

# **Annex J - Forestry**

# **November 2022**





North Argyll 275 kV Upgrade:
Crarae Substation
Environmental Appraisal
Compensatory Planting Management
Strategy

November 2022





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#### 1 Introduction

This Technical Appendix (TA) presents information relevant to the proposed Crarae Substation and associated connection to the existing Inveraray to Crossaig 275kV overhead line (OHL). It should be read in conjunction with the **EA Report,** specifically **Chapter 5 Forestry** and **Chapter 2 Project Description,** for full details of the Project.

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.

The Applicant proposes to construct a new 275 kV electricity substation (hereby referred to as 'the Proposed Development'), with associated overhead line works (hereby referred to as 'the Associated Development') in the vicinity of the existing Crarae substation. The two developments are hereby collectively referred to as 'the Project'. The new substation will connect into the recently completed overhead line between Inveraray and Crossaig and the Project will support the export of renewable energy generated within the Argyll area. The substation platform would cover an area of 1.43ha within a wider Project boundary of 18.75ha.

As detailed in **Chapter 5 Forestry**, the Project impacts a total area of 8.03 ha of woodland. There is no potential to retain native trees as the site is predominantly composed of Sitka spruce of varying age class and growth rates. Large areas of 'checked' Sitka were identified through the proposed development boundary, resulting from deep peat.

In-line with the Applicant's commitment to achieve no net loss of woodland for new Development Projects, the total area of woodland removal being 8.03 ha for the Project will be replanted through the application of this Woodland Planting Management Strategy.

#### 2 Purpose of the Strategy

This report explains the management strategy that will be undertaken by the Applicant prior to and during the Project construction phase, to implement the replanting of the total area of woodland removed.

#### 3 Woodland Planting Management Constraint

The Electricity Safety, Quality and Continuity Regulations 2002 (ESQCR, 2002)¹ specify safety standards to protect the general public and consumers from danger of overhead electricity powerlines. These standards outline minimum safety clearances and the Distribution Network Operator's (DNO's) duty to maintain these safety clearances.

The regulations also contain requirements on quality and continuity of electricity supply to ensure an efficient and economic service to customers and consumers.

Further legislation arrived in 2006 with the ESQCR, 2006; Amendment<sup>2</sup>, which extended the above duties of the DNO to make their overhead powerlines resilient to the effect of major storms. This includes reducing the risk of falling trees and branch-wood of hitting the electricity network.

The result of this legislation is that the DNOs in addition to maintaining the vegetation to minimum safety clearances, now must seek to achieve further clearances for trees which may be affected by storm weather conditions.

<sup>&</sup>lt;sup>1</sup> Electricity Safety, Quality and Continuity Regulations 2002 (ESQCR, 2002) URL: www.legislation.gov.uk/uksi/2002/2665/contents/made

<sup>&</sup>lt;sup>2</sup> Electricity Safety, Quality and Continuity (Amendment) Regulations 2006 (ESQCR, 2006) URL: www.legislation.gov.uk/uksi/2006/1521/made



Due to the requirements of the ESQCR it is generally not feasible to replant woodland within the operational areas of the Development. Therefore, in order to replant the woodland removal area of the Development, 'off-site' woodland planting must be achieved

#### 4 Compensatory Planting Scheme

The Applicant will implement the required woodland planting through the management of a Compensatory Planting Scheme. This management process is based on liaising and securing agreements with landowners that are located within the same Local Authority area as the Project for woodland planting of suitable bare land by the Applicant.

The Applicant is and will continue to undertake liaison with,

- Landowners who own the land where the proposed Project is to be located.
- 'Not for Profit' Organisations eg. Community Trusts, who own or have rights to areas of land and wish to plant woodland.
- Landowners within the Local Authority area of the proposed Project, who wish to plant woodland.

Through liaison with these landowners, areas of bare land suitable for woodland planting will be identified and whereby they would enter into a Compensatory Planting Scheme agreement with the Applicant. The total area of bare land secured for woodland would meet the total area of woodland removal of the Project.

On agreement with the landowner a formal woodland planting scheme design will be produced and submitted to Scottish Forestry<sup>4</sup> for consultation and approval.

Following completion of the approval process, the Applicant will undertake the woodland planting as per the scheme design and will maintain the newly planted area for the required period in-line with forestry industry best practice to ensure successful woodland establishment is achieved.

#### 5 Reporting

After planting scheme approval is received from Scottish Forestry, the Applicant will formally report to the Planning Authority that the required woodland planting area has been achieved to meet the total woodland removal area of the Project and has secured no net loss of woodland.

