

Volume 5: Appendix 8.2.21 – Woodland Report:
Justinhaugh

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1. WOODLAND REPORT: JUSTINHAUGH

1.1 Introduction

- 1.1.1 This Woodland Report has been prepared by 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.
- 1.1.2 This Woodland Report will accompany an application for Consent under Section 37 of the *Electricity Act 1989*¹ (as amended) and Section 57(2) of the *Town and Country Planning (Scotland) Act 1997* to construct and operate approximately 105.2 kilometres (km) of new double circuit 400 kilovolts (kV) overhead transmission line (OHL) between Kintore and Tealing (hereafter referred to as the 'Proposed Development'). A full description of the Proposed Development and its ancillary works is set out within **Volume 1, Chapter 3: Project Description** of this EIAR.

1.2 Purpose of this Woodland Report

- 1.2.1 As part of the Environmental Impact Assessment (EIA) process, it was identified that the OHL construction and the access tracks required to construct the Proposed Development would cross a number of woodland areas within private or state-owned landholdings.
- 1.2.2 This Woodland Report 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 This Woodland Report relates to land at Justinhaugh and the relevant landholding property boundary is presented in **Figure 8.1.21: Landowner Boundaries**.
- 1.2.4 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 Woodland Report also sets out the area quantity (in hectares (ha)) to be compensatory planted to ensure no net loss of woodland is achieved as required by The Scottish Government's Policy on Control of Woodland Removal².

Requirement and Objectives of the Report

- 1.2.5 This Woodland Report details the works required to the woodland, including the felling and any restocking, due to the construction and operation of the Proposed Development.
- 1.2.6 The objectives of this Woodland Report are to:
- provide an assessment of the woodland areas that are affected by the Proposed Development, including the requirement for woodland removal and management recommendations to mitigate the impact of the woodland removal; and
 - describe any mitigation measures proposed to address likely impacts relating to loss of woodland and windthrow risk and to meet The Scottish Government's Policy on Control of Woodland Removal by identifying the required quantity for compensatory planting.

Limitations and assumptions

- 1.2.7 All data included within this Woodland Report has been gathered from field surveys or desk-based assessments, which includes analysis of nationally held datasets, up to date aerial imagery and field measurements and data collection.

¹ UK Government, 1989. *Electricity Act 1989*. [Online] Available at: <https://www.legislation.gov.uk/ukpga/1989/29/contents>

² Forestry Commission Scotland, 2009. *Scottish Government's Control of woodland Removal Policy* [Online] Available at: <https://www.forestry.gov.scot/publications/285-the-scottish-government-s-policy-on-control-of-woodland-removal>

- 1.2.8 Baseline data was derived from Scotland's environmental web³ and Scottish Forestry map viewer⁴. The data sources identified in **paragraph 8.4.6 of Volume 2, Chapter 8: Forestry** were also used to inform this Woodland Report.
- 1.2.9 Forests (or woodlands) comprise the land, of at least 0.5 ha (UKFS: V5 2023) under areas of trees with a canopy cover of at least 20%, or having the potential to achieve this, including the integral open space, as well as any felled areas awaiting replanting and are identified on the National Forest Inventory (NFI). The term 'forest' and 'forestry' for the purpose of this report is used to refer to areas that are typically coniferous that are managed for commercial timber production. The term 'wood' and 'woodlands' is used to refer to areas that are typically broadleaved and deciduous and not principally managed for timber production.
- 1.2.10 Woodland structure and age for the purpose of this Woodland Report have been categorised into an age class matrix:
- Young – young trees, generally less than 5 years old;
 - Immature – trees between approximately 6-15 years old;
 - Pole Stage – trees between 16 – 30 years old, primarily conifer;
 - Mature – trees considered to be of felling age, 31 –50 years and over; and
 - Established – established range of age classes with mature trees and an understory of younger trees.
- 1.2.11 In addition, to simplify the reader's understanding, a species matrix has been derived to categorise the species along the length of the Proposed Development:
- Felled – trees which have been felled and are awaiting restocking;
 - Mixed Broadleaves – broadleaf trees containing a range of species including native trees such as Oak or Birch, may also contain non-native trees such as Sycamore or Chestnut;
 - Mixed Woodland – a diverse mix of conifer and broadleaf trees with non-native species present;
 - Native Mixed Woodland – mixed woodland containing native broadleaf species such as Oak or Birch and including elements of Scots Pine;
 - Conifer – Conifer species; Sitka spruce, Norway spruce, Larch, Firs or Pines; and
 - Scrub/Regen – areas of unmanaged land with low density, self-seeded trees. A mixture of species with non-native conifer and broadleaf trees present.

