Scottish & Southern Electricity Networks
TRANSMISSION

Shin to Loch Buidhe 132kV Overhead Line Rebuild

Project Need and Overview

Why is the project required

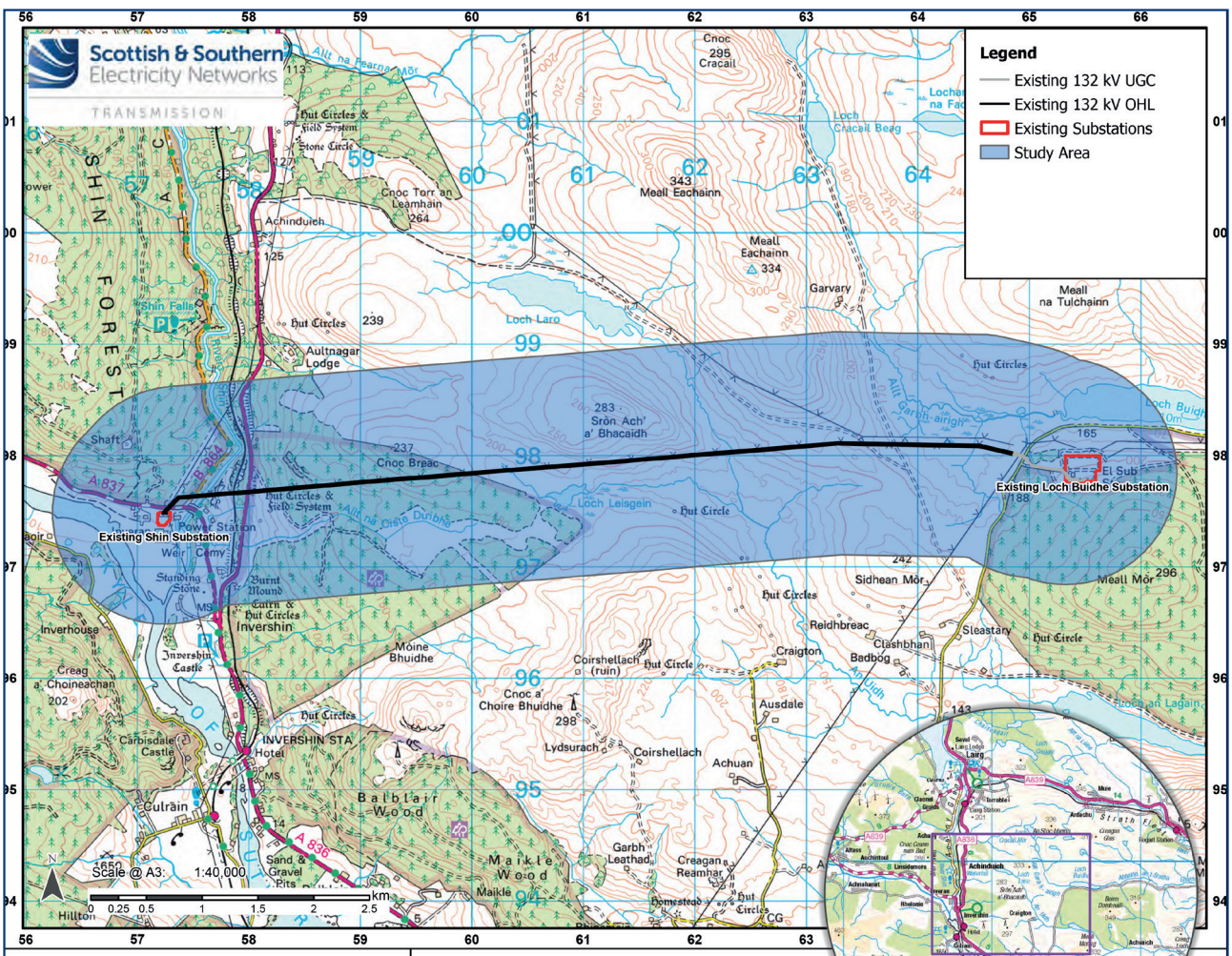
This project is essential in supporting the UK's transition to a cleaner, greener energy future. With a significant increase in onshore wind generation around the existing Shin and Loch Buidhe substations, our electricity network must be reinforced to ensure we can efficiently deliver this renewable energy to homes and businesses across the country.

This project plays a key role in supporting national Net Zero targets, and by strengthening our transmission network, we are not only enabling more renewable energy to connect but also enabling a secure and reliable electricity supply for the future. In compliance with our Network Operators Licence, we aim to deliver the project in an efficient, coordinated and economic manner whilst minimising impact on the environment.