 $<sup>^{3}</sup>$  'off-site' meaning alternative bare land areas suitable for woodland planting out-with the Development's operational area.

<sup>&</sup>lt;sup>4</sup> Scottish Forestry - the Scottish Government agency responsible for forestry policy, support and regulations. URL: www.forestry.gov.scot



# North Argyll 275 kV Upgrade: Crarae Substation Environmental Appraisal Woodland Report

# November 2022



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#### 1. Introduction

This Woodland Report has been prepared to identify potential impacts on the woodland and wider landscape as a result of the proposed Crarae Substation and accompanying infrastructure located within the Red Line Boundary (RLB), (hereby referred to as the 'Proposed Development') and the associated Inveraray to Crossaig overhead line (OHL) tie-in (hereby referred to as 'the Associated Development'). The RLB site is located directly east of Feorlin Reservoir at national grid reference point 'NR960970', with the majority on Forestry and Land Scotland (FLS) managed ground, within a commercial conifer plantation under forestry management.

The Environmental Appraisal (EA – to which this report forms part of **Annex J**) has been carried out to determine the potential impacts on the woodland and natural resource as a result of the Proposed and Associated Developments (collectively referred to as 'the Project'). The EA sets out mitigation measures and offsetting for any loss of woodland and ecologically important habitats.

The objectives of this report are to:

- Describe the woodland baseline conditions on-site and in the immediate surrounding areas;
- Identify the potential windthrow risk in connection with the Proposed and Associated Developments and their components, including tree felling within the substation site, adjacent to the access tracks, and for the OHL alignment;
- Identify the short and long-term potential impacts on the commercial woodland;
- · Describe any mitigation measures proposed to address likely impacts relating to windthrow risk; and
- Identify the required area quantity for compensatory planting.

This report is supported by:

- Figure 1: Crarae Forestry Project Felling OS Map
- Figure 2: Crarae Forestry Project Felling Aerial
- Figure 3: Crarae Plates Reference Map

#### 2. Site Location

The site location plan, including the proposed Crarae Substation site, the wider RLB (which encompasses additional land to facilitate the build of ancillary works) and the OHL alignment corridor is shown in **Figures 1** and **2**. In terms of the Proposed Development, the substation site (platform area) covers a total land area of 1.43 ha, the RLB 18.75 ha including the access road, and the Temporary Works Area 0.67 ha. The Inveraray to Crossaig Reinforcement OHL currently runs along the northern boundary of the proposed red line boundary and will be aligned to connect to the proposed new substation. The Associated Development (the OHL tie-in 85m operational corridor OC) covers 3.94 ha.

The existing commercial forestry access track runs through the RLB Site, starting at the existing bellmouth at the A83 public road (national grid reference point 'NR962945'). The track runs north from the A83 before turning north west towards the Proposed Development. The stretch of existing track which is proposed to service the new substation covers a total length of approximately 4.7 km. Furthermore, the Proposed Development will involve the construction of a new 350 m long permanent access track (with significant upgrading of a further 505 m), which will service the substation, whereas the Associated Development will require the construction of a new 352 m temporary access track.

The RLB Site, including the entire extent of the substation site, is located within a large commercial conifer plantation (largely Sitka spruce *Picea sitchensis* with some presence of Lodgepole pine *Pinus contorta* in areas). The age classes and growth rates vary throughout (8-12; 13-16; and 17-20 years old) with areas of both harvestable Sitka spruce and areas of poorer growth that would be mulched. There may also be potential for some of this crop to be utilised as biomass pulp. Immediately north of the site runs Abhainn Bheag an Thunns, and Feorlin Reservoir lies to the north west.

#### 3. The Project

The Proposed Development will be subject to an application under the Town and Country Planning (Scotland) Act 1997 (as amended), whilst the Associated Development will be subject of an application under section 37 of the Electricity Act 1989.

#### 3.1 Proposed Development

The Proposed Development layout is shown in **Figures 1** and **2** and comprises the following:

- RLB including the access road in the region of 18.75ha;
- A substation platform in the region of 1.43 ha is to be delivered across the substation site accommodate Gas Insulated Switchgear (GIS);
- Upgrading of the existing forestry tracks (4.7 km), which will facilitate access to the site, including clearing vegetation 10 m either side of the centre line of the track, as well as to 6 m height;
- Construction of a new permanent access track, approximately 350 m long (with significant upgrading of a further 505 m) connecting the existing forestry track to the substation site;
- Construction of a SUDs system including an outfall pipeline with a 40m corridor and associated forestry removal of approximately 1.63 ha; and
- A Temporary Works Area located south of the proposed substation, 0.67 ha in size. This will be used during the construction of the Proposed Development.

