Scottish & Southern Electricity Networks

Consultation Document - Route Selection

Project: Abhainn Dubh Wind Farm Connection

Date: August 2024

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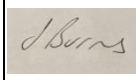
	L. Soeder		J. Burns		M. Goodwin		16.08.2024	

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GLOSSARY

Term	Definition
Alignment	A centre line of an overhead line (OHL), along with location of key angle structures.
Amenity	The natural environment, cultural heritage, landscape and visual quality. Also includes the impact of SHE Transmission's works on communities, such as the effects of noise and disturbance from construction activities.
Ancient Woodland Inventory (AWI)	The Ancient Woodland Inventory identifies ancient woodland using presence or absence of woods from old maps, information about the wood's name, shape, internal boundaries, location relative to other features, ground survey, and aerial photography.
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 and, normally, with the objective of influencing decisions, policies or programmes of action.
Corridor	A linear area which allows a continuous connection between the defined connection points. The corridor may vary in width along its length; in unconstrained areas it may be many kilometres wide.
Environmental Impact Assessment (EIA)	A formal process set down in The Electricity Works (EIA) (Scotland) Regulations 2000 (as amended in 2008) used to systematically identify, predict and assess the likely significant environmental impacts of a proposed project or development.
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.
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.
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).
Micrositing	The process of positioning individual structures to avoid localised environmental or technical constraints.
Mitigation	Term used to indicate avoidance, remediation or alleviation of adverse impacts.
National Scenic Area (NSA)	A national level designation applied to those landscapes considered to be of exceptional scenic value.
Overhead line	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.
Riparian Woodland	Natural home for plants and animals occurring in a thin strip of land bordering a stream or river.
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.

Term	Definition
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.
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'.
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.
Span	The section of overhead line between two 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. Implemented under the Wildlife and Countryside Act 1981.
Stakeholders	Organisations and individuals who can affect or are affected by SHE Transmission works.
Study Area	The area within which the corridor, route and alignment study takes place.
Terminal Structure	A structure (tower or pole) required where the line terminates either at a substation or at the beginning and end of an underground cable section.
The National Grid	The electricity transmission network in the Great Britain.
Volts	The international unit of electric potential and electromotive force.
Wayleave	A voluntary agreement entered into between a landowner upon whose land an overhead line is to be constructed and SHE Transmission.
Wild Land Area (WLA)	Those areas comprising the greatest and most extensive areas of wild characteristics within Scotland.

PREFACE

This Consultation Document has been prepared by ERM on behalf of Scottish and Southern Electricity Networks Transmission (SSEN Transmission), to seek comments from all interested parties on the Abhainn Dubh Wind Farm Connection project.

The Consultation Document is available online at: https://www.ssen-transmission.co.uk/abhainn-dubh-wind-farm-connection

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

- Tuesday 3rd September 2024, Evanton Jubilee Hall, 3pm – 7pm

Comments on this document should be sent to:

Lisa Marchi

Community Liaison Manager

SSEN Transmission

10 Henderson Road, Inverness IV1 1SA

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All comments are requested by Friday 4th October 2024.

EXECUTIVE SUMMARY

SSEN Transmission is proposing to construct and operate a 132 kV overhead line (OHL) to connect the proposed Abhainn Dubh Wind Farm to the existing Fyrish 132 kV Substation. Abhainn Dubh Ltd., E Power Ltd. and Invis Energy are the developers for Abhainn Dubh Wind Farm, which was submitted for Section 36 planning consent on 2nd June 2023. The 58.5 MW wind farm requires a single circuit 132 kV connection from the wind farm substation compound, terminating at the existing Fyrish Substation.

Three Route Options have been identified to achieve the connection and these have been appraised against environmental, engineering and economic criteria. This Consultation Document invites comments from all interested parties on the three Route Options under consideration.

The key environmental considerations are impacts on the cultural heritage assets of Foulis Castle, Novar Garden & Designed Landscape and the Fyrish Monument, collision and barrier effects on protected bird species (e.g. capercaillie) and landscape and visual impacts. The key engineering considerations are hilly terrain, access challenges, and potential presence of peat of the Route Options.

Through the environmental appraisal, Route Option 2 was identified as having a lower magnitude of impact on Annex 1 peat and blanket bog habitat. All Route Options have cultural heritage features within the 2 km Study Area that may experience effects to settings. Route Option 3 has the greatest potential impact due a higher number of Scheduled Monuments, Class A Listed Buildings and undesignated assets, which are found within the Route.

From an engineering perspective, Route Option 2 is the Preferred Route Option. Route Option 3 appears to be the second preferred option. The only challenge at this stage with this option appears to be the proximity to the residential properties. Route Option 1 is the least preferred considering its hilly terrain, access challenges, and potential presence of peat.

The economic appraisal identified all Route Options are within 120% of the lowest capital and operational cost option, therefore all Route Options are considered acceptable from a cost perspective.

The overall Preferred Route Option for the connection between the proposed Abhainn Dubh Wind Farm to the existing Fyrish 132 kV Substation is therefore Route Option 2, achieved though consideration of environmental, engineering and economic appraisals of all Route Options.

Face to face consultation events will be held at Evanton Jubilee Hall on 3rd September between 3pm and 7pm. Meetings will be arranged with statutory and other stakeholders. The responses received, and those sought from statutory consultees and other key stakeholders will inform further consideration and design of the Preferred Route leading to the identification of a proposed route to take forward to the alignment and consenting stages.

Please submit your comments to Lisa Marchi, Community Liaison Manager, SSEN Transmission, 10 Henderson Road, Inverness IV1 1SA (lisa.marchi@sse.com).

All comments are requested by 4th October 2024.

1. INTRODUCTION

1.1 Purpose of Document

SSEN Transmission is proposing to construct and operate a 132 kV overhead line (OHL) connection to connect proposed Abhainn Dubh Wind Farm to the existing Fyrish 132 kV Substation (the 'Proposed Development'). This Consultation Document invites comments from all interested parties on the three Route Options under consideration (see **Figure 1.1**).

This document presents the findings of an environmental, engineering and cost appraisal of the three Route Options identified by SSEN Transmission and describes the process by which a Preferred Route for the OHL has been selected. The Preferred Route is considered to provide the optimal opportunity to achieve an economically viable, technically feasible and environmentally sound alignment within it.

1.2 Document Structure

This Consultation Document comprises the following sections:

- Section 1: Introduction – describes the purpose of the document;
- Section 2: The need for the proposals – describes the project need, the project overview, and consultation history;
- Section 3: Route selection process – describes the process for selecting the Preferred Route, based on environmental, engineering and economic considerations;
- Section 4: Description of routes – describes the identification of Route Options and provides a summary of each Route Option (1, 2 and 3);
- Section 5: Comparative appraisal – a summary of the environmental, engineering and economic topics, followed by a comparative analysis summary and a description of the Preferred Route; and
- Section 6: Consultation on the proposals – invites comments on the preferred option process, the identification of Preferred Route and next steps.

1.3 Next Steps

As part of the consultation exercise, comments are sought from members of the public, statutory consultees and other key stakeholders on the Preferred Route Option put forward in this report.

A Report on Consultation will be published after the consultation period has ended, which will document the consultations responses received, and the decisions made considering these responses to select a Preferred Route. The Preferred Route will go forward to Alignment Selection, Stage 3 (see **Section 3.1**).

Further engineering and environmental studies will be undertaken to identify a Preferred Alignment within the Preferred Route. Upon completion of the alignment selection process, an Indicative Proposed Alignment will be selected, and further technical and environmental assessment will be undertaken. This will culminate with an application to Scottish Ministers for consent for the construction and operation of an OHL under Section 37 of the Electricity Act 1989.

2. THE PROPOSALS

2.1 The Need for the Project

Scottish Hydro Electric Transmission plc who, operating and known as SSEN Transmission, holds a licence under the Electricity Act 1989 to develop and maintain an efficient, co-ordinated, and economical system of electricity transmission in the north of Scotland and remote islands.

The developer of Abhainn Dubh Wind Farm has submitted a Planning Application under Section 36 of the Electricity Act 1989 for a ~ 75 MW wind farm, which has a contracted connection date of 2029[1]. SSEN Transmission has a statutory duty under Schedule 9 of the Electricity Act 1989 to connect the new development to the transmission network by the contracted connection date.

The development is in line with SSEN Transmission's commitment and licence obligation to facilitate the connection of renewables generators to the grid through an economical, efficient and coordinated approach to transmission reinforcement.

2.2 Project Overview

The Abhainn Dubh Renewable Energy Development is an onshore wind project comprising up to 13 wind turbines and associated infrastructure located approximately 4.5 km west of Evanton, 7 km north-east of Strathpeffer and 4 km north-west of Dingwall.

The Proposed Development comprises approximately 8.4 km of OHL and approximately 1 km of underground cable (UGC) connecting the proposed Abhainn Dubh Wind Farm Substation to the existing Fyrish 132 kV Substation (see **Figure 2.1**). The UCG will be located at the Fyrish Substation to the east and the Developer's Substation in the west of the Route, and the length will be confirmed at alignment stage.

Three Route Options with corridors of circa 1.5 km in width have been identified. The environmental constraints present, and potential impact of the Route Options are assessed below.

The Proposed Development incorporates a single circuit 132 kV trident wood "H" pole arrangement supporting the overhead line running over a distance of approximately 8.4 km. The typical height of the trident poles would be 10 to 18 m, with a typical span of between 75 - 100 m.

Plate 2.1. 'H' Trident Wood Poles

[1] Energy Consents Unit (2024) Abhainn Dubh Wind Farm Application Details [online] Available at: https://www.energyconsents.scot/ApplicationDetails.aspx?cr=ECU00004732 [Accessed: July 2024]

2.2.1 Construction Activities

Key tasks during the construction would include:

- Establishment of suitable laydown areas for material and installation of temporary track solutions as necessary;
- Establishment of temporary construction compounds/welfare units;
- Upgrades to existing tracks and potentially new tracks where required;
- Delivery of structures and materials to site;
- Assembly and erection of wood pole structures and stays; and
- Stringing of conductors using hauling ropes and winches.

Installation of the wood poles would involve the following tasks:

- Excavation of a suitable area for the wood poles, and backfilling after installation of the pole (backfilling would generally be carried out the same day as excavation so that no open excavations are left overnight). The exact area would depend on the ground conditions at each pole;
- In some pole locations, it may be necessary to add imported hardcore backfill around the pole foundations to provide additional stability in areas where the natural sub soils have poor compaction qualities;
- In some pole locations where shallow bedrock is present, it may be necessary to break or remove rock to accommodate pole foundations;
- Conductors would be installed on the wood poles using full tension stringing to prevent the conductor coming into contact with the ground; and
- Remedial works would be carried out to reinstate the immediate vicinity of the structure, and any ground disturbed, to pre-existing use.

2.2.2 Forestry Removal

Any woodland removal which may be required prior to the construction work will be identified and described after a Proposed Alignment has been identified. Any removal of sections of commercial forest would be undertaken in consultation with the relevant landowners. After felling, any timber removed that is commercially viable would be sold and the remaining forest material would be dealt with in a way that delivers the best practicable environmental outcome and is compliant with waste regulations.

An operational corridor would be required to enable the safe operation and maintenance of the Proposed Development. This will vary depending on the type of woodland (based on species present) in proximity to the Proposed Development. In areas of native woodland, it is usually possible to provide a narrower corridor due to a reduced risk of trees falling on the Proposed Development.

2.2.3 Access

The access strategy has not yet been determined. It is anticipated that minimal access track would be required to be installed in close proximity to the OHL to enable construction and maintenance.

More detailed plans for access during construction will be prepared once a Proposed Alignment has been identified and the preferred support structure type selected. Where possible, existing access tracks will be used and upgraded as required. New access tracks may be required and where there is a justified long-term requirement they will be left in place.

Where ground conditions permit, it is preferable to construct the infrastructure without an access track (e.g. on dry and level pasture). Temporary matting may be used in sensitive areas subject to an assessment of gradients and ground conditions. Preference will be given to lower impact access solutions including the use of low pressure tracked personnel vehicles and temporary track solutions in boggy / soft ground areas to reduce any damage to, and compaction of, the ground.

2.2.4 Programme

It is anticipated that construction of the Proposed Development would take place over an 18 to 22 months period, following the granting of consents, although detailed programming of works would be the responsibility of the Principal Contractor in agreement with SSEN Transmission. The programme for the project is currently under development, an indicative programme is as follows:

- Construction Start: July 2027; and
- Operation: July 2029.

3. ROUTE SELECTION PROCESS

3.1 Guidance Document

The approach to route selection was informed by the following SSEN Transmission guidance:

- Procedures for Routeing Overhead Lines and Underground Cables of 132 kV or above, SHE Transmission, 2020, Rev 2.00 (PR-NET-ENV-501); and
- Biodiversity Net Gain Flow Chart, Guidance and Project Toolkit (FC-NET-ENV-500).

The guidance develops a process which aims to balance environmental, engineering and economic considerations throughout a staged Route Options process.

The standard process follows four principal stages:

- Stage 0: Routeing Strategy Development.
- Stage 1: Corridor Selection;
- Stage 2: Route Selection; and
- Stage 3: Alignment Selection.

For certain projects, such as Abhainn Dubh Wind Farm connection, Stage 0 or 1 is not required due to the small scale of the Proposed Development. As a result, this consultation document presents the appraisal completed at Stage 2 – Route Selection.

In consideration of the above, the method of identifying a Preferred Route Option in this study has involved the following four key tasks:

- Identification of the baseline condition;
- Environmental assessment of available Route Options; and
- Identification of an environmentally Preferred Route.

3.2 Study Area

The Study Area for the Route Options is located in the northwest Highlands, between the proposed connection point within the proposed Abhainn Dubh Wind Farm, and the existing Fyrish Substation north-east of Dingwall. The Study Area was developed to be sufficiently broad to allow for a range of connection options to be considered, responding to environmental, technical, and economic considerations. The Route Options within the Study Area have been developed and assessed to identify potential environmental impacts ahead of the alignment stage.

3.3 Baseline Conditions

The following information sources have informed the desk-based baseline study to identify potential environmental constraints within and adjacent to the Route Options. The study area applied for natural heritage features was 10 km, for landscape and visual 15 km, and cultural heritage 2 km. The desktop survey has involved the following:

- Identification of environmental designated sites and other constraints, utilising GIS datasets available via NatureScot SiteLink[2] and other sources. These include:
  - Special Areas of Conservation (SAC);
  - Special Protection Areas (SPA)
  - National Nature Reserves (NNR);
  - Proposed Special Protection Areas (pSPA);
  - Sites of Special Scientific Interest (SSSI);

[2] Nature Scot (2024) SiteLink Home [online] Available at: https://sitelink.nature.scot/home [Accessed: July 2024]

- National Scenic Area (NSA);
- Wild Land Areas (WLA);
- Royal Society for the Protection of Birds (RSPB) reserves;
- Land Capability for Agriculture[3];
- Geological Conservation Review Sites;
- Carbon-rich soil, deep peat and priority peatland habitats[4]; and
- Areas at risk of flooding[5] .

- Identification of archaeological designations and other recorded sites, utilising GIS datasets available via Historic Environment Scotland Data Services[6] and local Historic Environment Scotland teams; these include:
  - World Heritage Sites (WHS) and buffers;
  - Scheduled Monuments and Battlefield Sites;
  - Category A, B and C listed buildings; and
  - Gardens and Designed Landscapes.
- Review of the Highland-wide Council Local Development Plan 2012[7] to identify local policies and further environmental constraints and opportunities, such as Local Nature Conservation Sites (LNCS), core paths or other locations important to the public;
- Review of landscape character assessments of relevance to the Study Area;
- Review of Ordnance Survey (OS) mapping (1:50,000 and 1:25,000) and online GIS data sources from OS Open Data[8]) and aerial photography (where available) to identify other potential constraints such as settlement, properties, walking routes, cycling routes etc.; and
- Review of other local information through online and published media such as tourism sites.

Vantage Point surveys will be undertaken to understand the interaction between birds and potential overhead lines along the Preferred Route.

