Scottish & Southern Electricity Networks

TRANSMISSION

Chleansaid Wind Farm 132 kV OHL Connection

Environmental Appraisal (EA) Report

Appendix 11.1: OHL Woodland Report

November 2024

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1. INTRODUCTION

1.1.1 This Technical Appendix (TA) presents information relevant for the Dalchork Substation to Chleansaid Windfarm 132kV Overhead line (OHL) Connection. It should be read in conjunction with the EA Report specifically **Chapter 11: Forestry,** for full details of the Proposed Development.

1.1.2 Scottish Hydro Electric Transmission plc (the 'Applicant'), operating and known as Scottish and Southern Electricity Networks Transmission (hereafter referred to as 'SSEN Transmission'), owns and maintains the electricity transmission network across the north of Scotland. Due to the growth in renewable electricity generation in the north and north-east of Scotland, upgrade of the transmission network is required in order to provide the necessary increase in transmission capacity.

1.1.3 The Applicant proposing to apply for consent under Section 37 of the Electricity Act 1989 to construct and operate a 10.5 kilometre (km) single circuit 132 kV OHL supported by Trident wood poles between the substation at Dalchork and a connection point at the recently constructed Chleansaid windfarm 132 kV OHL . The location of the Proposed Development is shown in **Figure 11.1**.

1.2 Purpose of this Woodland Report

1.2.1 As part of the Environmental Appraisal (EA) process, it was identified that the overhead line construction and the access tracks required to construct the Proposed Development would cross a number of woodland areas that are within public landholdings.

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

1.2.3 Field surveys of the woodland areas have been undertaken and have been used to determine the various woodland characteristics for the assessment of the woodland removal area requirement and recommendations. This document also sets out the area quantity (ha) to be compensatory planted to ensure that no net loss of woodland is achieved.

1.3 Woodland Property

1.3.1 Dalchork forest is under public ownership and is located approximately 2.78km north of the town of Lairg as shown on **Figure 11.1** The woodland property is a large area of commercial conifer woodland, with an existing forest road infrastructure. The property area lies east off the A836 public road.

2. DEVELOPMENT REQUIREMENTS

2.1 Overhead Line

2.1.1 Reference to **Figure 11.1**, the sections of OHL applicable to the Forestry and Land Scotland, woodland property are from Pole 1 to Pole 114 and extending to the property boundary approximately 41 metres to northeast.

2.1.2 The Proposed Development 132 kV Trident wood pole OHL infrastructure has an approximate width of 5 m as standard, at the widest part (steel crossarm) of the OHL i.e., from outside conductor to outside conductor, in addition to this the safety vicinity zone from each conductor is a 3.5 m radius around the conductor.

2.1.3 The OHL infrastructure and minimum safety clearance distance is therefore 12 m (6 m either side of the OHL centreline) and this has been utilised to calculate the area of the Operational Corridor (OC) occupied by infrastructure. In some cases, such as angle Poles the requirement may be slightly in excess of this distance, however the average minimum distance has been used in this assessment.

2.1.4 The Study Area for this assessment is based on the required OC. The Applicant defines the area in which it has rights to remove woodland for the purposes of the safe construction, resilience and continued 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 with reference to the distance at which a tree could fall and cause damage to the overhead line, resulting in a supply outage[1]. As a result, the final corridor width would be based on the safety distance required to allow for a mature tree falling towards the OHL at the mid-point on an OHL span between two Poles, taking account of topography and tree height at maturity. Standard falling distance for a mature conifer tree considered to be a minimum of 30 m. Where the OC passes through areas of native woodland, it is noted that the width of woodland removal is likely to be reduced, due to the general lower height and characteristics of the tree species present. The proposed OC illustrated in **Figure 11.2** has been based on the likely height of the woodland at maturity and therefore, varies in width according to the woodland type present.

2.1.5 The future plans of Landowner woodland restructuring (clear-fell and replant) have been reviewed.

2.1.6 The OC width that has been assessed and identified for the safe build and energisation of the new OHL through the areas of commercial conifer woodland is 72 m (36 m either side of the OHL centreline).

2.1.7 The OC width that has been assessed and identified for the safe build and energisation of the new OHL through the areas of native broadleaved woodland is 60 m (30 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.

2.2 Access Track Route Design

2.2.1 The Dalchork commercial conifer forest is serviced from the A836 public road by well-constructed hard metalled forest roads / access tracks, regularly used for timber haulage. These forest roads / access tracks will form part of the main vehicle access route for the Proposed Development as shown on **Figure 11.2** and will be subject to maintenance and upgrade works as part of the construction work scope specifications. The existing forest roads / access tracks will be utilised during the forestry works element of the Proposed Development.