#### 3.2 Associated Development

The Associated Development layout is shown in Figures 1 and 2 and comprises the following:

- Construction of two new terminal lattice steel towers to support the connection into the new 275 kV Crarae substation including new downlead terminations;
- Construction of one angle lattice steel tower to replace the existing terminal tower at the existing 132 kV Crarae substation including realignment of the OHL;
- Five temporary towers or masts and associated temporary OHL diversion to facilitate the build of the new towers to avoid long network outages;
- Approximately 352 m of temporary access tracks providing access to the existing Inveraray to Crossaig overhead line (OHL);
- Dismantling of one lattice steel tower located between the two new terminal towers at the new 275 kV Crarae substation.

#### 4. Woodland Characteristics

#### 4.1 Substation Site / Project Design Layout Area

The RLB site (comprising the Proposed Development) covers a total of 18.75 ha (of which 0.67 ha comprises the Temporary Works Area) of mainly Sitka spruce plantations of varying age classes with integrated open ground. Growth rates vary due to pockets of deep peat.

The area proposed for the substation platform consists mainly of Sitka sprucepre-thicket approximately 8-years-old, as well as and 15-year-old thicket. Again, there are areas of deep peat and saturated ground throughout, and the ground conditions have impacted tree growth rates and created 'checked' Sitka spruce (areas of poor quality/stunted growth timber). The crop varies significantly throughout the site, with both harvestable material, areas to mulch, and fell-to-waste areas as the ground becomes extremely soft.

The Inveraray to Crossaig Reinforcement OHL currently connects to the existing Crarae substation approximately 800 m north east of the Proposed Development and will, as part of the Associated Development, be aligned to tie-in to the new substation. An 85 m operational corridor (OC) will be established for construction purposes; however, it runs entirely across open ground and therefore no tree felling will be required as a result of the Associated Development.

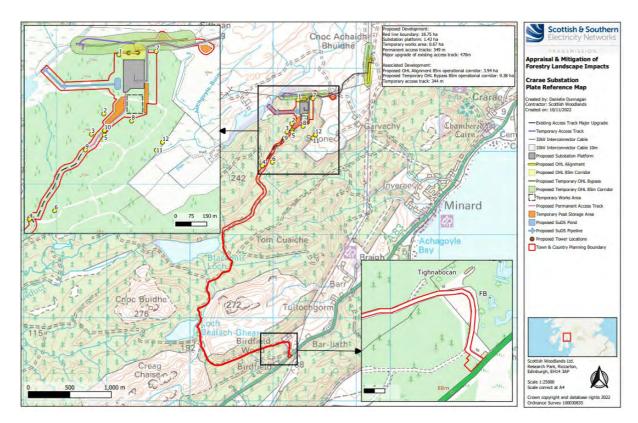


Figure 3 illustrates the plate locations.

**Plates 1** to **8** below illustrate the different woodland characteristics of the Project.



**Plate 1** – View to the south from the northern edge of the RLB, 10-15-year-old thicket Sitka spruce.



**Plate 2** – View to the east from the western edge of the RLB near the Reservoir, thicket Sitka spruce **o** approximately 15 years.



**Plate 3** – View to the east from the western edge of the RLB near the Reservoir, change in crop from 8-10 to approximately 17-20 years.



**Plate 4** – View to the north from the existing access track.



**Plate 5** – View to the north west showing open ground with naturally regenerating Sitka spruce.



**Plate 6** – View to the north from the southern edge of the RLB showing existing infrastructure, highlighting the potential to utilise spruce for biomass.



**Plate 7** – View to the west from the northern tip of the RLB showing pre-thicket Sitka spruce ofapproximately 7 years old.



Plate 8 – The view to the east shows a large area of deep peat.

