Scottish & Southern Electricity Networks

Spittal to Loch Buidhe to Beauly 400 kV OHL Connection

Environmental Impact Assessment

Volume 5, Appendix 13.1 – K:

Woodland Reports

Sutherland Estate

July 2025

Scottish & Southern Electricity Networks

Contents

1. Introduction

1.1 Scottish and Southern Electricity Networks (SSEN) Transmission, hereafter referred to as 'the Applicant', owns, operates, develops and maintains the high voltage electricity transmission system in the north of Scotland and the Scottish islands. Due to the growth in renewable electricity generation in the north and north-east of Scotland, upgrade of the transmission network is required to provide the necessary increase in transmission capacity. The Applicant is applying for consent under Section 37 of the Electricity Act 1989 to construct and operate a new double circuit 400 (kilovolt) kV overhead line (OHL).

1.2 This report provides an assessment of woodland impact related to the Spittal to Loch Buidhe to Beauly 400 kV OHL Connection project (the 'Proposed Development'). The report details the woodland area affected by the Operational Corridor (OC), new access tracks (permanent), and additional felling required due to windblow risk within individual ownerships. It also includes mitigation considerations and compensatory planting recommendations.

2. Purpose of this Woodland Report

2.1 As part of the Environmental Impact Assessment (EIA) process, it was identified that construction of the OHL and associated access tracks would cross a number of woodland areas within both public and private landholdings. The landholding property boundaries are identified in **Figure 1: Woodland Impacted by the Proposed Development**.

2.2 This document provides an assessment of the woodland areas that are affected by the Proposed Development, including the requirement for woodland removal and management recommendations to mitigate the impact of the woodland removal.

2.3 Field surveys of the woodland areas have been undertaken and have been used to determine the various woodland characteristics to identify the woodland removal required and recommended. This document also sets out the area, in hectares (ha), of compensatory planting required to ensure no net loss of woodland is achieved.

3. Woodland Property

3.1 Sutherland Estate is privately owned. The estate's woodlands are situated approximately 7 km northwest of Golspie village, with the nearest major public road being a minor unclassified road along Dunrobin Glen off the A9 at Golspie town.

3.2 Within the local setting, these woodlands are primarily situated south of Loch Horn and on either side of the local road at Dunrobin Glen at the head of this glen. The woodlands affected by the Proposed Development are intersected by the main watercourse running through the glen, Allt nan Sgeith, eventually becoming Golspie Burn.

3.3 The site features forestry access tracks that lead to woodlands; however, they do not reach all the Towers within the Proposed Development. These existing tracks will need to be upgraded to support the construction and operational phases of the project. Refer to **Figure 1: Woodland Impacted by the Proposed Development**.

4. Development Requirements

4.1 400 kV Operational Corridor

4.1.1 With reference to **Figure 1: Woodland Impacted by the Proposed Development**, the Overhead Line (OHL) sections relevant to Sutherland Estate extend from 160 m north to Tower N231 to over 110 m south of Tower N249.

4.1.2 The Study Area for this assessment is based around an operational corridor of 90m. The Applicant defines the OC as the area in which it has rights to remove woodland for the purposes of creation of new OHL, resilience and maintenance of OHLs, or protection of electrical plant as required by the Electricity Safety, Quality and Continuity Regulations (ESQCR) 2002 regulations and The Electricity Act 1989. The OC is defined as to the distance at which a tree could fall and cause damage to the OHL, resulting in a supply outage. As a result, the final OC width would be based on the safety distance required from the OHL centreline to allow for a mature tree falling towards the OHL, taking account of topography and tree height at maturity.

4.1.3 The OC width that has been assessed and identified for the safe build and energisation of the new OHL through areas of conifer woodland is 90 m (45 m either side of the OHL centreline). Further details can be found in **Section 13.3** of **Volume 2, Chapter 13: Forestry** which outlines the extent of the study area.

4.1.4 The OC width that has been assessed and identified for the safe build and energisation of the OHL through the areas of broadleaves is also 90 m (45 m either side of the OHL centreline). This has been assessed as a maximum OC width required at these woodland locations, with the potential of further narrowing of the OC prior to construction to allow greater tree retention depending on factors such as tree height, topography, crown reduction or other mitigation strategies[1].

