposed that the Baseline Alignment with Variant 6-A and 6-B (underground cable) is taken forward as the preferred alignment and design solution in Section 6.

12. CONSULTATION ON THE PROPOSALS

- 12.1.1 SSEN Transmission places great importance on, and is committed to, consultation and engagement with all parties or stakeholders who are likely to have an interest in proposals for new projects. Stakeholder consultation and engagement is an essential part of an effective development process.
- 12.1.2 Preliminary consultation with statutory consultees has been undertaken throughout the alignment selection and design stage to seek feedback on alignment options and design solutions as they have evolved. This feedback has been given consideration in selection of a preferred alignment and design solution (see Appendix 4).
- 12.1.3 Feedback received by stakeholders during the route options stage, as detailed within the Report on Consultation (published in November 2020), has also helped inform the alignment selection stage and identification of a preferred alignment and design solution.
- 12.1.4 A series of public exhibition events will be held to provide local communities the opportunity to provide feedback on the alignment selection stage of the project.

12.2 Questions for Consideration by Consultees

- 12.2.1 When providing your comments and feedback, SSEN Transmission would be grateful for your consideration of the questions below:
- Have we adequately explained the need for this Project?
 - Are you satisfied that our approach taken to selecting the preferred alignment and design solution has been adequately explained?
 - Are there any factors, or environmental features, that you consider may have been overlooked during the route and alignment selection process?
 - Do you have any other comments in relation to the drivers for the project, related to the transmission infrastructure requirements, or about the preferred alignment and design solution?

12.3 Next Steps

- 12.3.1 All comments are requested by 19th November 2021. A Report on Consultation will be produced which will document the consultations received, and the decisions made in light of these responses, and the identification of a proposed alignment.
- 12.3.2 Following the identification of a proposed alignment, further technical and environmental surveys will be undertaken as appropriate to support an Environmental Impact Assessment (EIA) Report and Section 37 application for the proposed alignment, anticipated to be made in summer 2022. A Scoping Report for the project is planned to be published in November 2021 to outline the proposed scope of the EIA Report.