3.4 Route Identification and Selection Methods

Route Options were identified following site appraisals, taking into account the most notable constraints identified during the baseline studies. Considerations have included a review of the steps outlined in the Holford Rules and SSEN Transmission's approach to Routeing. In summary, the following have been taken into account as far as is practicable at this Routeing stage and will be considered in more detail during Stage 3 (Alignment Selection):

- Avoid if possible major areas of highest amenity value (including those covered by national and international designations and other sensitive landscapes);
- Avoid by deviation, smaller areas of high amenity value;
- Try to avoid sharp changes of direction and reduce the number of larger angle towers required;

[3] The Scottish Government (2024) Scotland's Soils [online] Available at: https://map.environment.gov.scot/Soil_maps/?layer=5 [Accessed July 2024]

[4] NatureScot (2024) Carbon and peatland 2016 map [online] Available at: https://soils.environment.gov.scot/maps/thematic-maps/carbon-and-peatland-2016-map/ [Accessed: July 2024]

[5] SEPA (2024) Flood Maps [online] Available at: https://scottishepa.maps.arcgis.com/apps/webappviewer/index.html?id=3098bbef089c4dd79e5344a0e1e7c91c&showLayers=FloodMapsBasic_2743;FloodMapsBasic_2743_0;FloodMapsBasic_2743_1;FloodMapsBasic_2743_2;FloodMapsBasic_2743_3;FloodMapsBasic_2743_4;FloodMapsBasic_2743_5;FloodMapsBasic_2743_6;FloodMapsBasic_2743_7;FloodMapsBasic_2743_8;FloodMapsBasic_2743_9;FloodMapsBasic_2743_10;FloodMapsBasic_2743_11 [Accessed: July 2024]

[6] Historic Environment Scotland (2024) Historic Environment Scotland Data Services [online] Available at: https://portal.historicenvironment.scot/downloads [Accessed: July 2024]

[7] Highland Council (2012) Highland-wide Local Development Plan [online] Available at: https://www.highland.gov.uk/info/178/development_plans/199/highland-wide_local_development_plan [Accessed: July 2024]

[8] OS (2024) Open Data [online] Available at: https://osdatahub.os.uk/downloads/open [Accessed: July 2024]

- Avoid skylining the Route in key views and where necessary, cross ridges obliquely where a dip in the ridge provides an opportunity;
- Target the Route towards open valleys and woods where the apparent height of towers will be reduced and views broken by trees (avoid slicing through landscape types and try to keep to edges and landscape transitions);
- Consider the appearance of other lines in the landscape to avoid a dominating or confusing wirescape effect; and
- Approach urban areas through industrial zones and consider the use of undergrounding in residential and valued recreational areas.

Indicative Route Options have been identified at 1.5 km widths (although this depends on the site specific constraints and may be narrower or wider in places) to allow for subsequent identification of alignments during the next stage of the process (Stage 3).

3.5 Appraisal Method

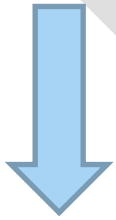
Appraisal of Route Options has involved systematic consideration against the following environmental, technical and economic topic areas:

3.5.1 Environmental

- Natural Heritage (Designations, Protected Species, Habitats, Ornithology and Geology, Hydrogeology and Hydrology);
- Cultural Heritage (Designations and Cultural Heritage Assets);
- People (Settlements, Visual and Physical Effects);
- Landscape (Designations and Character);
- Land Use (Agriculture, Forestry and Recreation); and
- Planning.

Environmental sensitivity has been considered qualitatively, based on professional judgement and utilising the Red, Amber, Green (RAG) rating. It has been applied to each topic area indicating potential impacts. This rating is based on a four-point scale as described in **Table 3.1** below. SSEN Transmission guidance "Procedures for Routeing Overhead Lines of 132 kV or above" (**Section 3.1**) has been followed.

Table 3.1 RAG Rating for Comparative Analysis

Most Preferred  **Least Preferred**	**No Impact**	No potential for the infrastructure design development to be constrained
	Lower Impact	High potential to accommodate the required infrastructure within the context of the consideration appraised
	Moderate Impact	Moderate potential to accommodate the required infrastructure within the context of the consideration appraised
	Higher Impact	Low potential to accommodate the required infrastructure within the context of the consideration appraised

3.5.2 Engineering

The purpose of this assessment is to evaluate the route options using the methodology and engineering categories in table A7 of SSEN document PR-NET-ENV-501: Procedures of Routeing Overhead Lines of 132kV and above. These categories are as follows:

- Infrastructure crossings – major crossings, road crossings;
- Environmental design – elevation, atmospheric pollution, contaminated land, flooding;
- Ground conditions – terrain, peat;

- Construction/Maintenance – access; and
- Proximity – clearance distance, communication masts, metallic pipelines.

Engineering sensitivity has been considered qualitatively, based on professional judgement and utilising the RAG rating. It has been applied to each topic area indicating potential impacts. This rating is based on a four-point scale as described in **Table 3.1**. SSEN Transmission guidance "Procedures for Routeing Overhead Lines of 132 kV or above" (**Section 3.1**) has been followed.

3.5.3 Cost

To allow comparative appraisal a RAG rating has been applied using the criteria described in **Table 3.2**.

Table 3.2 Cost RAG Rating for Comparative Analysis

Red	Amber	Green
>140% of least cost option	120 - 140% of least cost option	< 120% of least cost option

3.5.4 Identification of a Preferred Route

Following review of all of the potential Route Options, these have been considered in combination to arrive at a Preferred Route Option. The overall objective throughout the appraisal of Route Options has been to take full consideration of all environmental factors to minimise any potential adverse impacts on the environment whilst taking into account technical and cost considerations. Where possible, sections of the lowest risk have been combined to form a complete Route Option. However, where it is not possible to join up all sections of lowest risk rating, the section of next best rating has been selected, using professional judgement.

4. DESCRIPTION OF ROUTES

4.1 Identification of Route Options

This Environmental Route Selection Report appraises three Route Options, Route Options 1, 2 and 3 (as shown on **Figure 4.1**). The appraisal uses the environmental criteria set out in **Section 3** to identify a Preferred Route Option.

Route Option 1

Route Option 1 begins at the proposed Abhainn Dubh Wind Farm Substation and travels north east and curves around and adjacent to the north of the Novar Estate. The Route travels south for approximately 3 km towards the Fyrish 132 kV Substation. Route Option 1 is approximately 15 km in length.

Route Option 2

Route Option 2 begins at the proposed Abhainn Dubh Wind Farm Substation and travels north east, to the south of Cnoc Fyrish until it meets at the Fyrish 132 kV Substation. Route Option 2 is approximately 11 km in length.

Route Option 3

Route Option 3 begins at the proposed Abhainn Dubh Wind Farm Substation and travels south east, crossing the River Sgitheach. The Route Option continues eastwards, to the south of Cnoc Fyrish and Swordale Hill, finishing at the Fyrish 132 kV Substation. Route Option 3 is approximately 13 km in length.

5. COMPARATIVE ANALYSIS

This section provides a summary of the potential environmental, technical and economic constraints identified for each Route Option. A detailed review of potential environmental and technical constraints is presented in **Appendix B** and **C**.

5.1 Route Option 1

5.1.1 Natural Heritage Context

The natural heritage constraints present within the Route Option 1 are illustrated in **Figure 5.1**.

Designations

Route Option 1 passes through three designated sites: the Novar Special Protection Area (SPA), the Alness River Valley Sites of Special Scientific Interest (SSSI) and the Allt nan Caorach SSSI. The proximity to the Ben Wyvis SPA, Specioal Area of Conservation (SAC) and SSSI means there is the potential to disturb nationally important population of breeding dotterel (*Charadrius morinellus*) together with the resident pair of golden eagles (*Aquila chrysaetos).*

The proximity to the Cromarty Firth SPA and SSSI means there is the potential to disturb populations of European importance of the Annex I species: osprey (*Pandion haliaetus*). Additionally, the Cromarty Firth Ramsar site qualifies under Ramsar Criterion 1 by virtue of it containing a variety of wetland types including intertidal mudflats, estuarine alder woodland, open water transition fen and saltmarsh. Route Option 1 is given a Red RAG rating due to the proximity to the designated sites and passing directly through ancient woodland.

Protected Species

European protected species likely to be present within Route Option 1 include wildcat (*Felis silvestris grampia),* otter *(Lutra lutra)* and bat species. There is potential for UK BAP species including red squirrel (*Sciurus vulgaris*), pine marten (*Martes martes*), badger (*Meles meles*), and adder *(Vipera berus)* to be present along the Route. In addition, there is potential for SBL species including slow worm (*Anguis fragilis)*, common lizard (*Zootoca vivipara*), common toad (*Bufo bufo*), hedgehog (*Erinaceus europaeus*), mountain hare *(Lepus timidus)* and brown hare (*Lepus europaeus*), to be present.

A Green RAG Rating is applied but further surveys are scheduled to be undertaken along the Preferred Route in due course, which will inform the assumptions made above.

Habitats

Route Option 1 crosses ancient woodland, grassland and blanket bog habitats which may include Annex 1 habitats and potential Ground Water Dependent Terrestrial Ecosystem (GWDTE) habitats. There will be direct impacts to these habitats from tower placement and access road construction. Indirect effects may also be experienced due to nearby construction activities e.g. disturbance to water supply, erosion of peat or deposition of dust. A Red RAG rating is applied as the project is likely to compromise the conservation status of Annex 1 habitats including blanket bog and ancient woodland e.g. by passing directly through them.

Ornithology

Schedule I, BoCC or nesting bird species may be present within Route Option 2, including black grouse (*Lyrurus tetrix*); red-throated diver (*Gavia stellata*), hen harrier *(Circus cyaneus),* barn owl *(Tyto alba),* and peregrine (*Falco peregrinus*).

In addition, the following Schedule 1-listed, Annex I-listed and / or BoCC red-listed bird species are known to hold territories which encompass the area covered by Route Option 2; capercaillie (*Tetrao urogallus*), osprey (*Pandion haliaetus*), red kite (*Milvus milvus*), golden eagle (*Aquila chrysaetos*) and merlin (*Falco columbarius*).

There is therefore the potential for barrier or collision impacts during operation and a Red RAG rating is applied.

Geology, Hydrology and Hydrogeology

The bedrock geology across Route Option 1 includes Braemore Mudstone Formation, Cnoc Fyrish Conglomerate Formation, Ousdale Arkose Formation and Raddery Sandstone Formation. The quality and type of bedrock underlying the Route Option will influence the specification of tower foundation design.

Route Option 1 is predominantly underlain by a Class 2C low productivity aquifer. Impacts resulting from construction and operation of the Proposed Development are likely to be limited to pollution events or localised disturbance to flows. The Route Option passes through five WFD designated watercourses (River Glass, Alness River, Allt na Seasgaich, Allt nan Caorach and Upper Allt nan Caorach, which may require a WFD assessment to be completed as part of any EIA.

There are six private water supplies within Route Option 1: the Elieanach, the Novar Westend Cottage, the Glenglass - West End, the Lealty Farmhouse, the Lealty Lodge and the Novar Tigh na Craig PWS. Depending on the location of excavations and infrastructure a standalone PWS risk assessment might be required as part of the EIA. An Amber RAG rating is applied as this Route Option passes through a surface water drinking protected area and may compromise the quality and/or quantity of surface waters which provide public supply.

5.1.2 Cultural Heritage Context

The cultural heritage constraints present within the Route Option 1 are illustrated in **Figure 5.2**.

There is one Scheduled Monument and one Garden & Designed Landscape (GDL00023 Ardross Castle) within Route Option 1. Within 5 km of Route Option 1 there are 24 Scheduled Monuments and one Garden & Designed Landscape (GDL00303 Novar).

A Red RAG rating has been applied to account for the direct interaction with scheduled monuments and non-designated assets, as well as likely adverse setting effects on Ardross Castle GDL and Novar GDL. There are one Category B, and one Category C Listed Buildings within Route Option 1 that will require an assessment of potential change to the landscape in long-distance from the assets, which has the potential to introduce an impact on the setting. Therefore, a Red RAG rating is applied.

For Route Option 1, there remains the potential to introduce impacts to settings for Listed Buildings, including the Category B and C Listed Buildings and Ardross Castle, as a result of changes to the visual sphere and character of the area.

5.1.3 Landscape and Visual Context

The landscape and visual constraints present within the Route Option 1 are illustrated in **Figure 5.3.**

Route Option 1 does not pass through any National Scenic Areas (NSAs) or Wild Land Areas (WLAs). The eastern extent of the Route Option 1 overlaps with the Ardross Castle GDL, located to the north-east. Although Route Option 1 does overlap, it is anticipated that avoidance and micrositing will be applied at alignment stage. Therefore, Route Option 1 has the potential to impact the special qualities of nationally and/or regionally designated landscapes and therefore a Red RAG rating is applied.

Route Option 1 is located within the 341 - Forest Edge Farming and the 330 - Rounded Hills and Moorland Slopes LCTs. An Amber RAG rating has been applied to Landscape character and visual amenity as the Route Option has the potential to compromise these topics. There are few settlements adjacent to the Route Option, however the Ardross Castle GDL is located within Route Option 1.

5.1.4 Land Use and Recreation Context Land Use and Recreation Context

Agriculture

Route Option 1 is located within agricultural land scored between 3.2 and 5.2 and therefore a Green RAG rating for low impact has been applied.

Forestry

There are large areas of commercial forestry within Route Option 1 with the potential to compromise forestry operations resulting of loss in commercial returns. A Red RAG rating is applied as Route Option 1 crosses conifer plantation woodland, especially the commercial forestry plantations located at the Windfarm Substation, which will be severely affected.

Recreation

Route Option 1 intersects one core path in the east of the Route. Route Option 1 may compromise the recreational amenity of the Fyrish Core Path, near the Fyrish Monument located 1.5 km away at the closest point, therefore an Amber RAG rating is applied.

5.1.5 Planning

There are numerous policies within the current LDP on the protection of the natural and built environments that will be relevant in the consideration of the development of electricity infrastructure. The Route Option is in full compliance with national, regional and local applicable planning policy. An Amber RAG rating has been applied as the Route Option may be inconsistent with other third party proposals known to the planning system.

5.1.6 RAG Impact Rating Summary

Table 5.1 Summary RAG Rating Table for Route Option 1

Route	RAG Impact Rating - Environmental															
	Natural Heritage					Cultural Heritage		People	Landscape			Land Use			Planning	
	Designations	Protected Species	Habitats	Geology, Hydrology and ...	Ornithology	Designations	Cultural Heritage Assets	Proximity to People	Designations	Character	Visual	Agriculture	Forestry	Recreation	Policy	Planning
1	H	L	H	M	H	H	H	L	H	M	M	L	H	M	M	M

5.1.7 Engineering Constraints

Major Crossings

Major crossings include other OHLs of 132 kV and above, railways, rivers/loch, land with altitude 200 m+, navigable waterways, motorways and other major roads, major pipelines, and other significant infrastructure. These crossing require specific OHL solutions and can greatly constrain a design.

Route Option 1 would require crossing the proposed ASTI OHL Loch Buidhe- Beauly, However Route Option 1 may share same corridor with this line for approx. 6 kms. The Route Option also requires crossing existing 132 kV and 275 kV OHLs coming into Fyrish Substation. All the OHL crossings designs would be further assessed in detailed design stage however, it seems that most of these crossings would be near substations and can be crossed in undergrounded sections of the line. There would also be railway track crossings along the B817 road.

Route Option 1 crosses the River Glass and River Sgitheach. The average width of this river appears to be around 15 - 25 m. The wood pole average span is generally around 80 – 85 m and in some cases it could give

maximum span around 100 m. Therefore, considering the span lengths of the wood poles, spanning this river could be challenging and careful alignment placement required with all Route Options. Therefore, Red RAG rating has been assigned to Route Option 1.

Road Crossings

Road crossings include all road crossings. Private tracks and driveways may also be included where the need for access to be maintained is present or where relatively high traffic volumes are anticipated. Whilst the impact on OHL design is less for these crossings, measures are still required and collectively they can greatly constrain a Route Option.

Route Option 1 has the least number of road crossings, therefore, a Green RAG Rating has been applied. The majority of crossings appear to be forestry track and existing wind farm tracks.

Elevation

High elevations increase wind and ice loading on the lines resulting in the need for shorter spans or stronger structures. This can constrain routeing options and increase cost. Additionally, a more robust access for construction and maintenance is required at higher altitudes due to the increased risk of severe weather.

Alignment and tower locations are not determined at this stage therefore the centreline of each Route Option was used for the assessment.

The altitude along Route Option 1 is greater than 200 m AOD for more than 78% of the route, and therefore it is classified as Red RAG Rating. The route has mountainous terrain with significant rises and falls of elevation throughout. Although the altitude is above 200m for maximum portion of the route, it is still at elevations which are constructable with wood pole trident structures.

Contaminated Land

Contaminated land poses a significant health risk to construction and maintenance operatives, and is potentially expensive to mitigate, dispose of or remediate. As such, the presence of contaminated land in a Route Option would be a significant constraint. For assessment purposes, the presence of unexploded ordnance, is also considered in this section as it has similar implications.

At this time an initial desktop study has been carried out looking at possible unexploded ordinance (UXO) within the areas surrounding the routes. A Green RAG Rating has been applied as there are no known UXO in the areas within and surrounding the Route Option 1.

Flooding

Areas vulnerable to flooding pose a potential risk during construction, may prevent maintenance, and can pose a physical risk to structures during flood events. As such, Options with large areas vulnerable to flooding would have a high risk of constraint.