About the project

The existing overhead steel tower line which runs between Shin substation and Loch Buidhe substation was constructed in the 1960's, and is operated at 132kV. The initial intention was to reconductor the existing overhead line between Shin substation and Loch Buidhe substation, however it was identified that the existing towers would not be suitable for the heavier conductor proposed and unable to accommodate the new conductor rating (348MVA).

In order to meet the required ratings, it is anticipated that this will be achieved via the construction and operation of a new 132kV double circuit overhead line to replace the existing overhead line. The new infrastructure proposed aims to facilitate renewable energy connections to the Transmission Network.



Shin - Loch Buidhe OHL Existing Circuit and Study Area

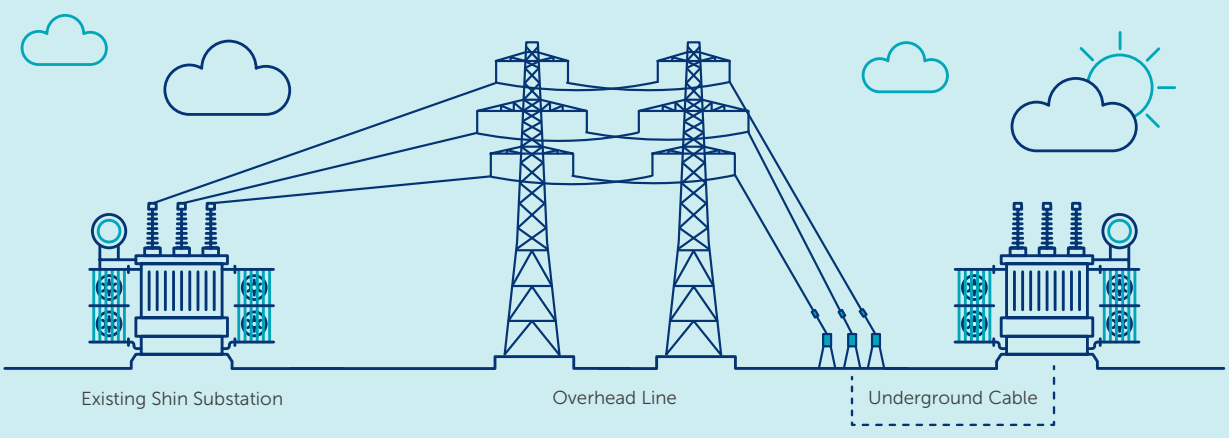


*Diagram not to scale, for illustration purposes only

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Project scope

The proposed scope of works for the Shin – Loch Buidhe 132kV Rebuild are:

- Construct approximately 10.5km of double circuit between Shin 132kV substation and Loch Buidhe 132kV substation. The circuits shall consist of approximately 8km double circuit overhead line (OHL) on steel lattice towers and 2.5km underground cable (UGC).
- Upon completing commissioning of the rebuild works, dismantle the existing Shin – Loch Buidhe 132kV OHL.

Project Timeline

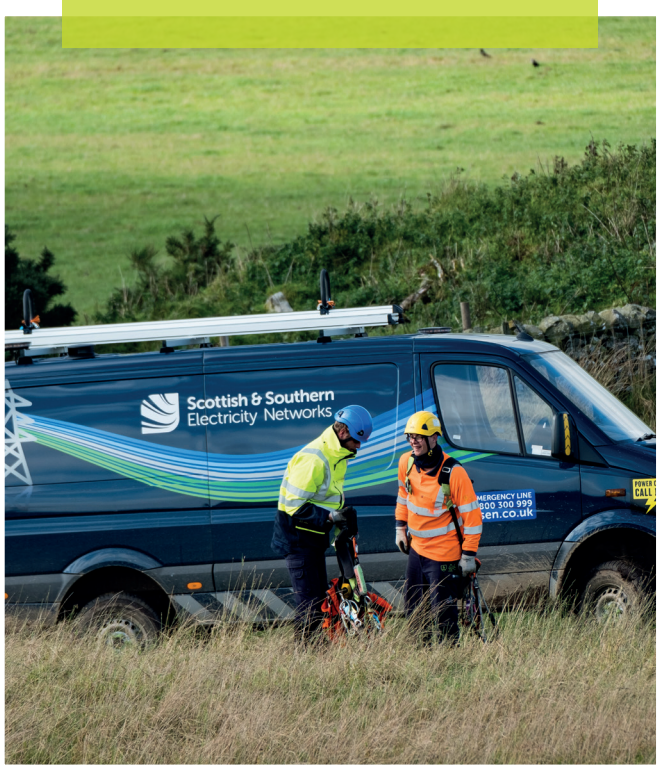
February 2025
Project introduction

Autumn 2025
Public Consultation

January 2026
Submission of Section 37 consent application

November 2027
Start on Site
(if Section 37 consent granted)

