

Creag Dhubh to Dalmally 275kV Connection

Environmental Impact Assessment

Volume 4 | Appendix 11.1d

Overhead Line (OHL) Woodland Report

Property: Creagan and Cabrach

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 Creagan and Cabrach forest is under private ownership and is located approximately 3km 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 Creagan and Cabrach 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 123 259'.

4 Development Requirements

4.1 275kV Overhead Line

- 4.1.1 Reference to **Plate 4.1** and **Figure 11.1(EIAR Volume 3a)**, the section of OHL applicable to the Creagan and Cabrach property is from east of tower 29 to east of tower 34.

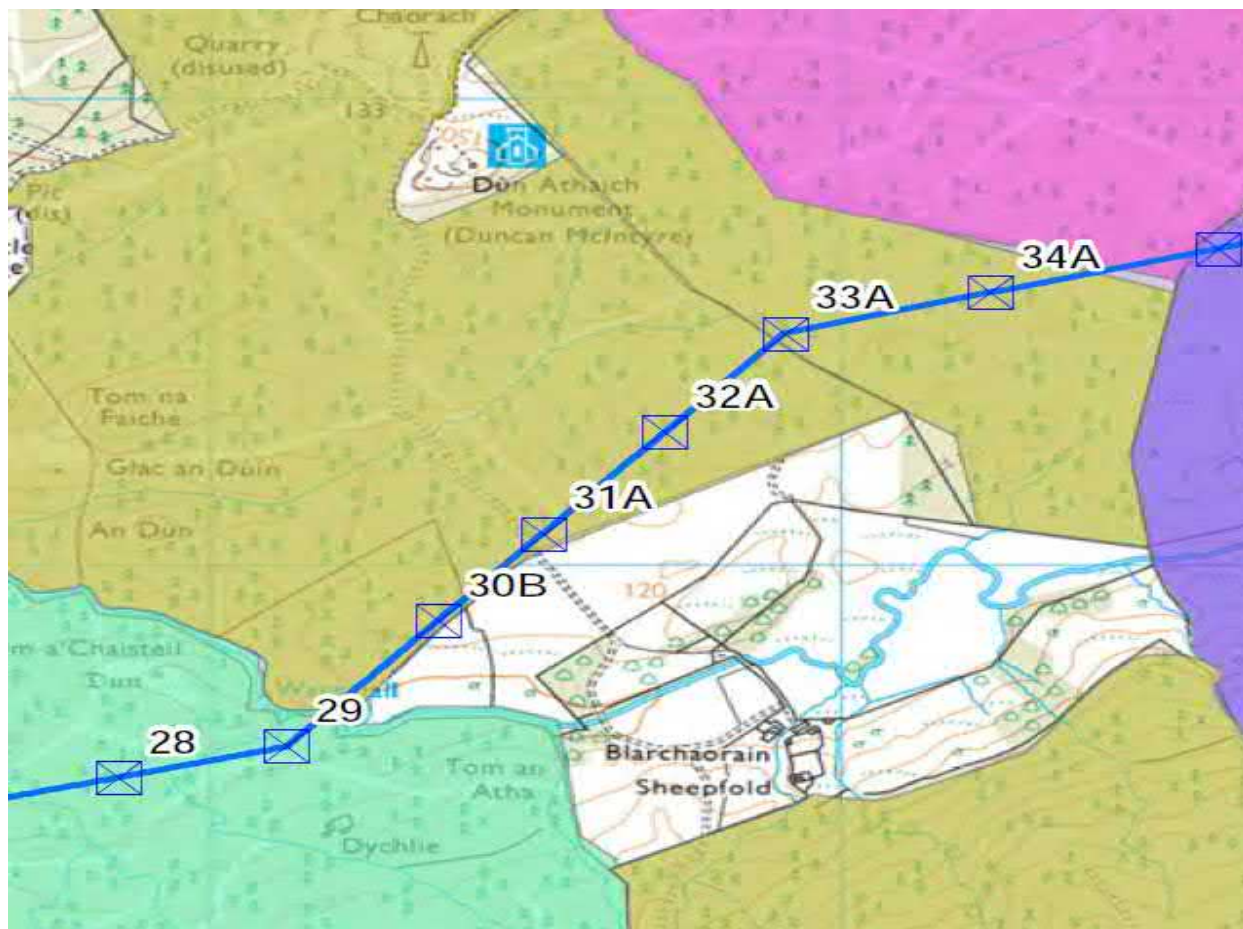


Plate 4.1: OHL T29 to T34

- 4.1.2 The 275kV OHL standard tower dimensions for the project 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 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**

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)

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.
- 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 Creagan and Cabrach forest is serviced from the A819 public road by well-constructed hard metalled forest roads, regularly used for timber haulage. These forest roads 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. The existing forest roads 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 30 to 34 on Creagan and Cabrach. The new access track build routes are located within the 85m wide operational corridor and with one section required outside the OHL operational corridor to link the existing forest road/access track.
- 4.2.4 The access track new build corridor width required to be cleared through woodland is 20 m wide (10 m 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 property comprises of two large woodland areas located opposite each other running north to south **Figures 11.1, 11.5 and 11.6 (EIAR Volume 3a)**., separated by a neighbouring property located centrally between the two woodlands. The southern woodland block is not impacted by the development project, whereas the northern block is impacted. The OHL development project is located in the southern area of the northern woodland block.
- 5.1.2 The northern woodland block is a large area of commercial conifer woodland with small areas of mixed broadleaved woodland and open ground integrated throughout. The conifer area has undergone significant woodland restructuring in recent years, which is continuing by the landowner under an approved Long Term Forest Plan (LTFP). The woodland management regime is clear fell and replant, with the predominant tree species being Sitka spruce. The conifer age class ranges from young restock plantation (circa. 6 years) to mature woodland (circa. 40 years) and all of plantation origin.
- 5.1.3 Some sporadic tree windblow is evident within the mature conifer woodland areas.

