

Creag Dhubh to Dalmally 275kV Connection

Environmental Impact Assessment

Volume 4 | Appendix 11.1e

Overhead Line (OHL) Woodland Report

Property: Dychliemore

April 2022



Contents:

| | |
|------------------------------------|----|
| 1 INTRODUCTION..... | 2 |
| 2 PURPOSE OF WOODLAND REPORT..... | 2 |
| 3 WOODLAND PROPERTY | 2 |
| 4 DEVELOPMENT REQUIREMENTS | 3 |
| 4.1 275kV Overhead Line | 3 |
| 4.2 Access Track Route Design..... | 4 |
| 5 WOODLAND CHARACTERISTICS | 4 |
| 6 WINDTHROW RISK IMPACT | 9 |
| 7 WOODLAND MANAGEMENT IMPACT..... | 9 |
| 8 MITIGATION OPPORTUNITIES | 9 |
| 9 WOODLAND REMOVAL IMPACT | 10 |
| 10 COMPENSATORY PLANTING..... | 11 |
| 11 LIST OF FIGURES..... | 11 |

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 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 Dychliemore forest is under private ownership and is located approximately 4 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 Dychliemore 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 120 246'.

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 Dychliemore property is from tower 25 to east of tower 29.

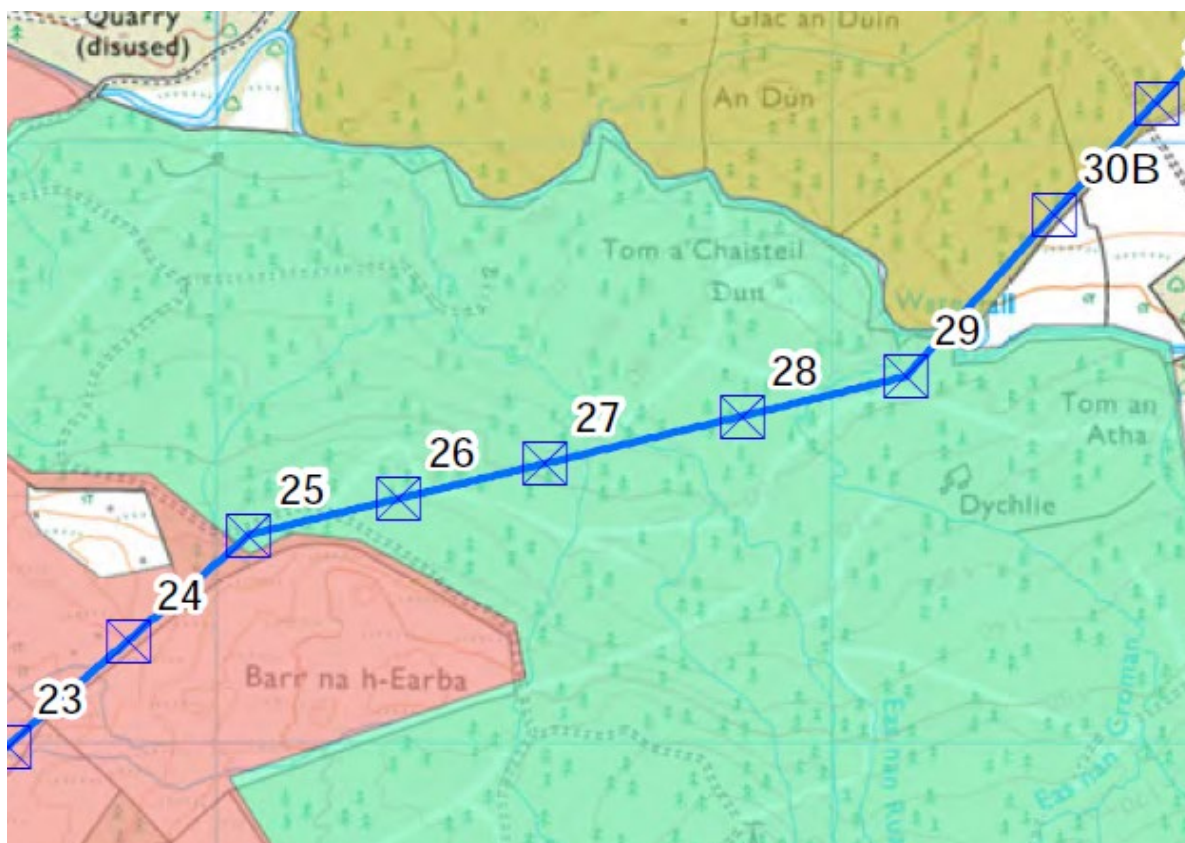


Plate 4.1:OHL T25 to T29

- 4.1.2 The 275kV 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 4m 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.
- 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 Dychliemore 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 25 to 29 on Dychliemore. 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 woodland property comprises of 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), **Figures 11.5, 11.6 (EIAR Volume 3a) and TA figure's 11.19 to 11.24**. The woodland management regime is clear fell and replant, with the

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)

predominant tree species being Sitka spruce. The conifer age class ranges from young plantation (circa. 4 years) to mature woodland (circa. 40 years) and all of plantation origin.

