

Creag Dhubh to Dalmally 275kV Connection

Environmental Impact Assessment

Volume 4 | Appendix 11.1b

Overhead Line (OHL) Woodland Report

Property: Bovuy Forest

April 2022



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1 Introduction

- 1.1.1 This Technical Appendix (TA) presents information relevant to the Creag Dhubh to Dalmally 275kV Connection. It should be read in conjunction with the **Volume 2 – EIA Report** specifically **Chapter 11: Forestry**, for full details of the Proposed Development.
- 1.1.2 Scottish Hydro Electric Transmission plc (the Applicant) who, operating and known as Scottish and Southern Electricity Networks Transmission (SSEN Transmission), own, operate and develop the high voltage electricity transmission system in the north of Scotland and remote islands. 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 is proposing to apply for consent under section 37 of the Electricity Act 1989 to construct and operate a 13.3 kilometre (km) double circuit 275 kV overhead line (OHL), supported by lattice steel towers between a proposed substation at Creag Dhubh to the existing Scottish Power Energy Networks (SPEN) 275 kV OHL that runs from Dalmally to Inverarnan, near Succoth Glen, connecting via a Tie-In connection (the 'Proposed Development'). The location of the Proposed Development is shown in **Figure 1.1: Location Plan and Overview (EIAR Volume 3a)**.

2 Purpose of this Woodland Report

- 2.1.1 As part of the Environmental Impact Assessment (EIA) 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 within private or state owned landholdings. The landholding property boundaries are identified in **Figure 11.1 (EIAR Volume 3a)**.
- 2.1.2 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.
- 2.1.3 Field surveys of the woodland areas have been undertaken and have been used to determine the various woodland characteristics in order to identify the woodland removal required and recommended. This document also sets out the area quantity (ha) to be compensatory planted to ensure no net loss of woodland is achieved.

3 Woodland Property

- 3.1.1 Bovuy Forest is under private ownership and is located approximately 7.5 km south west of the village of Dalmally **Figure 11.1 (EIAR Volume 3a)**. The woodland property is a large area of commercial conifer woodland, with an existing forest road infrastructure.
- 3.1.2 Bovuy Forest vehicle access is serviced off the A819 public road to the east via a hard metalled forest road. The main vehicle access point is located at national grid reference 'NN 0998 2201'.

4 Proposed Development Requirements

4.1 275kV Overhead Line

- 4.1.1 Reference to **Plate 4.1** and **Figure 11.1 and 11.4 (EIAR Volume 3a)**, the section of OHL applicable to the Bovuy property is from Tower 10 to 16A.

