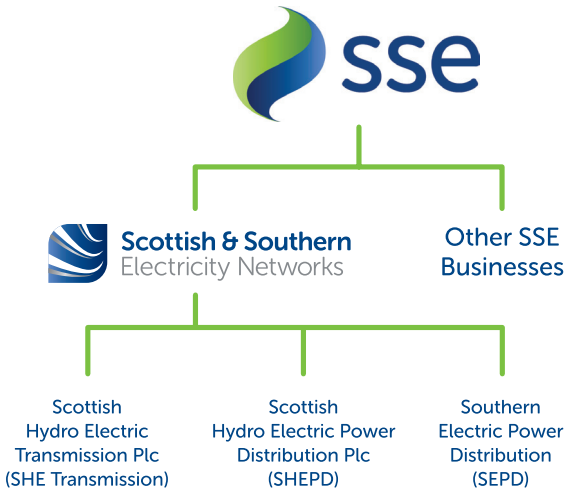
Dunoon 132kV Overhead Line Rebuild

Consultation booklet - November 2020

Scottish & Southern Electricity Networks

Who we are

We are Scottish and Southern Electricity Networks, operating under licence as Scottish Hydro Electric Transmission Plc (SHE Transmission) for the transmission of electricity in the north of Scotland.



In total we maintain about 5,000km of overhead lines and underground cables – easily enough to stretch across the Atlantic from John O'Groats all the way to Boston in the USA.

Our network crosses some of the UK's most challenging terrain – including circuits that are buried under the seabed, are located over 750m above sea level and up to 250km long.

The landscape and environment that contribute to the challenges we face also give the area a rich resource for renewable energy generation. There is a high demand to connect from new wind, hydro and marine generators which rely on Scottish and Southern Electricity Networks to provide a physical link between the new sources of power and electricity users. Scottish and Southern Electricity Networks is delivering a major programme of investment to ensure that the network is ready to meet the needs of our customers in the future.

Our responsibilities

We have a licence for the transmission of electricity in the north of Scotland and we are closely regulated by the energy regulator Ofgem.

Our licence stipulates that we must develop and maintain an efficient, co-ordinated and economical system of electricity transmission.

What is the difference between Transmission and Distribution?

Electricity transmission is the transportation of electricity from generating plants to where it is required at centres of demand. The electricity transmission network, or grid, transports electricity at very high voltages (greater than 132kV) through overhead lines, underground cables and subsea cables. The transmission network provides efficient and secure supply to communities, providing the ability to transmit electricity across Scotland, and to England and Wales via the National Grid. The transmission network provides a critical role in transferring the renewable energy generated across Scotland to areas of high demand, such as cities.

The distribution network is connected into the transmission network at substations, where the voltage is lowered by transformers to 33kV or 11kV, and the power is then distributed to communities and businesses through overhead lines and buried cables. Energy generators such as smaller hydroelectric sites or wind farms can also connect to the wider grid via a distribution connection with the voltage increased at the substation for connection to the transmission network.

Overview of Project Area

Project Overview

The aim of the Dunoon 132kV overhead line (OHL) rebuild project is to rebuild the existing transmission network servicing Dunoon in Argyll and Bute. The electricity towers between Dunoon substation to Garelochead (approximately 16 kilometers) are now coming toward the end of their operational life and are required to be replaced. The line passes over some very steep and arduous terrain and has a very high fault rate associated with it during high winds due to the design of the tower used in the original build.

We have carried out a capability study of the OHL to see if it is suitable for upgrading with larger conductors (the wires which carry the current). The outcome of this study was that almost half of the towers were not in a satisfactory condition and were unsuitable for modification to resolve ground clearance and fault issues. In order to ensure security of supply, a replacement overhead tower line will be constructed. Once the new OHL is constructed and in service the existing line will be dismantled and removed.