- 5.1.2 The woodland ground conditions are variable on mostly peaty gley soil², whereby the mature Sitka spruce standing timber volume is in the region of 550 m³ per hectare.
- 5.1.3 The landowner's existing Long Term Forest Plan is valid until the year 2021, with the intention to renew for the next 10 year period to year 2031. The felling phases and restock proposals have been reviewed during the OHL forestry landscape impact appraisal, **Figures 11.5, 11.6(EIAR Volume 3a), TA Figures 11.19 to 11.24.**
- 5.1.4 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.
- 5.1.5 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)
- 5.1.6 An area of 1.48 ha of broadleaved woodland located within the Dychliemore property between towers 24 to 30, **Figure 11.4(EIAR Volume 3a) and TA Figure 11.23** has been identified as native woodland classification.
- 5.1.7 The mixed broadleaved woodland ranges from young plantation (circa. 5 years) to well established mature native woodland.
- 5.1.8 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.forestry.gov.scot/forestry/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 west to tower 25.

- 5.1.9 A native broadleaved plantation of approximately 5 to 10 years old, located between Towers 24 and 25. The operational corridor will be reduced to 60 m wide at this location, with the potential of further selective felling to increase tree retention.



Plate 5.2: Looking north east to between tower locations 25 and 26.

- 5.1.10A native broadleaved plantation of approximately 5 to 10 years old, situated between Towers 25 and 26. The operational corridor will be reduced to 60 m wide at this location, with the potential of further selective felling to increase tree retention.



Plate 5.3: Looking east from the forest road to towers 26, 27 and 28.

- 5.1.11 As shown in Plate 5.3, the young Sitka spruce restock plantation of approximately 4 years old covers an area from the forest road (west of Tower 26) to Tower 27. This area of conifer woodland will require an 85 m wide operational corridor to provide future safe resilience from tree fall of the OHL.
- 5.1.12 Between Tower 27 to mid-span of Tower 28 the woodland changes to mature native broadleaved woodland of mixed tree species including Oak, Alder, Birch and Willow.



Plate 5.4: Looking west to tower 29 and 28. Showing mature conifer and broadleaved woodland types.

- 5.1.13 After mid-span of Towers 27 and 28 to Tower 29 and to the woodland property boundary **TA Figure 11.20**, the woodland type is predominantly mature Sitka spruce. A narrow strip of native broadleaved woodland exists between Tower 29 and the woodland property boundary.
- 5.1.14 The Sitka spruce conifer woodland is un-thinned and is host to generally good quality trees on the drier better quality ground. Where there are areas of wetter boggy ground the trees are of poorer quality.
- 5.1.15 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 60m width for the greater retention of native broadleaved trees **Figure 11.4(EIAR Volume 3a)**.
- 5.1.16 Reference to the OHL forestry landscape assessment documents **TA Figures 11.19 to 11.24** 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.
- 5.1.17 The total area of management felling proposed is 7.42 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 ranging between 13 and 18, classified as moderately to highly 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 11.19 to 11.24**, 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.

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 some small areas 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 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. This will be dependent on the requirements of the development project and in particular the safety of OHL wiring operations.

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)

- 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 obligations 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 | 3.28ha |
| | Mature conifer tree crop | 3.40ha |
| | Native broadleaved woodland | 1.48ha |
| Access Track Corridor | Young conifer plantation | 0.79ha |

Table 9.2 Compensatory Planting

| | | |
|----------------------------|------------------------------------|--------|
| Compensatory Planting Area | Mixed conifer or mixed broadleaves | 8.95ha |
|----------------------------|------------------------------------|--------|

Table 9.3 Woodland Removal Impact of Infrastructure

| | | |
|--|--|--------------|
| Total Loss of Woodland Area | | 8.95ha |
| Total Compensatory Planting Area | | 8.95ha |
| 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 | 7.42ha |
| Replanting/Restocking | Predominantly conifer | 7.42ha |
| 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