4.2 Access Track Route Design

4.2.1 An existing infrastructure network within the property provides access to some of the woodlands in the proximity to the Proposed Development features; however, new sections of both temporary and permanent roads will be constructed within and outside the OC. These roads will serve as the primary vehicle access route for the Proposed Development, as illustrated in **Figure 1: Woodland Impacted by**

[1]As specified by the 'Red Zone' set out in paragraph 41 of the Forest Industry Safety Accord. (2020) Safety Guide 804 Electricity at Work: Forestry. [pdf] Available at: FISA 804 (ukfisa.com).

the Proposed Development, and will undergo maintenance and upgrades as part of the construction scope.

4.2.2 New access tracks, also detailed in **Figure 1: Woodland Impacted by the Proposed Development**, will be built to service Towers N231 to N249.

4.2.3 The access track corridor width required for clearing through the woodland is 20 m (10 m on either side of the centreline), but this will be evaluated in situ to determine the suitability for further tree retention.

4.2.4 The construction of these new access tracks will increase the impact of woodland removal along routes located outside the OC. The affected woodland along the new roadways will consist of a similar composition to that found within the OC, featuring a combination of coniferous plantations and broadleaved woodlands, depending on the specific location of the roads. Refer to **Table 9.1** below.

4.2.5 Tree felling, stump removal and residue mulching will be required for the installation of new access tracks and at each tower location for the formation of temporary construction working areas.

4.2.6 These roads will serve as the main arterial construction route. Tree felling and timber extraction will be able to utilise existing tracks, prior to any construction activity.

4.2.7 Where existing tracks require maintenance or upgrading, this may involve the removal of trees and scrub to facilitate the works, particularly to accommodate the creation of additional passing places. While much of the upgrade activity would fall within standard forest access maintenance, which typically involves the removal of scrub, regeneration, and crown management, some sections may require additional tree clearance within a corridor of up to 12 m in width.

5. Woodland Characteristics

5.1 A desk-based study of the woodland areas was conducted, to identify current woodland environmental designations and classifications.

5.2 The web-based data provided by Scottish Forestry and referencing the Scottish Government's Ancient Woodland Inventory (AWI), and

- The Scottish Forestry Map Viewer provides spatial data on the Native Woodland Survey of Scotland (NWSS) and classifies the woodland types into four categories[2] [3]:

[2] Scottish Forestry Map Viewer URL https://scottishforestry.maps.arcgis.com/apps/webappviewer/index.html?id=0d6125cfe892439ab0e5d0b74d9acc18

[3] Scottish Forestry Native Woodland Survey of Scotland: Glossary of Terms; URL: Main Title (forestry.gov.scot)

1. Native woodland
2. Nearly-native woodland
3. Open land habitat
4. Plantations on Ancient Woodland Sites (PAWS)

5.3 The woodlands within this ownership are located on gentle slopes and steep foothills between Cnoc na Gamhna and Ben Horn, two local hills. The general aspect varies between south- and north-facing, as the woodland extends across both sides of the glen. Elevations range from approximately 130 m to 350 m above sea level.

5.4 The route primarily passes through mixed-species coniferous plantations. Within the central areas of the OC affected by woodlands, some sections are classified as Native Woodland under the Native Woodland Survey of Scotland (NWSS), specifically as native pinewoods and wet woodland.

5.5 The woodlands consist mainly of commercially managed conifer plantations, with only small patches of broadleaved woodland located within the OC.

5.6 The Native Woodland classification includes two types, one is wet woodland featuring a broadleaved stand encountered within the OC and the other is classified as native pinewood, which is located within the buffer areas of the new permanent tracks or along the edge of the OC in the central areas. Refer to **Table 5.1** below.

Table 5.1: Woodland Designations

Item	Type of Impact	Woodland Designations	Area (ha)
Operational Corridor	Permanent	NWSS- Native woodland	0.20
Access track corridor	Permanent	NWSS- Native woodland	0.16

5.7 The Native Woodlands of the native pinewood type consist primarily of Scots pine conifer woodlands. These trees are in the young pole stage, averaging about 8 m in height, with variations observed among the plantation. The

Native Woodland – woods where the canopy cover is composed mainly of native species (i.e., over 50%).
Nearly Native Woodland - where native species make up between 40% and 50% of the canopy. These are woods that could have potential to be converted into native woodlands by altering their species mix.
Open Land Habitat – areas with <20% canopy cover of trees and shrubs adjoining a native woodland.
PAWS - Plantation on Ancient Woodland Sites. These are surveyed in the NWSS where they are recorded in the Scottish ancient woodland inventory (SAWI). These woodlands appear to have originated through natural regeneration sometime before the mid-19th century, but were later converted to planted wood.

canopy is semi-open, and there is no understorey development present within these pinewoods. Refer to **Plates 1 and 2**.