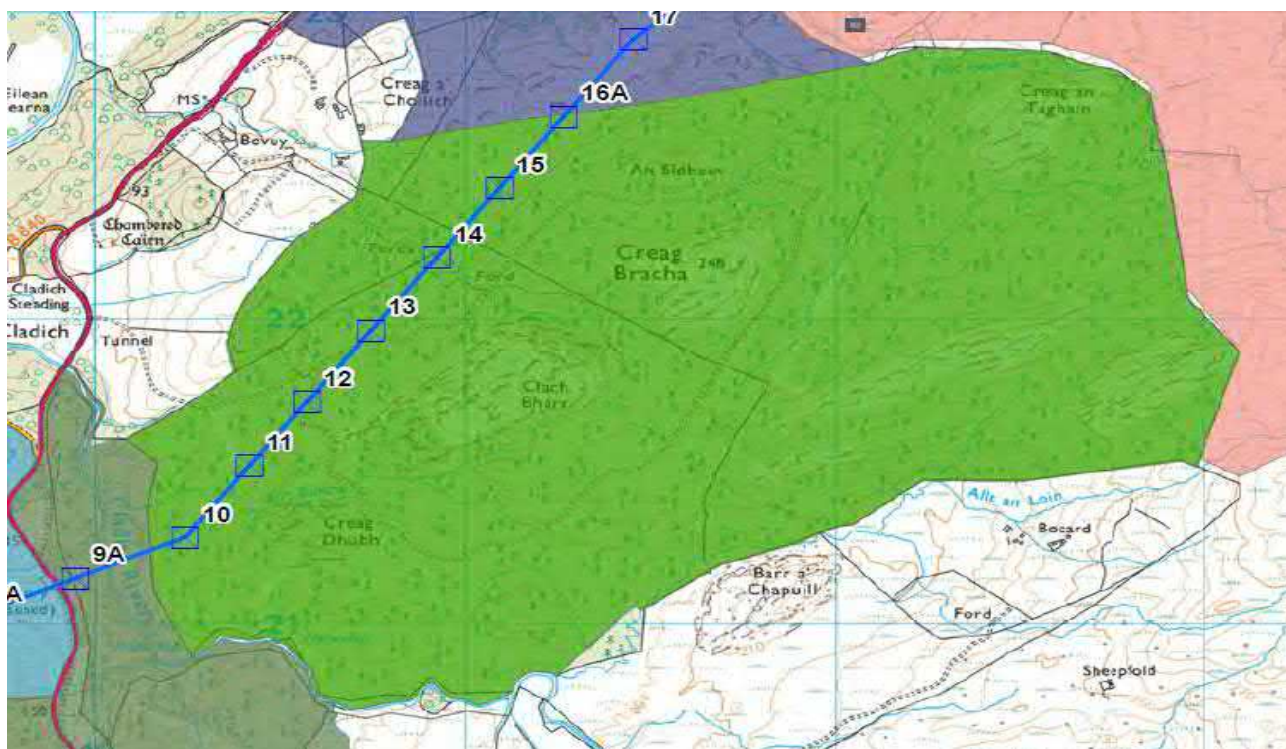


Plate 4.1: OHL T10 to T16A

- 4.1.2 The 275 kV OHL standard tower dimensions for the Proposed Development have a width of 17 m at the widest part (crossarm) of the tower i.e. from outside conductor to outside conductor, in addition to this the safety vicinity zone from each conductor is a 4 m radius around the conductor.
- 4.1.3 The OHL infrastructure and minimum safety clearance distance is therefore 25 m (12.5 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 towers the requirement may be slightly in excess of this distance, however the average minimum distance has been used in this assessment.
- 4.1.4 The Study Area for this assessment is based around the OC. The Applicant defines the area in which it has rights to remove woodland for the purposes of creation of new overhead lines (OHLs), 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 with reference to the distance at which a tree could fall and cause damage to the overhead line, resulting in a supply outage¹. 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 towers, taking account of topography and tree height at maturity. 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 lower height of the tree species present. The proposed OC illustrated in **Figure 11.4 (EIAR Volume 3a)** has been based on the likely height of the woodland at maturity and therefore, varies in width according to the woodland type of present.
- 4.1.5 The future plans of landowner woodland restructuring (clear fell and replant) have been reviewed.

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 \(ukfisa.com\)](https://www.ukfisa.com/fisa-804)

- 4.1.6 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 85 m (42.5 m either side of the OHL centreline).
- 4.1.7 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.

4.2 Access Track Route Design

- 4.2.1 The Bovuy forest is serviced by a well-constructed hard metalled forest road, that provides vehicle access off the A819 public road. This will form part of the main vehicle access route for the Proposed Development **Figure 11.4 (EIAR Volume 3a)**, and will be subject to maintenance and upgrade works as part of the construction work scope. This section of forest road/access track will be utilised during the forestry works.
- 4.2.2 General access track tree maintenance work may be required along the existing forest road/access track in preparation for the civil engineering access track upgrade works.
- 4.2.3 Sections of new access track **Figure 11.4 (EIAR Volume 3a)** are required to be built as part of the construction work scope, to service the OHL section Towers 10 to 16A on Bovuy. The new access track routes are mainly contained within the 85 m wide operational corridor, with a short section of approximately 160 m required outside the OHL operational corridor to link the existing forest road/access track to Tower 11.
- 4.2.4 The access track new build corridor width required to be cleared through woodland is 20 m wide (10m either side of centreline) **Figure 11.4 (EIAR Volume 3a)**. This will increase the impact of woodland removal along new build access track routes that are outside the OHL operational corridor.
- 4.2.5 Stump removal and residue mulching will be required for the installation of new access tracks and at each tower location for the formation of a construction compound and temporary crane pad.

5 Woodland Characteristics

- 5.1.1 The woodland property comprises of a large area of commercial conifer woodland with sporadic mature broadleaves and open ground **Figure 11.14** of this TA.
- 5.1.2 The conifer area has undergone significant woodland restructuring in recent years, which is continuing by the landowner through approved felling licence **Figure 11.14 and 11.15** of this TA. 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 clear-felled and replant, with the predominant tree species being Sitka spruce ranging from young restock plantation (circa. 3 years) to mature woodland (circa. 40 years) all of plantation origin. Pockets of tree windblow are evident within the mature conifer woodland areas.
- 5.1.3 Where there are historic clear-fell sites the mature broadleaves of birch, willow and alder, have been retained throughout the site for woodland biodiversity as long term tree retention. The woodland ground conditions are variable on mostly peaty gley soil, with pockets of peat present sporadically around the site.

- 5.1.4 Although the landowner's LTFP felling phase and restock maps are in draft form, the restructuring proposals have been reviewed during the OHL forestry landscape assessment **Figures 11.5, 11.6 (EIAR Volume 3a) and TA Figures 11.13 to 11.18.**
- 5.1.5 A desk based study of the woodland areas was conducted, utilising web based data provided by Scottish Forestry² and referencing the Scottish Government's Ancient Woodland Inventory³, to identify current woodland environmental designations and classifications.
- 5.1.6 The Scottish Forestry Map Viewer provides spatial data on the Native Woodland Survey of Scotland and classifies the woodland types into four categories⁴,
- Native woodland
 - Nearly-native woodland
 - Open land habitat
 - Plantations on Ancient Woodland Sites (PAWS)
- 5.1.7 An area of 0.36 ha of broadleaved woodland located between towers 9 to 11, **Figure 11.4 (EIAR Volume 3a) and 11.17**, has been identified as native woodland classification.

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

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

³ Ancient Woodland Inventory (Scotland) URL: [Ancient Woodland Inventory \(Scotland\) - data.gov.uk](https://data.gov.uk/dataset/ancient-woodland-inventory-scotland).

⁴ Scottish Forestry Native Woodland Survey of Scotland: Glossary of Terms; URL: [Main Title \(forestry.gov.scot\)](https://www.scottishforestry.gov.uk/native-woodland-survey-of-scotland/glossary-of-terms).

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 - Plantations 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 woods.



Plate 5.1: Looking east to tower locations 11 and 10.