The main project elements are as follows:

- Construction of a new 132kV overhead line from North of Ardentinny to Dunoon substation, located near Sandbank
- Reconductoring of the Loch Long crossing
- Decommissioning/removal of the existing 132kV overhead line from Ardentinny to Sandbank
- Associated tie in works at Dunoon Substation will also be required

During the rebuild of the replacement OHL, we will still require to maintain the electricity supply to Dunoon, and therefore are required to rebuild the OHL on an alternative alignment to the existing route. As such, we will require a new Section 37 consent from the Energy Consents Unit of the Scottish Government.

Our existing OHL also crosses Loch Long to connect to Scottish Power Energy Networks licenced area, at the east side of Loch Long by Garelochhead. As part of the reinforcement project, we are also proposing to reconductor (replace the wires which carry current on the line) this part of the line and maintain the existing towers at either side of the crossing.

Why we are consulting at this stage?

Overhead line routeing is a balance between environmental, technical and economic considerations, with stakeholder and public consultation also making up a key element of this process.

This project is at an early stage of development and we are consulting with local stakeholders at this stage to introduce our proposals and to share considered routes alongside the proposed engineering solution for initial comment. We have identified a preliminary preferred route which we are keen to hear your views on.

After receiving initial feedback, and carrying out further survey work and analysis to help refine our proposals, we will carry out further external engagement to ensure that local community members and stakeholders are able to provide input towards our plans at key stages as the project develops.

Engineering and Marine Considerations

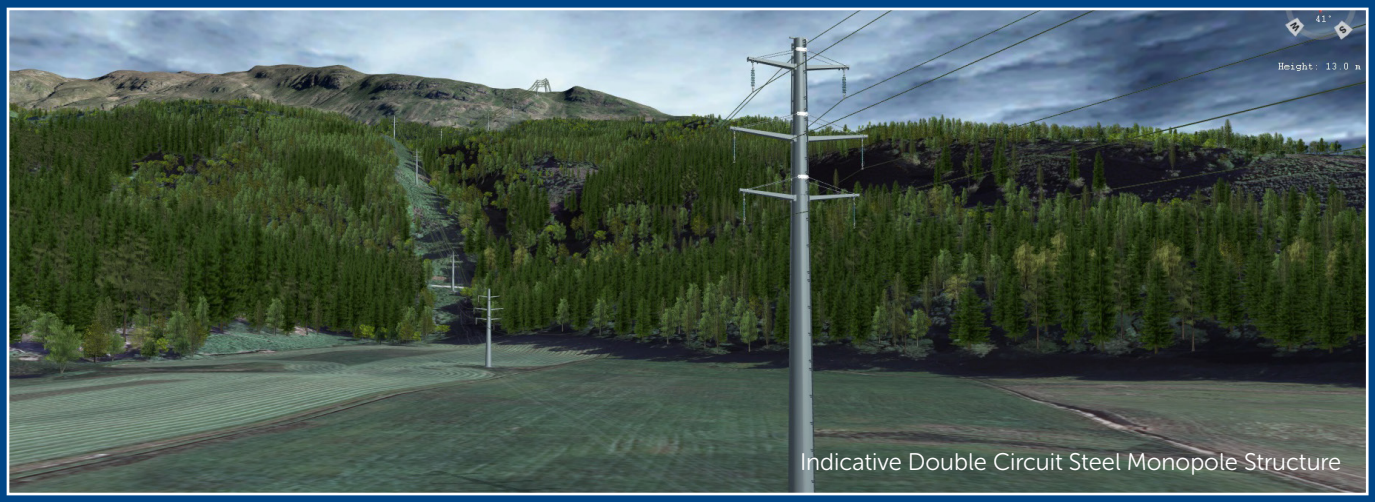
The existing towers operate at a voltage of 132kV, which is the smallest transmission voltage on the Scottish network. The proposed replacement line will operate at this same voltage.

In order to achieve the necessary capacity requirements various technology options were considered. Several methods of overhead line supports have been used throughout the history of the UK's transmission network and as the usage and design parameters for these varies greatly, it was necessary to filter down the number of supports to be assessed.