#### 4.2 Existing Access Track Upgrade and Widening

Figures 1 and 2 show the approximately 4.7 km long access track upgrade route design from the existing bellmouth off the main road, to the start point of the access track new build section into the substation site. The majority of this track has been recently upgraded as part of the Inveraray to Crossaig Reinforcement; however, any regeneration will be cleared (felled to waste or target pruning) up to 10 m on either side of the trackcentre line, as well as to 6 m height, to facilitate the construction phase of the Project. Options have been explored to retain the windfirm green edge on the eastern side of this track, rather than felling to the RLB. The Sitka spruce crop in this area is slightly older and more prone to windthrow than that further north, and the decision to retain the existing windfirm edge would mitigate this risk. Furthermore, this track can also be utilised in such a way that suitable areas of Sitka spruce that are to be felled for the Project can be harvested and extracted for biomass.

The Associated Development too will involve upgrading a stretch of existing access track; however, this track runs across open ground and little to no vegetation clearance will therefore be required here.

#### 4.3 Access Track Construction (New Build Section)

Clearance of a 20 m-wide corridor is required for a new 350 m long permanent access track to service the Proposed Development; however, this track is entirely encompassed by the RLB which will be clear-felled (see **Figures 1** and **2**). No forestry risks have therefore been identified as a result of this track-build. The 352 m long temporary access track which will service the Associated Development runs north east of the RLB, across open ground, and no tree felling/vegetation clearance will therefore be required to facilitate this track-build.

Plates 9 and 10 below show the current woodland characteristics of the permanent section of the new track.



Plate 9 – View to the north from the start of the new permanent access track to service the substation.



Plate 10 - View to the north, Sitka in check along the edge of the new permanent access track.

#### 5. Windthrow Risk Impact Assessment

Most of the site lies on peaty gley soil, with wet pockets of peat and a high water table present throughout the site, affecting the growth rates of the crop and causing large areas of 'check'. There is not much harvestable material on site, although the southern part of the RLB site appears drier and has slightly better crop growth with some potential to harvest logs for biomass. While the windthrow risk is relatively low throughout the site due to the growthof the crop being somewhat limited by poor growing conditions, the wet ground conditions could create floatation problems for forest machinery.

The woodland site to be removed for the Project has a 'Detailed Aspect Method of Scoring' (DAMS)¹ windthrow hazard score of 17 (highly exposed). The local climate is classified as cool and wet. Exposure reduces the variety of tree species suitable to grow on the site, with conifer plantation being the most viable option.

#### 5.1 Substation Site / Project Design Layout Area

The windthrow risk impact of the main area of woodland removal for the Proposed Development is generally low, due to the woodland characteristics of young conifer thicket with areas of open ground. In terms of the Associated Development, there is no windthrow risk impact due to the 85 m alignment/tie-in OC running across open ground (see **Figures 1** and **2**).

### 5.2 Existing Access Track Upgrade and Widening

The windthrow risk as a result of vegetation clearance to facilitate the existing track upgrade to service the Associated Development is none, as it runs across open ground. The removal of trees (Sitka spruce regeneration) required to facilitate the upgrade of the existing track to service the Proposed Development is also low risk. It is recommended that the RLB should be aligned with the eastern side of this access track corridor and retain the current windfirm green edge on this side, this will mitigate the windthrow risk to this crop from prevailing westerly winds.

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<sup>&</sup>lt;sup>1</sup> Detailed Aspect method of Scoring (DAMS) Ref. Forest Research, "Forest Gales software programme" and Forestry Commission Leaflet 85 "Windthrow Hazard Classification"

## 5.3 Access Track Construction (New Build Section)

As previously mentioned, the new access track that will service the Proposed Development is entirely encompassed by the RLB, which will be clear-felled, meaning that no windthrow risk impact will result from this track-build. In terms of the Associated Development, its new track will run across open ground, meaning no vegetation clearance is required and the windthrow risk is negligible.

#### 6. Woodland Management and Landscape Impact

The required woodland removal (by clear-felling) areas of the Project, within the RLB and OHL tie-in OC would be permanently lost for future forestry restructuring/planting within the woodland property area, as it would become under the ownership and management of the Applicant. The long term impact of the Project on future forestry felling operations would be minimal, as a safe tree clearance from the sub-station and OHL infrastructure would be established. Also, the key forestry management access routes will not be restricted as a result of the Project.

The existing access track upgrade works and the construction of the new permanent access tracks will result in some woodland removal, however, the long-term impact would be beneficial, creating an upgraded and new forest road infrastructure to service the wider woodland property for the future.

The wider landscape impact of the woodland removal for the Project has been considered. The site is positioned in a shielded location of minimal prominence in the landscape and it has been identified that the required woodland removal will have minimal effect on the visible landscape. **Plates 11** and **12** below show the view of the site from the neighbouring farmland located to the south of the site.