Using the SEPA flood map, each of the routes were assessed to determine what percentage is at risk to flooding. The proposed Route Option 1 passes over the River Glass which has a medium likelihood of flooding at 0.5% chance of happening in any one year. It crosses over perpendicular at two separate locations but does not follow it closely which reduces the flood risk. The first crossover occurs to the north-east of Abhainn Dhubh Wind Farm, which is indicated as a medium likelihood of river flooding at 0.5% chance each year. The second crossover happens to the Allt Leacach, and Srath Mor where the route follows a length of approximately 2.9 km. The flood map indicates that there is a 0.5% chance of flooding in the area for river flooding. Depending on the exact location of the alignment within Route Option 1, it may also cross or closely follow the river in these areas. As a result, a Red RAG Rating has been applied for Route Option 1.

The following flood risk assessment has been done using SEPA flood maps available online which do not have the routes shown on them so require comparison to the proposed routes. This section should be reviewed in greater detail once the flood maps are overlayed with the route corridors and should also include the ground conditions observed once a site visit has been carried out.

Terrain

Steep or mountainous slopes present a significant difficulty for routeing, access, construction, and maintenance. Options with a large proportion of steep or mountainous slopes are more likely to be constrained and thus more difficult and costly to build and maintain.

The terrain has been assessed by the reviewing the average gradient and maximum gradients of the terrain along the route using Google Earth elevation profile. Route Option 1 has gradients below 40% however, the route is not flat and is gently undulated, therefore it is classified as Amber RAG Rating. All routes have similar average slopes and have a maximum slope no greater than ±30%.

Peatland

Peat, particularly deep peat, represents a significant difficulty for access, construction, and maintenance. Route Options with a large proportion peatland are more likely to be constrained and thus more difficult and costly to build and maintain. Peatland is also an important habitat and construction of new OHLs can cause lasting damage.

The NatureScot Peatland Mapping has been used to determine peat areas along each route. The beginning sections of Route Option 1 has large pockets of Class 1 (Nationally important carbon-rich soils, deep peat and priority peatland habitat. Areas likely to be of high conservation value) and Class 2 (Nationally important carbon-rich soils, deep peat and priority peatland habitat. Areas of potentially high conservation value and restoration potential) peat. It is approximated that 27 – 32% of the total length of Route Option 1 is present in deep peat. The exact extents of the lengths and depth of the peat shall be determined upon carrying out the site investigation works. Therefore, a Red RAG Rating has been applied to Route Option 1.

Access

Construction of temporary access for construction are a significant project cost and a Route Option that is remote from existing tracks and the public road network has the potential to incur large access costs. Furthermore, access for inspection and maintenance is necessary throughout the life of the asset. A Route Option remote from existing access routes represents a significant risk and has a high potential to be constrained.

Access has been evaluated by reviewing the ordnance survey maps and using satellite imagery to identify the density of existing roads and access tracks within the proposed route corridors. Based on the number of existing access tracks and distances between each one, the areas in each route have been identified and the appropriate rating then given.

Route Option 1 has been designated as Amber RAG Rating. Despite of being hilly terrain all sections of the route have multiple access tracks for most of the route, no more than 1 km from the centre of the proposed route. On northeast side of the Fyrish Substation the road is connected to B9176 Struie Road. The road then runs for a length of the route and finally connects to the existing wind farm site adjacent the Loch Glass.

Angle Supports

OHLs with a high number of angles supports tend to be more difficult to construct, due to the number of angled pull throughs, and often require more extensive access. As such, a Route Option with many angle supports is at a greater risk of being constrained.

Route Option 1 has slightly more challenging terrain than the other routes and appears to have 18 angle poles inclusive of failure containment poles.

Although the calculation of number of angle poles is very high level at this stage. There could be more angle poles added to each route as the design progresses. However, it appears that the proportion in which the pole will increase will remain similar and the option 3 likely to have <110% of the least likely option. Therefore, Red RAG rating has been conservatively applied to Route Option 1.

Clearance

Dispersed buildings and properties are a common feature of the Scottish landscape. Placing OHLs near these features is rarely well received and best avoided. Route Options with numerous areas near buildings and properties have significant risk of constraining routing.

Although clearances are more applicable during the alignment stage, an assessment has been carried out to see if there are any properties within or near the route boundaries. This category has been interpreted to mean the distance it would be possible to maintain to properties/buildings with an alignment through each of the corridors (e.g. if there were properties within the route boundary, where it would be possible to maintain 250 m to them with the alignment design, the route would still be given green RAG rating).

Route Option 1 has several dispersed buildings especially the northern side of the Fyrish substation. Considering the width of the route (1.5 km) it could be possible to maintain more than 250 m separation of OHL. Therefore, an Amber RAG Rating has been conservatively applied to Route Option 1.

Wind Farms

Wind Farms pose a risk to OHLs due to disruption of airflows which causes wake on OHL conductors. Due to the wake effect, there are chances of increased conductor vibrations which causes fatigue in conductors and eventually results in breaking of conductor strands. Therefore, to achieve the desired life of the conductor it is mandatory to keep the OHL's out with the 3-rotor diameter buffer of turbines. Current guidance states that any OHL must be situated at least the tip height of the turbine +10% or three times the rotor diameter depending on which is greater.

Route Option 1 travels to the northeast of the proposed Abhainn Dhubh Wind Farm with the closest wind turbine being 500 m from the furthest possible point of the route section. Near the proposed Abhainn Dhubh Wind Farm Substation the proposed turbines rotors have a 136 m diameter. This makes the buffer distance equivalent to 408 m where the OHL support structures cannot be located. Therefore, a Red RAG Rating has been applied to Route Option 1.

Communication Masts

OHLs can block existing line of sights for telecommunication masts and thus the line of sights from mast can constrain structure locations.

The OS map and cell mapper website have been assessed to check if any communication masts are present near the Route Options. From the desktop study survey, all three Route Options are free from communication towers. Therefore, a Green RAG Rating is applied.

Urban Developments

As with dispersed buildings and properties, urban areas represent a significant constraint that will often need to be routed around.

Route Option 1 is in vicinity to a small town, and while there are some settlements along the Route Option there is no real urban environments within it. Therefore, a Green RAG Rating is applied.

Metallic Pipes

Metallic pipes have to be both avoided by individual supports, as they are often expensive to reroute, and, ideally, the final alignment should avoid running parallel, to avoid electrical impacts on the pipelines. As such it represents a constraint on routeing options.

There are not known metallic pipes within Route Option 1. Therefore, a Green RAG Rating is applied for Route Option 1.

Route Lengths

The length of the routes affects the numbers of structures/accesses required, the extent of visual impact from the OHL and project cost.

Alignment and tower locations are not determined at this stage therefore the centreline of each Route Option was used for the assessment. Route Option 1 is significantly longer than all others due to heading around hilly terrain which adds approximately 3 km compared to the other two Route Options and is therefore designated as Red RAG Rating. This Route Option, therefore, have a substantial impact in terms of cost and construction time.

DNO Crossings

Existing Distribution Network Operator/Operations (DNO) crossings are generally undergrounded or diverted to avoid creating a construction and maintenance hazard. There is a cost and programme requirement associated with this activity and Route Options with a large number of DNO crossings could find minimising such crossing a significant routeing constraint.

Data provided by SSEN Distribution in ArcGIS & Electrical Office shows that there is possibility that Route Option 1 crosses an 11 kV DNO line at the River Glass, a 33 kV close to Novar Power Station which travels along the route and route may cross this 33 kV and another 11 kV when approaching the Fyrish Substation depending on the final alignment chosen. Therefore, a Red RAG Rating is applied to Route Option 1.

The Electricity Safety, Quality and Continuity Regulations (ESQCR) assessment

Based on the ESQCR assessment Route Option 1 is identified as intermediate Risk (Amber RAG Rating). Further assessment for ESQCR will be carried out at the Alignment stage.

Table 5.2 Summary Engineering RAG Rating Table for Route Option 1

Route Option	Infrastructure Crossing		Environmental Design				Ground Condition		Construction and Maintenance		Proximity					
	Major Crossings	Minor Roads	Elevation	Atmospheric Pollution	Contaminated Land	Flooding	Terrain	Peatland	Access	Angle Towers	Clearance Distance	Windfarms	Communication Masts	Urban Developments	Metallic Pipes	Route Lengths
1	H	L	H	L	L	H	M	H	M	H	M	H	L	L	L	H

5.1.8 Economic Considerations

Due to the early stage of the project, limited information is available to make a cost comparison appraisal, resulting in the requirement to make high-level assumptions for each of the cost comparison elements considered. These will be considered in more detail at the alignment stage when the technical and engineering specifications required become clearer.

Capital

The preferred technology solution is anticipated to be a new 132kV single circuit OHL supported on a trident wood pole. This is the most cost effective solution in comparison to other technology. Route 1 is within 120% of the least cost option, and has therefore been provided a Green rating

Operational

Compared to other overhead line technologies, a single circuit OHL supported on a trident wood pole is relatively straightforward technology to inspect and maintain. As such, all Route Options have been allocated a Green RAG rating for Operational Cost.

Table 5.3 Summary RAG Rating Table for Capital and Operational Costs of Route Option 1

Route Option	RAG Impact Rating - Cost	
	Capital	**Operational**
	Construction, Diversions, Public Road Improvements, Felling, Land Assembly and Consent Mitigations	Inspections and Maintenance
1	L	L

5.2 Route Option 2

5.2.1 Natural Heritage Context

The natural heritage constraints present within the Route Option 2 are illustrated in **Figure 5.1**.

Designations

Route Option 2 passes through the Novar SPA designated for a breeding population of European importance of the Annex I species capercaillie (*Tetrao urogallus*). The proximity to the Ben Wyvis SPA, SAC and SSSI means there is the potential to disturb nationally important population of breeding dotterel (*Charadrius morinellus*). The proximity to the Cromarty Firth SPA and SSSI means there is the potential to disturb populations of European importance of the Annex I species: osprey (*Pandion haliaetus*). Additionally, the Cromarty Firth Ramsar site qualifies under Ramsar Criterion 1 by virtue of it containing a variety of wetland types including intertidal mudflats, estuarine alder woodland, open water transition fen and saltmarsh. Route Option 2 passes through multiple areas of long-established ancient woodland rated native and nearly-native, in the western and northern section. Route Option 2 is given a Red RAG rating due to the proximity to the designated sites and passing directly through a number of areas designated as ancient woodland.

Protected Species

European protected species likely to be present within Route Option 2 include wildcat (*Felis silvestris grampia),* otter *(Lutra lutra)* and bat species. There is potential for UK BAP species including red squirrel (*Sciurus vulgaris*), pine marten (*Martes martes*), badger (*Meles meles*), and adder *(Vipera berus)* to be present along the Route. In addition, there is potential for SBL species including slow worm (*Anguis fragilis)*, common lizard (*Zootoca vivipara*), common toad (*Bufo bufo*), hedgehog (*Erinaceus europaeus*), mountain hare *(Lepus timidus)* and brown hare (*Lepus europaeus*), to be present. A Green RAG Rating is applied but further surveys are scheduled to be undertaken along the Preferred Route Option in due course, which will inform the assumptions made above.

Habitats

Route Option 2 crosses ancient woodland, grassland and blanket bog habitats which may include Annex 1 habitats and GWDTE habitats. There will be direct impacts to these habitats from tower placement and access road construction. Indirect effects may also be experienced due to nearby construction activities e.g. disturbance to water supply, erosion of peat or deposition of dust. A Red RAG rating is applied as the project is likely to compromise the conservation status of Annex 1 habitats including blanket bog and ancient woodland e.g. by passing directly through them.

Ornithology

Schedule I, BoCC or nesting bird species may be present within Route Option 2, including osprey (*Pandion haliaetus*) and red kite (*Milvus milvus*).

In addition, the following Schedule 1-listed / Annex I-listed and / or BoCC red-listed bird species are known to hold territories which encompass the area covered by Route Option 2 include; capercaillie (*Tetrao urogallus*), black grouse (*Lyrurus tetrix*), red-throated diver (*Gavia stellata*), hen harrier *(Circus cyaneus),* barn owl *(Tyto alba),* golden eagle (*Aquila chrysaetos*), merlin, (*Falco columbarius*) and peregrine (*Falco peregrinus*).

There is therefore the potential for barrier or collision impacts during operation and a Red RAG rating is applied.

Geology, Hydrology and Hydrogeology

The bedrock geology across Route Option 2 includes Braemore Mudstone Formation, Cnoc Fyrish Conglomerate Formation and Raddery Sandstone Formation.

Route Option 2 is predominantly underlain by a Class 2C low productivity aquifer. Impacts resulting from construction and operation of the Proposed Development are likely to be limited to pollution events or localised disturbance to flows. The Route Option passes through three WFD designated watercourses (River Glass, River Skitheach and Allt na Seasgaich), which may require a WFD assessment to be completed as part of any EIA.

There are 9 private water supplies within Route Option 2. Depending on the location of excavations and infrastructure a standalone PWS risk assessment might be required as part of the EIA. An Amber RAG rating is applied as this Route Option passes through a surface water drinking protected area and may compromise the quality and/or quantity of surface waters which provide public supply.

5.2.2 Cultural Heritage Context

The natural heritage constraints present within the Route Option 2 are illustrated in **Figure 5.2.**

There are four Scheduled Monuments and one Designed Landscape within Route Option 2. Within 5 km of Route Option 2 there are 24 Scheduled Monuments and one Designed Landscape.

There is the potential for direct impacts to designated assets anticipated for this Route Option. There remains the potential to oversail or interact in close proximity to designated assets, as well as directly impact the Novar GDL, and introduce direct effects to non-designated assets. This can be mitigated through the use of avoidance and micrositing where possible. There remains the potential to introduce effects to setting for designated assets as a result of changes to the visual sphere and character of the area. Therefore, a Red RAG rating is applied.

There are no Conservation Areas within Route Option 2. There are four Category B, and two Category C Listed Buildings within Route Option 2 that will require an assessment of potential change to the landscape in long-distance from the assets, which has the potential to introduce an impact on the setting. Therefore, a Green RAG Rating is applied.

For Route Option 2, there remains the potential to introduce impacts to settings for Listed Buildings, including the Category B and C Listed Buildings in and around Novar House, as a result of changes to the visual sphere and character of the area.

5.2.3 Landscape and Visual Context

The landscape and visual constraints present within the Route Option 2 are illustrated in **Figure 5.3**.

Route Option 2 does not pass through any NSAs or WLAs. The eastern extent of the Route Option 2 passes directly through the Novar Estate GDL. Although Route Option 2 does overlap, it is anticipated that avoidance and micrositing will be applied at alignment stage. Route Option 2 has the potential to impact the cultural interests of nationally and/or regionally designated landscapes and therefore a Red RAG rating is applied.

Route Option 2 is located within the 328 – Farmed and Forested Slopes the 341 - Forest Edge Farming and Rounded Hills and Moorland Slopes LCTs. An Amber RAG rating has been applied to landscape character as the Route Option may compromise the characteristic elements of the landscape. There are few settlements adjacent to the Route Option. Route Option 2 may compromise view or visual amenity of individual properties

and recreational areas, particularly the Fyrish Monument located 0.8 km away at the closest. Visual amenity is therefore assigned an Amber RAG rating.

5.2.4 Land Use and Recreation Context

Agriculture

Route Option 2 is located within agricultural land scored between 3.2 and 5.2. There are a number of commercial Christmas tree plantations within the Route Option and due to the commercial use, an Amber RAG rating is applied.

Forestry

There are large areas of commercial forestry within Route Option 2 with the potential to compromise forestry operations resulting of loss in commercial returns. A Red RAG rating is applied as Route Option 2 crosses conifer plantation woodland, especially the commercial forestry plantations located at the Windfarm Substation, which will be severely affected.

Recreation

Route Option 2 may compromise the recreational amenity of the five core paths in the area, including Swordale Hill, located within the Route Option, therefore an Amber RAG rating is applied.

5.2.5 Planning

There are numerous policies within the current LDP on the protection of the natural and built environments that will be relevant in the consideration of the development of electricity infrastructure. The Route Option is in full compliance with national, regional and local applicable planning policy. An Amber RAG rating has been applied as the Route Option may be inconsistent with other third party proposals known to the planning system.

5.2.6 RAG Impact Rating Summary

Table 5.4 Summary RAG Rating Table for Route Option 2

Route	RAG Impact Rating - Environmental															
	Natural Heritage					Cultural Heritage		People	Landscape			Land Use			Planning	
	Designations	Protected Species	Habitats	Geology, Hydrology and ...	Ornithology	Designations	Cultural Heritage Assets	Proximity to People	Designations	Character	Visual	Agriculture	Forestry	Recreation	Policy	Planning
2	H	L	H	M	H	H	L	M	H	M	M	M	H	M	M	M

5.2.7 Engineering Constraints

Major Crossings

Major crossings include other OHLs of 132 kV and above, railways, rivers/loch, land with altitude 200 m+, navigable waterways, motorways and other major roads, major pipelines, and other significant infrastructure. These crossing require specific OHL solutions and can greatly constrain a design.