Based on pre-selection criteria, which included visual impact considerations, electrical clearance requirements and a requirement to support 132kV operation, we identified the following type of structures that would best suit the project:

- **132kV Double Circuit Steel lattice tower**
- **132kV Double Circuit steel monopole structures NeSTS designed for SSEN**

Indicative Double Circuit Steel Tower



Indicative Double Circuit Steel Monopole Structure

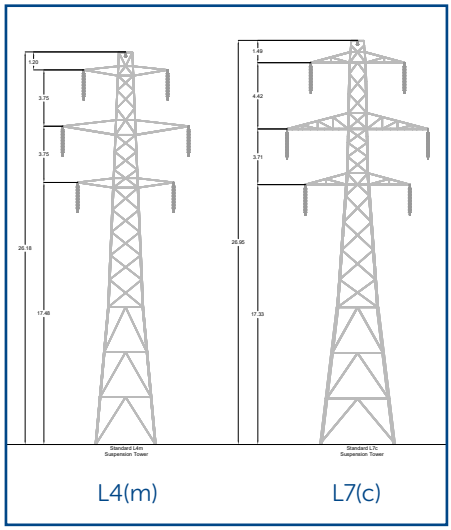
Alternative options which were considered for the project but discounted due to factors such as being unable to provide required reliability and due to the extensive works requirement during construction were:

- **Wooden Pole Structure**
- **Composite Pole Structure**

Engineering and Marine Considerations cont.

Comparison of structures:

Double Steel Circuit Lattice Tower

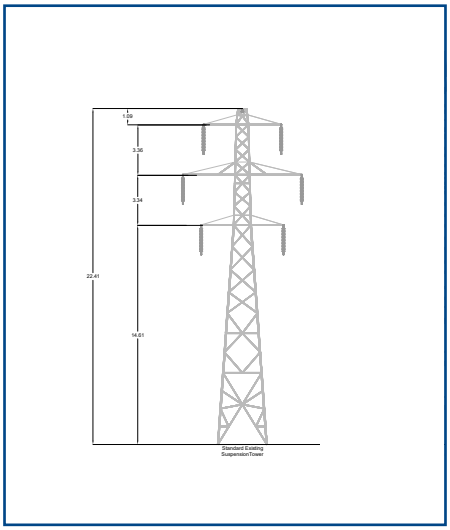


L4(m) L7(c)

The height of these structures is generally between 26-44m depending on the angle of the line and the extensions required and the average span is approximately 300m.

Both Lattice L7(c) and L4(m) tower options are suitable for the terrain and environmental loadings at Dunoon However L4(m) will require modifications/upgrade of steel members.

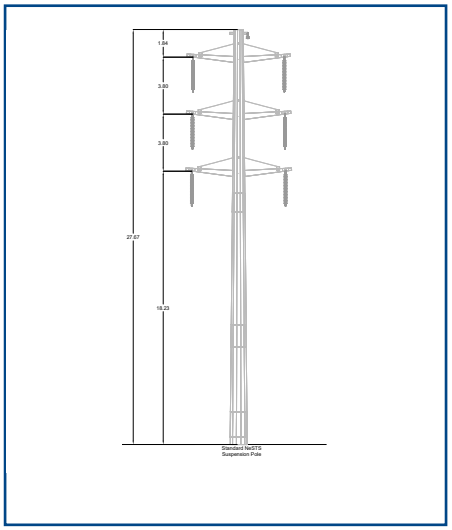
Existing Structure (Double Steel Circuit Lattice Tower)



The height of the existing structure is 27m with an average span of 220m.