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)

2.2.2 General tree maintenance works may be required along the existing forest roads / access tracks in preparation for the civil engineering forest road / access track upgrade works.

2.2.3 Sections of temporary access track as shown on **Figure 11.2** are required to be built as part of the Proposed Development, to service the construction of OHL sections, Poles 1 to 16, 20 to 22, 34 to 41, 49 to 65, 81, 99, 106 & 109 to 114 . The formation of 3m wide temporary access tracks, comprising an open-ground trackway system, are required to service the OHL build. A 5m wide access track corridor will be required through woodland are located within the OHL operational corridor and to link-into the existing forest road / access track network.

2.2.4 The temporary access track construction corridor width required to be cleared through woodland is 5m (2.5m either side of centreline) as shown on **Figure 11.2**. At locations where access track routes are being formed by the overlay and installation of steel trackway panels the construction corridor width required to be cleared through woodland is 5m (2.5m either side of centreline) as shown on **Figure 11.2.**

2.2.5 Through woodland the removal of tree stumps and forestry residue mulching will be required for the installation of the new temporary access tracks.

3. WOODLAND CHARACTERISTICS

3.1.1 The woodland property is situated on the east side of the A836 public road, as shown on **Figure 11.1**. The woodland area on the east side, is impacted by the Proposed Development from Pole 1 to Pole 114 as shown on **Figure 11.2**.

3.1.2 The eastern woodland area impacted by the Proposed Development is an area of commercial conifer woodland with a small area of mixed broadleaf woodland. The woodland is broken up by areas of open ground integrated throughout. The conifer area has undergone significant woodland restructuring (clearfell and replant) in recent years, which is being continued by the Landowner through approved statutory felling licences. Long Term Forest Plan (LTFP) maps have been drafted by the Landowner, as part of the woodland restructuring management strategy for the property. The woodland management regime is clearfell and replant, with the predominant tree species being Sitka Spruce *Picea sitchensis* and Lodgepole Pine *Pinus contorta*. The conifer woodland age class ranges from young restock plantation (circa. 0-5 years old) to immature pole woodland (circa. 25 years old) and all being of plantation woodland origin. Small sporadic pockets of tree windblow are evident within the immature conifer pole woodland areas between Pole 89 to 107.

3.1.3 The woodland ground conditions are variable with soil types of mostly shallow Peats, Peaty gleys, with pockets of deep Peat present sporadically around the site within riparian areas.

3.1.4 The Lando Landowner's draft Long Term Forest Plan restructuring proposals including the felling phases and restocking / replanting maps have been reviewed during the OHL forestry landscape assessment as shown on Figure **11.1** to **11.2**.

3.1.5 A desk based study of the woodland areas has been conducted, utilising web based data provided by Scottish Forestry[2] and referencing the Scottish Government's Ancient Woodland Inventory, to identify current woodland environmental designations and classifications.

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

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

3.1.7 An area of 4.75 ha of predominantly young Sitka Spruce and Lodgepole Pine located between Poles 5 – 10 and a small area in and around the substation of approx. 0.88 ha mixed broadleaf located between Poles 1 to 5 are classed as Native Woodland (Native Woodland Survey of Scotland).

3.1.8 There are no formal environmental woodland designations present for the conifer woodland area.

2 Scottish Forestry Land Information Search URL: https://map.environment.gov.scot/LIS_Agri/Agri.html

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

3.1.9 The **Plates 3.1** to **3.11** show the variable woodland condition impacted by the OHL OC between Pole locations 1 to 110. The predominant tree species is Sitka Spruce and Lodgepole Pine of variable age class because of recent woodland restructuring management by the Landowner.

3.1.10 The terrain is generally flat / mildly undulating and ground conditions are moist to wet boggy areas and light depressions along the valley's watercourses.

3.1.11 **Plate 3.1** between Poles 1 to 11 show a uniform commercial restock plantation of intimate mix Sitka Spruce and Lodgepole Pine (circa. 0 - 5 years old) with some integrated open ground impacted by the existing OHL operational corridor.

3.1.12 A small area 0.89 ha of mixed broadleaf tree species (circa. 0-5 years old) including Holly, Birch, Willow, Alder and Rowan have been restocked in and around the substation area, adjacent to the existing OHL and the planned operational corridor heading north for approximately 240 m. The OC can be narrowed to a width 60m or less where possible for the greater retention of the broadleaf trees. Terrain is gently sloping uphill to the North and east, soils are mostly upland brown earth with some Peaty gleys in the north. There is no harvestable timber present. Young trees and stumps will require to be mulched.