Route Option 2 would require crossing the proposed ASTI OHL Loch Buidhe- Beauly. The route also requires crossing existing 132 kV and 275 kV OHLs coming into Fyrish Substation. All the OHL crossings designs would be further assessed in detailed design stage however, it seems that most of these crossings would be near substations and can be crossed in undergrounded sections of the line. There would also be railway track crossings along the B817 road.

Route Option 2 crosses the River Glass and River Sgitheach. The average width of this river appears to be around 15 - 25 m. The wood pole average span is generally around 80 – 85 m and in some cases it could give maximum span around 100 m. Therefore, considering the span lengths of the wood poles, spanning this river could be challenging and careful alignment placement required with all Route Options. Therefore, Red RAG rating has been assigned to Route Option 2.

Road Crossings

Road crossings include all road crossings. Private tracks and driveways may also be included where the need for access to be maintained is present or where relatively high traffic volumes are anticipated. Whilst the impact on OHL design is less for these crossings, measures are still required and collectively they can greatly constrain a Route Option.

Route Options 2 and 3 have the most road crossings; however, many of these access tracks look to be forestry tracks, proposed/existing wind farm developer access roads, roads connecting to residential areas and not heavily used so are not considered to have a major impact on the overhead line construction. Therefore, an Amber RAG Rating has been applied to Route Option 2.

Elevation

High elevations increase wind and ice loading on the lines resulting in the need for shorter spans or stronger structures. This can constrain routeing options and increase cost. Additionally, a more robust access for construction and maintenance is required at higher altitudes due to the increased risk of severe weather.

Alignment and tower locations are not determined at this stage therefore the centreline of each Route Option was used for the assessment.

Route Option 2 has approximately 2.08 km portion around 22% of the route above 200 m AOD, therefore rated as Amber RAG Rating.

Contaminated Land

Contaminated land poses a significant health risk to construction and maintenance operatives, and is potentially expensive to mitigate, dispose of or remediate. As such, the presence of contaminated land in a Route Option would be a significant constraint. For assessment purposes, the presence of unexploded ordnance, is also considered in this section as it has similar implications.

At this time an initial desktop study has been carried out looking at possible unexploded ordinance (UXO) within the areas surrounding the routes. A Green RAG Rating has been applied as there are no known UXO in the areas within and surrounding the Route Option 2.

Flooding

Areas vulnerable to flooding pose a potential risk during construction, may prevent maintenance, and can pose a physical risk to structures during flood events. As such, Options with large areas vulnerable to flooding would have a high risk of constraint.

Using the SEPA flood map, each of the routes were assessed to determine what percentage is at risk to flooding. Route Option 2 has sections crossing River Glass, River Sgitneach and Novar area, which are predominantly in a flood zone. This would be difficult to avoid as where the route is proposed, runs directly through or mostly close and parallel to it. Therefore, an Amber RAG Rating has been applied for Route Option 2.

The following flood risk assessment has been done using SEPA flood maps available online which do not have the routes shown on them so require comparison to the proposed routes. This section should be reviewed in greater detail once the flood maps are overlayed with the route corridors and should also include the ground conditions observed once a site visit has been carried out.

Terrain

Steep or mountainous slopes present a significant difficulty for routeing, access, construction, and maintenance. Options with a large proportion of steep or mountainous slopes are more likely to be constrained and thus more difficult and costly to build and maintain.

The terrain has been assessed by the reviewing the average gradient and maximum gradients of the terrain along the route using Google Earth elevation profile. Route Option 2 has gradients below 40% however, the route is not flat and is gently undulated, therefore it is classified as Amber RAG Rating. All routes have similar average slopes and have a maximum slope no greater than ±30%.

Peatland

Peat, particularly deep peat, represents a significant difficulty for access, construction, and maintenance. Route Options with a large proportion peatland are more likely to be constrained and thus more difficult and costly to build and maintain. Peatland is also an important habitat and construction of new OHLs can cause lasting damage.

The NatureScot Peatland Mapping has been used to determine peat areas along each route. No pockets of Class 1 (Nationally important carbon-rich soils, deep peat and priority peatland habitat. Areas likely to be of high conservation value) and Class 2 (Nationally important carbon-rich soils, deep peat and priority peatland habitat. Areas of potentially high conservation value and restoration potential) peat are noted within Route Option 2. Therefore, a Green RAG Rating has been applied for Route Option 2.

Access

Construction of temporary access for construction are a significant project cost and a Route Option that is remote from existing tracks and the public road network has the potential to incur large access costs. Furthermore, access for inspection and maintenance is necessary throughout the life of the asset. A Route Option remote from existing access routes represents a significant risk and has a high potential to be constrained.

Access has been evaluated by reviewing the ordnance survey maps and using satellite imagery to identify the density of existing roads and access tracks within the proposed route corridors. Based on the number of existing access tracks and distances between each one, the areas in each route have been identified and the appropriate rating then given.

Route Option 2 leaves Abhainn Dhubh Wind Farm areas, Swordale Road, Glenn Glass Road and some other unnamed roads are running along the majority of the route length. The Swordale and Glen Glass Roads are connected to A9 road via B817 Road. Final investigations would be required to determine if all access tracks are part of the public road network. The route also passes through some forestry tracks close to Fyrish Substation. Therefore, an Amber RAG Rating has been applied to Route Option 2.

Angle Supports

OHLs with a high number of angles supports tend to be more difficult to construct, due to the number of angled pull throughs, and often require more extensive access. As such, a Route Option with many angle supports is at a greater risk of being constrained.

Route Option 2 appears to have 13 angle poles inclusive of failure containment poles.

Although the calculation of number of angle poles is very high level at this stage. There could be more angle poles added to each route as the design progresses. Therefore, Green RAG rating has been conservatively applied to Route Option 2.

Clearance

Dispersed buildings and properties are a common feature of the Scottish landscape. Placing OHLs near these features is rarely well received and best avoided. Route Options with numerous areas near buildings and properties have significant risk of constraining routing.

Although clearances are more applicable during the alignment stage, an assessment has been carried out to see if there are any properties within or near the route boundaries. This category has been interpreted to mean the distance it would be possible to maintain to properties/buildings with an alignment through each of the corridors (e.g. if there were properties within the route boundary, where it would be possible to maintain 250 m to them with the alignment design, the route would still be given green RAG rating).

Route Option 2 also has several dispersed buildings which could be avoided at alignment stage but the building along the routes might come within 100 – 250 m buffer of alignment. Therefore, an Amber RAG rating is conservatively applied to Route Option 2.

Wind Farms

Wind Farms pose a risk to OHLs due to disruption of airflows which causes wake on OHL conductors. Due to the wake effect, there are chances of increased conductor vibrations which causes fatigue in conductors and eventually results in breaking of conductor strands. Therefore, to achieve the desired life of the conductor it is mandatory to keep the OHL's out with the 3-rotor diameter buffer of turbines. Current guidance states that any OHL must be situated at least the tip height of the turbine +10% or three times the rotor diameter depending on which is greater.

Route Option 2 travels to the northeast of the proposed Abhainn Dhubh wind farm with the closest wind turbine being 640 m from the furthest possible point of the route section. Near the proposed Abhainn Dhubh Wind Farm Substation the proposed turbines rotors have a 136 m diameter. Therefore, a Red RAG Rating has been applied to Route Option 2.

Communication Masts

OHLs can block existing line of sights for telecommunication masts and thus the line of sights from mast can constrain structure locations.

The OS map and cell mapper website have been assessed to check if any communication masts are present near the Route Options. From the desktop study survey, all three Route Options are free from communication towers. Therefore, a Green RAG Rating is applied.

Urban Developments

As with dispersed buildings and properties, urban areas represent a significant constraint that will often need to be routed around.

Route Option 2 is in vicinity to a small town, and while there are some settlements along the Route Option there is no real urban environments within it. Therefore, a Green RAG Rating is applied.

Metallic Pipes

Metallic pipes have to be both avoided by individual supports, as they are often expensive to reroute, and, ideally, the final alignment should avoid running parallel, to avoid electrical impacts on the pipelines. As such it represents a constraint on routeing options.

There are not known metallic pipes within Route Option 2. Therefore, a Green RAG Rating is applied for Route Option 2.

Route Lengths

The length of the routes affects the numbers of structures/accesses required, the extent of visual impact from the OHL and project cost.

Alignment and tower locations are not determined at this stage therefore the centreline of each Route Option was used for the assessment. Route Option 2 has the shortest route as it takes a more direct approach from the windfarm to the substation, and is therefore classified as Green RAG Rating.

DNO Crossings

Existing Distribution Network Operator/Operations (DNO) crossings are generally undergrounded or diverted to avoid creating a construction and maintenance hazard. There is a cost and programme requirement associated with this activity and Route Options with a large number of DNO crossings could find minimising such crossing a significant routeing constraint.

Data provided by SSEN Distribution in ArcGIS & Electrical Office shows that there is possibility that Route Option 2 crosses an 11 kV DNO line in Redburn and River Glass area, however as the route travels north of Evanton area it crosses 33 kV. Therefore, an Amber RAG Rating is applied to Route Option 2.

The Electricity Safety, Quality and Continuity Regulations (ESQCR) assessment

Based on the ESQCR assessment Route Option 2 is identified as Red RAG Rating, due to passing through forestry, river, residential areas and arable crops. Further assessment for ESQCR will be carried out at the Alignment stage.

Table 5.5 Summary Engineering RAG Rating Table for Route Option 2

Route Option	Infrastructure Crossing		Environmental Design				Ground Condition		Construction and Maintenance		Proximity					
	Major Crossings	Minor Roads	Elevation	Atmospheric Pollution	Contaminated Land	Flooding	Terrain	Peatland	Access	Angle Towers	Clearance Distance	Windfarms	Communication Masts	Urban Developments	Metallic Pipes	Route Lengths
2	H	M	M	M	L	M	M	L	M	L	M	H	L	L	L	L

5.2.8 Economic Considerations

Due to the early stage of the project, limited information is available to make a cost comparison appraisal, resulting in the requirement to make high-level assumptions for each of the cost comparison elements considered. These will be considered in more detail at the alignment stage when the technical and engineering specifications required become clearer.

Capital

The preferred technology solution is anticipated to be a new 132kV single circuit OHL supported on a trident wood pole. This is the most cost effective solution in comparison to other technology. Route 2 is the shortest in length and is therefore the least cost option and has been provided a Green rating.

Operational

Compared to other overhead line technologies, a single circuit OHL supported on a trident wood pole is relatively straightforward technology to inspect and maintain. As such, all Route Options have been allocated a Green RAG rating for Operational Cost.

Table 5.6 Summary RAG Rating Table for Capital and Operational Costs of Route Option 2

Route Option	RAG Impact Rating - Cost	
	Capital	**Operational**
	Construction, Diversions, Public Road Improvements, Felling, Land Assembly and Consent Mitigations	Inspections and Maintenance
2	L	L

5.3 Route Option 3

5.3.1 Natural Heritage Context

The natural heritage constraints present within the Route Option 3 are illustrated in **Figure 5.1**.

Designations

Route Option 3 passes through the Novar SPA designated for a breeding population of European importance of the Annex I species capercaillie (*Tetrao urogallus*). The proximity to the Ben Wyvis SPA, SAC and SSSI means there is the potential to disturb nationally important population of breeding dotterel (*Charadrius morinellus*). The proximity to the Cromarty Firth SPA and SSSI means there is the potential to disturb populations of European importance of the Annex I species: osprey (*Pandion haliaetus*). Additionally, the Cromarty Firth Ramsar site qualifies under Ramsar Criterion 1 by virtue of it containing a variety of wetland types including intertidal mudflats, estuarine alder woodland, open water transition fen and saltmarsh. Route Option 3 passes through multiple areas of long-established ancient woodland rated native and nearly-native, in the western and northern section. Route Option 3 is given a Red RAG rating due to the proximity to the designated sites and passing directly through a number of areas designated as ancient woodland.

Protected Species

European protected species likely to be present within Route Option 3 include otter (*Lutra lutra*), wildcat (*Felis silvestris grampia),* otter *(Lutra lutra)* and bat species. There is potential for UK BAP species including red squirrel (*Sciurus vulgaris*), pine marten (*Martes martes*), badger (*Meles meles*), and adder *(Vipera berus)* to be present along the Route. In addition, there is potential for SBL species including slow worm (*Anguis fragilis)*, common lizard (*Zootoca vivipara*), common toad (*Bufo bufo*), hedgehog (*Erinaceus europaeus*), mountain hare *(Lepus timidus)* and brown hare (*Lepus europaeus*) to be present. A Green RAG Rating is applied but further surveys are scheduled to be undertaken along the Preferred Route Option in due course, which will inform the assumptions made above.

Habitats

Route Option 3 crosses ancient woodland, grassland and blanket bog habitats which may include Annex 1 habitats and GWDTE habitats. There will be direct impacts to these habitats from tower placement and access road construction. Indirect effects may also be experienced due to nearby construction activities e.g. disturbance to water supply, erosion of peat or deposition of dust. A Red RAG rating is applied as the project is likely to compromise the conservation status of Annex 1 habitats including blanket bog and ancient woodland e.g. by passing directly through them.

Ornithology

Schedule I, BoCC or nesting bird species may be present within Route Option 2, including osprey (*Pandion haliaetus*) and red kite (*Milvus milvus*).

In addition, the following Schedule 1-listed / Annex I-listed and / or BoCC red-listed bird species are known to hold territories which encompass the area covered by Route Option 2 include; capercaillie (*Tetrao urogallu*s), black grouse (*Lyrurus tetrix*), red-throated diver (*Gavia stellata*), hen harrier *(Circus cyaneus),* barn owl *(Tyto alba),* golden eagle (*Aquila chrysaetos*), merlin (*Falco columbarius*) and peregrine (*Falco peregrinus*).

There is therefore the potential for barrier or collision impacts during operation and a Red RAG rating is applied.

Geology, Hydrology and Hydrogeology

The bedrock geology across Route Option 3 includes Braemore Mudstone and Raddery Sandstone, and Ousdale Arkose Formation. The quality and type of bedrock underlying the Route will influence the specification of tower foundation design.

Route Option 3 is predominantly underlain by a Class 2C low productivity aquifer. Impacts resulting from construction and operation of the Proposed Development are likely to be limited to pollution events or localised disturbance to flows. The Route Option passes through three WFD designated watercourses (River Glass, River Skitheach and Allt na Seasgaich), which may require a WFD assessment to be completed as part of any EIA. There are 4 private water supplies within Route Option 3. An Amber RAG rating is applied as this Route Option passes through a surface water drinking protected area and may compromise the quality and/or quantity of surface waters which provide public supply.

5.3.2 Cultural Heritage Context

The natural heritage constraints present within the Route Option 3 are illustrated in **Figure 5.2**.

There are two Scheduled Monuments and one Garden and Designed Landscape within Route Option 3. Within 5 km of Route Option 3 there are 25 Scheduled Monuments and one Garden and Designed Landscape.

There are six Category B and two Category C Listed Buildings within Route Option 3 that will require an assessment of potential change to the landscape in long-distance from the assets, which has the potential to introduce an impact on the setting. Therefore, a Red RAG Rating is applied.

For Route Option 3, there remains the potential introduce impacts to setting for Listed Buildings, therefore an Amber RAG rating has been applied to account for the direct interaction and close proximity with designated assets and non-designated assets, and likely setting effect on Novar GDL.

5.3.3 Landscape and Visual Context

The landscape and visual constraints present within the Route Option 3 are illustrated in **Figure 5.3.**

Route Option 3 does not pass through any NSAs or WLAs. The central extent of the Route Option 3 passes directly through the Novar Estate GDL. Although Route Option 3 does overlap, it is anticipated that avoidance and micrositing will be applied at alignment stage. Therefore, Route Option 3 has the potential to impact the cultural interests of nationally and/or regionally designated landscapes and therefore a Red RAG rating is applied.

Route Option 3 is located within the 341 - Forest Edge Farming and the 330 - Rounded Hills and Moorland Slopes LCTs. The Route Option may compromise characteristic elements of the landscape character type and an Amber RAG rating is applied to the landscape character assessment. There are settlements adjacent to the Route Option. This Route Option may compromise view or visual amenity of individual properties and recreational areas, particularly the Fyrish Monument located 1.3 km to the north at the closest point. Visual amenity is therefore assigned an Amber RAG rating.

5.3.4 Land Use and Recreation Context

Agriculture

Route Option 3 is located within agricultural land scored between 3.2 and 5.2. There are Christmas tree plantations within the Route Option and due to the commercial use, an Amber RAG rating is applied.

Forestry

There are large areas of commercial forestry within Route Option 3 with the potential to compromise forestry operations resulting of loss in commercial returns. A Red RAG rating is applied as Route Option 3 crosses conifer plantation woodland, especially the commercial forestry plantations located at the Windfarm Substation, which will be severely affected.

Recreation

Route Option 3 may compromise the recreational amenity of the seven core paths in the area. including Swordale Hill, located within the Route Option. Route Option 3 is located in close proximity to the Inverness to John O' Groats National Cycle Path. As such, an Amber RAG rating is applied.