October 2030
Construction/commissioning complete, and dismantling of redundant OHL between Shin – Loch Buidhe



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Consents and Environmental

Environmental Assessments

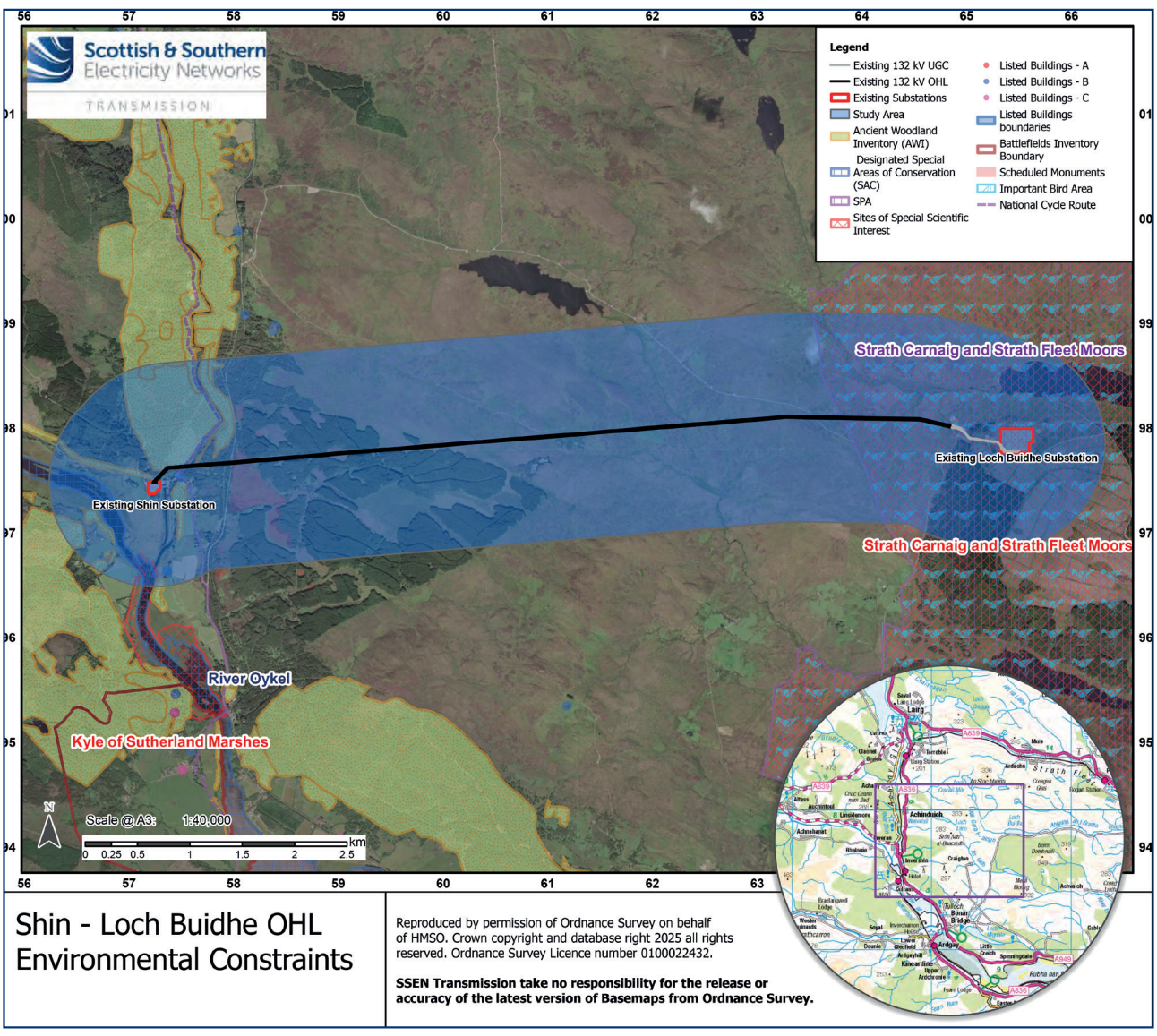
Desk-based assessments using available mapping and Geographic Information Systems (GIS) data have been undertaken to gather baseline information. Initial site walkovers by specialists commenced in late 2024 and will continue into 2025. This is crucial to enable us to understand the key environmental constraints and sensitivities within the route corridor.