**Plate 11** – View of site to the north from the neighbouring farmland.



**Plate 12** – View of site to the north from the neighbouring farmland.

## 7. Mitigation Opportunities

The removal of woodland is required to facilitate the Project (construction, installation, and operation) and any ancillary works. Opportunities have been assessed for woodland replanting within the RLB Site, however due to the presence of deep peat it has been decided not to replant and the areas of the site without infrastructure will be left as bog/mire habitat (see Figure Annex E, E.4). The OHL tie-in OC will be left open to ensure safe operation of the OHL.

The compensatory planting areas referenced in Section 9 of this report would fully mitigate the potential impacts of woodland removal by achieving no net loss of woodland area.

## 8. Woodland Removal Impact

**Table 1: Woodland Removal for infrastructure** 

|                           | Item   | Woodland Type  | Area (ha) |
|---------------------------|--|--|-----------|
|                           | RLB (including the substation platform, Temporary Works Area, new permanent access track, existing access track, and 33 kV interconnector cable corridor | 8-10 years Sitka spruce Pre thicket  | 4.93      |
| Proposed                  |  | 12-15 years Sitka spruce thicket (substation site and existing access track)   | 1.07      |
| Development               |  | Mixed broadleaves (existing access track)  | 0.1       |
|                           |  | 15-17 years Sitka spruce thicket (varying up to 20 years)  | 1.93      |
|                           |  | Open ground with sporadic Sitka spruce regeneration  | 2.84      |
| Associated<br>Development | OHL 85m alignment corridor   | 8-10 years thicket Sitka spruce  | 0.15      |
|                           |  | OHL alignment corridor open ground with Stika spruce regeneration  | 3.94      |
|                           |  | Temporary Bypass open ground with Stika spruce regeneration (not including overlap of OHL alignment corridor, 33kV interconnector cable 10m corridor or temporary access track 20m corridor) | 5.83      |
|                           | Temporary access<br>track 20m corridor   | Open ground with Sitka spruce regeneration (within temporary bypass OHL alignment corridor)  | 0.71      |

**Table 2: Compensatory Planting** 

|                           | Compensating  | Planting Proposal  | Area (ha) |
|---------------------------|---|--|-----------|
| Proposed<br>Development   | RLB (including the substation platform, Temporary Works Area, new permanent access track, existing access track, and 33 kV interconnector cable corridor) | Mixed broadleaves; mixed non-<br>commercial conifers; commercial<br>conifer plantation | 8.03      |
| Associated<br>Development | OHL alignment corridor  | Mixed broadleaves; mixed non-<br>commercial conifers; commercial<br>conifer plantation | 0.15      |
|                           | Temporary access track  | Mixed broadleaves; mixed non-<br>commercial conifers; commercial<br>conifer plantation | 0.0       |

## 9. Compensatory Planting

Off-site compensatory planting is to be undertaken to replace the total area of woodland removal for the Project. This will be carried out in accordance with the Scottish Government's Control of Woodland Removal Policy<sup>2</sup> to achieve no net loss of woodland. The off-site planting will be agreed with a third party at a suitable planting site. The compensatory planting will be undertaken in-line with the construction work programme and following completion of the Project. For more information see the **Compensatory Planting Management Strategy** which also forms part of **Annex J**.

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<sup>&</sup>lt;sup>2</sup> Scottish Government Publication, provides policy direction for decisions on woodland removal in Scotland; URL: <u>The Scottish Government's Policy on Control of Woodland Removal (forestry.gov.scot)</u>