Plate 1- Edge of the Native Woodland (pinewood) at the proximity of Tower N242. Pole immature stand of Scots pine averaging 8 m in height, presenting a rather open upper canopy. Grid reference: NC 79473 04374.

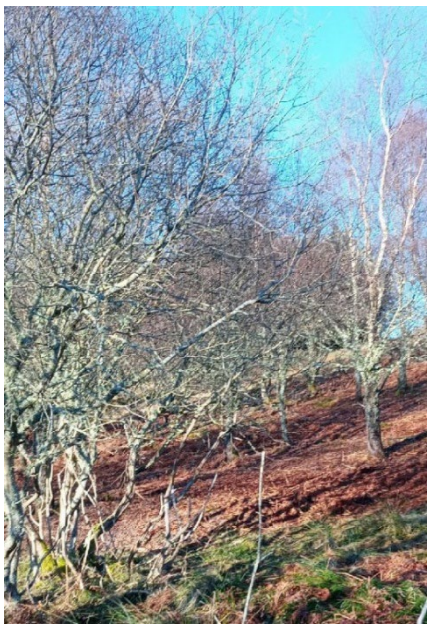

Plate 2-Native Woodland of wet woodland type dominated by birch and alder trees of pole stage and scattered willow shrubs. Potentially planted at the same time as conifer stands. The average height of birch trees is 7 m. Grid reference: NC 79644 04689.

5.8 Outside the woodland classification areas, the main conifer plantation consists of a mixed crop of young spruce and lodgepole pine trees at the pole stage. As seen in **Plate 3**, the spruce trees average 11 m in height, and the upper canopy is becoming closed, resulting in no understorey development.

Patches of stunted growth can be found in wetter and poorer ground areas. Additionally, some natural regeneration of mainly spruce can be observed along the edges of the conifer stand.

Plate 3- Mixed conifer crop composed of spruce and Lodgepole pine of immature pole stage. Trees averaging 11 m high and with a rather close canopy. Natural regeneration is starting to be evident on the edges of the stand on the open ground. Grid reference: NC 78934 03800.

5.9 Scattered small groups of larch trees are present, exhibiting characteristics similar to the spruce and Lodgepole pine mix. These commercially planted larch trees average height of 8 m. Refer to **Plates 4 and 5.**

Plate 4- Larch trees forming a stand previously planted and undergone ground cultivation. Trees of an average 8 m high. Grid ref: NC 79047 03842.

Plate 5- Commercial larch block on a slope north to the public road. Trees of 5 m height average. Grid reference: NC 79047 03842.

5.10 The northern coniferous blocks, situated above the public road on higher ground, exhibit a poorer establishment rate, with some stunted and checked groups scattered throughout the area and a more open upper canopy. The

trees in this region, composed primarily of Lodgepole pine and spruce, average 7 m in height. Refer to **Plate 6**.

5.11 Additionally, small patches of broadleaved trees are found on the edges of the watercourses and near the conifer coupes on the north side of the public road. Refer to **Plate 7**.