- 5.1.8 **Plate 5.1** shows the replanted area of young conifer species of around 3 years old. The young trees within the 85 m wide operational corridor will be removed.
- 5.1.9 A 20 m wide corridor will be required to be cleared through the young conifer tree plantation and removal of the old tree stumps for the new access track build corridor to Tower 11.
- 5.1.10 There are small areas of semi-mature mixed broadleaved trees of birch, willow and alder, that have been retained during the previous conifer woodland clear-fell. These are located within the Bovuy property, just west of Tower 10 and between Tower 10 and 11 along the Allt Beithe burn corridor. Selective felling at these locations will be undertaken to minimise the operational corridor to a width of 60 m and further retention of the lower growth height tree species may be achieved within the operational corridor. This is dependent on the requirements of safe OHL wiring operations and the access track build corridor.



Plate 5.2: Looking west from Tower 15.



Plate 5.3: Looking east from Tower 15.



Plate 5.4: Looking west towards Tower 16A.

- 5.1.11 **Plates 5.2 and 5.3** provide an example of the mature un-thinned Sitka spruce woodland predominantly characteristic of the Bovuy forest area impacted by the 85 m OHL operational corridor. The woodland ground conditions are generally good on peaty gley soils⁵, with adequate drainage, whereby the Sitka spruce measured standing tree volume is in the region of 700 m³ per hectare.
- 5.1.12 Some areas of undrained wet boggy ground exist within the woodland area and these areas have resulted in reduced 'checked' growth rates of the Sitka spruce trees, with a measured standing timber volume of around 100 m³ per hectare. Some sporadic tree windblow is evident throughout the woodland.
- 5.1.13 **Plate 5.4** shows the 'green edge' woodland boundary of Bovuy near Tower 16A.
- 5.1.14 Reference to the OHL forestry landscape assessment document **Figures 11.5, 11.6 (EIAR Volume 3a)**, and TA **figures 11.13 to 11.18** identifies the woodland exposure to windthrow and includes proposed management felling coupes to achieve suitable woodland windfirm boundaries of least impact to the forest landscape.
- 5.1.15 The total area of Management Felling proposed is 41.05 ha of conifer woodland. The felling of these areas are subject to Landowner agreement and by method of Scottish Forestry felling licence approval or long term forest plan formal amendment.

⁵ Scottish Government's Scotland's soils website [Home | Scotland's soils \(environment.gov.scot\)](https://www.gov.scot/topics/soils).

6 Windthrow Risk Impact

- 6.1.1 Most of the site lies on soil classified as peaty gleys, with pockets of peat present sporadically around the site.
- 6.1.2 The woodland site affected by the Proposed Development has a 'Detailed Aspect Method of Scoring' (DAMS)⁶ windthrow hazard class score ranging between 14 and 17, classified as moderately to highly exposed. The southernmost tip of the site is severely exposed with a DAMS windthrow hazard class score of 21. The local climate is classified as cool and wet.
- 6.1.3 These factors suggest that a moderate range of tree species can be grown on site.
- 6.1.4 As detailed in **Section 5** and **TA Figures 11.13 to 11.18**, the management felling coupes of the mature conifer woodland have been proposed to achieve suitable woodland windfirm boundaries.
- 6.1.5 No impact of windthrow risk will be created by the removal of the young conifer plantation areas within the OHL operational corridor and access track corridors.
- 6.1.6 A minimal impact of windthrow has been assessed for the native broadleaf woodland areas, due to their location, size and structure.

7 Woodland Management Impact

- 7.1.1 The OHL alignment 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 operational corridor, which will avoid the incidences of "Red Zone" trees.⁷
- 7.1.2 The OHL alignment crosses the forest road network at either approximately 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.
- 7.1.3 The OHL alignment 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.
- 7.1.4 The Proposed Development will remove existing mature and young conifer woodland with some small areas of broadleaved woodland. This in-turn will reduce the forestry restructuring/planting land available within the woodland property area.
- 7.1.5 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 managed through communication and agreement with the affected stakeholders.

⁶ Detailed Aspect method of Scoring (DAMS) Ref. Forest Research, "Forest Gales software programme" and Forestry Commission Leaflet 85 "Windthrow Hazard Classification"

⁷ 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 \(ukfisa.com\)](https://www.ukfisa.com)

8 Mitigation Opportunities

- 8.1.1 A reduced operational corridor width of 60 m has been assessed for the areas of native broadleaved woodland. Prior to the construction phase these areas will be assessed for further selective felling to identify if greater tree retention can be achieved.
- 8.1.2 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 9 below, will fully mitigate the operational corridor woodland removal area by replanting the area quantity (hectares) of woodland removed.
- 8.1.3 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.

9 Woodland Removal Impact

Table 9.1 Woodland Removal for Infrastructure

Item	Woodland Type	Area
OHL	Young conifer plantation	4.88 ha
	Mature conifer tree crop	8.75 ha
	Native broadleaved woodland	0.36 ha
Access Track Corridor	Young conifer plantation	0.34 ha

Table 9.2 Compensatory Planting

Compensatory Planting Area	Mixed conifer or mixed broadleaves	14.33 ha
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Table 9.3 Woodland Removal Impact of Infrastructure

Total Loss of Woodland Area	14.33 ha
Total Compensatory Planting Area	14.33 ha
Total Net Loss of Woodland Area	0.0 ha

Table 9.4 Woodland Removal for Management Felling

Item	Woodland Type	Area
Management Felling	Mature conifer tree crop	41.05 ha
Replanting/Restocking	Predominantly conifer	41.05 ha
Net Loss of Woodland Area		0.0 ha
Note. Felling approval is via Scottish Forestry Felling Licence application process or Long Term Forest Plan application or amendment process.		