- 5.1.4 The woodland ground conditions are variable on mostly peaty gley soil, with pockets of peat present sporadically around the site².
- 5.1.5 The landowner's existing LTFP is valid until the year 2023, with the intention to renew for the following 10 year period to year 2033. The felling phases and restock proposals have been reviewed during the OHL forestry landscape assessment **Figure 11.25 to 11.30** of this TA.
- 5.1.6 A desk based study of the woodland areas was conducted, utilising web based data provided by Scottish Forestry³ and referencing the Scottish Government's Ancient Woodland Inventory⁴, to identify current woodland environmental designations and classifications.
- 5.1.7 The Scottish Forestry Map Viewer provides spatial data on the Native Woodland Survey of Scotland and classifies the woodland types into four categories⁵,
- Native woodland
 - Nearly-native woodland
 - Open land habitat
 - Plantations on Ancient Woodland Sites (PAWS)
- 5.1.8 An area of 0.17 ha of broadleaved woodland located within the Creagan and Cabrach property between towers 29 to 30, **Figure 11.4 (EIAR Volume 3a)** and **TA Figure 11.29**, has been identified as native woodland classification.
- 5.1.9 There are no formal environmental woodland designations present for the conifer woodland area.

² Scottish Government's Scotland's soils website <https://soils.environment.gov.scot/>

³ 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>

⁴ Ancient Woodland Inventory (Scotland) URL: [Ancient Woodland Inventory \(Scotland\) - data.gov.uk](https://data.gov.uk/dataset/ancient-woodland-inventory-scotland)

⁵ Scottish Forestry Native Woodland Survey of Scotland: Glossary of Terms; URL: [Main Title \(forestry.gov.scot\)](https://www.scottishforestry.gov.uk/forestry-glossary)

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 west to tower locations 30 and 29.

- 5.1.10A young Sitka spruce conifer restock plantation of 6 years old, with approximately a 15 m wide buffer area of open ground north of the deer fence that demarcates the property boundary.
- 5.1.11The operational corridor will 42.5 m wide on the north side of the OHL impacting and requiring removal of an area of the conifer trees. The operational corridor on the south side of the OHL has been reduced to a width of approximately 30 m, utilising the deer fence line as the southern operational corridor boundary. This is to mitigate the requirement of removing the young broadleaved trees planted in tree shelters.



Plate 5.2: Looking west to tower location 29.

5.1.12 The native broadleaved woodland area is mature in age and of mixed tree species including Oak, Alder, Birch and Willow. The operational corridor will be narrowed to a 60_m width for the greater retention of native broadleaved trees.



Plate 5.3: Looking east from the forest road to towers 31 and 32.



Plate 5.4: Looking north west between tower 31 and 32.

- 5.1.13 **Plates 5.3 and 5.4** show the woodland type between Towers 31 and 32. Initially there is an area of open ground on the east of Tower 31 prior to the edge of the conifer woodland block that is impacted by the operational corridor to Tower 33.
- 5.1.14 The woodland types impacted by the operational corridor on the west side of Tower 32 is a main area of Sitka spruce with a measured standing timber volume of approximately 400 m³ per hectare and a small area of Lodgepole pine with a measured standing timber volume of approximately 300 m³ per hectare.
- 5.1.15 The mixed conifer woodland is of variable quality, due to species and wet ground conditions in places. The Lodgepole pine is of poorer quality of small roundwood size for timber production, with the Sitka spruce being of a size suitable for sawlog timber production. There are areas of 'checked' tree growth on the wet boggy ground.



Plate 5.5: Looking west from tower 33 to tower 32.

5.1.16 Between Towers 32 and 33 the mature Sitka spruce woodland impacted by the operational corridor is also of variable quality, ranging from a measured standing timber volume of approximately 100 m³ to 400 m³ per hectare. This is primarily due to the variable ground conditions of wet areas producing poorer tree growth conditions, with the drier better drained areas producing favourable tree growth conditions.



Plate 5.6: Looking west from tower 33 towards tower 34.



Plate 5.7: – Looking west mid-span from tower 33 to tower 34.



Plate 5.8: – Looking east in proximity to tower 34.

5.1.17 **Plates 5.6, 5.7 and 5.8** shows the woodland types between Towers 33 and 34. As can be seen, moving west to east (**Plate 5.6**) the main area of this OHL section is healthy, well established Sitka spruce restock plantation of 7 years old with open ground. Moving further east towards Tower 34 (**Plate 5.7**), the conifer restocked plantation becomes sparse and patchy with failed areas of Sitka spruce, with an area (**Plate 5.8**) of pole stage Sitka spruce in ‘checked’ growth. This area of pole stage Sitka spruce has been retained during the historic clear fell and is identified as long term retention in the landowner’s LTFP for the woodland property.

5.1.18 Reference to the OHL forestry landscape assessment documents **TA Figures 11.25 to 11.30** 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.