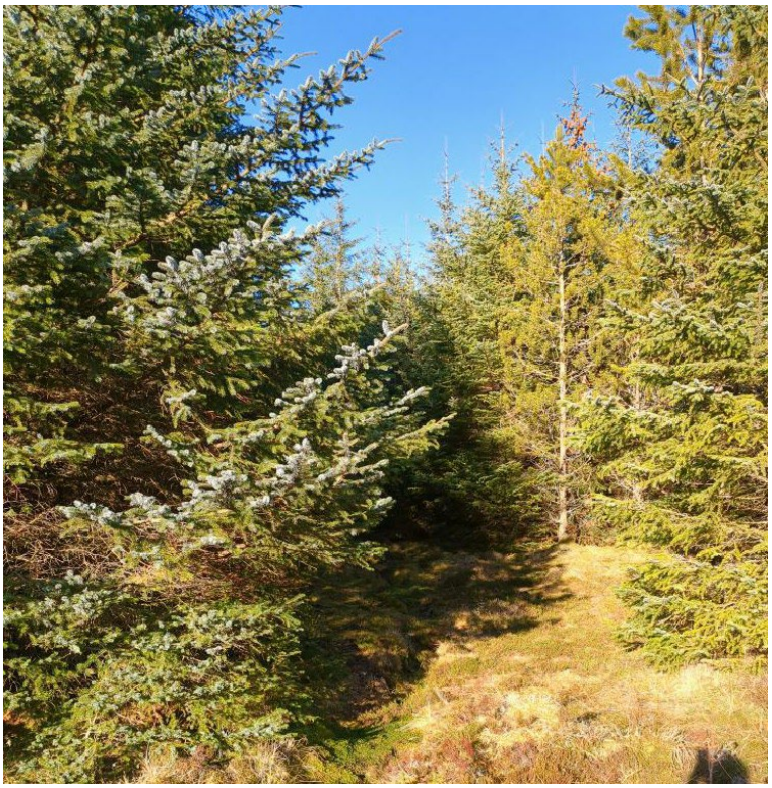

Plate 6- Spruce and Lodgepole pine mix on commercial plantation north of the Dunrobin glen public road. Trees are shorter than those encountered on the commercial coupes south of the road. Grid reference: NC 80105 05187.

Plate 7- Broadleaved trees in the vicinity of the watercourse at the edge of the conifer stand feature birch trees of up to 4 m in height in wet ground. Grid reference: NC 80090 05101.

5.12 Generally, the woodlands within Sutherland Estate affected by the Proposed Development primarily comprise pole-stage commercial conifer plantations, dominated by a mix of spruce as the main species, along with lodgepole pine in intimate mixed stands, and a minor presence of larch. Small patches of broadleaved trees are also encountered, originally planted in the vicinity of watercourses and wet grounds.

5.13 The site soils are predominantly peaty gleyed podzols.[4]

6. Windblow Risk Impact

6.1 An assessment was undertaken of the risk of windblow to areas of woodland adjacent to the OC which would be exposed due to the tree clearance required for the OC. This assessment was based on the professional judgement of the forestry surveyor with consideration being given to the soil and moisture regime, the topography, tree species, top height, exposure, altitude and aspect in relation to the prevailing wind direction and any previous management regimes. This assessment was also based on site visits and observations, and available data of the site. Reference was also made to Forest GALES 2.5 Forest Research decision support system where appropriate.

6.2 Given the nature of some of the woodlands, mainly at young pole-stage conifer woodlands, along with the local characteristic of soils, topography and

[4] Scottish Government's Scotland's soils website https://soils.environment.gov.scot

aspect, it is anticipated that the introduction of the OC will not result in future windblow to the adjoining woods.

6.3 The woodland site affected by the Proposed Development has a 'Detailed Aspect Method of Scoring' (DAMS)[5] windthrow hazard class score of 11, classified as low. The site presents mineral soils with shallow rooting that are mostly cool and moist.

6.4 All woodlands affected by the Proposed Development are believed to remain wind-stable. These rather open coupes have been assessed and are therefore considered stable in the current conditions.

7. Woodland Management Impact

7.1 The OHL will create additional challenges for the future management of the forest as it dissects existing management coupes and introduces an electrical hazard. The risks associated with the electrical hazard will be reduced by regular maintenance of the OC, so maintaining the compliance of the OC and reducing any need for future tree clearance operations within the "Red Zone".[6]

7.2 The sterilisation of the OC, however, will have an impact on forest restructuring, potentially impacting the landowner's ability to utilise the forest's commercial viability in accordance with the UK Forestry Standard. Mitigation opportunities are discussed in the following **Section 8**.

7.3 The OHL will cross the woodland road network at either approximately 45 or 90 degrees and will be built to the regulatory safe height clearances above forest access tracks, which will reduce the hazard in respect of future timber haulage. It may still, however, impact on machine operations within the proximity of the OHL, such as stacking and loading. Mitigation of which could be incorporated into the access design, following discussions with the landowner.

7.4 The OHL may be restrictive to future in-forest machinery access. The requirement for dedicated forestry machine OHL crossing points will be discussed with the landowner and if required, will be identified once the OHL has been constructed, thus providing a safe OHL crossing point(s) for future working within the woodland.

7.5 The impact of the Proposed Development on the overall viability and continuity of woodland management has been considered. The affected woodland forms part of a larger estate predominantly made up of commercial conifer blocks. While the proposed OC intersects several woodland compartments in the

[5] Detailed Aspect method of Scoring (DAMS) Ref. Forest Research, "Forest Gales software programme" and Forestry Commission Leaflet 85 "Windthrow Hazard Classification"
[6] As specified by the 'Red Zone' set out in paragraph 41 of the Forest Industry Safety Accord (FISA) Safety Guide 804. Electricity at Work: Forestry (2020) FISA 804 (ukfisa.com)

northern part of the estate, it is not expected to hinder the implementation of forest operations or the ongoing management of these areas. The proposed new tracks will improve access to both sides of the public road, thereby enhancing overall operational accessibility. As a result, no significant fragmentation or isolation of woodland units is anticipated, and the Proposed Development is not considered likely to materially affect the viability of current or future woodland management.