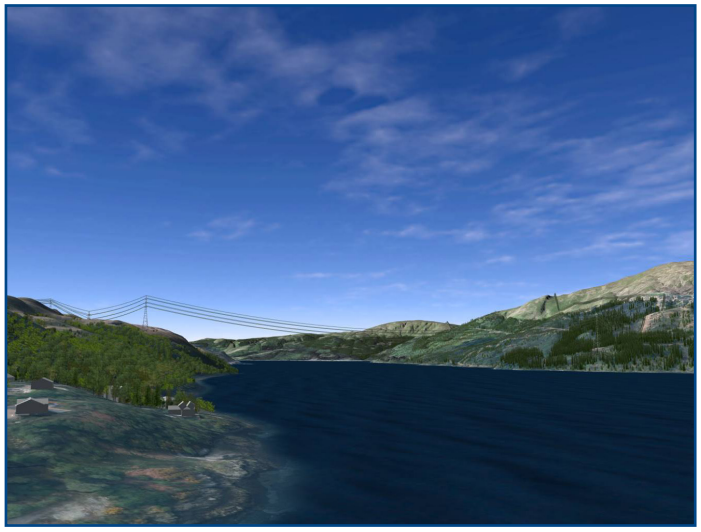
Due to the requirement for larger conductors, the rebuild will require slightly larger towers in comparison to the existing.

Double Circuit Steel Monopole Structure (NeSTS)*



The height of the NeSTS structure is generally between 27-40m depending on the angle of the line and extensions required and the average span is 300m.

NeSTS are a new technology, and whilst planned to be built in Aberarder in the Scottish Highlands, there are no NeST structures currently operational in Scotland.



The existing steel lattice towers either side of the Loch Long crossing do not currently need to be replaced. However, an upgrade of the existing conductors and fittings will be required. There is currently significant clearance of the Loch to ensure safety of marine users (which is why these towers are higher) and we will ensure that adequate clearance, to satisfy stakeholders needs, is maintained.