5.1.19 The total area of management felling proposed is 12.47 ha of commercial conifer woodland. The felling of these areas are subject to Landowner agreement and by method of Scottish Forestry felling licence approval or LTFP formal amendment.⁶

⁶ This felling is not included within the scope of the proposed development (for the purpose of the application for consent under S37 of the Electricity Act 1989). This additional ‘management felling’ would be subject to a requirement for separate felling licence approval from Scottish Forestry

6 Windthrow Risk Impact

- 6.1.1 Most of the site lies on soil classified as peaty gleys, with some 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)⁷ windthrow hazard class score of 13, classified as moderately exposed. 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 3** and **TA Figures 11.25 to 11.30**, 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 broadleaved 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.⁸
- 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 permanently remove existing mature and young conifer woodland with a small area of broadleaved woodland from the operational corridor. This will reduce the forestry restructuring/planting land available within the woodland property area, as the operational corridor will be maintained clear of trees.
- 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 required to be project managed through communication and agreement with the affected stakeholders.

8 Mitigation Opportunities

- 8.1.1 A reduced operational corridor width of 60 m has been assessed for the area of native broadleaved woodland. Prior to the construction phase these areas will be assessed for further selective felling to

⁷ Detailed Aspect method of Scoring (DAMS) Ref. Forest Research, "Forest Gales software programme" and Forestry Commission Leaflet 85 "Windthrow Hazard Classification"

⁸ 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)

identify if greater tree retention can be achieved. This will be dependent on the requirements of the development project and in particular the safety of OHL wiring operations.

- 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**, 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	5.38ha
	Mature conifer tree crop	4.02ha
	Native broadleaved woodland	0.17ha
Access Track Corridor	Young conifer plantation	0.56ha

Table 9.2 Compensatory Planting

Compensatory Planting Area	Mixed conifer or mixed broadleaves	10.13ha
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Table 9.3 Woodland Removal Impact of Infrastructure

Total Loss of Woodland Area		10.13ha
Total Compensatory Planting Area		10.13ha
Total Net Loss of Woodland Area		0.0ha

Table 9.4 Woodland Removal for Management Felling

Item	Woodland Type	Area
Management Felling	Mature conifer tree crop	12.47ha
Replanting/Restocking	Predominantly conifer	12.47ha
Net Loss of Woodland Area		0.0ha
Note. Felling approval is via Scottish Forestry Felling Licence application process or Long Term Forest Plan application or amendment process.		

10 Compensatory Planting

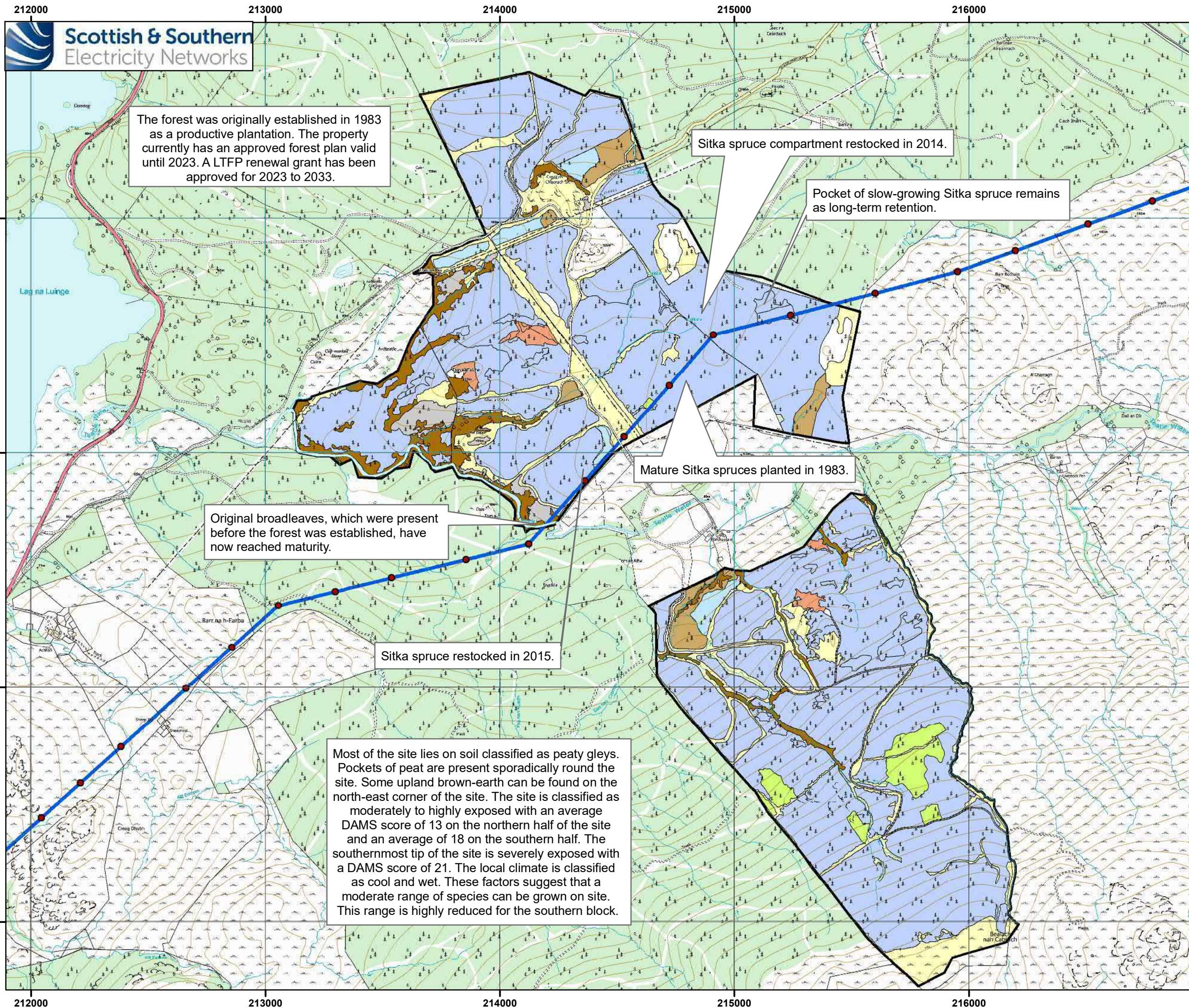
10.1.1 Compensatory planting to achieve the area quantity (hectares) of woodland removal will be provided for the OHL and access track operational corridor area and will be in accordance with the Scottish Government's Control of Woodland Removal Policy⁹ of no net loss of woodland.