3.1.13 DAMS[4]: - 15/16 Sheltered / Moderately exposed, due to age of crop, management felling is not required for this part.

Plate 3.1: Coordinates: 4.4053452 W, 58.0549179 N. North facing.

[4] Detailed Aspect method of Scoring (DAMS) Ref. Forest Research, "Forest Gales software programme" and Forestry Commission Leaflet 85 "Windthrow Hazard Classification"

3.1.14 **Plate 3.2** between Poles 11 to 16 shows a uniform commercial conifer restocked plantation of an intimate mix of Sitka Spruce and Lodgepole Pine (circa. 0 - 5 years old), this area will be impacted by the Proposed Development OHL operational corridor.

3.1.15 Some sporadic small areas of naturally regenerating broadleaf tree species including, Birch and Rowan (circa. 0 - 5 years old) are present within the Proposed Development operational corridor.

3.1.16 Terrain is gently undulating north, with some wet juncus boggy areas down towards water course to north. Soils are mostly Peaty podzols and gleys.

3.1.17 No harvestable timber present. Young trees and stumps will require to be mulched.

3.1.18 DAMS[4]: - 15/16 Sheltered / Moderately exposed.

Plate 3.2: Coordinates: 4.4080814 W, 58.0592517 N. southwest facing.

3.1.19 **Plate 3.3** between Poles 16 – 26 shows a small area of uniform commercial restock plantation of Sitka Spruce (circa 0-5 years old). Some sporadically dispersed naturally regenerating mixed broadleaf, including Birch and Willow (circa 0-5 years old) present between Poles 19 – 21. The OC can be narrowed to a width 60 m or less where possible for the greater retention of the broadleaf trees.

3.1.20 The terrain is gently undulating, soft / fresh ground conditions for most part. Slight depression leading into riparian zone around the Watercourse where very soft, flushing Peaty surface water gleys, juncus bog and very wet ground conditions are present.

3.1.21 No harvestable timber present. Young trees and stumps will require to be mulched.

3.1.22 DAMS[4]: - 15/16 Sheltered / Moderately exposed.

Plate 3.3: Coordinates: 4.4080481 W, 58.00665001 N. south facing.

3.1.23 **Plate 3.4** between Poles 26 and 32 shows a uniform commercial restock of intimate mix Sitka Spruce and Lodgepole Pine (circa. 0-5 years old).

3.1.24 There is an area of open ground and some patchy clusters of mixed broadleaf, species include Birch, Rowan and Willow. The OC can be narrowed to a width 60 m or less where possible for the greater retention of the broadleaf trees.

3.1.25 The terrain is relatively flat, soft fresh / wet ground with a mixture of soil types Peaty podzols up slope and peaty gleys present down slope towards existing OHL.

3.1.26 No harvestable timber present. Young trees and stumps will need to be mulched.

3.1.27 DAMS[4]: - 15/16 Sheltered / Moderately exposed.

Plate 3.4: Coordinates: 4.4080481 W, 58.00665001 N. north facing.

3.1.28 **Plate 3.5** between Poles 32 – 41, shows naturally regenerating young native broadleaved, with a small area of new planting (circa. 5-10 years old). Approx. 0.82Ha, including species such as Birch, Willow and Rowan, that will impact the OHL operational corridor. The OC can be narrowed to a width 60 m or less where possible for the greater retention of the broadleaf trees.

3.1.29 Terrain is sloping uphill to the south, soft / wet ground conditions on, Peaty surface water gleys and Peaty podzols as you move up slope.

3.1.30 No harvestable timber present. Young trees and stumps will need to be mulched.

3.1.31 DAMS[4]: - 15 Sheltered / Moderately exposed.

Plate 3.5: Coordinates: 4.4089304 W,58.089757 N. southeast facing.

3.1.32 **Plate 3.6** between Poles 41 – 65 shows an area of clearfelled coniferous woodland. Restocking direction as per the woodland property LMP is to be restocked with coniferous species throughout this part. An area of deadwood has been left that will also be impacted by the OHL operational corridor.

3.1.33 The terrain falls into a slight depression at foot of hill rising up gently to the northeast, soft / wet ground conditions are present with Peaty gleys down into valley and Peaty podzol soils moving up slope to east.