1.3 Woodland Property

- 1.3.1 Justinhaugh (hereinafter referred to as the property) is situated north of Forfar and is under private ownership. The mature, linear, riparian woodland lies on the northern bank of the South Esk river and is comprised mainly of broadleaf species including alder, silver birch and sycamore.

1.4 Development Requirements

400 kV Overhead Line

- 1.4.1 The Study Area for this assessment is based on the required Operational Corridor (OC) (see **paragraphs 3.8.21 to 3.8.22 in Volume 1, Chapter 3: Project Description**). The Applicant defines the OC as 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 OHL, resulting in a supply outage. As a result, the final OC 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. Standard falling distance for a mature conifer tree is considered to be a minimum

³ Scottish Forestry Land Information Search URL: https://map.environment.gov.scot/LIS_Agri/Agri.html

⁴ Scottish Forestry Map Viewer URL:

<https://scottishforestry.maps.arcgis.com/apps/webappviewer/index.html?id=0d6125cfe892439ab0e5d0b74d9acc18>

of 30 m. Where the OC passes through areas of native broadleaved woodland, it is noted that the width of woodland may be reduced, due to the general lower height and characteristics of the tree species present and as will be detailed in the Woodland Retention Plan.

- 1.4.2 The 400 kV OHL standard tower dimensions for the Proposed Development have a width of 11.2 m at the widest part (crossarm) of the tower ie from outside conductor to outside conductor, in addition to this the safety vicinity zone from each conductor is a 5.3 m radius around the conductor.
- 1.4.3 The OHL infrastructure and minimum safety clearance distance is therefore 90 m (45 m either side of the OHL centreline) and this has been utilised to calculate the area of the OC. 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.

Access Track Route Design

- 1.4.4 Justinhaugh woodland lies between Towers S140 and S142. Access track requirements to facilitate tower construction will exceed outwith the OC. Access to Tower S140 will require a new temporary track to be constructed which will feed onto the existing public road. No woodland clearance will be required for this access track. Access to Tower S141 will require the construction of a new temporary stone track and existing track upgrade to Inshewan Avenue which feeds onto the public road. No woodland clearance will be required for this access track. Access to Tower S142 will require the construction of a new temporary stone track which will feed into the temporary stone access track for Tower S141. Access to each Tower will begin outwith the OC and end within the OC.
- 1.4.5 General access track tree maintenance work may be required along the existing/new forest access track in preparation for the civil engineering access track upgrade works.
- 1.4.6 Sections of new access track (see **Figure 8.2.21: Proposed Felling Requirements**) are required to be built as part of the construction work scope, to service the OHL section Towers S142 to S140.
- 1.4.7 Temporary woodland removal will be required to facilitate 'holding out positions'; tension towers require a temporary 'holding out position' to raise the tower working platforms which would be utilised when stringing the conductors. This platform is winched into position by a tractor at one and a half the tower height away and once in position gets locked off and attached to concrete sledges.

1.5 Woodland Characteristics

- 1.5.1 The property is situated to the west of Justinhaugh village and north of the B957 and South Esk river.
- 1.5.2 The area impacted by the Proposed Development is an area of predominantly mixed broadleaf woodland. The woodland has a diverse age structure, with the main age class being immature. Maximum top height for these blocks is approaching circa. 15 m. The woodlands are not utilised for commercial or recreational purposes, with minimal public access taking place within them. The woodland ground conditions are variable, on mostly imperfectly drained humus-iron podzols and undifferentiated alluvial soils.
- 1.5.3 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 Inventory, to identify current woodland environmental designations and classifications.
- 1.5.4 The Scottish Forestry Map Viewer⁴ provides spatial data on the Native Woodland Survey of Scotland⁵ and classifies the woodland types into four categories:
 - Native woodland⁶;

⁵ Scottish Forestry Native Woodland Survey of Scotland: Glossary of Terms; URL: <https://www.forestry.gov.scot/publications/75-native-woodland-survey-of-scotland-glossary-of-terms/viewdocument/75>

⁶ Native Woodland – woods where the canopy cover is composed mainly of native species (ie over 50%)

- Nearly-native woodland⁷;
- Open land habitat⁸; and
- Plantations on Ancient Woodland Sites (PAWS)⁹.