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- TA Figure 11.30 – M8 Creagan and Cabrach Proposed Powerline Restock

⁹ <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 11.26

M4: Creagan & Cabrach- Current Tree Cover

Created On: 14/10/2021

Legend

Property Boundary

Proposed Towers

Proposed 275kV Powerline Route

Species

Sitka Spruce

Norway Spruce

Lodgepole Pine

Japanese Larch

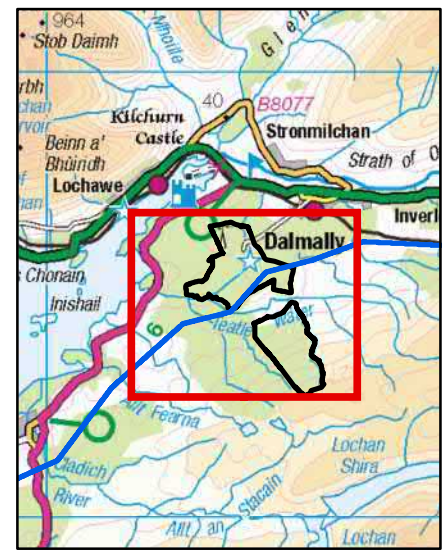
Mixed Broadleaves (original)

Native Mixed Broadleaves

Open Ground

Other Land

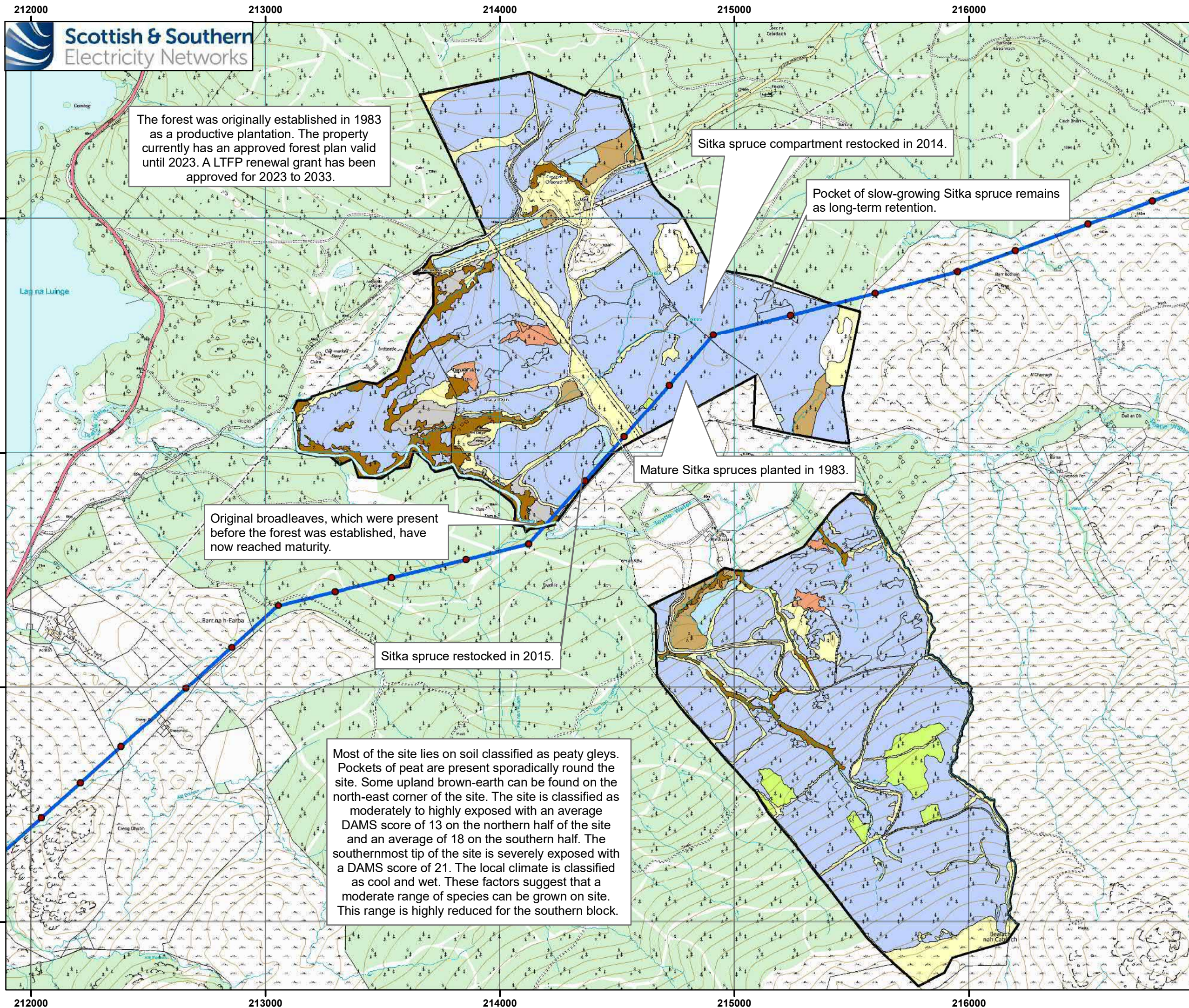
Unplanted



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Scale Correct at A3