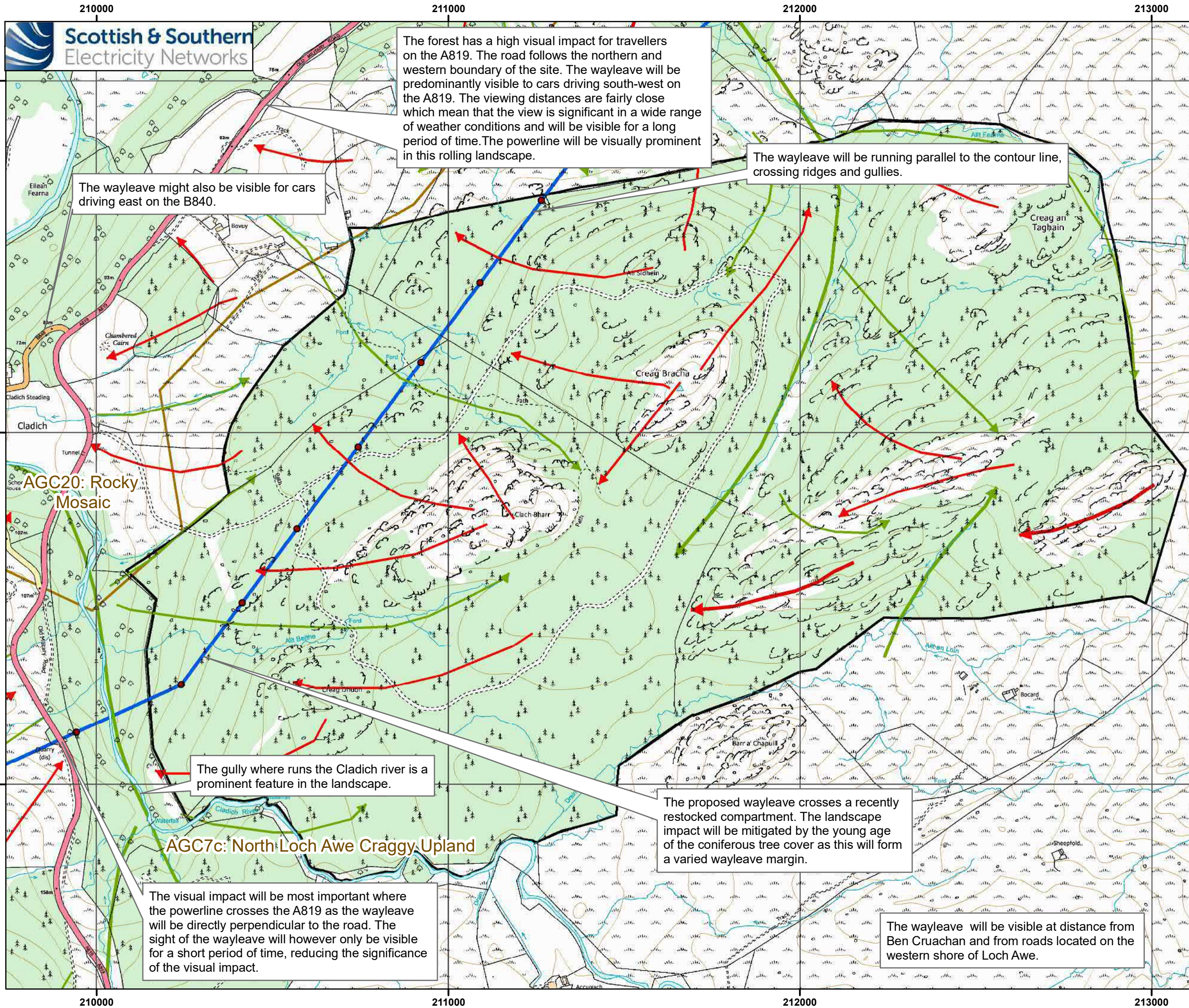
10 Compensatory Planting

10.1.1 Compensatory planting to achieve the area quantity (hectares) of woodland removal will be provided for the OHL and access track operational corridor area and will be in accordance with the Scottish Government's Control of Woodland Removal Policy of no net loss of woodland⁸.

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⁸ <https://forestry.gov.scot/publications/285-the-scottish-government-s-policy-on-control-of-woodland-removal/viewdocument/285>