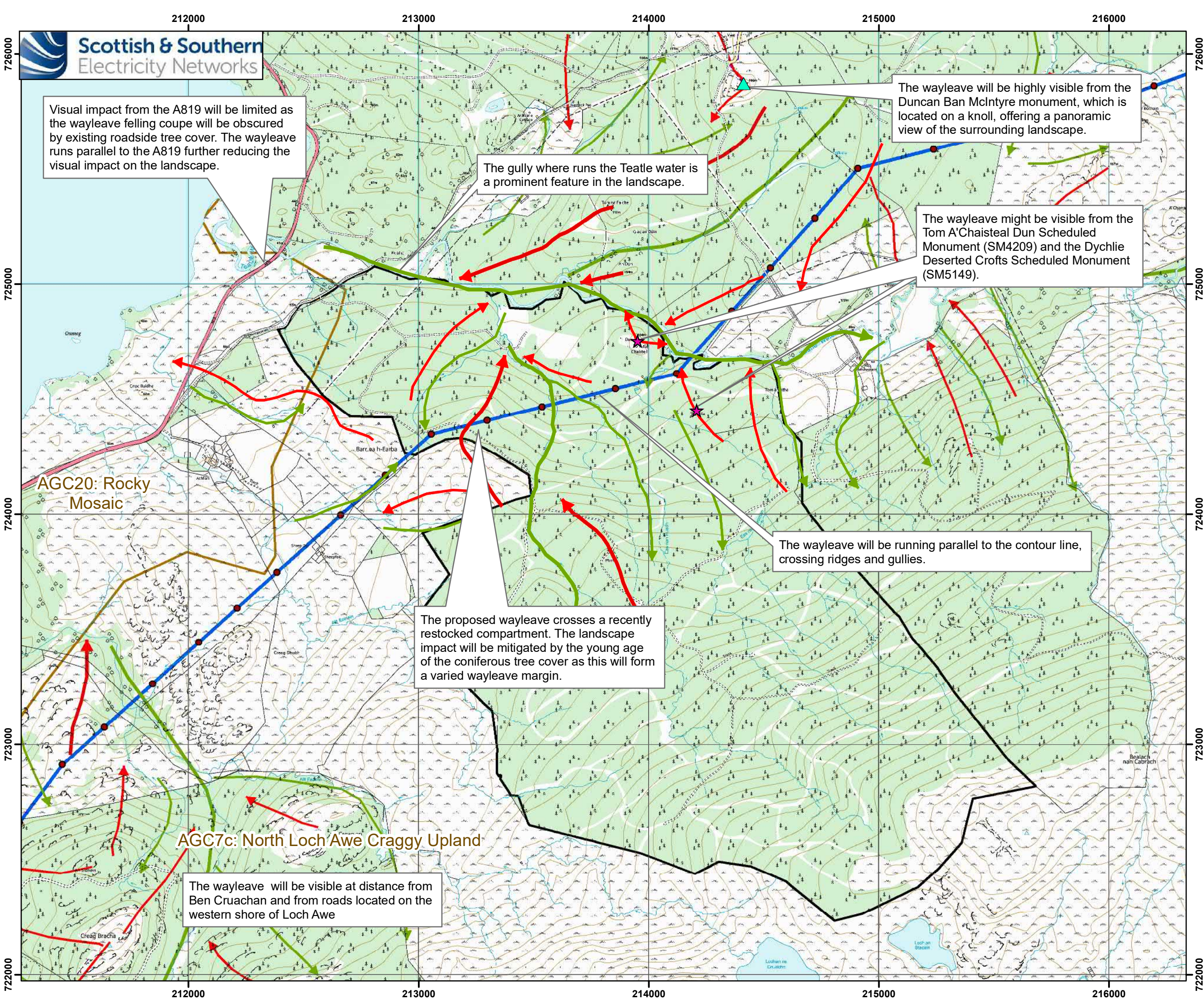
10.1.1 Compensatory planting to achieve the area quantity (hectares) of woodland removal will be provided for the OHL and access track operational corridor area and will be in accordance with the Scottish Government's Control of Woodland Removal Policy⁹ of no net loss of woodland.

11 List of Figures

- Figure 11.1 - Landownership Boundary Map
- Figure 11.4 – Forestry Project Felling Maps
- Figure 11.5 – M1 Location & Landscape Character
- Figure 11.6 – M2 Selected Forests

- TA Figure 11.19 – M9 Dychliemore Location and Context
- TA Figure 11.20 – M10 Dychliemore Current Tree Cover
- TA Figure 11.21 – M11 Dychliemore Proposed Felling Under Current LTFP
- TA Figure 11.22 – M12 Dychliemore Proposed Layout of Crops Under Current LTFP - Restock
- TA Figure 11.23 – M13 Dychliemore Proposed Powerline Felling
- TA Figure 11.24 – M14 Dychliemore Proposed Powerline Restock

⁹ <https://forestry.gov.scot/publications/285-the-scottish-government-s-policy-on-control-of-woodland-removal/viewdocument/285>