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Ordnance Survey 100030835



LT000029: Creag Dhubh to Dalmally 275kV OHL Connection

Appraisal & Mitigation of Forestry Landscape Impacts

Figure 11.26

M4: Creagan & Cabrach- Current Tree Cover

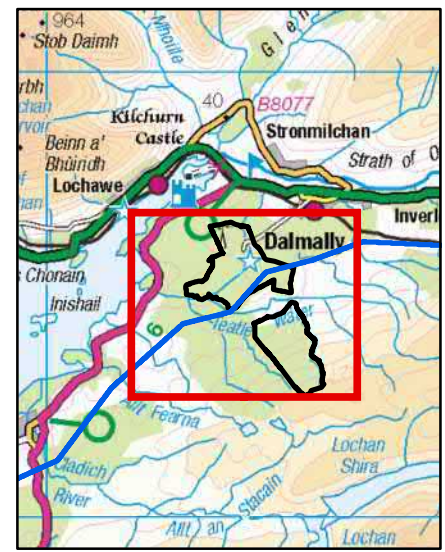
Created On: 14/10/2021

Legend

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

Species

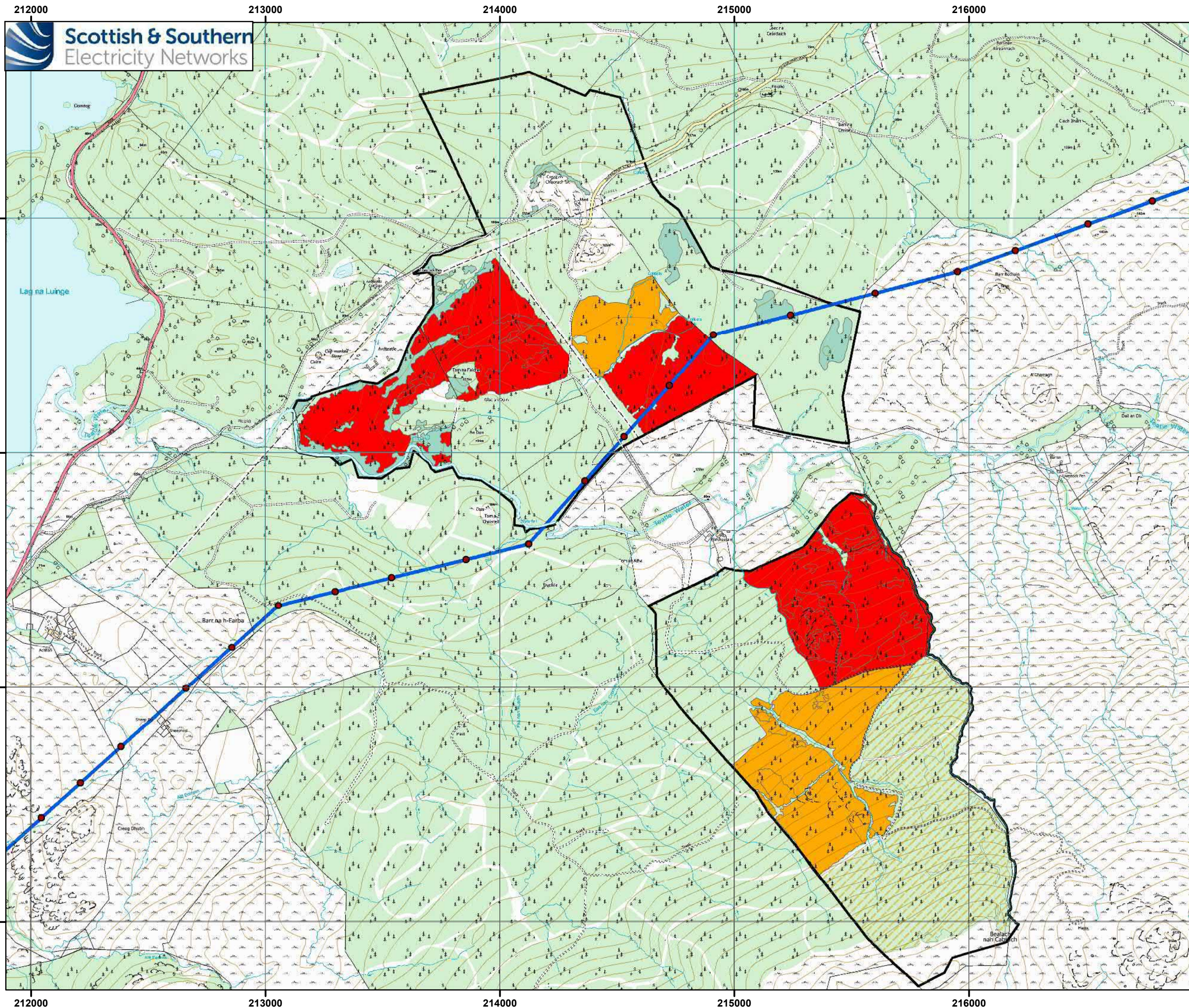
- Sitka Spruce
- Norway Spruce
- Lodgepole Pine
- Japanese Larch
- Mixed Broadleaves (original)
- Native Mixed Broadleaves
- Open Ground
- Other Land
- Unplanted