LT000029: Creag Dhubh to Dalmally 275kV OHL Connection

Appraisal & Mitigation of Forestry Landscape Impacts

Figure 11.13
M15: Bovuy- Location and Context

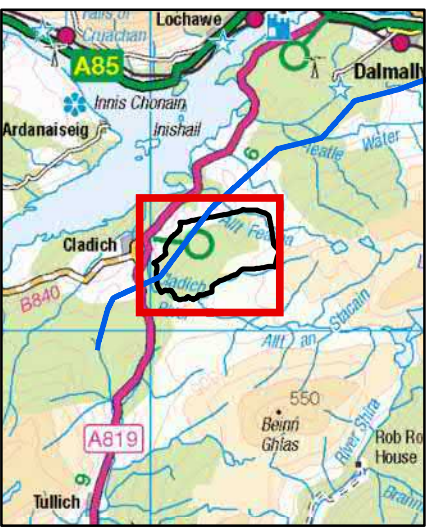
Created On: 14/10/2021

Legend

- Property Boundary
- Proposed Towers
- Proposed 275kV Powerline Route

Landscape Analysis

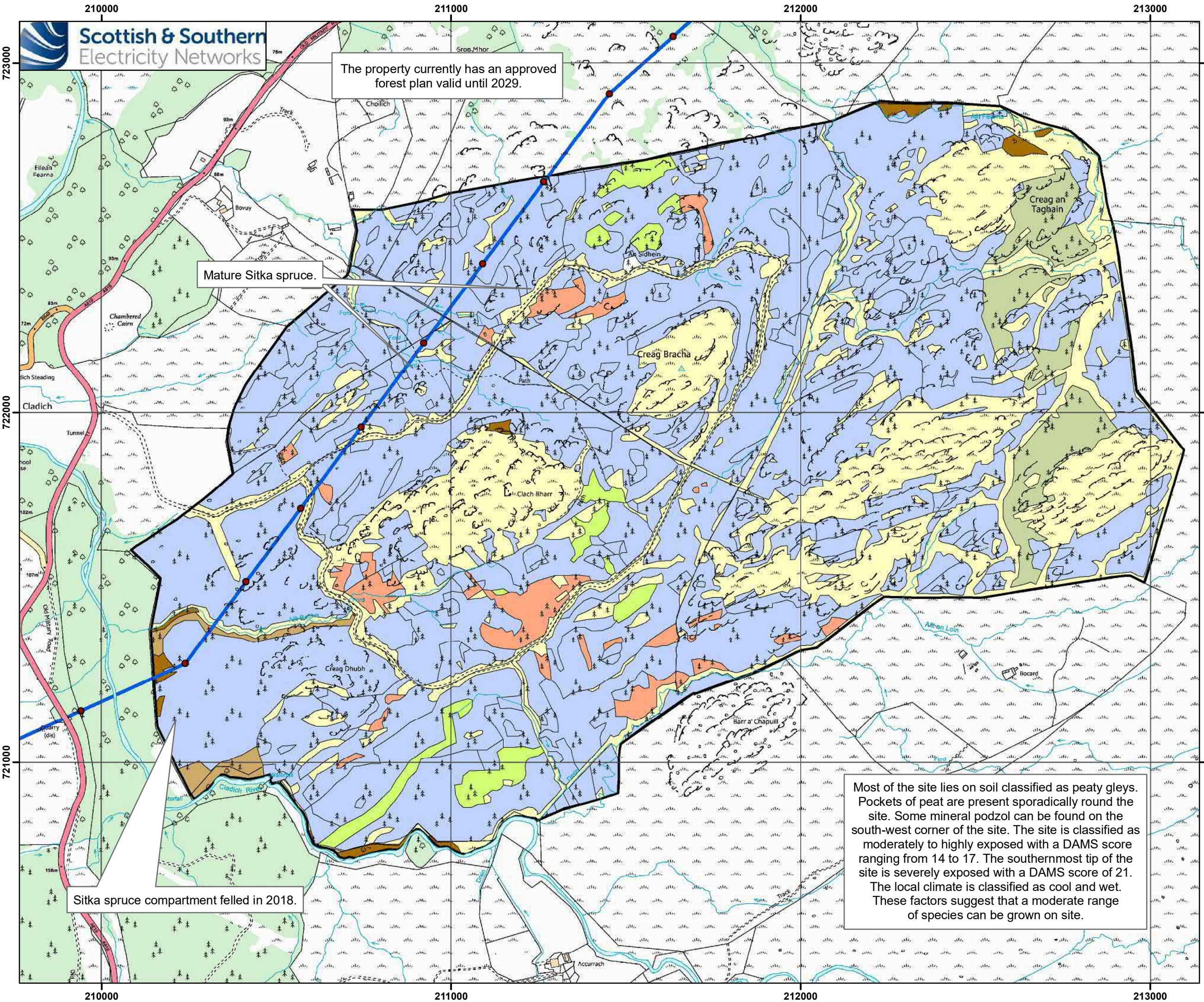
- Ridges and Spurs
- Hollows and Gullies
- Core Path
- Landscape Character Type Boundary



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Scale Correct at A3

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Scottish & Southern
Electricity Networks

The property currently has an approved
forest plan valid until 2029.

Mature Sitka spruce.

Sitka spruce compartment felled in 2018.

Most of the site lies on soil classified as peaty gleys.
Pockets of peat are present sporadically round the
site. Some mineral podzol can be found on the
south-west corner of the site. The site is classified as
moderately to highly exposed with a DAMS score
ranging from 14 to 17. The southernmost tip of the
site is severely exposed with a DAMS score of 21.
The local climate is classified as cool and wet.
These factors suggest that a moderate range
of species can be grown on site.

LT000029: Creag Dhubh to Dalmally 275kV OHL Connection

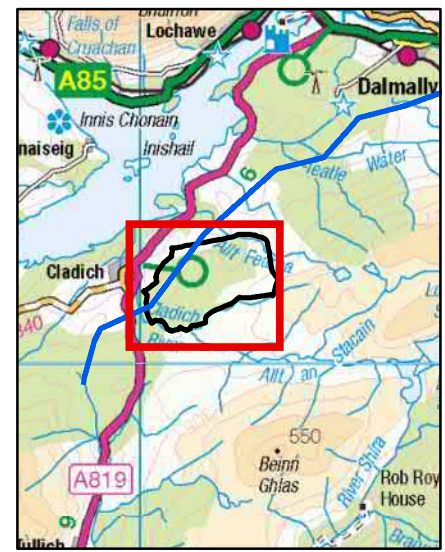
Appraisal & Mitigation of Forestry
Landscape Impacts