5.3.5 Planning

There are numerous policies within the current LDP on the protection of the natural and built environments that will be relevant in the consideration of the development of electricity infrastructure. The Route Option is in full compliance with national, regional and local applicable planning policy. An Amber RAG rating has been applied as the Route Option may be inconsistent with other third party proposals known to the planning system.

5.3.6 RAG Impact Rating Summary

Table 5.7 Summary RAG Rating Table for Route Option 3

Route	RAG Impact Rating - Environmental															
	Natural Heritage					Cultural Heritage		People	Landscape			Land Use			Planning	
	Designations	Protected Species	Habitats	Geology, Hydrology and ...	Ornithology	Designations	Cultural Heritage Assets	Proximity to People	Designations	Character	Visual	Agriculture	Forestry	Recreation	Policy	Planning
3	H	L	H	M	H	H	M	M	H	M	M	M	H	M	M	M

5.3.7 Engineering Constraints

Major Crossings

Major crossings include other OHLs of 132 kV and above, railways, rivers/loch, land with altitude 200 m+, navigable waterways, motorways and other major roads, major pipelines, and other significant infrastructure. These crossing require specific OHL solutions and can greatly constrain a design.

Route Option 3 would require crossing the proposed ASTI OHL Loch Buidhe- Beauly. The route also requires crossing existing 132 kV and 275 kV OHLs coming into Fyrish Substation. All the OHL crossings designs would be further assessed in detailed design stage however, it seems that most of these crossings would be near substations and can be crossed in undergrounded sections of the line. There would also be railway track crossings along the B817 road. Therefore, Red RAG rating has been assigned to Route Option 3.

Road Crossings

Road crossings include all road crossings. Private tracks and driveways may also be included where the need for access to be maintained is present or where relatively high traffic volumes are anticipated. Whilst the impact

on OHL design is less for these crossings, measures are still required and collectively they can greatly constrain a Route Option.

Route Options 2 and 3 have the most road crossings; however, many of these access tracks look to be forestry tracks, proposed/existing wind farm developer access roads, roads connecting to residential areas and not heavily used so are not considered to have a major impact on the overhead line construction. Therefore, an Amber RAG Rating has been applied to Route Option 3.

Elevation

High elevations increase wind and ice loading on the lines resulting in the need for shorter spans or stronger structures. This can constrain routeing options and increase cost. Additionally, a more robust access for construction and maintenance is required at higher altitudes due to the increased risk of severe weather.

Alignment and tower locations are not determined at this stage therefore the centreline of each Route Option was used for the assessment.

Route Option 3 starts at high elevation with a small section of approximately 1 km, which is less than above 200 m AOD. A Green RAG rating has been applied to Route Option 3.

Contaminated Land

Contaminated land poses a significant health risk to construction and maintenance operatives, and is potentially expensive to mitigate, dispose of or remediate. As such, the presence of contaminated land in a Route Option would be a significant constraint. For assessment purposes, the presence of unexploded ordnance, is also considered in this section as it has similar implications.

At this time an initial desktop study has been carried out looking at possible unexploded ordinance (UXO) within the areas surrounding the routes. A Green RAG Rating has been applied as there are no known UXO in the areas within and surrounding the Route Option 3.

Flooding

Areas vulnerable to flooding pose a potential risk during construction, may prevent maintenance, and can pose a physical risk to structures during flood events. As such, Options with large areas vulnerable to flooding would have a high risk of constraint.

Using the SEPA flood map, each of the routes were assessed to determine what percentage is at risk to flooding. Route Option 3 has sections crossing River Glass, River Sgitneach and Novar area, which are predominantly in a flood zone. This would be difficult to avoid as where the route is proposed, runs directly through or mostly close and parallel to it. Therefore, an Red RAG Rating has been applied to Route Option 3.

The following flood risk assessment has been done using SEPA flood maps available online which do not have the routes shown on them so require comparison to the proposed routes. This section should be reviewed in greater detail once the flood maps are overlayed with the route corridors and should also include the ground conditions observed once a site visit has been carried out.

Terrain

Steep or mountainous slopes present a significant difficulty for routeing, access, construction, and maintenance. Options with a large proportion of steep or mountainous slopes are more likely to be constrained and thus more difficult and costly to build and maintain.

The terrain has been assessed by the reviewing the average gradient and maximum gradients of the terrain along the route using Google Earth elevation profile. Route Option 3 has gradients below 40% however, the route is not flat and is gently undulated, therefore it is classified as Amber RAG Rating. All routes have similar average slopes and have a maximum slope no greater than ±30%.

Peatland

Peat, particularly deep peat, represents a significant difficulty for access, construction, and maintenance. Route Options with a large proportion peatland are more likely to be constrained and thus more difficult and costly to build and maintain. Peatland is also an important habitat and construction of new OHLs can cause lasting damage.

The NatureScot Peatland Mapping has been used to determine peat areas along each route. No pockets of Class 1 (Nationally important carbon-rich soils, deep peat and priority peatland habitat. Areas likely to be of high conservation value) and Class 2 (Nationally important carbon-rich soils, deep peat and priority peatland habitat. Areas of potentially high conservation value and restoration potential) peat are noted within Route Option 3. Therefore, a Green RAG Rating has been applied for Route Option 3.

Access

Construction of temporary access for construction are a significant project cost and a Route Option that is remote from existing tracks and the public road network has the potential to incur large access costs. Furthermore, access for inspection and maintenance is necessary throughout the life of the asset. A Route Option remote from existing access routes represents a significant risk and has a high potential to be constrained.

Access has been evaluated by reviewing the ordnance survey maps and using satellite imagery to identify the density of existing roads and access tracks within the proposed route corridors. Based on the number of existing access tracks and distances between each one, the areas in each route have been identified and the appropriate rating then given.

Similar to Route Option 2, Route Option 3 leaves the proposed Abhainn Dubh Wind Farm, there are a number of tracks within the route. Then Swordale Road is running approximately for 4 km length of the route with some other unnamed access roads. Then as the road progresses there are access tracks for forestry areas and Novar residential areas. Finally, the route passes through B9176 Road, which is connected to Fyrish Substation through an access road. Therefore, an Amber RAG Rating has been applied to Route Option 3.

Angle Supports

OHLs with a high number of angles supports tend to be more difficult to construct, due to the number of angled pull throughs, and often require more extensive access. As such, a Route Option with many angle supports is at a greater risk of being constrained.

Route Option 3 appears to have 15 angle poles which also includes failure containment poles.

Although the calculation of number of angle poles is very high level at this stage. There could be more angle poles added to each route as the design progresses. However, it appears that the proportion in which the pole will increase will remain similar and Route Option 3 is likely to have <110% of the least likely option. Therefore, Amber RAG rating has been conservatively applied to Route Option 3.

Clearance

Dispersed buildings and properties are a common feature of the Scottish landscape. Placing OHLs near these features is rarely well received and best avoided. Route Options with numerous areas near buildings and properties have significant risk of constraining routing.

Although clearances are more applicable during the alignment stage, an assessment has been carried out to see if there are any properties within or near the route boundaries. This category has been interpreted to mean the distance it would be possible to maintain to properties/buildings with an alignment through each of the corridors (e.g. if there were properties within the route boundary, where it would be possible to maintain 250 m to them with the alignment design, the route would still be given green RAG rating).

There is dense population in some sections of Route Option 3 which may fall within 100 m of alignment. Therefore, a Red RAG rating has been assigned to Route Option 3.

Wind Farms

Wind Farms pose a risk to OHLs due to disruption of airflows which causes wake on OHL conductors. Due to the wake effect, there are chances of increased conductor vibrations which causes fatigue in conductors and eventually results in breaking of conductor strands. Therefore, to achieve the desired life of the conductor it is mandatory to keep the OHL's out with the 3-rotor diameter buffer of turbines. Current guidance states that any OHL must be situated at least the tip height of the turbine +10% or three times the rotor diameter depending on which is greater.

Route Option 3 travels to the northeast of the proposed Abhainn Dhubh wind farm with the closest wind turbine being 535 m from the furthest possible point of the route section. Near the proposed Abhainn Dhubh Wind Farm Substation the proposed turbines rotors have a 136 m diameter. Therefore, a Red RAG Rating has been applied to Route Option 3.

Communication Masts

OHLs can block existing line of sights for telecommunication masts and thus the line of sights from mast can constrain structure locations.

The OS map and cell mapper website have been assessed to check if any communication masts are present near the Route Options. From the desktop study survey, all three Route Options are free from communication towers. Therefore, a Green RAG Rating is applied.

Urban Developments

As with dispersed buildings and properties, urban areas represent a significant constraint that will often need to be routed around.

Route Option 3 is in vicinity to a small town, and while there are some settlements along the Route Option there is no real urban environments within it. Therefore, a Green RAG Rating is applied.

Metallic Pipes

Metallic pipes have to be both avoided by individual supports, as they are often expensive to reroute, and, ideally, the final alignment should avoid running parallel, to avoid electrical impacts on the pipelines. As such it represents a constraint on routeing options.

There are not known metallic pipes within Route Option 3. Therefore, a Green RAG Rating is applied for Route Option 3.

Route Lengths

The length of the routes affects the numbers of structures/accesses required, the extent of visual impact from the OHL and project cost.

Alignment and tower locations are not determined at this stage therefore the centreline of each Route Option was used for the assessment. Route Option 3 is slightly longer than Route Option 2, and is therefore classified as Amber RAG Rating.

DNO Crossings

Existing Distribution Network Operator/Operations (DNO) crossings are generally undergrounded or diverted to avoid creating a construction and maintenance hazard. There is a cost and programme requirement associated with this activity and Route Options with a large number of DNO crossings could find minimising such crossing a significant routeing constraint.

Data provided by SSEN Distribution in ArcGIS & Electrical Office shows that there is possibility that Route Option 3 also crosses the 11 kV DNO lines those travels along the Swordale Road and 33 kV north of Evanton, Novar, B817 and B9176 roads. Therefore, a Red RAG Rating is applied to Route Option 3.

The Electricity Safety, Quality and Continuity Regulations (ESQCR) assessment

Based on the ESQCR assessment Route Option 3 is identified as Red RAG Rating, due to passing through forestry, river, residential areas and arable crops. Further assessment for ESQCR will be carried out at the Alignment stage.

Table 5.8 Summary Engineering RAG Rating Table for Route Option 3

Route Option	Infrastructure Crossing		Environmental Design				Ground Condition		Construction and Maintenance		Proximity					
	Major Crossings	Minor Roads	Elevation	Atmospheric Pollution	Contaminated Land	Flooding	Terrain	Peatland	Access	Angle Towers	Clearance Distance	Windfarms	Communication Masts	Urban Developments	Metallic Pipes	Route Lengths
3	H	M	L	M	L	H	M	L	M	M	H	H	L	L	L	M

5.3.8 Economic Considerations

Due to the early stage of the project, limited information is available to make a cost comparison appraisal, resulting in the requirement to make high-level assumptions for each of the cost comparison elements considered. These will be considered in more detail at the alignment stage when the technical and engineering specifications required become clearer.

Capital

The preferred technology solution is anticipated to be a new 132kV single circuit OHL supported on a trident wood pole. This is the most cost effective solution in comparison to other technology. Route 3 is within 120% of the least cost option, and has therefore been provided a Green rating.

Operational

Compared to other overhead line technologies, a single circuit OHL supported on a trident wood pole is relatively straightforward technology to inspect and maintain. As such, all Route Options have been allocated a Green RAG Rating.

Table 5.9 Summary RAG Rating Table for Capital and Operational Costs of Route Option 3

Route Option	RAG Impact Rating - Cost	
	Capital	**Operational**
	Construction, Diversions, Public Road Improvements, Felling, Land Assembly and Consent Mitigations	**Inspections and Maintenance**
3	L	L

6. SELECTION OF PREFERRED ROUTE

6.1 Preferred Route

A comparison of the Route Options has identified similar environmental constraints for the three Route Options. There are marginal differences outside of the RAG assessment for each topic. On balance and using professional judgement Route Option 2 is considered to be the environmentally Preferred Route (see **Table 6.1**).

All Route Options are relatively similar in impact to cultural heritage assets as all three introduce impacts to Ardross Castle and Novar Estate GDLs, however Route Option 2 has a lower impact on the cultural heritage assets of Foulis Castle and the Fyrish Monument due to the intervening distance from the Route Option.

Route Option 2 is located further away from settlements and the recreation routes in the Cromarty Firth area including the national Cycle Path of Inverness to John O' Groats (in comparison to Route Option 3). Route Option 1 and Route Option 3 are less preferable due to intersecting irreplaceable habitats such as ancient woodland and the proximity to existing road and network infrastructure.

From an engineering perspective, all only a few such as elevation, ground conditions, access and proximity to wind turbines have more influence in determining the preferred engineering option specific for this project as these features may affect the technology, reliability and construction techniques for the proposed overhead line. This analysis has shown that while there are some challenges, there is a solution available that allows for an alignment through the area. In the following section the key factors shall be discussed for the routes and a comparison shall be made to aid in the decision behind the most appropriate route.

While Route Option 1 and Route Option 2 follow the B9176 road with a small portion near Fyrish Substation, there are no other major road crossings for all Route Options. Route Options 2 and 3 have better access than Route Option 1. Although there is some variation in the number of minor road crossings, the difference between each route on this factor is relatively insignificant and does not limit the Route Options.

The elevation for Route Option 1 remains above 200 m for at least 65% of the length. This requires a more robust design due to extreme climatic loadings at this height. Route Option 2 has less percentages of lengths around above 200 m as compared to Route Option 3. Therefore, this option is more preferable on other two routes based on this factor.

Route Options 1 and 3 follow the length of the river for a longer length passing several waterfalls, exposing it to the floodplain. These routes are at higher risk to flooding and constructability along the floodplains could also prove challenging. Route Option 2 crosses the River Glass north-east of Swordale Hill and, as per SEPA flood maps, it is less prone to flood areas as compared to other two Route Options.

Ground conditions across the routes have been reviewed in detail, as the routes are still at corridor assessment the centre line of each route was used to determine the change in elevation across the terrain. Although the maximum gradients were relatively similar on Route Options 2 and 3 the gradients of greater than 20% occurred in multiple areas with a significant number of peaks and troughs along the Route Option 1. Due to the number of undulations in Route Option 1, it would be difficult to design this out and would therefore cause difficulty in construction and siting of poles potentially making this route unfeasible.

Another significant issue with all ROUTE OPTIONS is forestry challenges, as some sections of all routes are passing through forestry, so approximately similar amount of forestry felling works would be required for all three Route Options.

Alongside the terrain issues it is also observed that a significant proportion of the Route Option 1 passes through peatlands resulting in being assigned a red RAG rating. To be able to construct a wood pole OHL suitable ground conditions are required so that the poles remain stable and to allow the construction to take place. Route Options 2 and 3 have no areas of Class 1 and Class 2 peatland.

The final key consideration when comparing the Route Options relates to their proximity to existing infrastructure both residential properties along with the windfarms in the area. Route Option 1 has several dispersed properties and is located more than 250 m distance from most of these residential properties. Route Option 2 has residential properties along the Swordale Road, with properties near Novar within 250 m more

than Route Option 1. As Route Option 3 follows along the Swordale, Evanton and Novar it comes into closer contact with a greater number of properties and will be more challenging to avoid. This factor should be considered as routing within close proximity to residential properties will impact on views and can also result in potential objections.

SSEN TG-NET-OHL-518 specifications states that new lines must maintain at least 3 x rotor diameter distance from the subject turbine. All the Route Options are within this distance at the start of route near proposed Abhainn Dhubh Substation. The wake on the conductors needs to be calculated in this buffer zone to account for the change of elevation otherwise the OHL will need to be undergrounded for the section which is within the turbines wake.

From the comparison carried out certain aspects of each route have some issues; however, it is apparent that Route Option 1 has several issues that make the route unfeasible mainly due to terrain constraints. Other Route Options appear to be technically feasible, although Route Option 3 could be challenging to navigate along the final section due to close proximity to residential properties and tree cutting required. Route Option 2 appears to have the least number of constraints out of all the Route Options considered.

From an economical perspective, all Route Options are within 120% of the lowest capital and operational cost option, therefore all options are considered acceptable from a cost perspective.

The overall Preferred Route Option for the connection between the proposed Abhainn Dubh Wind Farm to the existing Fyrish 132 kV Substation is therefore Route Option 2, achieved though consideration of environmental, engineering and economic appraisals of all Route Options (see **Table 6.1**).