1.5.5 The area of broadleaved woodland located between Towers S140 to S142 including some of the access track corridors, **Figure 8.2.21: Proposed Felling Requirements** has been identified as Native Woodland Classification. However, there is an area (0.32 ha) within the OC that does not have this classification.

Plate 1: Looking north to Tower S141 (south of riverbank)



1.5.6 **Plate 1** indicates the riparian linear strip of woodland that is located along the banks of the South Esk, to the northeast of Tower S141. The predominant tree species is alder, silver birch and sycamore. Timber production is limited due to the variable tree crop between Towers S142 and S140, and due to the location and ground conditions surrounding the South Esk.

⁷ 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.

⁸ Open Land Habitat – areas with <20% canopy cover of trees and shrubs adjoining a native woodland.

⁹ 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 2: Looking northeast towards Tower S140



- 1.5.7 **Plate 2** shows the high density, pole stage growth in the mixed broadleaf woodland, looking northeast towards Tower S140. Willow is the most common species, growing and regenerating quickly on both sides of a small gully. Mature ash, sycamore and hawthorn are also present in this mixed woodland where ground conditions are generally wet and boggy.

Plate 3: Looking southwest towards Tower S141



- 1.5.8 **Plate 3** again shows the high-density growing nature of the mixed broadleaf woodland. Characterised by quick growing willow, **Plate 3** also shows young regenerating Sitka spruce.

1.6 Windthrow Risk Impact

- 1.6.1 The woodland ground conditions are variable, on mostly imperfectly drained, humus-iron podzols and undifferentiated alluvial soils. These soils are 'very moist' moisture status and 'medium' nutrient status, perhaps due to the proximity of the South Esk. The site has a warm, sheltered and moist climate.
- 1.6.2 An assessment was undertaken of the risk of windblow to areas of woodland adjacent to the OC which would be exposed due to the tree clearance required for the OC This assessment is based on the professional judgement of the forestry surveyor with consideration being given to the soil and moisture regime, the topography, tree species, top height, exposure, altitude and aspect in relation to the prevailing wind direction and any previous management regimes from

either, observations at a site level or via an approved management plan. Reference is also made to Forest GALES¹⁰ 2.5 Forest Research decision support system. Felling outwith the OC to a windfirm boundary is termed Management Felling and is presented within **Figure 8.2.21: Proposed Felling Requirements**.

- 1.6.3 The woodland site affected by the Proposed Development has a 'Detailed Aspect Method of Scoring' (DAMS)¹¹ windthrow hazard class score of 10, classified as 'sheltered'.
- 1.6.4 The management felling has been proposed to achieve suitable woodland windfirm boundaries. No impact of windthrow risk will be created by the removal of the woodland areas within the OHL OC.

1.7 Woodland Management Impact

- 1.7.1 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 OC, which will avoid the incidences of "Red Zone" trees¹².
- 1.7.2 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.
- 1.7.3 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.
- 1.7.4 The Proposed Development will permanently remove existing mature and young conifer woodland with an area of broadleaved 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.
- 1.7.5 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.
- 1.7.6 An additional 0.84 ha of Management Felling has been proposed to achieve suitable woodland windfirm boundaries to the south of the OC. Again, this includes a broadleaf component of alder, birch and sycamore.

1.8 Mitigation Opportunities

- 1.8.1 Prior to the construction phase broadleaf 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 Proposed Development and in particular the safety of OHL wiring operations.
- 1.8.2 The OC woodland removal area is required for the construction and functioning of the new OHL infrastructure. Reference to **Section 1.10: Compensatory Planting**, will fully mitigate the OC woodland removal area by replanting the area of woodland removed.
- 1.8.3 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.