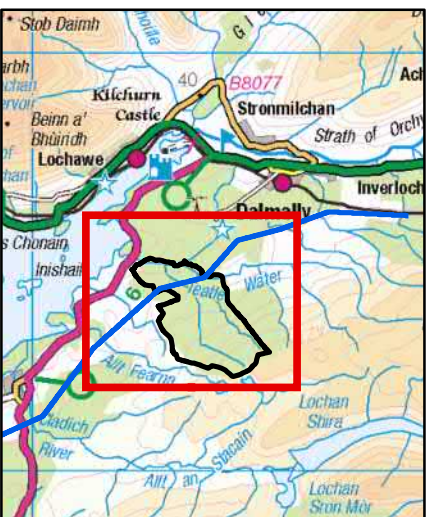


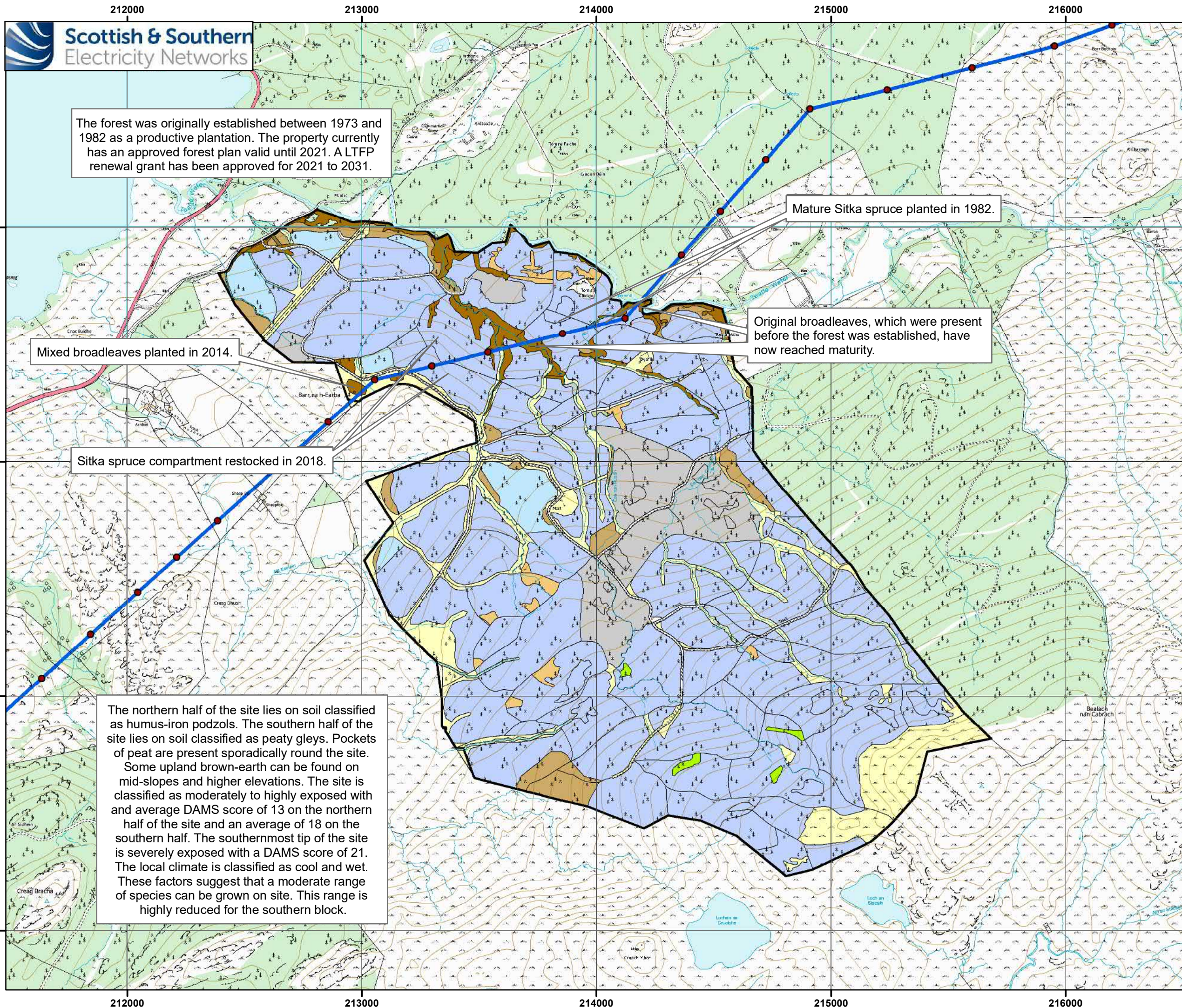
Legend

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

Landscape Analysis

- Ridges and Spurs
- Hollows and Gullies
- Core Path
- Landscape Character Type Boundary
- Scheduled Archaeological Features
- Prominent Viewpoint