3.1.34 No harvestable timber present. Young trees and stumps will need to be mulched.

3.1.35 DAMS[4]: - 15 Sheltered / Moderately exposed.

3.1.36 **Plate 3.7** between Poles 65 – 76, show patchy check areas of commercially stocked unthinned, Sitka Spruce, Larch & Lodgepole Pine in separate compartments (circa 10 – 15 years old).

3.1.37 Terrain relatively flat towards forest road gently undulating downhill to north. Soft / wet to very wet ground, evident by juncus Peat bogs through patchy areas. Fresh upland brown earth towards forest road.

3.1.38 Timber production limited due to variable sizes in tree crop, small roundwood and biofuel would be the optimal market for this young unthinned crop. Best of timber to the west leading into much poorer check timber to the northeast open and patchy areas. Approx. 150 m3 – 200m3 p/ha.

3.1.39 DAMS[4]: - 16 Moderately exposed.

Plate 3.6: Coordinates: 4.4089304 W,58.089757 N. northeast facing.

Plate 3.7: Coordinates: 4.4024975 W, 58.0932760 N. east facing.

3.1.40 **Plate 3.8** between Poles 76 – 93, show open ground down into the valley floor where water course is present. Some sporadic natural regeneration mostly Lodgepole Pine (Circa. 0-5 years old).

3.1.41 Terrain relatively flat, gently sloping up hill at forest road to south. Soils predominantly Peat, with some Molinia boggy areas present towards watercourse.

3.1.42 No harvestable timber present. Young trees and stumps will need to be mulched.

3.1.43 DAMS[4]: - 16 Moderately exposed

Plate 3.8: Coordinates: 4.3754756 W, 58.0956775 N. southeast facing.

3.1.44 **Plate 3.9** between Poles 93 – 99, show and area of commercially stocked, pole stage reasonable form Scots pine. (circa 15-20 years old) with isolated island of poor form Lodgepole Pine. (circa 10-15 years old) with some check areas.

3.1.45 Terrain gently rising to the south, soft / wet ground conditions, soil type Peaty podzols moving into Peaty gleys and Molinia boggy ground to east.

3.1.46 Timber production limited due to variable sizes in tree crop, small roundwood and biofuel would be the optimal market for this young unthinned crop. Due to age of crop and unthinned with soft / wet ground, management felling has been designated for this part.

3.1.47 DAMS[4]: - 16 Moderately exposed.

Plate 3.9: Coordinates: 4.3602092 W, 58.0941903 N. east facing.

3.1.48 **Plate 3.10** between Poles 99 -108, show an area of semi-mature unthinned Sitka Spruce generally in good form, with some nearby small islands of Lodgepole Pine in much poorer form and some isolated pockets of check (circa. 20-25 years old). In the surrounding crop there is evidence of windthrow due to the soft wet ground and trees are generally unstable, management felling will be required to take the crop back to a windfirm edge.

3.1.49 Terrain is rising gently to the south, soft / wet ground conditions are present. Soil type is predominantly Peaty gleys with some Peaty podzols as you move up slope to the south.

3.1.50 Timber production is limited due to variable sizes in tree crop, Small round wood and biofuel would be the optimal market for this young unthinned crop. Due to age of crop and being unthinned with soft wet ground, management felling has been designated for this part.

3.1.51 DAMS[4]: - 16 Moderately exposed.

Plate 3.10: Coordinates: 4.3486077 W, 58.0945662 east facing.

3.1.52 **Plate 3.11** between Poles 108 – 114, show an area of open ground tailing off into the valley to the woodland property boundary. There is a number of small, isolated pockets of conifer regeneration throughout, predominantly Lodgepole Pine with some Sitka Spruce (circa. 0-5 years old).

3.1.53 Terrain falls into a slight depression along the watercourse with soft / wet ground. Soil types are predominantly Peaty gleys, with some Peaty bog areas down into valley indicated by juncus, as you rise up the valley to the south soil profiles turn to Peaty podzols.

3.1.54 No harvestable timber. Young trees and stumps will need to be mulched.

3.1.55 DAMS[4]: - 16 Moderately exposed. Isolated natural regeneration, no management felling identified for this area.

Plate 3.11: Coordinates: 4.3486077 W, 58.0945662 N. northeast facing

4. WINDTHROW RISK IMPACT

4.1.1 Most of the Proposed Development lies on soil classified as Peaty gleys / podzols, with some Molinia and Juncus bog present in and around watercourses. Some relatively small areas of upland brown earth at substation and forest road to north.