¹⁰ Forest Research (2025). Available at: <http://www.forestdss.org.uk/geoforestdss/>. The Detailed Aspect Method of Scoring (DAMS) is a system used to assess wind exposure in forestry and land management. It provides a numerical score that quantifies the level of exposure a site experiences based on factors such as elevation, topography, and aspect (the direction a slope faces). The DAMS score helps foresters predict wind risk, which is crucial for understanding tree stability, growth potential, and the likelihood of windthrow (trees being uprooted or broken by wind). The scoring system ranges from 0 to 24, with higher scores indicating more exposure to wind.

¹¹ Detailed Aspect method of Scoring (DAMS) Ref. Forest Research, "Forest Gales software programme" and Forestry Commission Leaflet 85 "Windthrow Hazard Classification"

¹² 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: <https://ukfisa.com/>

1.9 Woodland Removal Impact

- 1.9.1 Woodland removal area calculations are approximate and have been rounded up to reflect the worst case scenario for removal. Woodland felling will be reduced as much as possible through mitigation.

Table 1: Woodland Removal for Infrastructure

Item	Woodland Type	Area
Infrastructure Felling	Native mixed woodland	1.71 ha

Table 2: Compensatory Planting

Item	Woodland Type	Area
Compensatory Planting Area	Native mixed woodland	1.71 ha

Table 3: Woodland Removal Impact of Infrastructure

Item	Woodland Type	Area
Total Loss of Woodland Area	Native mixed woodland	1.71 ha
Total Compensatory Planting Area	Native mixed woodland	1.71 ha
Total Net Loss of Woodland Area		0.0 ha

Table 4: Woodland Removal for Management Felling

Item	Woodland Type	Area
Management Felling	Native mixed woodland	0.84 ha
Replanting/Restocking	As per landowners management plan	0.84 ha
Net Loss of Woodland Area		0.0 ha
<i>Note- Felling and restocking approval is via Scottish Forestry Felling Permission application process or Long-Term Forest Plan application or amendment process. This is to be sought by the landowner on whose land the management felling takes place, who is also responsible for all associated restocking operations.</i>		

1.10 Compensatory Planting

- 1.10.1 Compensatory planting to achieve the area quantity (hectares) of woodland removal, referenced above will be provided for the OHL and access track OC area and will be in accordance with the Scottish Government's Policy on Control of Woodland Removal of no net loss of woodland.
- 1.10.2 Compensatory planting will be detailed within **Volume 5, Appendix 8.1: Compensatory Planting Management Strategy**.
- 1.10.3 Areas of tree felling required to facilitate construction (where necessary) outside of the OC, temporary access tracks, holding out positions and EPZ (Equi-potential zones) and areas felled to a windfirm boundary will be replanted on site. Replanting of these sites will follow the conditions set out in the Scottish Forestry approved felling permission (where required) and will be the responsibility of the landowner.