In the meantime, marine consultants have been engaged to assess vessel traffic at Loch long for any potential disruption during the reconductoring, to ensure safety of any passing vessels under the existing overhead line.

Engagement with marine stakeholders will be ongoing to ensure any perceived issues are taken into consideration.

*New Suite of Transmission Structures

Routeing

The aim of our routeing guideline process is to provide a balanced assessment of economic, technical and environmental factors in order to select the preferred alignment for the new overhead line.

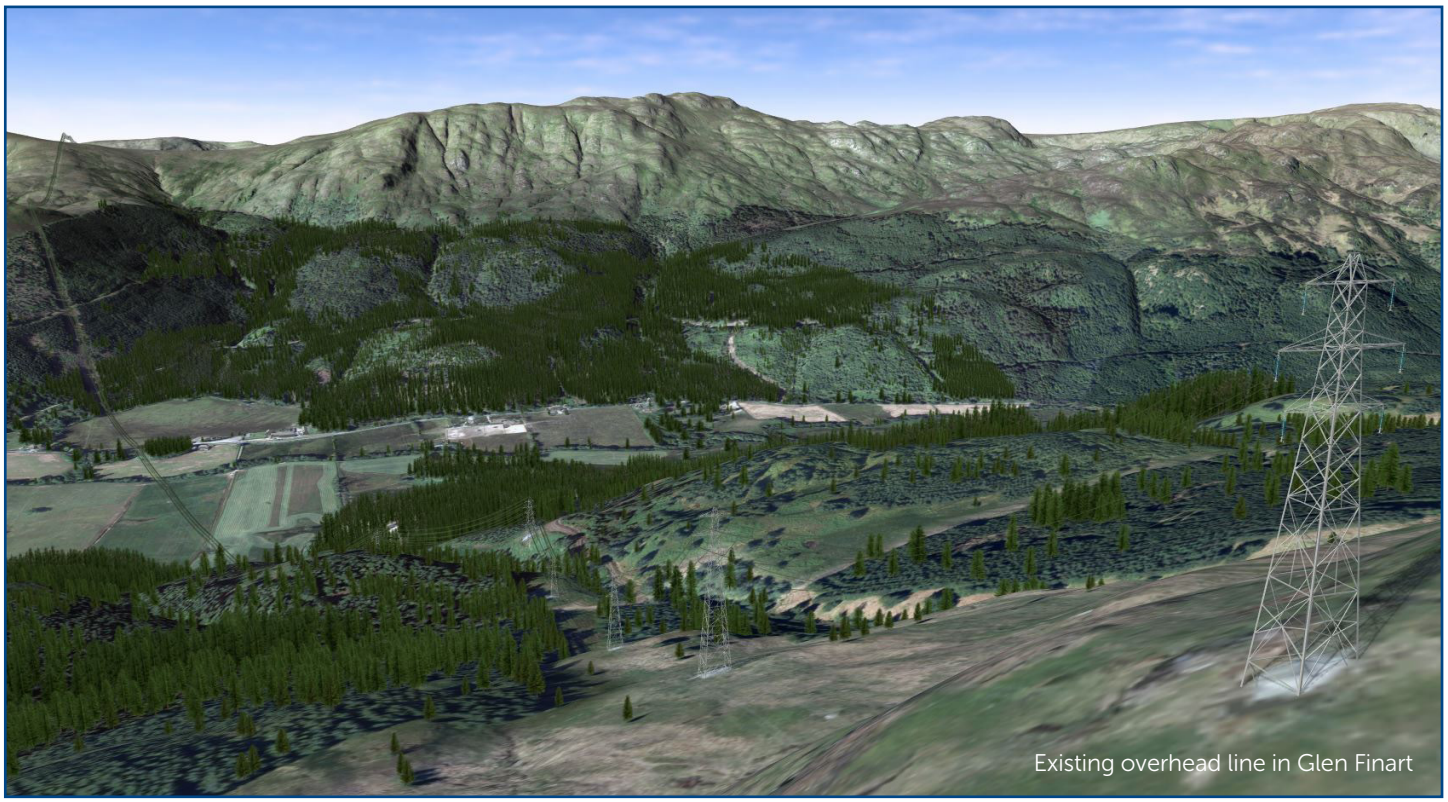
The proposed replacement overhead line route will be developed following our OHL routeing guidelines with consultation and stakeholder engagement throughout the process. The principal routeing stages are:

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

Due the geographic limitation of the proposed rebuild of the OHL from the western side of the Loch Long crossing to the existing Dunoon Substation (Grid Supply Point), this project has gone from Stage 0 to Stage 2, since effectively there is only one Corridor option for the project. Route Selection seeks to find a route within the corridor which avoids where possible physical, environmental and amenity constraints, is likely to be acceptable to stakeholders, and is economically viable, taking in to account factors such as altitude, slope, ground conditions and access.

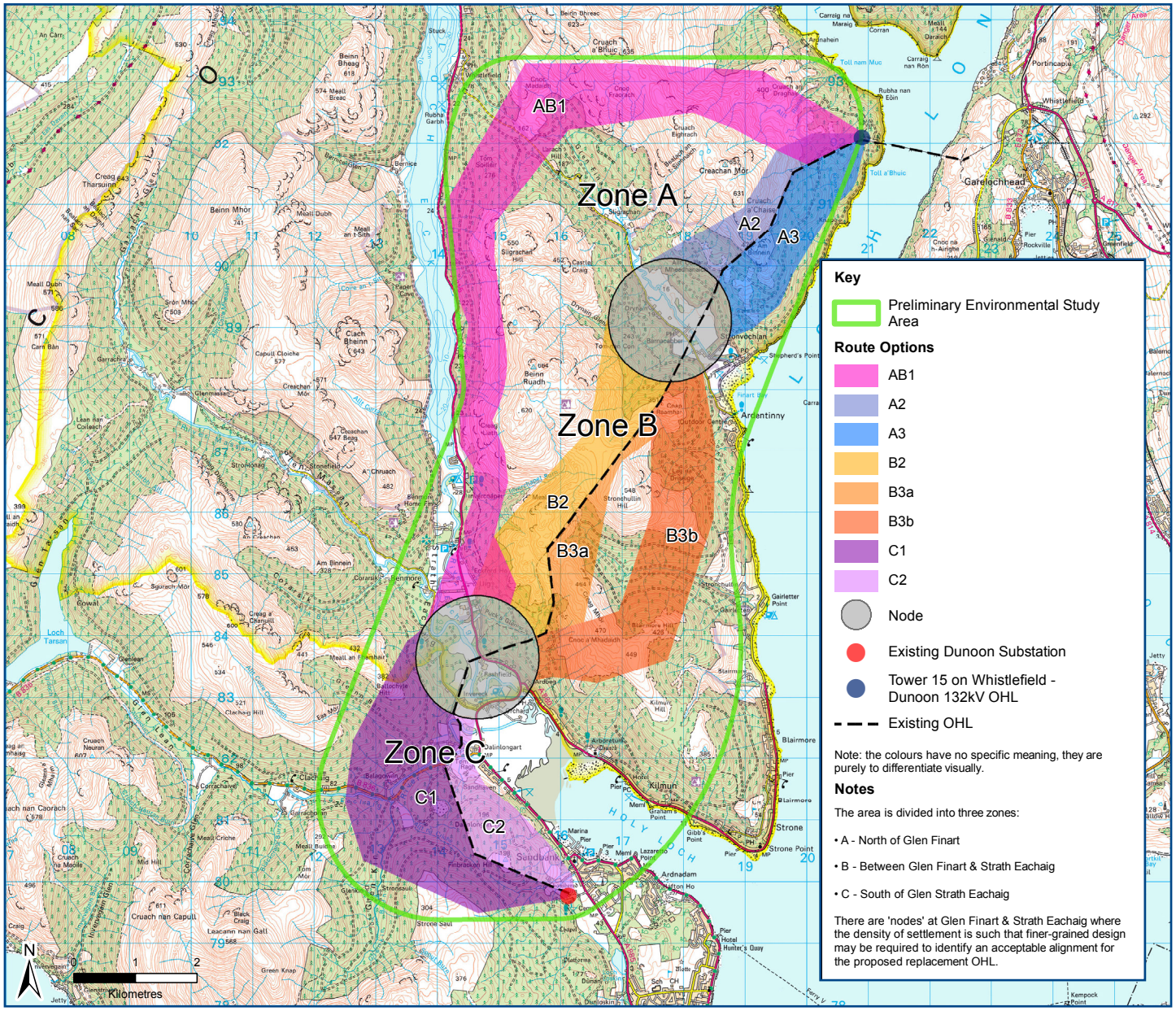
The dimensions of a route option depend on the context provided by the corridor. A route may be several kilometers in length and may range from 500m to more than 1km in width, depending on the scale of the project, the nature and extent of constraints and the character of the area in question.

The output of this stage will be set out in a Route Selection Study Report which will explain the approach and rational for the selection of the preferred route. Where inputs from stakeholders have been sought, the report would describe the outcomes and any amendments made to the preferred route before reaching the proposed route. Crossing the existing line with a new line is technically very challenging. In principle therefore route options divide east and west of the existing line.



Existing overhead line in Glen Finart

Routeing Options



In Zone A there are three options:

AB1 crosses the lower part of the ridge NE of Glen Finart, crosses the upper where it is not inhabited, then down the flank of Loch Eck and Strath Eachaig.

A2 runs west of the existing line below the 600m contour.

A3 runs east of the existing line avoiding the settlement at Stronvechlan and extensive linear woodlands along the lochside.

In Zone B there are four options:

AB1 as described for Zone A.

B2 west of the existing line below the 600m contour.

B3 east of the existing line constrained by settlement at Ardentinny and Gairletter, split **B3a** and **B3b** either side of Tronchullin Hill.