1:15,000
Scale Correct at A3

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

Appraisal & Mitigation of Forestry
Landscape Impacts

Figure 11.27
M5: Creagan & Cabrach- Proposed
Felling under Current LTFP Renewal
(2023-2033)

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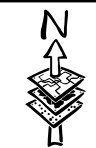
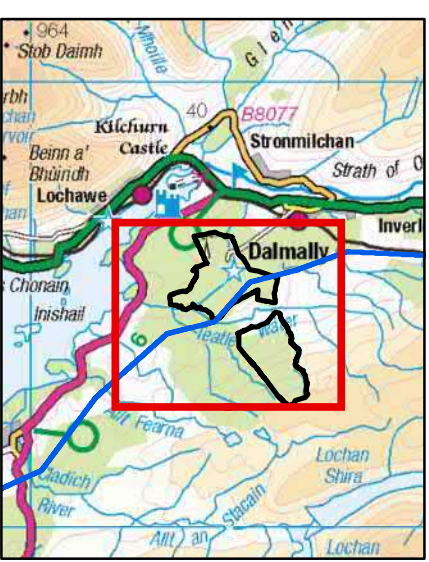
Legend

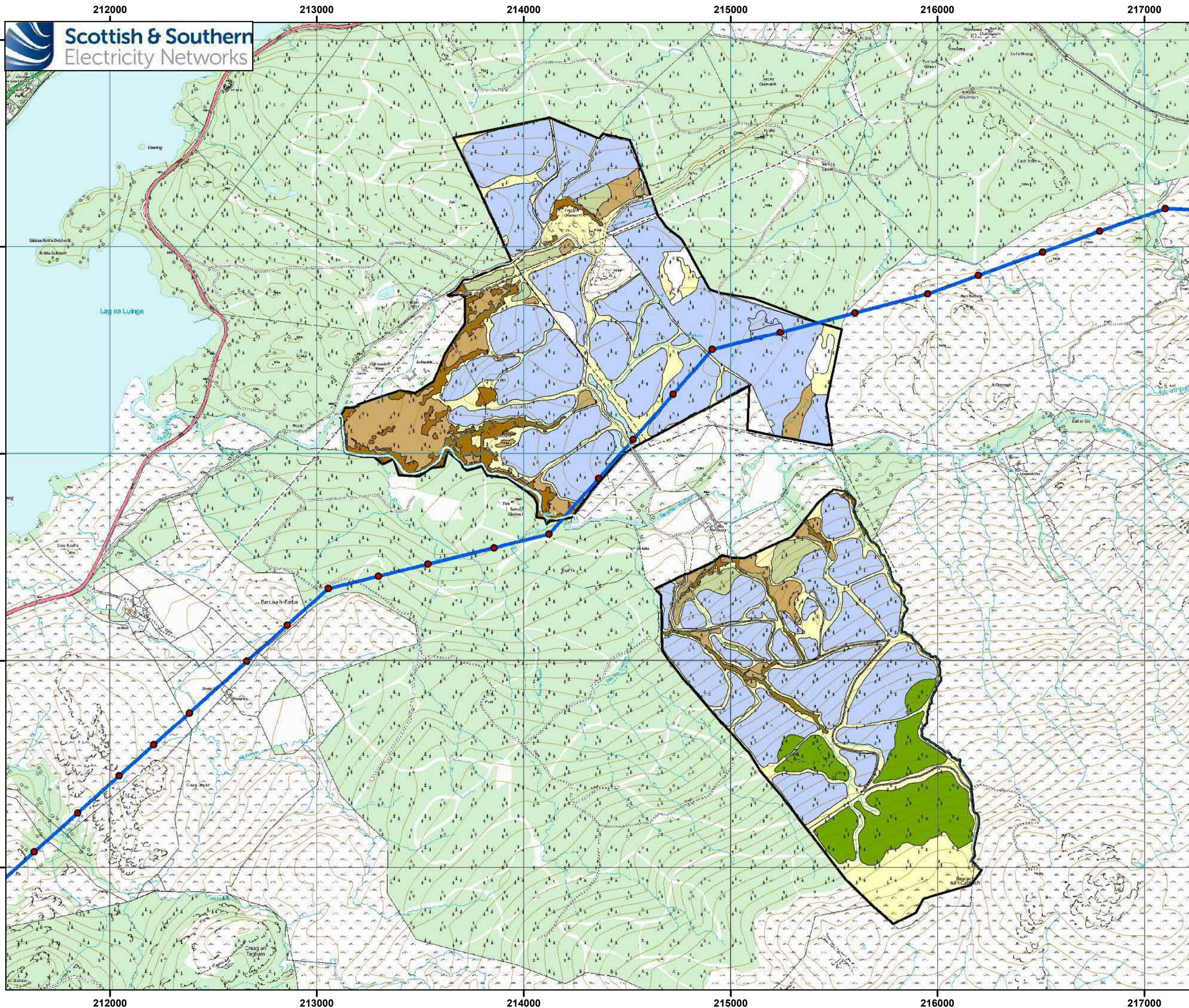
- Property Boundary
- Proposed Towers
- Proposed 275kV Powerline Route

LTFP Felling Phases

- Phase 1: 2023-2027
- Phase 2: 2028-2032
- Long-term retention
- Felling beyond plan period

Note:
These felling phases are indicative as
the new forest plan has not yet been
approved.