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

Appraisal & Mitigation of Forestry
Landscape Impacts

Figure 11.20

M10: Dychliemore- Current Tree
Cover

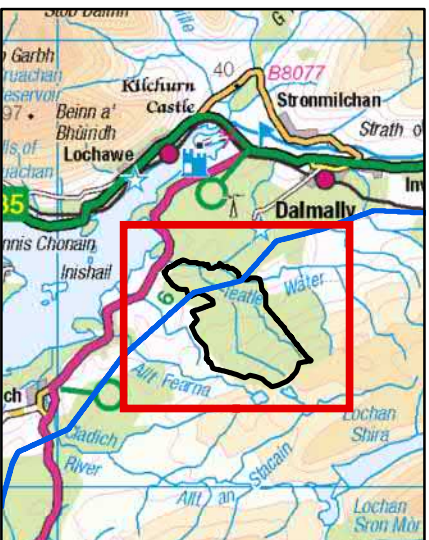
Created On: 14/10/2021

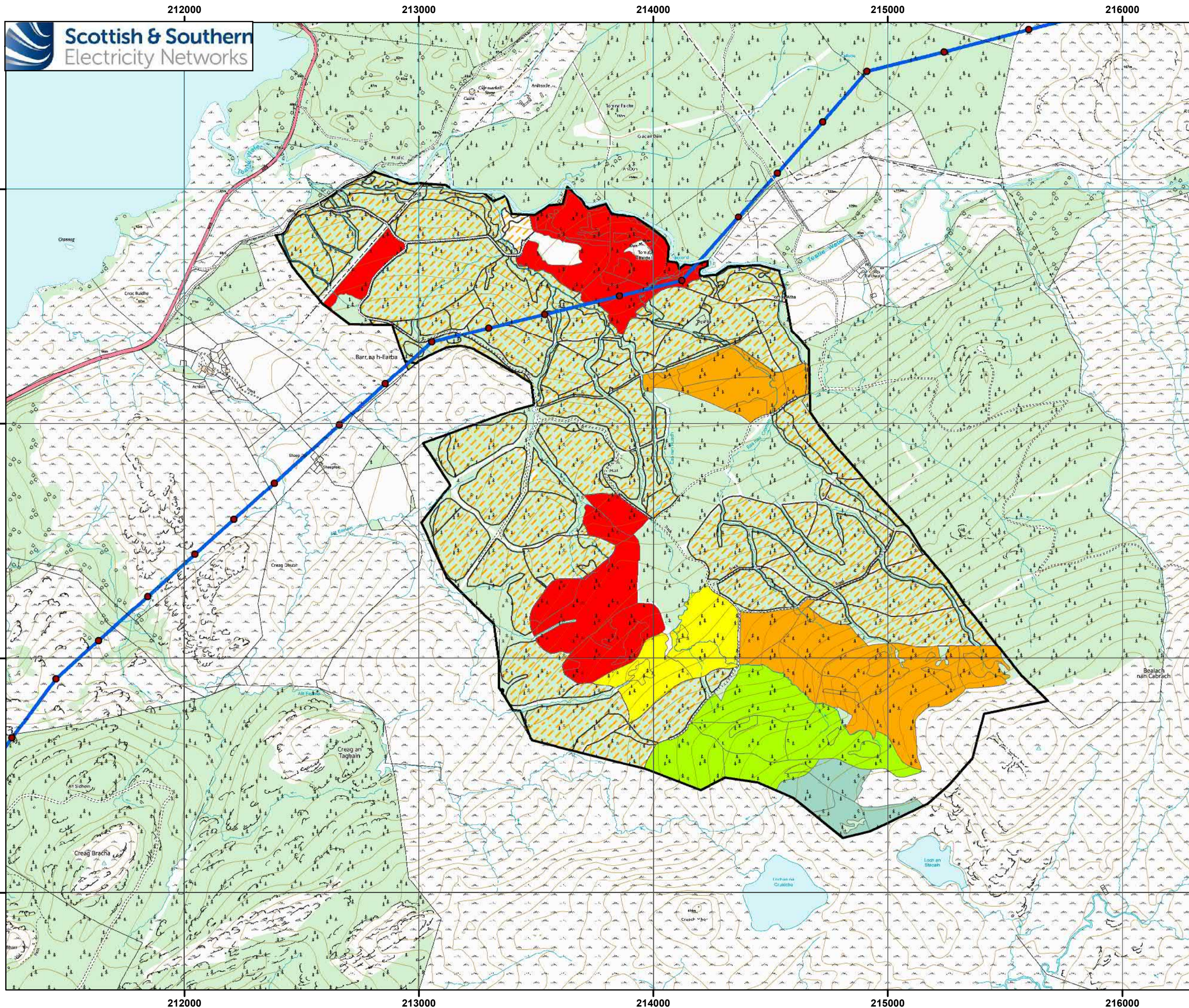
Legend

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

Current Species

- Sitka Spruce
- Norway Spruce
- Lodgepole Pine
- Hybrid Larch
- Mixed Conifers
- Mixed Broadleaves
- Native Mixed Broadleaves
- Open Ground
- Other Land
- Unplanted





LT000029: Creag Dhubh to Dalmally 275kV OHL Connection

Appraisal & Mitigation of Forestry Landscape Impacts

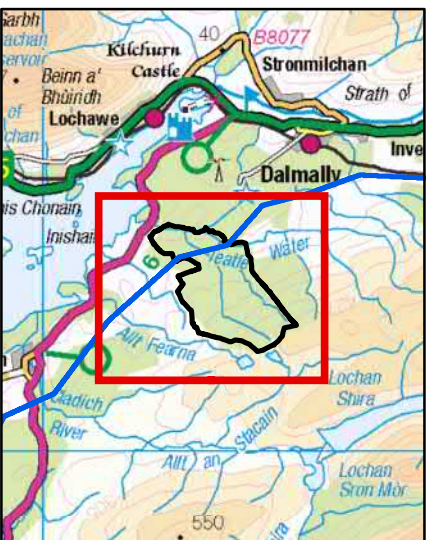
Figure 11.21
M11: Dychliemore- Proposed Felling under Current LTFP Renewal (2021-2031)