This work has been carried out during 2024 and has helped to identify key environmental constraints including, landscape and visual amenity, sensitive habitats, protected species, ornithology, forestry, cultural heritage and hydrology and hydrogeology. Following confirmation of a preferred alignment, which will be informed by the work and assessments carried out to date, further detailed studies and assessment work will be undertaken in 2025 and 2026 to support the consenting process going forwards.

Key Environmental Constraints

The key environmental constraints identified on the project to date include:

- Strath Carnaig and Strath Fleet Moors Site of Special Scientific Interest (SSSI) and Special Protection Area (SPA) which are designated for breeding hen harrier.
- Two Scheduled Monuments (SM 5462 and SM 5498), that lie within the route corridor. Both comprise areas of prehistoric settlement and cultivation surrounding the remains of hut circles across the west-facing hillside at Invershin.
- Areas of woodland listed on the Ancient Woodland Inventory at the western end of the route. These are areas listed as 1a and 2a (of semi-natural origin) and 3 (other).
- Osprey *Pandion halieatus*, red-throated diver *Gavia stellata* and black-throated diver *Gavia arctica*.



Shin - Loch Buidhe OHL Environmental Constraints

Biodiversity Net Gain

Following the mitigation hierarchy approach, our environmental commitments mean that when developing routeing and siting options for our overhead lines, underground cables and substations our projects will avoid, mitigate and restore any environmental impacts wherever possible.

Our environmental teams are embedded in project development to consider and consult upon the most suitable location from the very start of the optioneering phase, using well established data sets and additional detailed survey work.

We are committed to delivering 10% Biodiversity Net Gain on all sites gaining consent going forward.

This ensures that we don't just restore our natural habitats but actively improve them for the benefit of local communities, wildlife, flora and fauna.

Consenting

This project will be subject to a consent application to the Energy Consents Unit (ECU) under Section 37 of the Electricity Act 1989. Before a project progresses to consent application stage an EIA Screening Opinion is requested from the Scottish Ministers through the ECU to clarify whether the project falls within the thresholds of The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017.

If the project meets or exceeds certain criteria, then it is deemed to be an EIA Development and any application for consent must be accompanied by a formal EIA Report. If it is not deemed to be an EIA Development, SSEN Transmission will provide equivalent environmental information through a voluntary Environmental Appraisal (EA) Report. Additionally, because the works lie within a SSSI, SPA and a Scheduled Monument; SSSI consent, a Habitat Regulations Appraisal (HRA) and Scheduled Monument Consent (SMC) will be required as well as prior notification to The Highland Council.

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Construction of a steel lattice tower

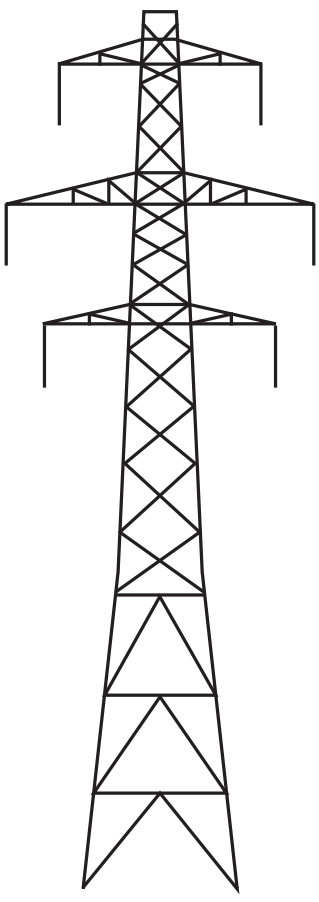
The proposed new 132kV double circuit overhead line between Shin and Loch Buidhe will be supported on steel lattice tower structures.

The 132kV steel lattice towers will have an average height of 33m, however the height of individual towers can vary in the range 27m to 42m depending on the specific design, terrain and required clearances to maintain safety standards. The tower foundation will have an average footprint of 10m x 10m per structure, although this can also vary for individual towers depending on design factors.

The average span length between towers is approximately 290m which can vary depending on the design requirements. There is also opportunity to micro-site towers away from sensitive areas.

New purpose-built access tracks will be required for some strategic locations, and where possible the existing network of tracks will be utilized for construction and operational maintenance activities.

An operational corridor will be maintained either side of the overhead line, including vegetation management, to minimise the risk of faults occurring.