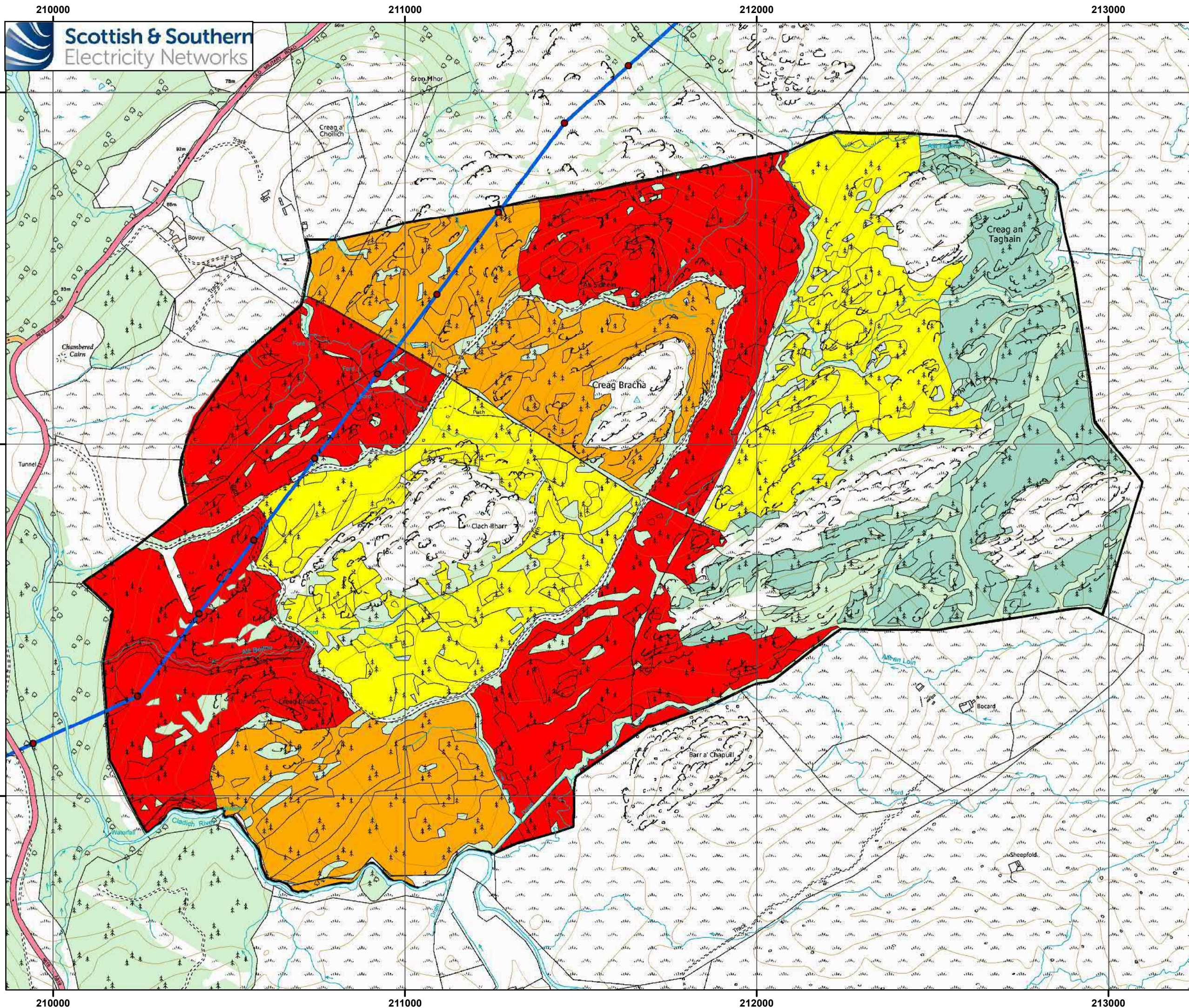
Figure 11.14
M16: Bovuy- Current Tree Cover

Created On: 14/10/2021

Legend

- Property Boundary
- Proposed Towers
- Proposed 275kV Powerline Route
- Current Species**
 - Sitka Spruce
 - Lodgepole Pine
 - Japanese Larch
 - Mixed Conifers
 - Mixed Broadleaves
 - Native Mixed Broadleaves
 - Open Ground
 - Other Land