Created On: 14/10/2021

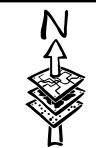
Legend

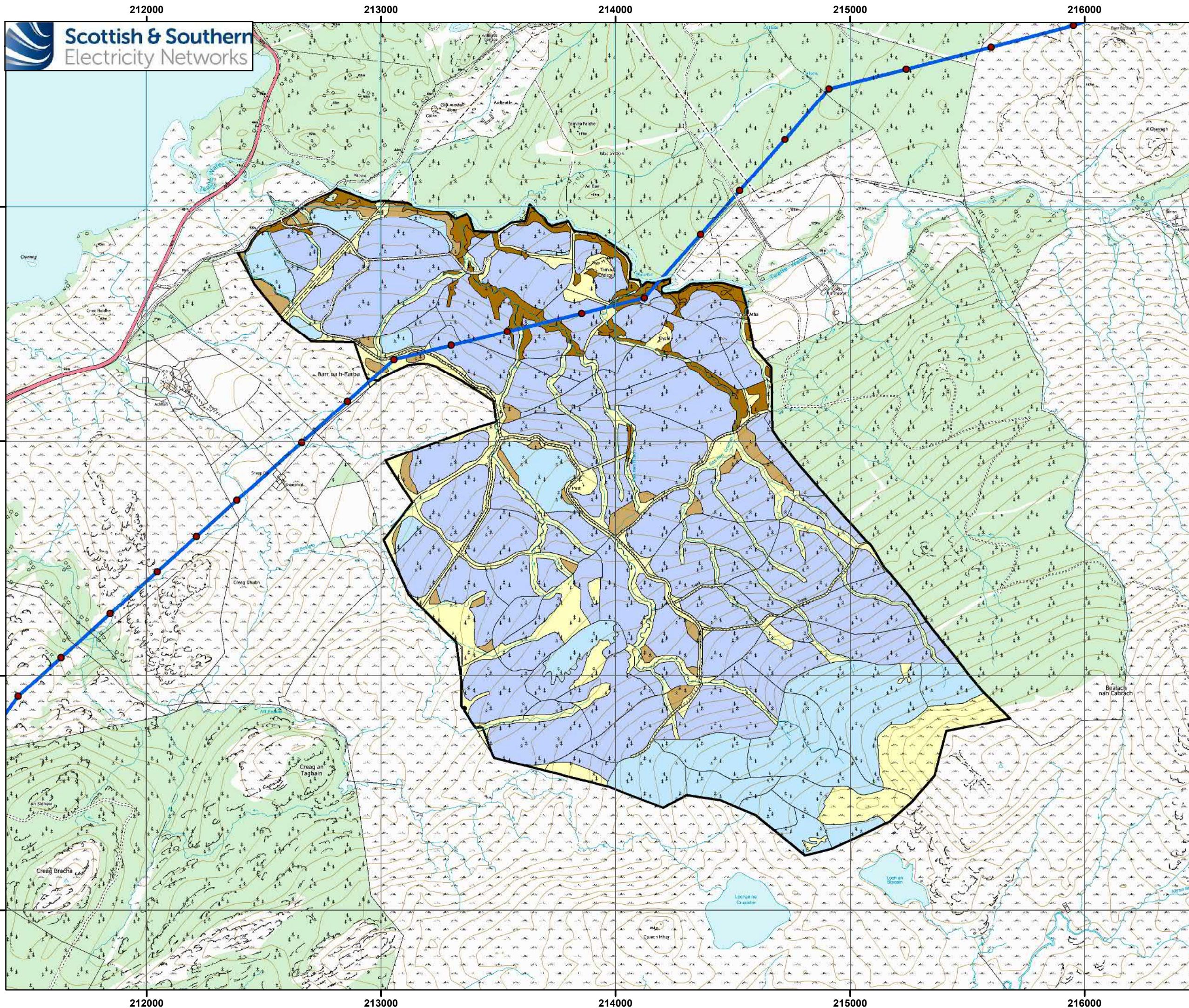
- Property Boundary
- Proposed Towers
- Proposed 275kV Powerline Route
- LTFP Felling Phases**
 - Phase 1: 2021-2025
 - Phase 2: 2026-2030
 - Phase 3: 2031-2035
 - Phase 4: 2036-2040
- Felling beyond plan period
- Long-term retention

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



1:15,000
Scale Correct at A3
© Crown copyright and database rights 2018
Ordnance Survey 100030835





LT000029: Creag Dhubh to Dalmally 275kV OHL Connection

Appraisal & Mitigation of Forestry Landscape Impacts

Figure 11.22
M12: Dychliemore- Proposed layout of crops under current LTFP (2021-2031)