7.6 The impacts arising from the Proposed Development are not anticipated to affect the wider woodland management regime, nor are they expected to necessitate any alteration to the current or planned species composition.

8. Mitigation Opportunities

8.1 The Applicant will be using a process of 'managed resilience' which will seek to retain naturally regenerated broadleaved trees and shrubs as close as possible to the line to keep as much tree cover as possible. Smaller and lower growing tree species and shrubs can be retained closer to the OHL. OHL vegetation maintenance would take place on a 4-yearly cycle as required.

8.2 Impacts on woodland restock opportunities, resulting from the OC sterilisation, could be addressed through the amendment of the Felling Licence Application or the Long-Term Forest Plan (LTFP), adhered to the regulations of the Forestry and Land Management (Scotland) Act 2018, and in line with the UK Forestry Standard guidance to utilise wayleave corridors as designed Open Ground, repurposing currently unplanted areas to maintain the commercial productivity of the woodland.

8.3 Before the construction phase, these areas, along with access tracks, will be assessed for selective felling and also crown reduction to determine if greater tree retention is feasible. The final extent of tree retention will depend on the requirements of the Proposed Development, particularly ensuring the safety of OHL wiring operations during construction.

8.4 The OC woodland removal area is required for the construction and operation of the new OHL infrastructure. Opportunities will be assessed for encouraging woodland regeneration within the OC, the identification of suitable areas cannot be guaranteed due to the requirement of maintaining the safe energisation of the OHL. Reference to **Tables 9.2 and 9.3** below, will fully mitigate the loss of forest resource within the OC through compensatory planting of the equivalent area (ha) of woodland removed.

8.5 Impacts on tree windfirm stability at the time of writing this report on the remaining crop have been assessed and considered as noted in **Section 6**.

8.6 Impact of stability within the remaining crop has been assessed and reported on above.

9 Woodland Removal Impact

Table 9.1: Woodland Removal for Infrastructure			
Item	**Type of Infrastructure**	**Woodland type**	**Area (ha)**
Operational corridor	Permanent	Broadleaved woodland	0.91
		Conifer woodland	14.52
Access track corridor	Permanent	Conifer woodland	0.59
	Temporary	Conifer woodland	0.35
Equipotential Zone (EPZ) Pulling Positions	Temporary	Conifer woodland	0.02

Table 9.2: Compensatory planting		
Compensatory Planting Area		16.39

Table 9.3: Woodland Removal Impact of Infrastructure		
Item	**Woodland type**	**Area (ha)**
Total Loss of Woodland Area	Broadleaved woodland	0.91
	Conifer woodland	15.48
Total Compensatory Planting Area off-site	Broadleaved woodland	0.91
	Conifer woodland	15.11
Total Restocking/ Replanting Area on-site	Conifer woodland	0.37
Total Net Loss of Woodland Area		**0**

10. Compensatory Planting

10.1 Compensatory planting to achieve the area quantity (ha) of woodland removal as a result of the Proposed Development will be in accordance with the Scottish Government's Control of Woodland Removal Policy of no net loss of woodland. A compensatory planting strategy is set out in **Volume 5, Appendix 13.3: Compensatory Planting Strategy.**

Scottish & Southern Electricity Networks
TRANSMISSION

Loch Horn

Scale 1:350,000

Scale @ A3 1:10,000

0 0.25 0.5 km

N

Legend

- Landownership boundary/parcel
- Operational Corridor
- Central line Operational Corridor
- Proposed 400kV OHL Towers
- HLP/EPZs buffer
- Conifer woodland- Operational Corridor 90m
- Broadleaved woodland- Operational Corridor 90m
- NWSS- Native woodland
- 20m Access Corridor
- Access Tracks- Existing Upgrade
- Access Tracks- New Stone Perm
- Access Tracks- New Stone Temp

Woodland report
Project No- LT000132
Spittal- Loch Buidhe - Beauly 400kV Connection
Figure 1. Woodland Impacted by the Proposed Development
Section B- Sutherland Estate

Ref No: 28-06-2025