4.1.2 The woodland site affected by the Proposed Development has a 'Detailed Aspect Method of Scoring' (DAMS) windthrow hazard class score ranging between 15 and 16, classified as moderately exposed. The local climate is classified as cool and wet.

4.1.3 These factors suggest that a moderate range of tree species can be grown on site.

4.1.4 Reference to the OHL forestry DAMS assessment documents as shown on **Plates 3.1 to 3.11**; identifies the woodland exposure to windthrow and includes proposed mitigation of management felling coupes to achieve suitable woodland windfirm boundaries of least impact to the forest landscape.

4.1.5 The total area of management felling proposed is 17 Ha of commercial conifer woodland. The felling of these areas is subject to Landowner agreement and by method of Scottish Forestry felling licence approval or Long-Term Forest Plan formal amendment.

4.1.6 As detailed in Section 1 of this report and shown on **Figures 11.1**, the management felling coupes of the pole stage conifer woodland have been proposed to achieve suitable woodland windfirm boundaries.

4.1.7 The impact of windthrow risk has been assessed between poles 88 – 110, the removal of the semi-mature conifer plantation areas out with the OHL OC.

4.1.8 No impact of windthrow has been assessed for the native broadleaf woodland areas, due to their location, age, size and structure.

5. WOODLAND MANAGEMENT IMPACT

5.1.1 The Proposed Development will create additional challenges for the future management of the forest as it dissects existing management coupes and introduces an electrical hazard. The constraint associated with the electrical hazard will be reduced by regular maintenance of the OC, which will avoid the incidences of "Red Zone" trees.

5.1.2 The Proposed Development crosses the forest road network at either approximately 10, 45 or 90 degrees and will be built to the regulatory safe height clearances above forest roads/access tracks, which will reduce the hazard in respect of future timber haulage.

5.1.3 The Proposed Development 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.

5.1.4 The Proposed Development will permanently remove existing semi mature and young conifer woodland with small areas of broadleaf woodland from the OC. This will reduce the forestry restructuring/planting land available within the woodland property area, as the OC will be maintained clear of trees.

5.1.5 During the construction phase, a level of disruption will be created for the undertaking of routine forestry management activities by the Landowner on the woodland property. This will be project managed through communication and agreement with the affected stakeholders.

5.2 Mitigation Opportunities

5.2.1 A reduced OC width of 60 m has been assessed for the areas of native broadleaf woodland. Prior to the construction phase these areas will be assessed for further selective felling to identify if greater tree retention can be achieved. This will be dependent on the requirements of the development project and in particular safe OHL energisation and the safety of OHL wiring operations.

5.2.2 The operational corridor woodland removal area is required for the construction and functioning of the new OHL infrastructure. Opportunities will be assessed for woodland replanting within the operational corridor, the identification of suitable areas cannot be guaranteed due to the requirement of maintaining the safe energisation of the OHL. Reference to **Section 6** below will fully mitigate the operational corridor woodland removal area by replanting the area quantity (hectares) of woodland removed, in line with Scottish governments woodland removal policy (CoWRP).

5.2.3 The management felling areas will be replanted by the Landowner, in-line with the Scottish Forestry felling licence regulations of the area felled must be replanted.

6. WOODLAND REMOVAL IMPACT

Table 9.1 Woodland Removal for Infrastructure		
Item	**Woodland Type**	**Area**
OHL	Young age conifer plantation	38.1 ha
	Semi-mature conifer tree crop	8.73 ha
	Native broadleaf woodland	1.67 ha

Table 9.2 Compensatory Planting		
Compensatory Planting Area	Predominantly mixed conifer with small area of mixed broadleaf.	48.5 ha

Table 9.3 Woodland Removal Impact of Infrastructure		
Total Loss of Woodland Area		48.5 ha
Total Compensatory Planting Area		48.5 ha
Total Net Loss of Woodland Area		**0 ha**

Table 9.4 Woodland Removal for Management Felling		
Item	**Woodland Type**	**Area**
Management Felling	Semi-mature conifer tree crop	20.3 ha
Replanting/Restocking	Predominantly conifer	20.3 ha
Net Loss of Woodland Area		**0 ha**
Note. Felling approval is via Scottish Forestry Felling Licence application process or Long-Term Forest Plan application or amendment process.		

6.1 Compensatory Planting

6.1.1 Compensatory planting to achieve the area quantity (hectares) of woodland removal will be provided for the OHL and access track OC areas and will be in accordance with the Scottish Government's Control of Woodland Removal Policy of no net loss of woodland.