**LT000029: Creag Dhubh
to Dalmally
275kV OHL Connection**

Appraisal & Mitigation of Forestry
Landscape Impacts

Figure 11.15

M17: Bovuy Indicative LTFP-
Proposed Felling

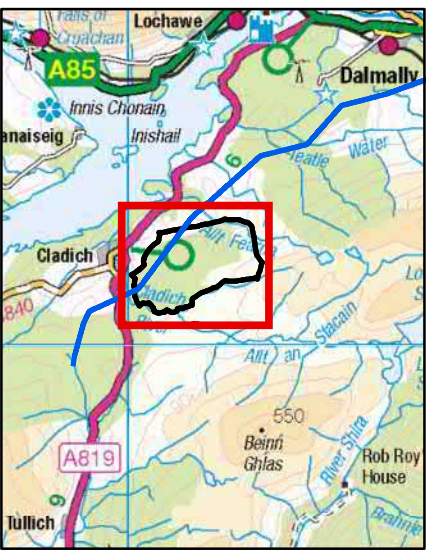
Created On: 14/10/2021

Legend

- Property Boundary
- Proposed Towers
- Proposed 275kV Powerline Route

Indicative LTFP Felling Phase

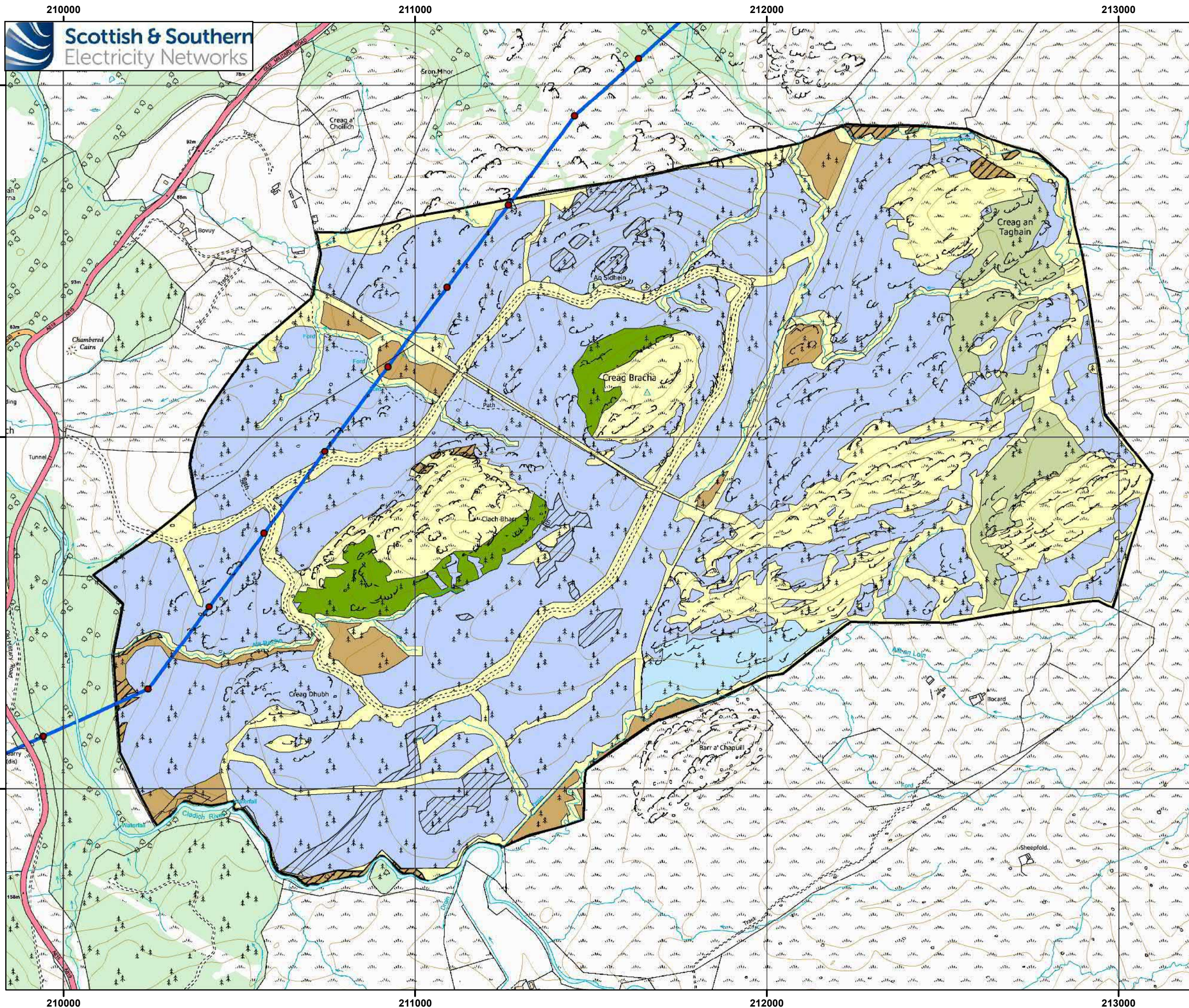
- Phase 1: 2018-2022
- Phase 2: 2023-2027
- Phase 3: 2028-2032
- Long-term Retention



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Appraisal & Mitigation of Forestry Landscape Impacts