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

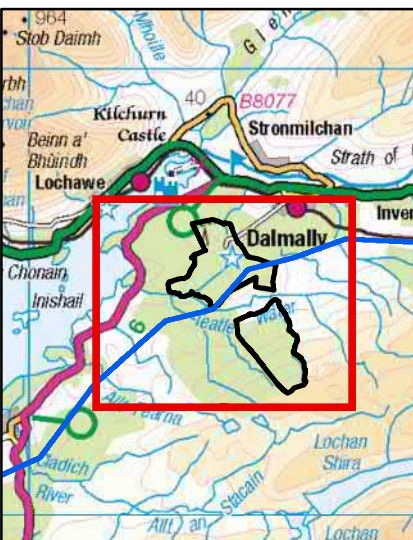
Appraisal & Mitigation of Forestry
Landscape Impacts

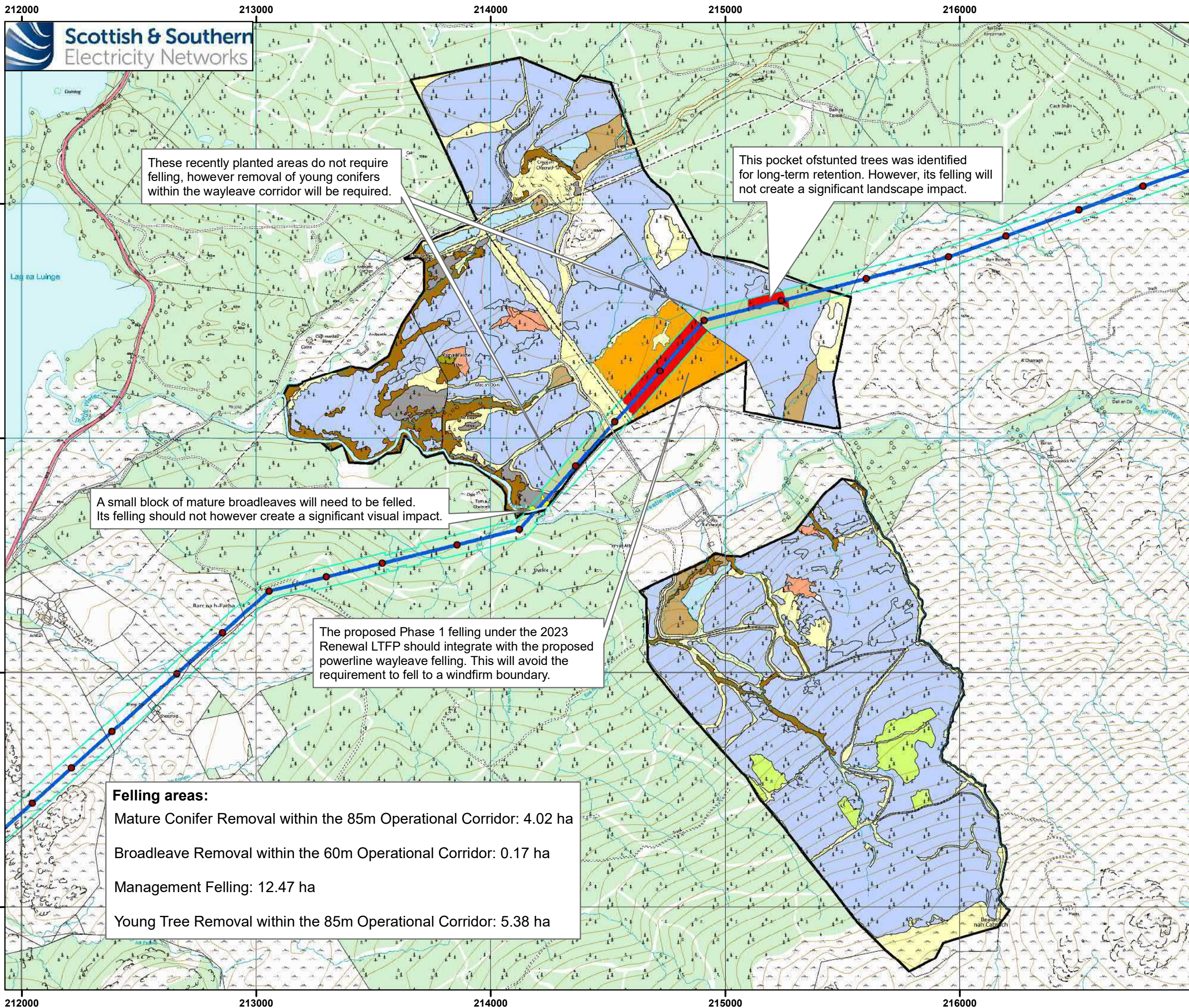
Figure 11.28
M6: Creagan & Cabrach- Proposed
layout of crops under current LTFP
(2023-2033)

Created On: 14/10/2021

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

- Restock Species**
-  Sitka Spruce
 -  Norway Spruce
 -  Scots Pine
 -  Mixed Conifers
 -  Mixed Broadleaves (original)
 -  Native Mixed Broadleaves
 -  Open Ground
 -  Other Land





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

Appraisal & Mitigation of Forestry
Landscape Impacts

Figure 11.29
M7: Creagan & Cabrach- Proposed
Powerline Felling

Created On: 17/11/2021

Legend

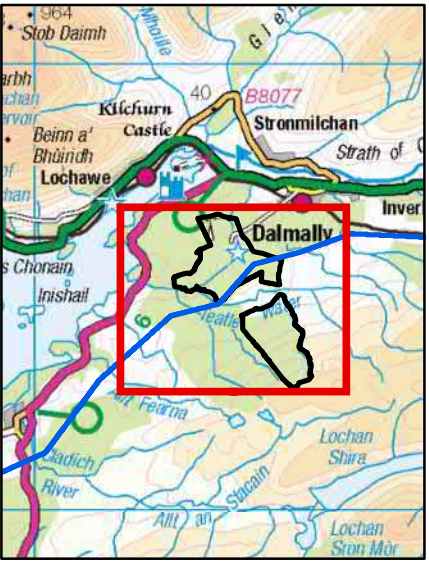
- Property Boundary
- Proposed Towers
- Proposed 275kV Powerline Route
- Overhead Line Operational Corridor