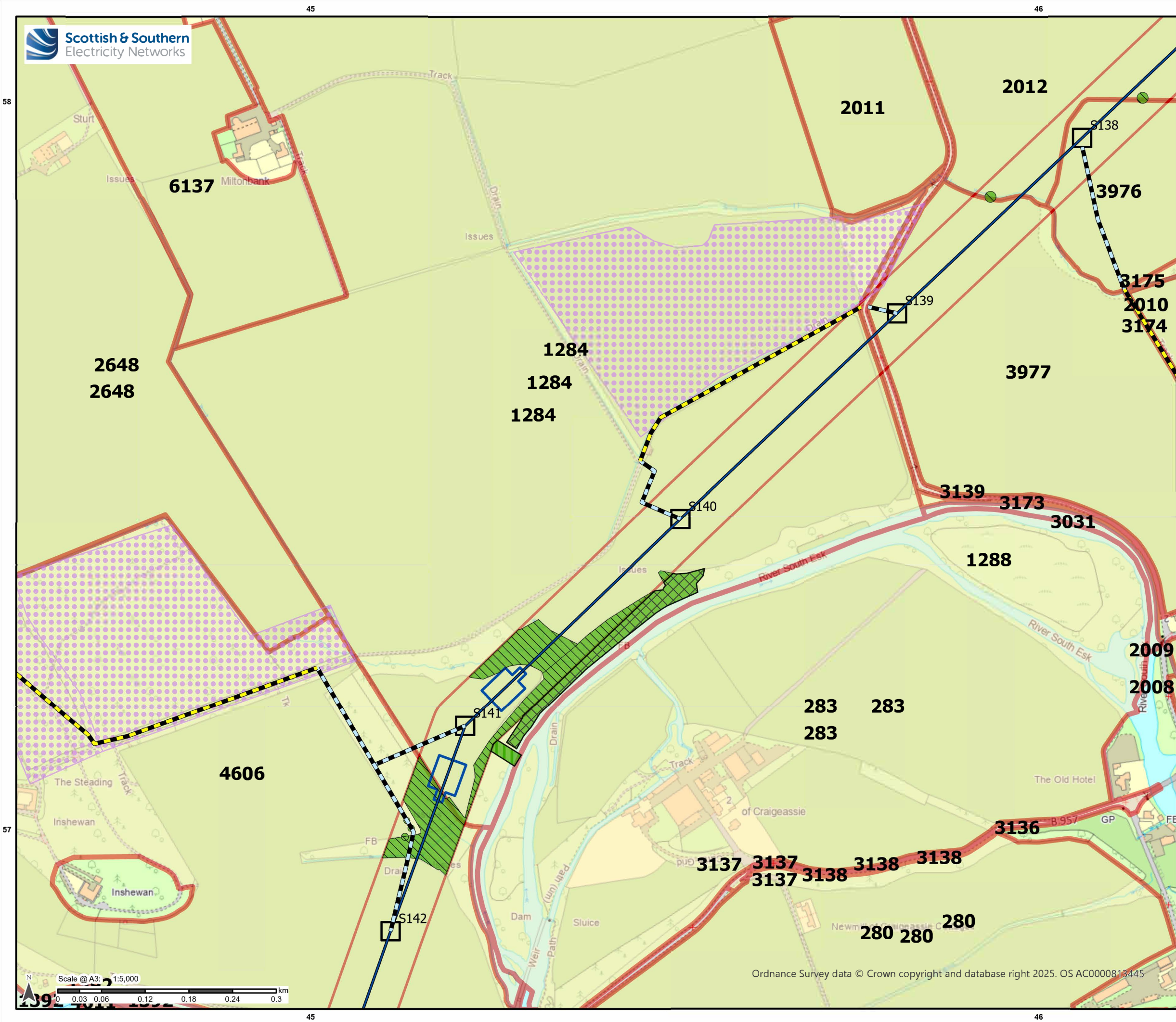


Figure 8.1.21
Landowner boundaries

- Landowner Boundaries
- Proposed Tower - 400kV (with tower number)
- Proposed OHL Alignment - 400kV
- 90m Operational Corridor

Ancient Woodland Inventory

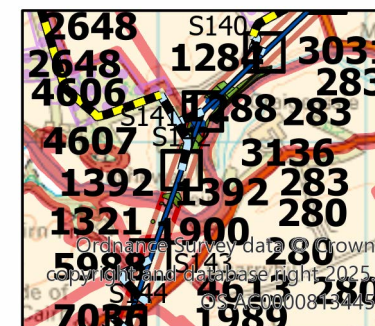
- Long-Established (of plantation origin)
- Access_New_Stone_Temp
- Access_Existing_Upgrade
- Proposed Conductor Pulling Area (EPZ)