Figure 11.16

M18: Bovuy Indicative LTFP- Proposed layout of crops- Restock

Created On: 14/10/2021

Legend

Property Boundary

Proposed Towers

Proposed 275kV Powerline Route

Indicative- LTFP Restock Species

Sitka Spruce

Norway Spruce

Scots Pine

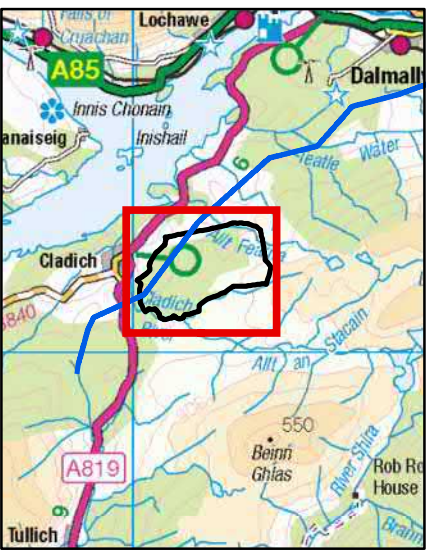
Mixed Conifers

Native Mixed Broadleaves

Open Ground

Natural Regeneration of Conifers

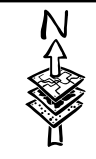
Natural Regeneration of Broadleaves

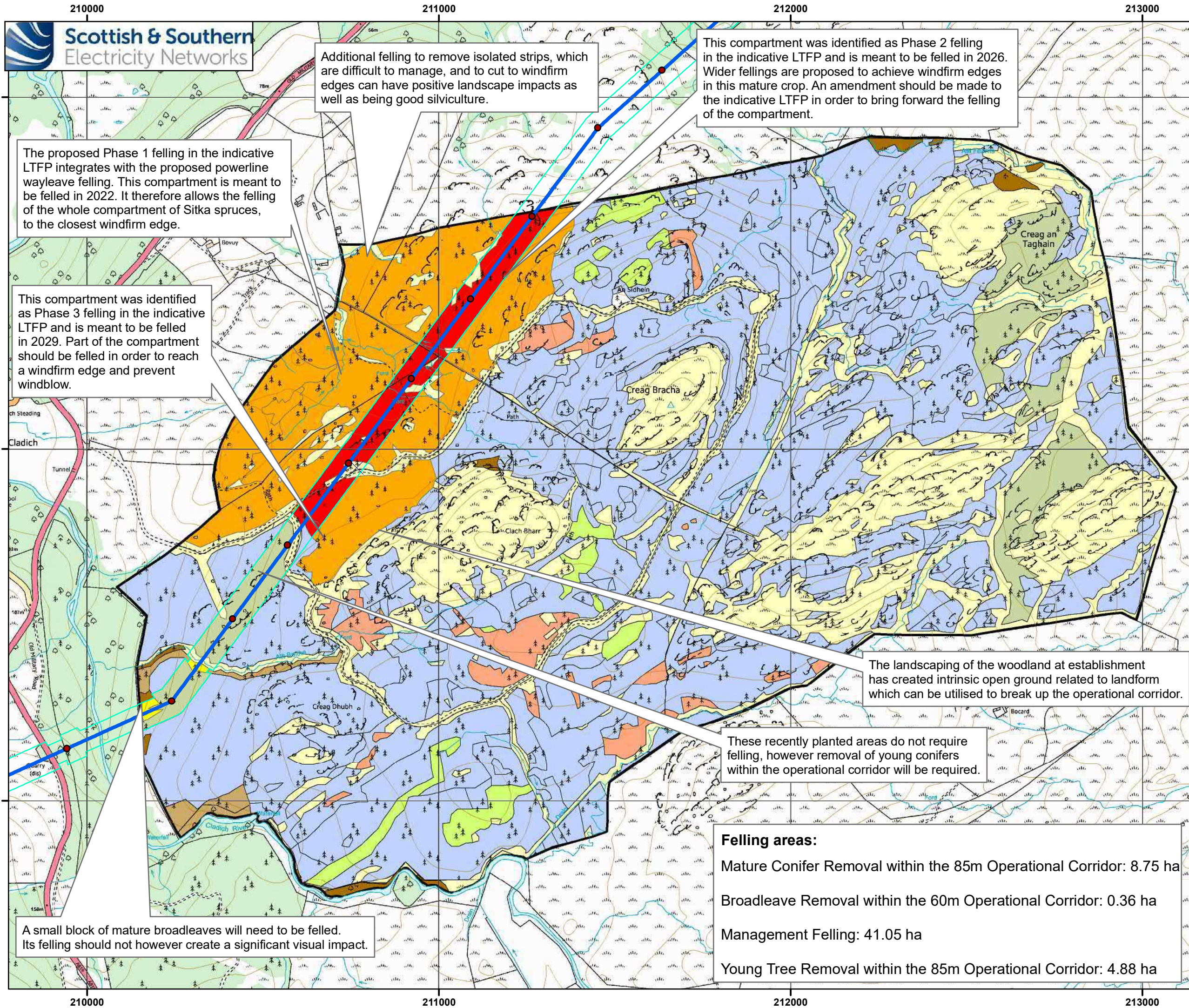


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LT000029: Creag Dhubh to Dalmally 275kV OHL Connection

Appraisal & Mitigation of Forestry Landscape Impacts

Figure 11.17

M19: Bovuy- Proposed Powerline Felling

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Legend

Property Boundary

Proposed Towers

Proposed 275kV Powerline Route

Overhead Line Operational Corridor

Proposed Powerline Felling

Mature Conifers Removal within the 85m Operational Corridor

Broadleaves Removal within the 60m Operational Corridor

Management Felling

Young Trees Removal within the 85m Operational Corridor

Current Species

Sitka Spruce

Lodgepole Pine

Japanese Larch

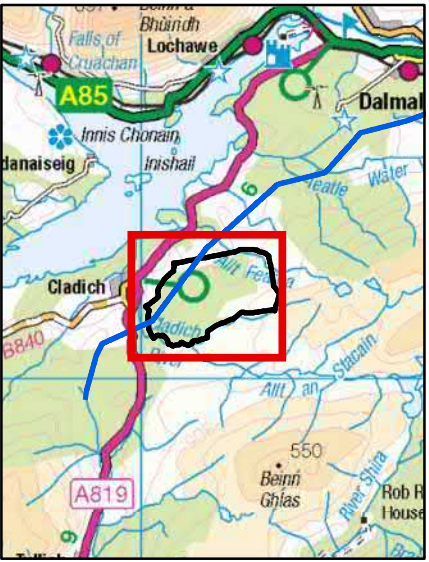
Mixed Conifers

Mixed Broadleaves

Native Mixed Broadleaves

Open Ground

Other Land



Felling areas:

Mature Conifer Removal within the 85m Operational Corridor: 8.75 ha

Broadleaf Removal within the 60m Operational Corridor: 0.36 ha

Management Felling: 41.05 ha

Young Tree Removal within the 85m Operational Corridor: 4.88 ha

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