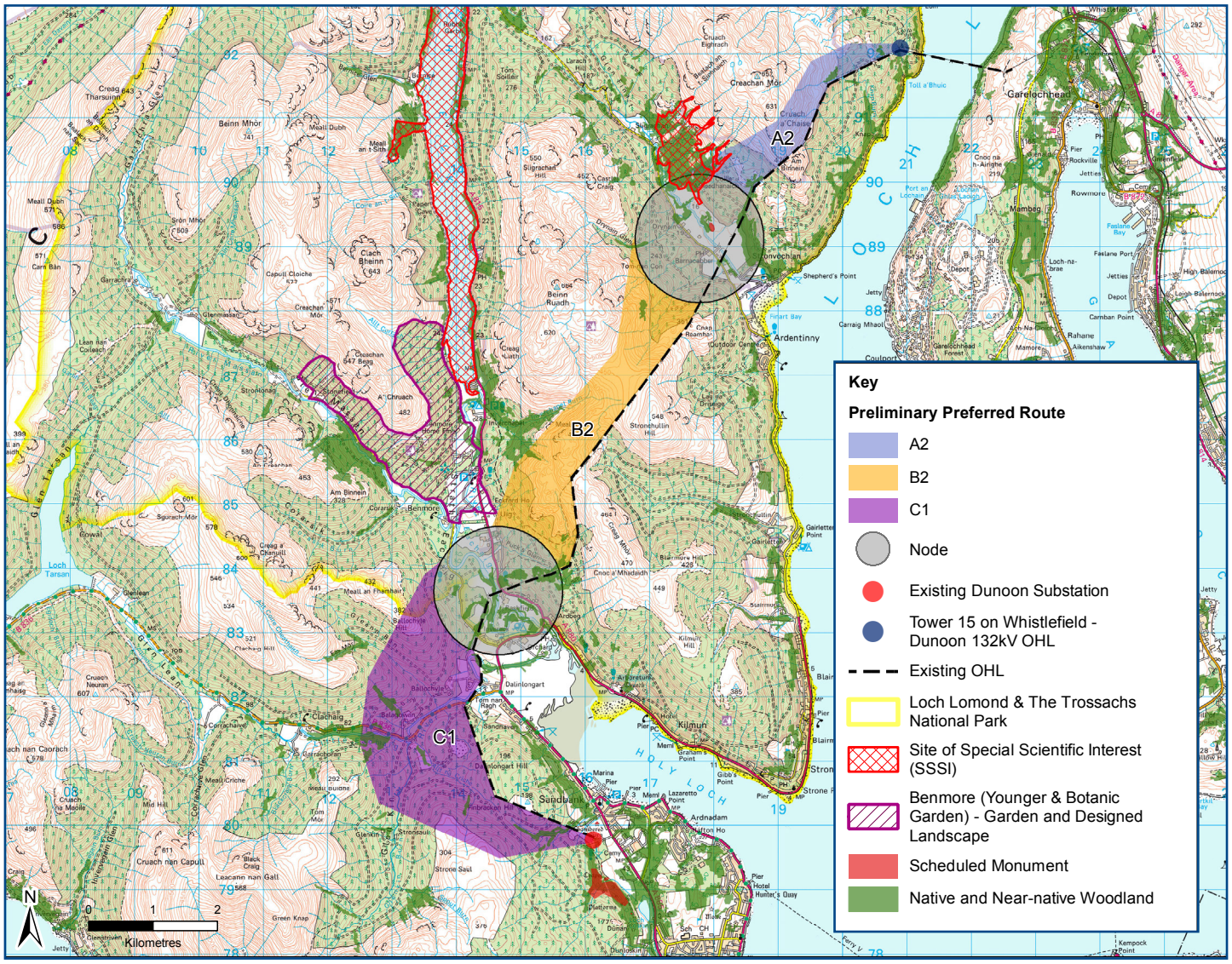
In Zone C there are two options:

C1 west of the existing line. Wider than usual to allow full consideration of alignment options at Stage 3.

C2 east of the existing line constrained.

Preliminary Preferred Route

Initial studies have led us to confirm that Route **A2, B2, C1** is preliminarily our preferred route option due to landscape and visual impacts, existing constraints and designated sites, habitats, forestry impacts and engineering challenges. However, this preference cannot be confirmed until we have completed more detailed surveys and assessment, and considered stakeholder feedback in regards to this option.



This indicative preferred route option for the replacement OHL is presented along with identified environmental constraints and designations, which along with other aspects such as residential dwellings, forestry interests, habitats and existing land use and amenity are considered during the routeing process. Certain constraints such as the Loch Lomond and the Trossachs National Park are unavoidable, however we will seek to minimise impacts on the associated sensitivities. The existing OHL will be taken down on completion of the new build and so environmental impacts of the replacement line may be offset against the impacts of the existing line in the longer term.