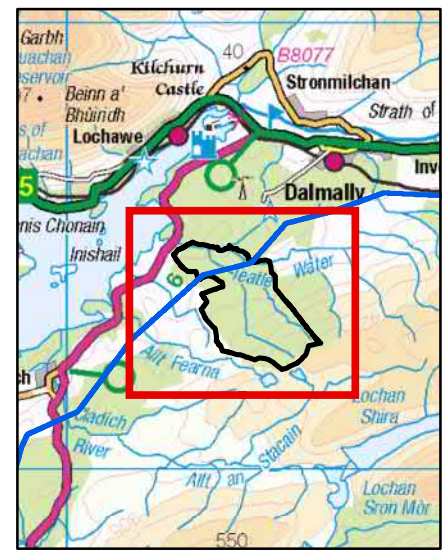
Created On: 14/10/2021

Legend

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

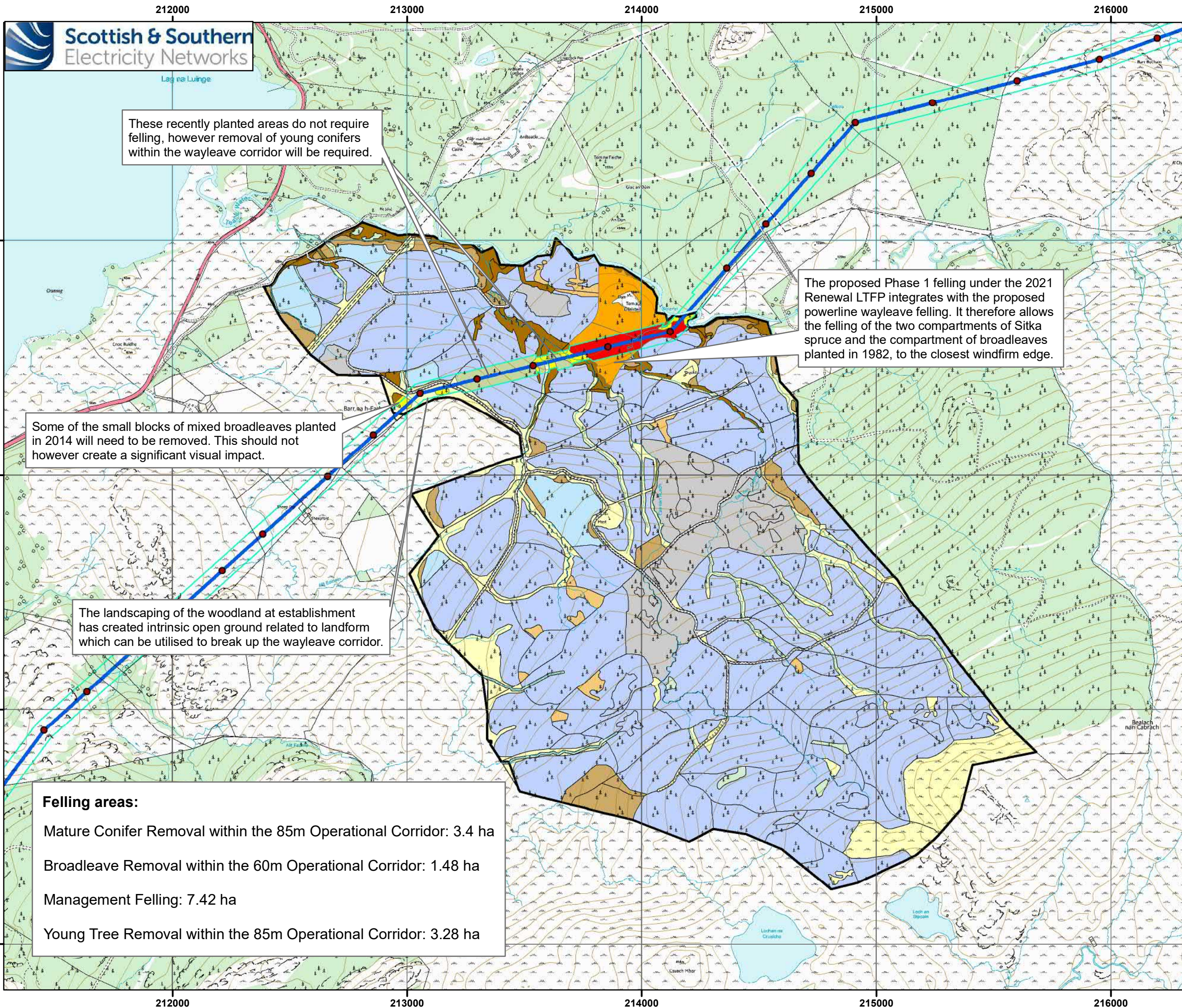
Restock Species

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



1:15,000
Scale Correct at A3
© Crown copyright and database rights 2018
Ordnance Survey 100030835





Legend

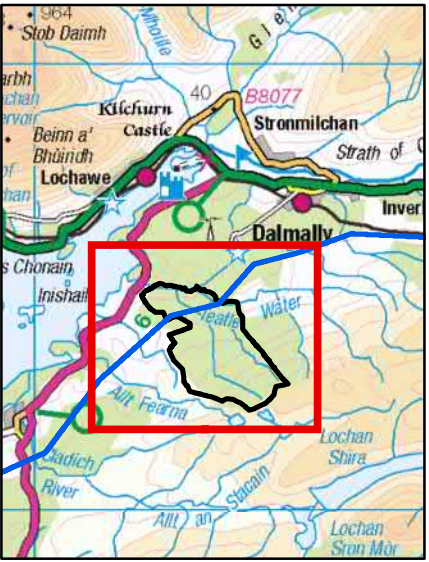
- Property Boundary
- Proposed Towers
- Proposed 275kV Powerline Route
- Overhead Line Operational Corridor