Figure 1: Crarae Substation Proposed & Associated Development Felling OS Map

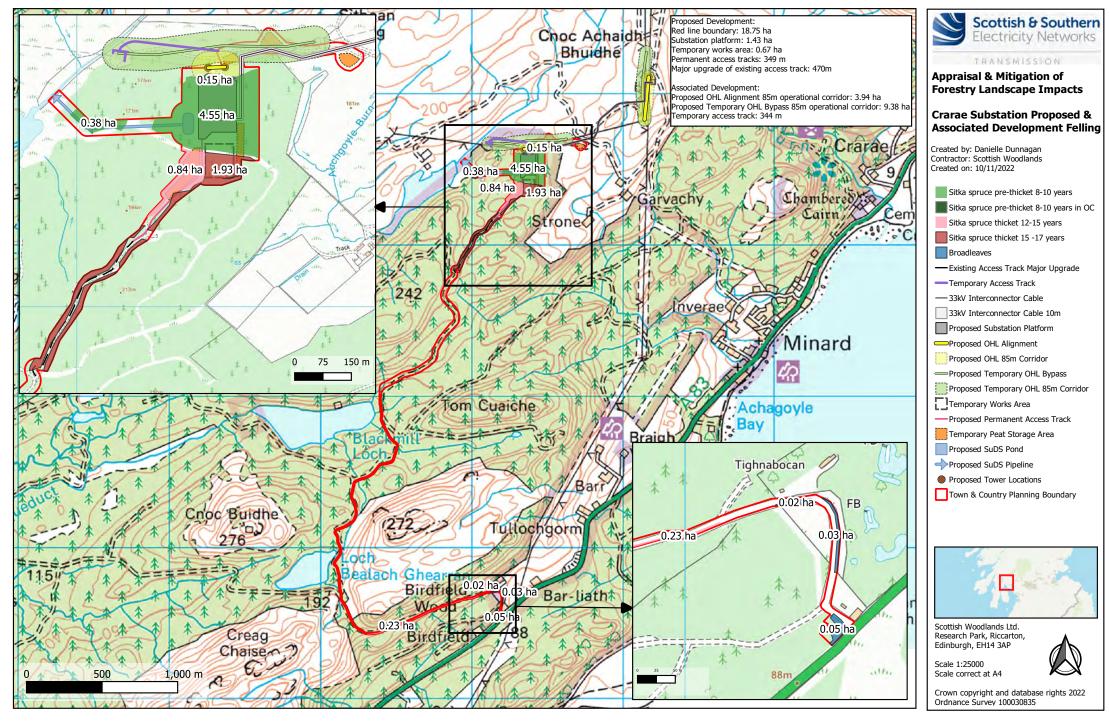


Figure 2: Crarae Substation Proposed & Associated Development Felling Aerial

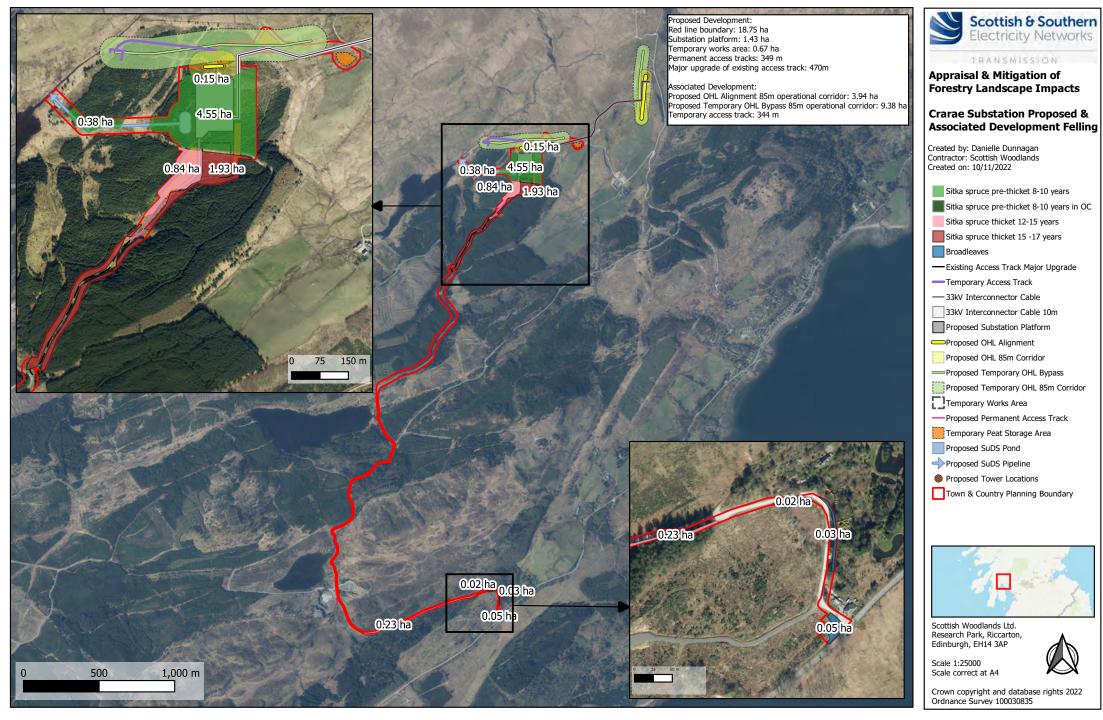


Figure 3: Crarae Plate Reference Map