Once we have confirmed a preferred Route, we will progress with Stage 3: Alignment Section. Further consultation will be undertaken at this stage.

What happens now and how do I have my say?

What happens next?

We intend to carry out further public engagement in Summer 2021 following collation and review of feedback from this consultation and are keen to receive feedback from as many local interested people as possible.

Following further consultation planned for 2021 and 2022, once we have confirmed a preferred Alignment, we will apply to the Energy Consent Unit of the Scottish Government for a Section 37 Consent for the construction and operation of the proposed replacement overhead line. This application will subject to Environmental Appraisal or Environmental Impact Assessment.

Comments

Your views and comments can be provided to the project team by completing a feedback form or by writing to Helen Batey, Community Liaison Manager. We will be seeking feedback from the members of the public and Statutory Bodies until **Friday 4th December.**

All received feedback will be assessed and the proposed options adapted where necessary.

Community Liaison Manager, Helen Batey

helen.batey@sse.com

01925 800 833
07778 453 993

Helen Batey
Scottish and Southern Electricity Networks,
Inveralmond House,
200 Dunkeld Road,
Perth, PH1 3AQ

Additional information

Information will also be made available via the project webpage and social media channels:

Project Website:
www.ssen-transmission.co.uk/projects/dunoon

Follow us on Twitter:
@ssencommunity

Follow us on Facebook:
@ssencommunity

Timeline

Environmental Assessment Commenced	June 2020
Preferred route consultation	November / December 2020
Preferred Alignment Consultation	June 2021
Environmental Impact Assessment	July 2021 to January 2022
Pre Application Public Event	February 2022
Submission of s37 Application	March 2022
Section 37 Granted	March 2023
Construction Commences	June 2023
Project Complete	January 2026

Your feedback

Thank you for taking the time to read this consultation booklet. In order to record your views and improve the effectiveness of our consultation, please complete this short feedback form.

Please complete in **BLOCK CAPITALS.** (Please tick one box per question only)

Q1 **Has the requirement for the Dunoon 132kV Overhead Line Rebuild Project clearly explained?**

Yes ☐ No ☐ Unsure ☐

Q2 **In your opinion, has a clear overview of the required project elements been provided?**

Yes ☐ No ☐ Unsure ☐

Q3 **Do you agree with the preferred technology solutions with have been identified? (NeSTS and towers)**

Yes ☐ No ☐ Unsure ☐

Please provide a sentence to explain your answer

Q4 **Do you have any preference between the two preferred technology solutions identified?**

132kV Double Circuit Steel lattice tower (often referred to as pylons) ☐

132kV Double Circuit Steel monopole structures (NeSTS) ☐

Please provide a sentence to explain your answer

Q5 **Do you agree with our preliminary preferred route option? (A2, B2, C1)**

Yes ☐ No ☐ Unsure ☐

Please provide a sentence to explain your answer

Q6 **Are there any identified routes you feel should NOT be progressed from any of the zones identified?**

If so, please tell us which.

Q7 **Are there any factors, or important points that you believe have not been considered and should be brought to our attention?**

If so, please tell us which

Full name and address

Email

Telephone

If you would like to be kept informed of progress on the project please tick this box. ☐

If you would like your comments to remain anonymous please tick this box. ☐

Thank you for taking the time to complete this feedback form.

Please submit your completed form by one of the methods below:

Post: Scottish and Southern Electricity Networks, Inveralmond House, 200 Dunkeld Road, Perth, PH1 3AQ

Email: helen.batey@sse.com

Online: www.ssen-transmission.co.uk/projects/dunoon

Download: Comments forms and all the information from today's event will also be available to download from the project website.

The feedback form and all information provided in this booklet can also be downloaded from the dedicated website:

www.ssen-transmission.co.uk/projects/dunoon

Any information given on the feedback form can be used and published anonymously as part of Scottish and Southern Electricity Networks consultation report. By completing this feedback form you consent to Scottish and Southern Electricity Networks using feedback for this purpose.