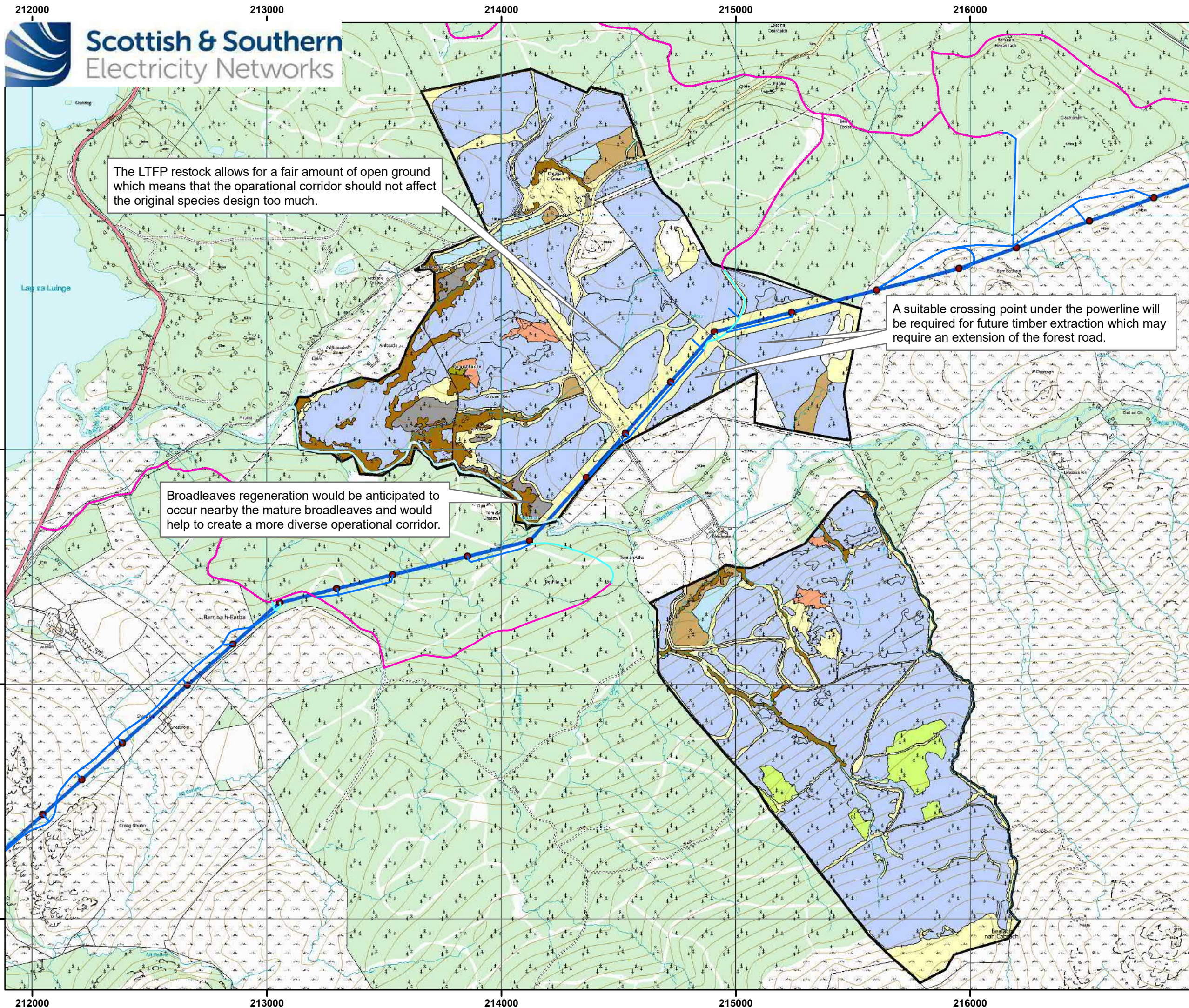
Proposed Powerline Felling

- 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
- Norway Spruce
- Douglas Fir
- Lodgepole Pine
- Japanese Larch
- Mixed Broadleaves (original)
- Native Mixed Broadleaves
- Open Ground
- Other Land
- Unplanted





LT000029: Creag Dhubh
to Dalmally
275kV OHL Connection

Appraisal & Mitigation of Forestry
Landscape Impacts

Figure 11.30
M8: Creagan & Cabrach- Proposed
Powerline Restock

Created On: 11/03/2022

Legend

- Property Boundary
- Proposed Towers
- Proposed 275kV Powerline Route
- Access Substation
- Access Route
- Access Tracks- Existing Upgrade
- Access Tracks- New Stone Permanent
- Access Tracks- New Stone Temporary

Overhead Line Operational Corridor Restock

- Sitka Spruce
- Native Mixed Broadleaves/Open Ground
- Open Ground

Current Species

- Sitka Spruce
- Norway Spruce
- Douglas Fir
- Lodgepole Pine
- Japanese Larch
- Mixed Broadleaves
- Native Mixed Broadleaves
- Open Ground
- Other Land
- Unplanted