Typical Steel Lattice Tower (L7c)

Underground Cable

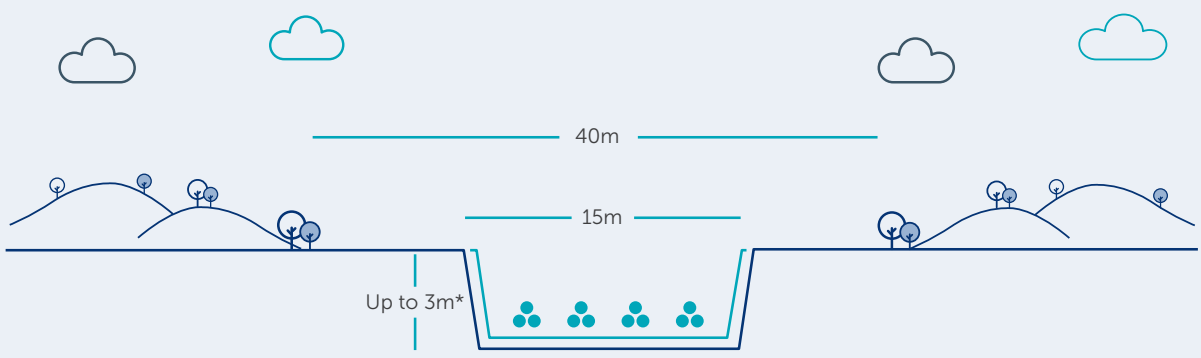
The proposed works also include a new section of underground cable to connect into Loch Buidhe substation. Underground cable is the optimal solution for this section due to engineering constraints, including proximity to existing overhead lines and associated Transmission infrastructure in this area.

For the Shin to Loch Buidhe circuit, a three phase 132kV double circuit is required. For underground sections, two underground cables are required per phase to achieve the necessary circuit capacity.

This means that a total of 12 parallel cables are required to be installed for any underground sections.

For electrical design reasons, these cables need to be suitably spaced out. To achieve the required spacing, a group of trenches at a combined width of up to 15m wide would be excavated, typically between 1m and 3m deep.

During the construction period, a working corridor of up to 40m wide is required for cable installation.



*depths exceeding 3m or obstructions would require trenchless techniques

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Additional Infrastructure

To facilitate the underground cable circuits, some additional infrastructure is required along the cable route.

Cable joint bays are necessary to connect minor sections of cable together. These joint bays would be a temporary excavation, however there is some permanent above-ground infrastructure in the form of link pillars which are required to enable future maintenance and safe operation of the circuit.

Cable sealing ends are also required at the point where the overhead line transitions to underground cable.

A compound would be constructed around the overhead line tower and cable sealing ends, comprising a stoned hard standing platform with a security fence around its perimeter.

The footprint of a typical cable sealing end compound would be approximately 50m x 50m.

Example joint bay excavation

Example link pillar

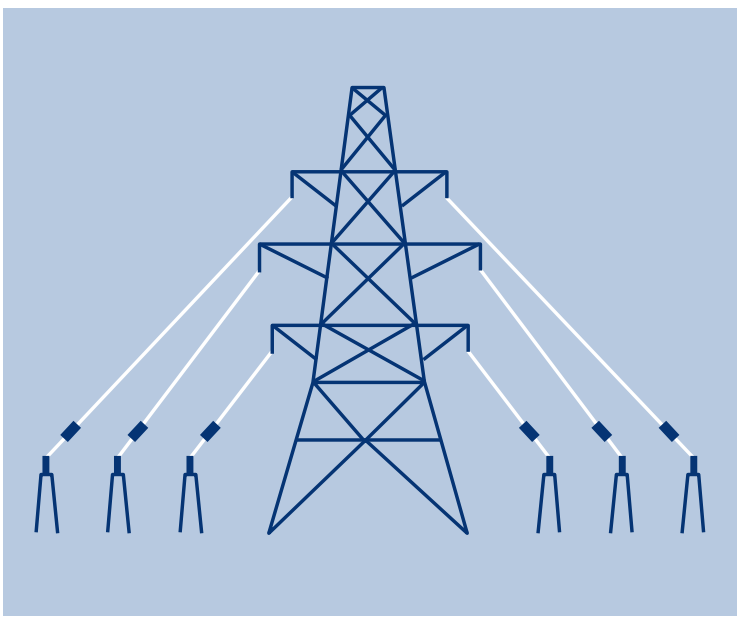
Other Considerations

Peatland is an important habitat and installing underground cables can cause lasting damage. It also poses significant engineering challenges due to the difficult ground conditions.

Therefore any underground cable development will seek to avoid areas of peatland where possible, or minimise disruption if unavoidable.

There are other environmental considerations including, but not limited to, impacts of the development on local biodiversity, ground nesting birds and mammals, accidental release of silt or pollutants into local environment and water courses.

Whilst steps will always be taken to mitigate and minimise such risks, these need to be carefully considered and balanced against a range of other factors when considering the development of new electricity transmission infrastructure.



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