Proposed Felling requirements

- OC
- MF
- Infrastructure

Woodland Type

- BL



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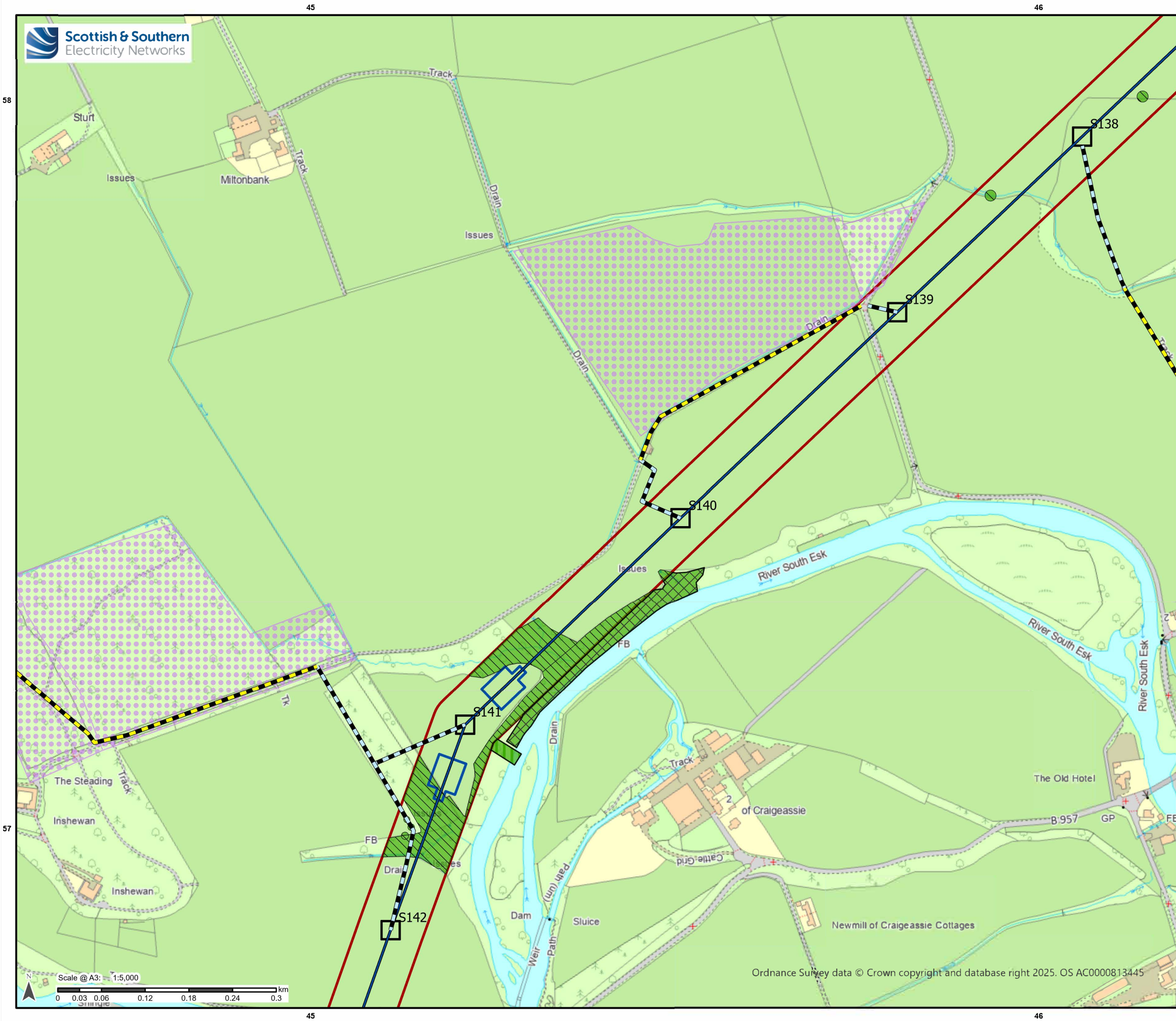


Figure 8.2.21 Proposed
felling requirements

- Proposed Tower - 400kV (with tower number)
- Proposed OHL Alignment - 400kV
- 90m Operational Corridor

Ancient Woodland Inventory

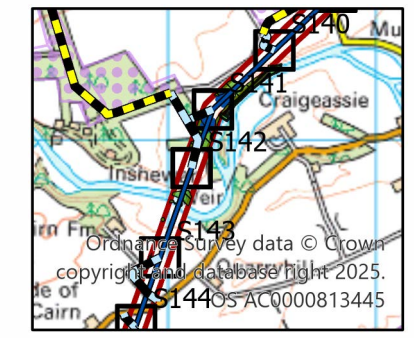
- Long-Established (of plantation origin)
- Access_New_Stone_Temp
- Access_Existing_Upgrade
- Proposed Conductor Pulling Area (EPZ)

Proposed Felling requirements

- OC
- MF
- Infrastructure

Woodland Type

- BL



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