Table 6.1. Summary RAG Assessment

	Category	Sub-Topic	Route Option 1 Rating	Route Option 2 Rating	Route Option 3 Rating
Environmental	Natural Heritage	Designations	H	H	H
		Protected Species	L	L	L
		Habitats	H	H	H
		Geology, Hydrology and Hydrogeology	M	M	M
		Ornithology	H	H	H
	Cultural Heritage	Designations	H	H	H
		Cultural Heritage Assets	H	L	M
	People	Proximity to People	L	M	M
	Landscape and Visual	Designations	H	H	H
		Character	M	M	M
		Visual	M	M	M
	Land Use	Agriculture	L	M	M
		Forestry	H	H	H
		Recreation	M	M	M
	Planning	Policy	M	M	M
		Planning	M	M	M
8i9uEngineering	Infrastructure Crossings	Major Crossings (132kV, 275kV, Rail, 200+m wide river, navigable canal, gas or hydro pipeline)	H	H	H
		Minor Roads	L	M	M
	Environmental Design	Elevation	H	M	L
		Contaminated Land	L	L	L
		Flooding	H	M	H
	Ground Conditions	Terrain	M	M	M
		Peat	H	L	L
	Construction / Maintenance	Access	M	M	M
		Angle Towers	H	L	M
	Proximity	Clearance Distance	M	M	H
		Proximity to Windfarms	H	H	H
		Communication Masts	L	L	L
		Urban Environments	L	L	L
		Metallic pipes	L	L	L
	Other Considerations	Route Lengths*	H	L	M
		DNO Crossings*	H	M	H
		ESQCR Assessment*	M	H	H
Cost	Capital	Construction, Diversions, Public Road Improvements, Felling, Land Assembly and Consent Mitigations	L	L	L
	Operational	Inspections and Maintenance	L	L	L

7. CONSULTATION ON THE PROPOSALS

7.1 Introduction

SSEN Transmission places great importance on, and is committed to, consultation and engagement with all parties and stakeholders likely to have an interest in proposals for new projects such as this. Stakeholder engagement is an essential part of an effective development process.

The proposals detailed in this report have been developed through environmental and technical analysis of various Route Options. The potential for environmental effects remains and further assessment and design will be important in giving detailed consideration to the development and integration of mitigation measures to address significant environmental effects identified.

When providing comment and feedback, SSEN Transmission would be grateful for your consideration of the questions below. We are keen to receive your views and comments in regard to the following:

- Do you feel sufficient information has been provided to enable you to understand what is being proposed and why?
- Which of the three Route Options would you consider the best option for SSEN Transmission to develop? Please provide an explanation of your answer.
- Which of the three Route Options would you consider the least preferable option for SSEN Transmission to develop? Please provide an explanation of your answer.
- Are there any potential risks or benefits associated with this project, that you believe have not been included in the Consultation Document?
- Do you have any other comments on the Proposed Development?

7.2 Next Steps

A public exhibition will be held in September 2024 (see **Preface**), and meetings will be arranged with statutory and other stakeholders. The responses received, and those sought from statutory consultees and other key stakeholders will inform further consideration and design of the Preferred Route leading to the identification of a proposed Route Option to take forward to the alignment stage and consenting stages.

Please submit your comments to:

Lisa Marchi
Community Liaison Manager
SSEN
10 Henderson Road, Inverness IV1 1SA
Email: lisa.marchi@sse.com
Mobile: 07825 015 507

All comments are requested by 4th October 2024.

Scottish & Southern Electricity Networks

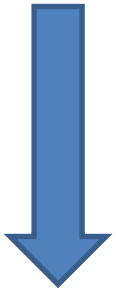
APPENDIX A ENVIRONMENTAL APPRAISAL OF ROUTE OPTIONS

Scottish & Southern Electricity Networks

APPENDIX B FIGURES

1.1.1 As discussed in **Section 3** of this report, the comparative appraisal of Route Options has involved systematic consideration against a number of environmental, technical and economic topic areas. This appendix provides further detail on the environmental topics under consideration.

1.1.2 A Red, Amber, Green (RAG) impact rating has been applied to each subject area indicating potential effects. This rating is based on a four point scale as follows:

Performance	Comparative Appraisal	
Most Preferred  Least Preferred	No Impact	The development is unlikely to be constrained
	Lower Impact	Low potential for the development to be constrained
	Moderate Impact	Intermediate potential for the development to be constrained
	Higher Impact	High potential for the development to be constrained.

Route Option 1

Description:		
Route Option 1 begins at the Fyrish 132 kV Substation and travels north for approximately 3 km. The route then curves around and adjacent to the north of the Novar Estate, subsequently travelling in a south westerly direction to the proposed Abhainn Dubh substation in the west.		
Review of Environmental Effects:		
Natural Heritage		
Topics	**Potential Impacts**	**RAG Impact Rating**
Designations	The Ben Wyvis SSSI, SPA and SAC are within 5 km of Route Option 1. The SPA is designated for supporting a nationally important population of breeding dotterel (*Charadrius morinellus*), which represents at least 2% of the British population. Route Option 1 has the potential to result in collision risk and barrier effects. The SPA has additional – albeit non-qualifying - ornithological interests, in its 'assemblage of breeding montane species', of which one is a Schedule 1 / Annex I species: golden eagle (*Aqulia chrysaetos*), (one pair), with potential connectivity to the Proposed Development. Within 2 km of Route Option 1 the Cromarty Firth SSSI, SPA, Ramsar Site is designated for supporting osprey (*Pandion haliaetus*), common tern (*Sterna hirundo*) and whooper swan (*Cygnus cygnus*) and is internationally significant for its non-breeding bird assemblage. Collision risk and barrier effects are also possible. Additionally, the Cromarty Firth Ramsar site qualifies under Ramsar Criterion 1 by virtue of it containing a variety of wetland types including Intertidal mudflats, estuarine alder woodland, open water transition fen and saltmarsh. Route Option 1 passes directly through the Allt nan Caorach SSSI in the west of the Route. The SSSI is the only site in East Ross and Cromarty which shows the transition from valley woodlands through upland birch woods to the upland vegetation of Ben Wyvis. Wild Land Area Rhiddoroch - Beinn Dearg - Ben Wyvis is located within 2 km, to the west of Route Option 1. The Novar SPA is immediately adjacent to Route Option 1. The Morangie Forest SPA is 3.2 km northeast from Route Option 1. The SPAs are designated for breeding capercaillie (*Tetrao urogallus*) (Annex I, Schedule 1 species). Route Option 1 has the potential to result in collision risk and barrier effect for bird species. Route Option 1 passes through multiple areas of ancient woodland rated native and nearly-native, in the western and northern section. Route 1 is given a Red rating due to the proximity to the designated sites and passing directly through ancient woodland.	H
Protected Species	European protected species known to occur in the area, which may therefore be present across Route Option 1 include otter (*Lutra lutra*), wildcat (*Felis silvestris grampia)* and bat species. There is a designated Wildcat Protection Area, covering approximately 50% of the route in the west.	L

	UK BAP species including red squirrel (*Sciurus vulgaris*), pine marten (*Martes martes*), badger (*Meles meles*), and adder *(Vipera berus)*. SBL species including slow worm (*Anguis fragilis)*, common lizard (*Zootoca vivipara*), common toad (*Bufo bufo*), hedgehog (*Erinaceus europaeus*), mountain hare *(Lepus timidus)* and brown hare (*Lepus europaeus*). Despite the potential to impact the designated Wildcat Protected Area within 50% of the Route, for the purposes of this assessment and in the absence of survey, it is assumed that through design, licencing and best practice construction techniques the project is unlikely to compromise the conservation status or known presence or suitable habitat for EPS or BAP species. A Green rating is therefore applied.	
Habitats	The presence of peatland within Route Option 1 means there may be potential to compromise the integrity of Annex 1 habitats including blanket bog and Ground Water Dependent Terrestrial Ecosystem (GWDTE). SSEN defines irreplaceable ancient woodland as Categories 1a and 2a of the AWI. There is ancient woodland of category 2a within the route, located at in the west near Fyrish Substation and localised areas near Glen Glass in the east. A Red rating is applied as the project is likely to compromise the conservation status of Annex 1 habitats including blanket bog and ancient woodland e.g. by passing directly through them.	H
Geology, Hydrology and Hydrogeology	There are six private water supplies within Route Option 1: the Elieanach, the Novar Westend Cottage, the Glenglass - West End, the Lealty Farmhouse, the Lealty Lodge and the Novar Tigh na Craig PWS. The route passes through five Water Framework Directive (WFD) designated watercourses (River Glass, Alness River, Allt na Seasgaich, Allt nan Caorach and Upper Allt nan Caorach), which may require a WFD assessment to be completed as part of any Environmental Impact Assessment (EIA). An Amber rating is applied as this route option passes through a surface water drinking protected area and may compromise the quality and/or quantity of surface waters which provide public supply.	M
Ornithology	Route 1 passes directly over the nesting territories of the following Schedule I and Annex I, Birds of Conservation Concern (BoCC) species; black grouse (*Lyrurus tetrix*), red-throated diver (*Gavia stellata*), hen harrier *(Circus cyaneus),* barn owl *(Tyto alba)* and peregrine (*Falco peregrinus*). In addition, Route 1 passes within the breeding territories of the following Schedule 1 / Annex I / BoCC nesting species: capercaillie (*Tetrao urogallus*); osprey (*Pandion haliaetus*); red kite (*Milvus milvus*); golden eagle (*Aquila chrysaetos*); and merlin, (*Falco columbarius*). SSEN will complete a bird survey programme to collect up-to-date data within the Preferred Route. There is the potential for barrier effects or collision risk during operation, therefore a Red rating is applied.	H
Cultural Heritage		
Topics	**Potential Impacts**	**RAG Impact Rating**

Designations	Direct: As per the assumptions of the assessment to use avoidance and micro-siting in all instances where possible, no direct impacts to designated assets are anticipated for Route Option 1. However, there remains the potential to oversail or interact in close proximity to designated assets and introduce direct effects to non-designated and previously unknown heritage assets. This option runs in very close proximity and encroaches on the Ardross Castle Garden and Designated Landscape (GDL). Indirect and Setting: There is potential to introduce effects to setting for Ardross Castle GDL, as a result of changes to the visual sphere and character of the area. Due to potential indirect impact on Ardross Castle GDL a Red rating is applied.	H
Cultural Heritage Assets	Direct: As per the assumptions of the assessment to use avoidance and micro-siting in all instances where possible, no direct impacts to designated Listed Buildings are anticipated for Route Option 1. Indirect and Setting: There is potential to introduce impacts to setting for Listed Buildings, including the Category A listed Ardross Castle, located 600 m to the north as a result of changes to the visual sphere and character of the area. As such a Red rating is applied.	H
People		
Topics	**Potential Impacts**	**RAG Impact Rating**
Proximity to people	Route Option 1 does not pass any residential communities in close proximity, however there are scattered residential properties within the route. Despite the proximity to Alness, the forest will act as a barrier and therefore Route Option 1 is rated a Green rating.	L
Landscape & Visual Amenity		
Topics	**Potential Impacts**	**RAG Impact Rating**
Landscape Designations	Route Option 1 does not pass through a National Scenic Area (NSA), Wild Land Area (WLA) or Special Landscape Area (SLA). The Rhiddoroch – Beinn Dearg – Ben Wyvis WLA is located 2 km west of Route Option 1. The Ben Wyvis SLA is located 1.5 km west of Route Option 1. Route Option 1 overlaps the Ardross Castle GDL. The Route is likely to compromise the cultural interests and features of the GDL and therefore a Red rating is applied.	H
Landscape Character	The two LCTs that Route Option 1 passes through are the 341 - Forest Edge Farming and the 330 - Rounded Hills and Moorland Slopes. The Route Option may compromise characteristic elements of the landscape character type, therefore an Amber rating is applied.	M

Visual Amenity	Route Option 1 may compromise view or visual amenity of individual properties and recreational areas, particularly the Fyrish Monument located 1.4 km to the south at the closest. Visual amenity is assigned an Amber rating.	M
Land Use		
Topics	**Potential Impacts**	**RAG Impact Rating**
Agriculture	Agricultural land within Route Option 1 has a land capability between 3.2 and 5.2 and therefore a Green rating for low impact has been applied. The higher 3.2 rating describes land capable of average production though high yields of barley, oats and grass can be obtained. Grass leys are common.	L
Forestry	A Red rating is applied as Route Option 1 crosses conifer plantation woodland and the commercial forestry plantations located near the Windfarm Substation are likely to be compromised.	H
Recreation	Route Option 1 may compromise the recreational amenity of the Fyrish Core Path, near the Fyrish Monument located 0.9 km away at the closest point. As such, an Amber rating is applied.	M
Planning		
Topics	**Potential Impacts**	**RAG Impact Rating**
Planning	A planning appraisal against the Highland-Wide Local Development Plan 2012[1] has been conducted and is described below. Please note that the UGC benefits from PD rights and does not require a planning application to be made under the TCPA.	M

Policy / Document	Appraisal
Policy 28 – Sustainable Design	The Proposed Development will promote and enhance the social, economic and environmental wellbeing of the wider area through its support for renewable energy and therefore is in line with Policy 28.

[1] The Highland Council, (2024) Local Development Plan 2012 [online] Available at: https://highland.maps.arcgis.com/apps/webappviewer/index.html?id=5ec04b13a9b049f798cadbd5055f1787 [Accessed: July 2024]

	Policy 30 – Physical Constraints	As part of the route optioneering process SSEN Transmission will undertake a full suite of environmental appraisals in order to select a route with the minimal level of impact on the surrounding environment and any physical constraints including flood risk areas and rights of way.	
	Policy 36 – Development in the Wider Countryside	The Proposed Development is deemed to not be significantly detrimental to the wider countryside and is therefore deemed to be in compliance with Policy 36.	
	Policy 47 – Safeguarding Inbye/Apportioned Croftland	The Proposed Development does not impact on any known croftland and therefore is in compliance with Policy 47.	
	Policy 51 – Trees and Development	As part of their commitment to replacement planting of any trees lost to development SSEN Transmission will undertake compensatory planting of any trees lost during the construction of the Route, ideally within the same geographical area if possible.	
	Policy 52 – Principle of Development in Woodland	Whilst it is likely that loss of some woodland will be required as part of the proposed Development the construction of the Route offers clear and significant public development due to it allowing the Abhainn Dubh WF scheme to be developed, in line with Scotland's net zero carbon emission strategy for its electricity generation network. Where any woodland is removed SSEN Transmission commit to compensatory planting.	
	Policy 72 – Pollution	SSEN Transmission will prepare a robust environmental appraisal prior to construction to assess and mitigate any potential pollutants.	
	Policy 55 – Peat and Soils	During the Routeing and Alignment selection phases SSEN Transmission will seek to choose a final alignment that avoids all known areas of peat. In such cases where disturbance to known peat deposits is unavoidable SSEN Transmission will produce a peat management plan in consultation with the Scottish Environment Protection Agency (SEPA) to demonstrate how any impacts from the Proposed Development have been minimised and mitigated.	
	Policy 57 – Natural, Built and Cultural Heritage	SSEN Transmission are of the view that the routeing selection process will lead to a chosen alignment that can satisfactorily demonstrate that the Proposed Development will not have an unacceptable impact on the natural environment, amenity and heritage resource. This will be assessed via an environmental appraisal of the OHL Route.	

Policy 58 – Protected Species	As part of the routeing selection process habitat surveys for protected species will be undertaken to establish the presence and if necessary a mitigation plan to avoid or minimise any impacts on the species at the alignment stage.	
Policy 59 – Other Important Species	As part of the routeing process an assessment of the impacts on other important species will be undertaken and effects will be avoided and/or mitigated at the alignment and environmental appraisal stages.	
Policy 60 – Other Important Habitats and Article 10 Features	As part of the routeing selection process habitat surveys will be undertaken to establish the presence and if necessary a mitigation plan to avoid or minimise any impacts on these at the alignment and environmental appraisal stages.	
Policy 61 – Landscape	The Proposed Development is primarily OHL with sections of UGC. The potential impacts on the landscape will be mitigated throughout the selection of a Route and Alignment.	
Policy 77 – Public Access	Should it prove necessary to impact upon a Core Path during the construction Stage SSEN Transmission will seek to divert it for as short a period as possible to allow for construction works to take place.	
Policy 78 – Long Distance Routes	The Proposed Development may have a direct or indirect adverse effects on the closest Long Distance Routes, namely elements of the National Cycle Network. A mitigation plan will be put in place by SSEN Transmission.	
Policy 63 - Water Environment	A hydrological appraisal will be undertaken to avoid and mitigate any impacts to the water environment.	
Policy 64 – Flood Risk	The Proposed route is not located within known areas of river or coastal flooding according to the SEPA flood risk mapping. Any considerations of surface water flooding will be assessed and if required mitigated.	
Policy 65 – Surface Water Drainage	SSEN Transmission will propose a design that will limit potential for surface water drainage issues.	

	Policy 69 – Electricity Transmission Infrastructure	The Proposed Development will not have an unacceptable significant impact on the environment, including natural, built and cultural heritage features, particularly as it is undergrounded and therefore should be supported by the Council in line with Policy 69.	
	Route Option 1 is in full compliance with national, regional and local applicable planning policy. An Amber rating has been applied as the Route Option may be inconsistent with other third party proposals known to the planning system.		