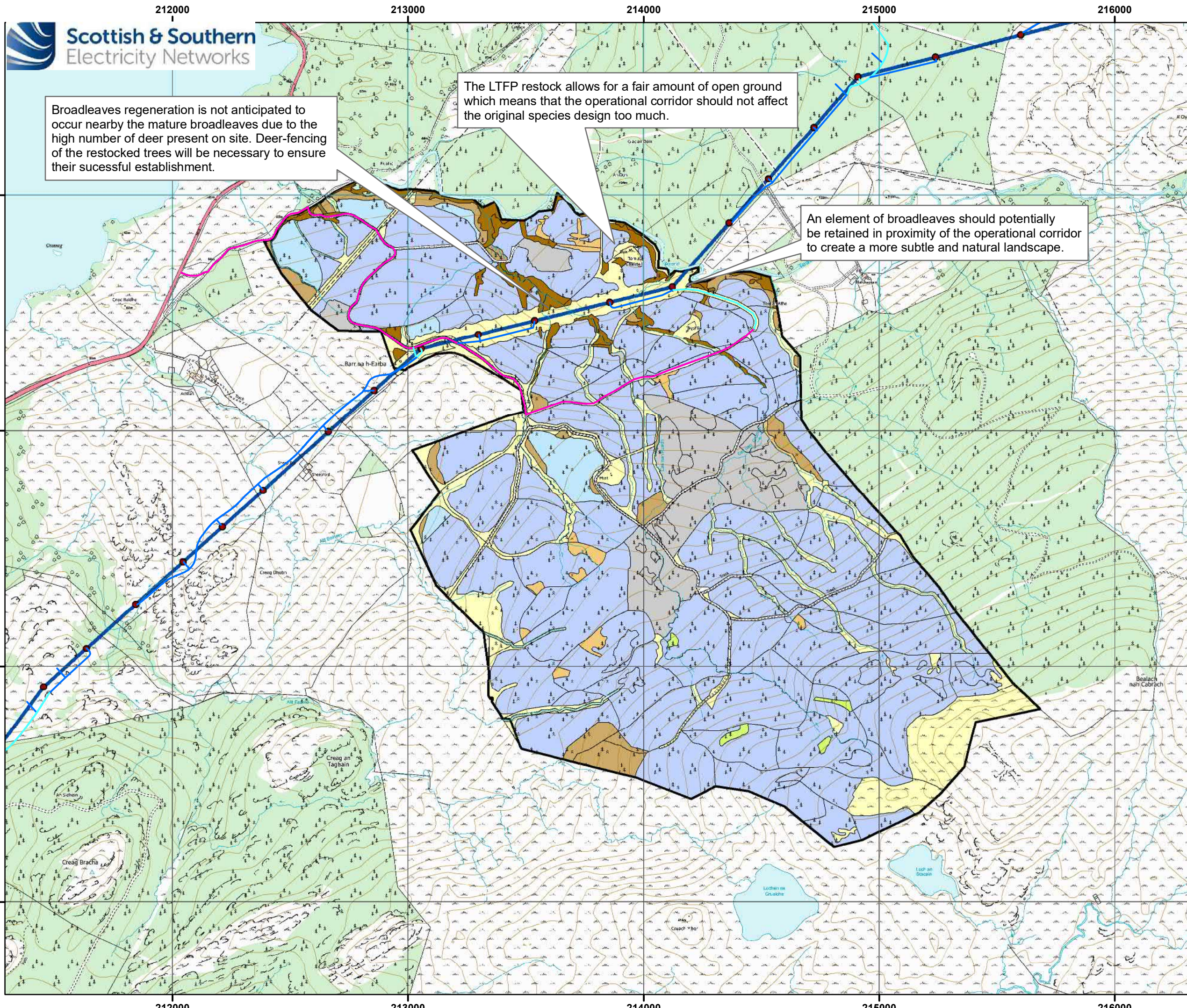
Proposed Powerline Felling

- 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
- Hybrid Larch
- Mixed Conifers
- 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 11.24
M14: Dychliemore- Proposed
Powerline Restock

Created On: 11/03/2022

Legend

- Property Boundary
- Proposed Towers
- Proposed 275kV Powerline Route
- Access Substation
- Access Route
- Access Tracks- Existing Upgarde
- Access Tracks- New Stone Permanent
- Access Tracks- New Stone Temporary
- Overhead Line Operational Corridor Restock**
 - Sitka Spruce
 - Mixed Broadleaves
 - Native Mixed Broadleaves/Open Ground
 - Open Ground
- Current Species**
 - Sitka Spruce
 - Norway Spruce
 - Lodgepole Pine
 - Hybrid Larch
 - Mixed Broadleaves (original)
 - Native Mixed Broadleaves
 - Open Ground
 - Other Land
 - Unplanted