Route Option 2

Description:		
Route Option 2 begins at the Fyrish 132 kV Substation and travels in a south westerly direction, to the south of Cnoc Fyrish until it meets at the proposed Abhainn Dubh substation in the west.		
Review of Environmental Effects:		
Natural Heritage		
Topics	**Potential Impacts**	**RAG Impact Rating**
Designations	The Ben Wyvis SSSI, SPA, and SAC are within 5 km of Route Option 1. The SPA is designated for supporting a nationally important population of breeding dotterel (*Charadrius morinellus*), which represents at least 2% of the British population. Route Option 1 has the potential to result in collision risk and barrier effects. The SPA has additional – albeit non-qualifying - ornithological interests, in its 'assemblage of breeding montane species', of which one is a Schedule 1 / Annex I species: golden eagle (*Aqulia chrysaetos*), (one pair), with potential connectivity to the Proposed Development. Within 2 km of Route Option 2 the Cromarty Firth SSSI, SPA, Ramsar Site is designated for supporting osprey (*Pandion haliaetus*), common tern (*Sterna hirundo*) and whooper swan (*Cygnus cygnus*) and is internationally significant for its non-breeding bird assemblage. Route Option 2 has the potential to impact and disrupt the designated species. Additionally, the Cromarty Firth Ramsar site qualifies under Ramsar Criterion 1 by virtue of it containing a variety of wetland types including Intertidal mudflats, estuarine alder woodland, open water transition fen and saltmarsh. Within 2 km of Route Option 2, the Allt nan Caorach SSSI is located. It is the only site in East Ross and Cromarty which shows the transition from valley woodlands through upland birch woods to the upland vegetation of Ben Wyvis. Route Option 2 has the potential to indirectly impact the SSSI. Wild Land Area Rhiddoroch - Beinn Dearg - Ben Wyvis is located within 2 km, to the west of Route Option 2. The Novar SPA is immediately adjacent to Route Option 2. The Morangie Forest SPA is 4.2 km northeast from Route Option 2. The SPAs are designated for breeding capercaillie (*Tetrao urogallus*) (Annex I, Schedule 1 species). Route Option 2 has the potential to result in collision risk and barrier effect for bird species Route Option 2 passes through multiple areas of long-established ancient woodland rated native and nearly-native, in the western and northern section. Route Option 2 is given a Red rating due to the proximity to the designated sites and passing directly through ancient woodland.	H
Protected Species	European protected species known to occur in the area, which may therefore be present across the route include otter (*Lutra lutra*), wildcat (*Felis silvestris grampia)* and bat species. There is a designated Wildcat Protection Area covering approximately 75% of the route in the west.	L

	UK BAP species including red squirrel (*Sciurus vulgaris*), pine marten (*Martes martes*), badger (*Meles meles*), and adder *(Vipera berus)*. SBL species including slow worm (*Anguis fragilis)*, common lizard (*Zootoca vivipara*), common toad (*Bufo bufo*), hedgehog (*Erinaceus europaeus*), mountain hare *(Lepus timidus)* and brown hare (*Lepus europaeus*). Despite the designated Wildcat Protected Area within 75% of the Route, for the purposes of this assessment and in the absence of survey, it is assumed that through design, licencing and best practice construction techniques the project is unlikely to compromise the conservation status or known presence or suitable habitat for EPS or BAP species. A Green rating is therefore applied.	
Habitats	The presence of peatland within the route option means there may be potential to compromise the integrity of Annex 1 habitats including blanket bog and GWDTE. SSEN defines irreplaceable ancient woodland as Categories 1a and 2a of the AWI. There is ancient Woodland of category 2a within the route, located around the Fyrish substation, within the Novar Estate and around Swordale Hill in the east. A Red rating is applied as the project is likely to compromise the conservation status of Annex 1 habitats including blanket bog and ancient woodland e.g. by passing directly through them.	H
Geology, Hydrology and Hydrogeology	There are 9 private water supplies within Route Option 2, including Novar Estate, Novar - Mains Cottage, Novar - Lagvoulin, Swordale – Lower, Swordale Hill Lodge, Glenglass – Redburn, Lynechork Farmstead, Swordale - Milton Lodge Steading, and Fannyfield House. The route passes through three Water Framework Directive (WFD) designated watercourses (River Glass, River Skitheach and Allt na Seasgaich), which may require a WFD assessment to be completed as part of any Environmental Impact Assessment (EIA). An Amber rating is applied as this route option passes through a surface water drinking protected area and may compromise the quality and/or quantity of surface waters which provide public supply.	M
Ornithology	Route 2 passes directly over the nesting territories of the following Schedule I and Annex I, Birds of Conservation Concern (BoCC) species; osprey (*Pandion haliaetus*); and red kite (*Milvus milvus*); In addition, Route 2 passes within the breeding territories of the following Schedule 1 / Annex I / BoCC nesting species: capercaillie (*Tetrao urogallus*); black grouse (*Lyrurus tetrix*), golden eagle (*Aquila chrysaetos*); hen harrier *(Circus cyaneus),* barn owl *(Tyto alba)* merlin, (*Falco columbarius*); and peregrine (*Falco peregrinus*). SSEN will complete a bird survey programme to collect up-to-date data within the Preferred Route. There is the potential for barrier and collision impacts during operation and a Red rating is applied.	H
Cultural Heritage		
Topics	**Potential Impacts**	**RAG Impact Rating**

Designations	Direct: There are four scheduled monuments within Route Option 2, Gun Port, Carn Liath, Drumore and Cladh ChuradainAs per the assumptions of the assessment to use avoidance and micro-siting in all instances where possible, no direct impacts to designated assets are anticipated for Route Option 2. However, there remains the potential to oversail or interact in close proximity to designated assets and introduce direct effects to non-designated and previously unknown heritage assets. The route passes directly through the Novar Estate GDL. Indirect and Setting: There is potential to introduce effects to setting for designated assets as a result of changes to the visual sphere and character of the area, including the Drumore Scheduled Monument and Novar Estate DGL. A Red rating is applied as there is potential to compromise the designating features or setting of a scheduled monument and GDL.	H
Cultural Heritage Assets	Direct: As per the assumptions of the assessment to use avoidance and micro-siting in all instances where possible, no direct impacts to designated Listed Buildings are anticipated for Route Option 2. Indirect and Setting: There remains the potential introduce impacts to setting for Listed Buildings, including the Category B and C listed buildings in and around Novar House, as a result of changes to the visual sphere and character of the area. Foulis Castle Category A listed building is approximately 1.7 km to the south. A Green rating is applied as the route is unlikely to compromise the integrity of a conservation area, non-inventory GDL, setting of an A listed building or directly disturb a B/C listed building.	L
People		
Topics	**Potential Impacts**	**RAG Impact Rating**
Proximity to people	Route Option 2 passes close to Alness and adjacent to Evanton and there are scattered residential properties within the route. Given the proximity to Evanton an Amber rating is applied.	M
Landscape & Visual Amenity		
Topics	**Potential Impacts**	**RAG Impact Rating**
Designations	Route Option 2 does not pass through a National Scenic Area (NSA) or Special Landscape Area (SLA). Route Option 2 does not pass through a Wild Land Area (WLA). The Rhiddoroch – Beinn Dearg – Ben Wyvis WLA is located 2 km west of Route Option 2. The Ben Wyvis SLA is located within 1.5 km west of Route Option 2. Route Option 2 passes directly through the Novar Estate GDL. The Route is likely to compromise the cultural interests and features of the GDL therefore a Red rating is applied.	H

Character	The two LCTs that Route Option 2 passes through are the 341 - Forest Edge Farming and the 330 - Rounded Hills and Moorland Slopes. The route option may compromise characteristic elements of the landscape character type therefore an Amber rating is applied.	M
Visual	Route Option 2 may compromise view or visual amenity of individual properties and recreational areas, particularly the Fyrish Monument located 0.8 km away at the closest. Visual amenity is assigned an Amber rating.	M
Land Use		
Topics	**Potential Impacts**	**RAG Impact Rating**
Agriculture	Agricultural land within Route Option 2 has a land capability between 3.2 and 5.2. There are Christmas tree plantations within the Route Option and due to the commercial use, an Amber rating is applied. The higher 3.2 rating describes land capable of average production though high yields of barley, oats and grass can be obtained. Grass leys are common.	M
Forestry	A Red rating is applied as Route Option 2 crosses conifer plantation woodland and the commercial forestry plantations located near the Windfarm Substation are likely to be compromised.	H
Recreation	Route Option 2 may compromise the recreational amenity of the six core paths in the area, including Swordale Hill, located within the Route Option. As such, an Amber rating is applied.	M
Planning		
Topics	**Potential Impacts**	**RAG Impact Rating**
Planning	A planning appraisal against the Highland-Wide Local Development Plan 2012[2] has been conducted and is described below. Please note that the UGC benefits from PD rights and does not require a planning application to be made under the TCPA.	M

Policy /Document	Appraisal

[2] Highland_wide_Local_Development_Plan (1).pdf

	Policy 28 – Sustainable Design	The Proposed Development will promote and enhance the social, economic and environmental wellbeing of the wider area through its support for renewable energy and therefore is in line with Policy 28.	
	Policy 30 – Physical Constraints	As part of the route optioneering process SSEN Transmission will undertake a full suite of environmental appraisals in order to select a route with the minimal level of impact on the surrounding environment and any physical constraints including flood risk areas and rights of way.	
	Policy 36 – Development in the Wider Countryside	The Proposed Development is deemed to not be significantly detrimental to the wider countryside and is therefore deemed to be in compliance with Policy 36.	
	Policy 47 – Safeguarding Inbye/Apportioned Croftland	The Proposed Development does not impact on any known croftland and therefore is in compliance with Policy 47.	
	Policy 51 – Trees and Development	As part of their commitment to replacement planting of any trees lost to development SSEN Transmission will undertake compensatory planting of any trees lost during the construction of the Route, ideally within the same geographical area if possible.	
	Policy 52 – Principle of Development in Woodland	Whilst it is likely that loss of some woodland will be required as part of the proposed Development the construction of the Route offers clear and significant public development due to it allowing the Ahbainn Dubh WF scheme to be developed, in line with Scotland's net zero carbon emission strategy for its electricity generation network. Where any woodland is removed SSEN Transmission commit to compensatory planting.	
	Policy 72 – Pollution	SSEN Transmission will prepare a robust environmental appraisal prior to construction to assess and mitigate any potential pollutants.	
	Policy 55 – Peat and Soils	During the Routeing and Alignment selection phases SSEN Transmission will seek to choose a final alignment that avoids all known areas of peat. In such cases where disturbance to known peat deposits is unavoidable SSEN Transmission will produce a peat management plan in consultation with the Scottish Environment Protection Agency (SEPA) to demonstrate how any impacts from the Proposed Development have been minimised and mitigated.	

Policy 57 – Natural, Built and Cultural Heritage	SSEN Transmission are of the view that the routeing selection process will lead to a chosen alignment that can satisfactorily demonstrate that the Proposed Development will not have an unacceptable impact on the natural environment, amenity and heritage resource. This will be assessed via an environmental appraisal of the Route.
Policy 58 – Protected Species	As part of the routeing selection process habitat surveys for protected species will be undertaken to establish the presence and if necessary a mitigation plan to avoid or minimise any impacts on the species at the alignment stage.
Policy 59 – Other Important Species	As part of the routeing process an assessment of the impacts on other important species will be undertaken and effects will be avoided and/or mitigated at the alignment and environmental appraisal stages.
Policy 60 – Other Important Habitats and Article 10 Features	As part of the routeing selection process habitat surveys will be undertaken to establish the presence and if necessary a mitigation plan to avoid or minimise any impacts on these at the alignment and environmental appraisal stages.
Policy 61 – Landscape	The Proposed Development is primarily OHL with sections of UGC. The potential impacts on the landscape will be mitigated throughout the selection of a Route and Alignment.
Policy 77 – Public Access	Should it prove necessary to impact upon a Core Path during the construction Stage SSEN Transmission will seek to divert it for as short a period as possible to allow for UGC construction works to take place.
Policy 78 – Long Distance Routes	The Proposed Development may have a direct or indirect adverse effects on the closest Long Distance Routes, namely elements of the National Cycle Network. A mitigation plan will be put in place by SSEN Transmission.
Policy 63 - Water Environment	A hydrological appraisal will be undertaken to avoid and mitigate any impacts to the water environment.
Policy 64 – Flood Risk	The Proposed route is not located within known areas of river or coastal flooding according to the SEPA flood risk mapping. Any considerations of surface water flooding will be assessed and if required mitigated.

		Policy 65 – Surface Water Drainage	SSEN Transmission will propose a design that will limit potential for surface water drainage issues.
		Policy 69 – Electricity Transmission Infrastructure	The Proposed Development will not have an unacceptable significant impact on the environment, including natural, built and cultural heritage features, particularly as it is undergrounded and therefore should be supported by the Council in line with Policy 69.
		Route Option 2 is in full compliance with national, regional and local applicable planning policy. An Amber rating has been applied as the Route Option may be inconsistent with other third party proposals known to the planning system.	

Route Option 3

Description:		
Route Option 3 begins at the Fyrish 132 kV Substation and travels in a south westerly direction, to the south of Cnoc Fyrish and Swordale Hill. It continues in a south westerly direction crossing the River Sgitheach before curving northwards to the proposed Abhainn Dubh substation in the west.		
Review of Environmental Effects:		
Natural Heritage		
Topics	**Potential Impacts**	**RAG Impact Rating**
Designations	The Ben Wyvis SSSI, SPA, and SAC are within 5 km of Route Option 1. The SPA is designated for supporting a nationally important population of breeding dotterel (*Charadrius morinellus*), which represents at least 2% of the British population. Route Option 1 has the potential to result in collision risk and barrier effects. The SPA has additional – albeit non-qualifying - ornithological interests, in its 'assemblage of breeding montane species', of which one is a Schedule 1 / Annex I species: golden eagle (*Aqulia chrysaetos*), (one pair), with potential connectivity to the Proposed Development. Route Option 3 runs parallel to the Cromarty Firth SSSI, SPA, Ramsar Site, designated for supporting Osprey (*Pandion haliaetus*), Common tern (*Sterna hirundo*) and Whooper swan (*Cygnus cygnus*) and is internationally significant for its non-breeding bird assemblage. Route Option 3 has the potential to result in collision risk and barrier effects. Additionally, the Cromarty Firth Ramsar site qualifies under Ramsar Criterion 1 by virtue of it containing a variety of wetland types including intertidal mudflats, estuarine alder woodland, open water transition fen and saltmarsh. Allt nan Caorach SSSI is located within 2 km of Route Option 3. It is the only site in East Ross and Cromarty which shows the transition from valley woodlands through upland birch woods to the upland vegetation of Ben Wyvis. Route Option 2 has the potential to indirectly impact the SSSI. The Novar SPA is immediately adjacent to Route Option 3. The Morangie Forest SPA is 4.2 km northeast from Route Option 3. They are designated for breeding Capercaillie (*Tetrao urogallus*) (Annex I, Schedule 1 species). Route Option 3 has the potential to result in collision risk and barrier effect for bird species. Route Option 3 passes through multiple areas of long-established ancient woodland rated native and nearly-native, in the western and northern section. Route Option 3 is given a Red rating due to the proximity to the designated sites and passing directly through ancient woodland.	H
Protected Species	European protected species known to occur in the area, which may therefore be present across Route Option 3 include otter (*Lutra lutra*), wildcat (*Felis silvestris grampia)* and bat species. There is a designated Wildcat Protection Area covering approximately 75% of the route in the west.	L

	UK BAP species including red squirrel (*Sciurus vulgaris*), pine marten (*Martes martes*), badger (*Meles meles*), and adder *(Vipera berus)*. SBL species including slow worm (*Anguis fragilis)*, common lizard (*Zootoca vivipara*), common toad (*Bufo bufo*), hedgehog (*Erinaceus europaeus*), mountain hare *(Lepus timidus)* and brown hare (*Lepus europaeus*). Despite the designated Wildcat Protected Area within 75% of the Route, for the purposes of this assessment and in the absence of survey, it is assumed that through design, licencing and best practice construction techniques the project is unlikely to compromise the conservation status or known presence or suitable habitat for EPS or BAP species. A Green rating is therefore applied.	
Habitats	The presence of peatland within the route option means there may be potential to compromise the integrity of Annex 1 habitats including blanket bog and GWDTE. SSEN defines irreplaceable ancient woodland as Categories 1a and 2a of the AWI. There is ancient Woodland of category 2a within the route. located around the Fyrish substation in the west, within the Novar Estate and within the Clare Plantation in the east. A Red rating is applied as the project is likely to compromise the conservation status of Annex 1 habitats including blanket bog and ancient woodland e.g. by passing directly through them.	H
Geology, Hydrology and Hydrogeology	There are 4 private water supplies within Route Option 3, including Swordale Milton Lodge, Novar-Lagvoulin, Novar Estate, and Novar- Mains Cottage. The route passes through two Water Framework Directive (WFD) designated watercourses (River Glass and Allt na Seasgaich), which may require a WFD assessment to be completed as part of any Environmental Impact Assessment (EIA). An Amber rating is applied as this route option passes through a surface water drinking protected area and may compromise the quality and/or quantity of surface waters which provide public supply.	M
Ornithology	Route3 passes directly over the nesting territories of the following Schedule I and Annex I, Birds of Conservation Concern (BoCC) species; osprey (*Pandion haliaetus*); and red kite (*Milvus milvus*); In addition, Route 3 passes within the breeding territories of the following Schedule 1 / Annex I / BoCC nesting species: capercaillie (*Tetrao urogallus*); black grouse (*Lyrurus tetrix*), golden eagle (*Aquila chrysaetos*); hen harrier *(Circus cyaneus),* barn owl *(Tyto alba)* merlin, (*Falco columbarius*); and peregrine (*Falco peregrinus*). SSEN will complete a bird survey programme to collect up-to-date data within the Preferred Route. There is the potential for barrier or collision impacts during operation therefore a Red rating is applied.	H
Cultural Heritage		
Topics	**Potential Impacts**	**RAG Impact Rating**

Designations	Direct: As per the assumptions of the assessment to use avoidance and micro-siting in all instances where possible, no direct impacts to designated assets are anticipated for Route Option 3. However, there remains the potential to oversail or interact in close proximity to designated assets, and introduce direct effects to non-designated and previously unknown heritage assets. Indirect and Setting: There remains the significant potential to introduce effects to setting for designated assets, including Novar GDL and Drumore Scheduled Monument, as a result of changes to the visual sphere and character of the area. This option runs directly through the Novar Estate GDL therefore a Red rating is applied.	H
Cultural Heritage Assets	Direct: As per the assumptions of the assessment to use avoidance and micro-siting in all instances where possible, no direct impacts to designated Listed Buildings are anticipated for this route. Indirect and Setting: There remains the potential to introduce impacts to setting for Listed Buildings, including the Category A listed Foulis Castle, as a result of changes to the visual sphere and character of the area. As such, an Amber rating is applied.	M
People		
Topics	**Potential Impacts**	**RAG Impact Rating**
Proximity to people	Route Option 2 passes close to Alness and adjacent to Evanton and there are scattered residential properties within the route. Given the proximity to Evanton an Amber rating is applied.	M
Landscape & Visual Amenity		
Topics	**Potential Impacts**	**RAG Impact Rating**
Designations	Route Option 3 does not pass through a National Scenic Area (NSA) or Special Landscape Area (SLA). Route Option 3 does not pass through a Wild Land Area (WLA). The Rhiddoroch – Beinn Dearg – Ben Wyvis WLA is located 2 km west of Route Option 3. The Ben Wyvis SLA is located within 1.5 km west of Route Option 3. Route Option 3 passes directly though the Novar Estate GDL. The Route is likely to compromise the cultural interests and features of the GDL and a Red rating is applied.	H
Character	The two LCTs that Route Option 3 passes through are the 341 - Forest Edge Farming and the 330 - Rounded Hills and Moorland Slopes. The route option may compromise characteristic elements of the landscape character type and an Amber rating is applied.	M
Visual	This route option may compromise view or visual amenity of individual properties and recreational areas, particularly the Fyrish Monument located 1.3 km to the north at the closest point. Visual amenity is assigned an Amber rating.	M

Land Use		
Topics	**Potential Impacts**	**RAG Impact Rating**
Agriculture	Agricultural land within Route Option 3 has a land capability between 3.2 and 5.2. There are Christmas tree plantations within the Route Option and due to the commercial use, an Amber rating is applied. The higher 3.2 rating describes land capable of average production though high yields of barley, oats and grass can be obtained. Grass leys are common.	M
Forestry	A Red rating is applied as Route Option 3 crosses conifer plantation woodland and the commercial forestry plantations located near the Windfarm Substation are likely to be compromised.	H
Recreation	Route Option 3 may compromise the recreational amenity of the six core paths in the area. including Swordale Hill, located within the Route Option. Route Option 3 is located in close proximity to the Inverness to John O' Groats National Cycle Path. As such, an Amber rating is applied.	M
Planning		
Topics	**Potential Impacts**	**RAG Impact Rating**
Planning	A planning appraisal against the Highland-Wide Local Development Plan 2012[3] has been conducted and is described below. Please note that the UGC benefits from PD rights and does not require a planning application to be made under the TCPA.	M

Policy /Document	Appraisal
Policy 28 – Sustainable Design	The Proposed Development will promote and enhance the social, economic and environmental wellbeing of the wider area through its support for renewable energy and therefore is in line with Policy 28.

[3] Highland_wide_Local_Development_Plan (1).pdf

Policy 30 – Physical Constraints	As part of the route optioneering process SSEN Transmission will undertake a full suite of environmental appraisals in order to select a route with the minimal level of impact on the surrounding environment and any physical constraints including flood risk areas and rights of way.
Policy 36 – Development in the Wider Countryside	The Proposed Development is deemed to not be significantly detrimental to the wider countryside and is therefore deemed to be in compliance with Policy 36.
Policy 47 – Safeguarding Inbye/Apportioned Croftland	The Proposed Development does not impact on any known croftland and therefore is in compliance with Policy 47.
Policy 51 – Trees and Development	As part of their commitment to replacement planting of any trees lost to development SSEN Transmission will undertake compensatory planting of any trees lost during the construction, ideally within the same geographical area if possible.
Policy 52 – Principle of Development in Woodland	Whilst it is likely that loss of some woodland will be required as part of the proposed Development the construction offers clear and significant public development due to it allowing the Abhainn Dubh WF scheme to be developed, in line with Scotland's net zero carbon emission strategy for its electricity generation network. Where any woodland is removed SSEN Transmission commit to compensatory planting.
Policy 72 – Pollution	SSEN Transmission will prepare a robust environmental appraisal prior to construction to assess and mitigate any potential pollutants.
Policy 55 – Peat and Soils	During the Routeing and Alignment selection phases SSEN Transmission will seek to choose a final alignment that avoids all known areas of peat. In such cases where disturbance to known peat deposits is unavoidable SSEN Transmission will produce a peat management plan in consultation with the Scottish Environment Protection Agency (SEPA) to demonstrate how any impacts from the Proposed Development have been minimised and mitigated.
Policy 57 – Natural, Built and Cultural Heritage	SSEN Transmission are of the view that the routeing selection process will lead to a chosen alignment that can satisfactorily demonstrate that the Proposed Development will not have an unacceptable impact on the natural environment, amenity and heritage resource. This will be assessed via an environmental appraisal of the Route.
Policy 58 – Protected Species	As part of the routeing selection process habitat surveys for protected species will be undertaken to establish the presence and if necessary a mitigation plan to avoid or minimise any impacts on the species at the alignment stage.

Policy 59 – Other Important Species	As part of the routeing process an assessment of the impacts on other important species will be undertaken and effects will be avoided and/or mitigated at the alignment and environmental appraisal stages.	
Policy 60 – Other Important Habitats and Article 10 Features	As part of the routeing selection process habitat surveys will be undertaken to establish the presence and if necessary a mitigation plan to avoid or minimise any impacts on these at the alignment and environmental appraisal stages.	
Policy 61 – Landscape	The Proposed Development is primarily OHL with sections of UGC. The potential impacts on the landscape will be mitigated throughout the selection of a Route and Alignment.	
Policy 77 – Public Access	Should it prove necessary to impact upon a Core Path during the construction Stage SSEN Transmission will seek to divert it for as short a period as possible to allow for construction works to take place.	
Policy 78 – Long Distance Routes	The Proposed Development may have a direct or indirect adverse effects on the closest Long Distance Routes, namely elements of the National Cycle Network. A mitigation plan will be put in place by SSEN Transmission.	
Policy 63 - Water Environment	A hydrological appraisal will be undertaken to avoid and mitigate any impacts to the water environment.	
Policy 64 – Flood Risk	The Proposed route is not located within known areas of river or coastal flooding according to the SEPA flood risk mapping. Any considerations of surface water flooding will be assessed and if required mitigated.	
Policy 65 – Surface Water Drainage	SSEN Transmission will propose a design that will limit potential for surface water drainage issues.	
Policy 69 – Electricity Transmission Infrastructure	The Proposed Development will not have an unacceptable significant impact on the environment, including natural, built and cultural heritage features, particularly as it is undergrounded and therefore should be supported by the Council in line with Policy 69.	

Route Option 3 is in full compliance with national, regional and local applicable planning policy. An Amber rating has been applied as the Route Option may be inconsistent with other third party proposals known to the planning system.

Abhainn Dubh Proposed Substation

Fyrish Substation

Proposed Route Options

Route Option 1

Route Option 2

Route Option 3

Proposed Spittal to Loch Buidhe to Beauly OHL

Existing OHL

Existing 132kV OHL

Existing 275kV OHL

0 500 1,000 1,500 2,000

Metres

SCALE: See Scale Bar	VERSION: A01
SIZE: A3	DRAWN: DN
PROJECT: 0738456	CHECKED: LS
DATE: 14/08/2024	APPROVED: KG

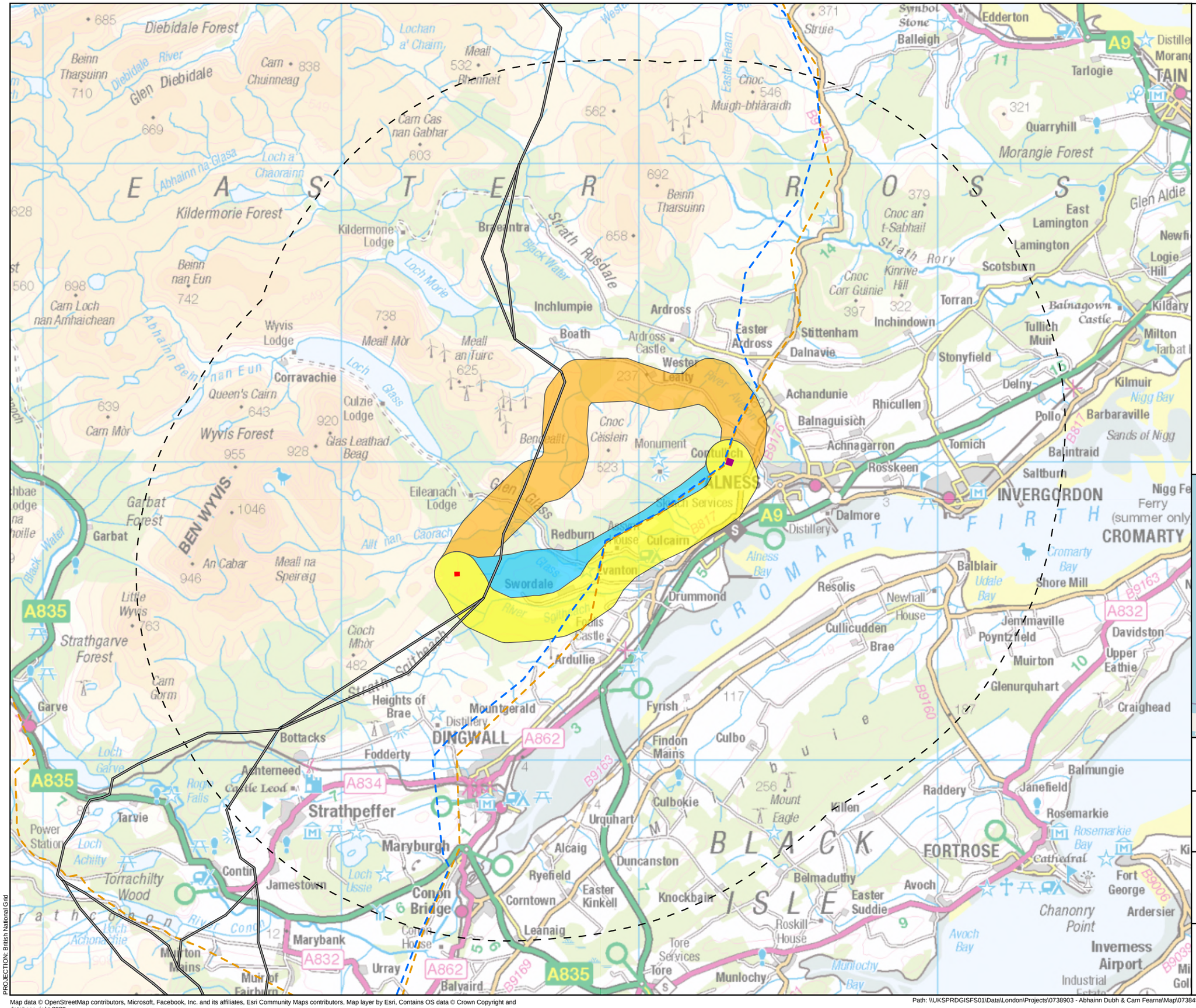
Figure 1.1
Abhainn Dubh Routeing Options

ERM

Scottish & Southern Electricity Networks TRANSMISSION

PROJECTION: British National Grid

Path: \\UKSPRDGISFS01\Data\London\Projects\0738903 - Abhainn Dubh & Carn Fearna\Map\0738456 - Abhainn Dubh.aprx



Abhainn Dubh Proposed Substation

Fyrish Substation

Proposed Route Options

Route Option 1

Route Option 2

Route Option 3

Proposed Spittal to Loch Buidhe to Beauly OHL

Existing OHL

Existing 132kV OHL

Existing 275kV OHL

0 500 1,000 1,500 2,000

Metres

SCALE: See Scale Bar	VERSION: A01
SIZE: A3	DRAWN: DN
PROJECT: 0738456	CHECKED: LS
DATE: 14/08/2024	APPROVED: KG

Figure 4.1
Abhainn Dubh Routeing Options

ERM

Scottish & Southern Electricity Networks TRANSMISSION

PROJECTION: British National Grid

Path: \\UKSPRDGISFS01\Data\London\Projects\0738903 - Abhainn Dubh & Carn Fearna\Map\0738456 - Abhainn Dubh.aprx

Abhainn Dubh Proposed Substation

Fyrish Substation

Proposed Route Options

Route Option 1

Route Option 2

Route Option 3

Abhainn Dubh Proposed Route Options 5km Buffer

Natural Heritage Constraints

Carbon And Peatland - Class 1 Importance

Carbon And Peatland - Class 2 Importance

Wildcat Protection Areas

Ancient Woodland Inventory (AWI)

Ramsar Sites

Special Areas Of Conservation (SAC)

Special Protection Areas (SPA)

Sites Of Special Scientific Interest (SSSI)

0 1 2 3

Kilometres

N

SCALE: See Scale Bar	VERSION: A01
SIZE: A3	DRAWN: DN
PROJECT: 0738456	CHECKED: LS
DATE: 15/08/2024	APPROVED: KG

Figure 5.1
Abhainn Dubh Routeing Options
Natural Heritage Constraints

ERM

Scottish & Southern Electricity Networks TRANSMISSION

PROJECTION: British National Grid

Path: \\UKSPRDGISFS01\Data\London\Projects\0738903 - Abhainn Dubh & Carn Fearna\Map\0738456 - Abhainn Dubh.aprx

Abhainn Dubh Proposed Substation

Fyrish Substation

Proposed Route Options

Route Option 1

Route Option 2

Route Option 3

Abhainn Dubh Proposed Route Options 5km Buffer

Cultural Heritage Constraints

Scheduled Monument

Garden and Designed Landscape

Category A Listed Building

Category B Listed Building

Category C Listed Building

0 1 2 3

Kilometres

SCALE: See Scale Bar	VERSION: A01
SIZE: A3	DRAWN: DN
PROJECT: 0738456	CHECKED: LS
DATE: 14/08/2024	APPROVED: KG

Figure 5.2
Abhainn Dubh Routeing Options
Cultural Heritage Constraints

ERM

Scottish & Southern Electricity Networks TRANSMISSION

PROJECTION: British National Grid

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Abhainn Dubh Proposed Substation

Fyrish Substation

Proposed Route Options

Route Option 1

Route Option 2

Route Option 3

Abhainn Dubh Proposed Route Options 5km Buffer

Landscape and Visual Constraints

Core Paths

National Cycle Network - Sustrans

Garden and Designed Landscape

Wild Land

0 1 2 3

Kilometres

SCALE: See Scale Bar	VERSION: A01
SIZE: A3	DRAWN: DN
PROJECT: 0738456	CHECKED: LS
DATE: 14/08/2024	APPROVED: KG

Figure 5.3
Abhainn Dubh Routeing Options
Landscape and Visual Constraints

ERM

Scottish & Southern Electricity Networks TRANSMISSION

PROJECTION: British National Grid

Path: \\UKSPRDGISFS01\Data\London\Projects\0738903 - Abhainn Dubh & Carn Fearna\Map\0738456 - Abhainn Dubh.aprx