

Annex I - Forestry

November 2022



An Suidhe Substation 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 An Suidhe 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 south west of Inveraray at national grid reference point 'NN047055' on Forestry and Land Scotland (FLS)-managed ground, within a wider area of commercial conifer plantation under forestry management.

The Environmental Appraisal (EA – to which this report forms part of **Annex I**) 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. This will involve proposals for long-term retention of certain areas and compensatory planting.

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 to 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: An Suidhe Forestry Project Felling OS Map
- Figure 2: An Suidhe Forestry Project Felling Aerial
- **Figure 3:** An Suidhe Plates
- Figure 4: An Suidhe Compensatory Planting

2. Site Location

The site location plan, including the proposed An Suidhe 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 1.3 ha and the RLB 7.43 ha (including the access track) and a Temporary Works Area of 0.7 ha). The existing Inveraray to Crossaig OHL currently runs south of the site and will be aligned to connect to the proposed new substation. The Associated Development (the OHL tie-in operational corridor, OC) covers 11.2 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 'NN044041'). The track runs north east from the A83 before turning north at the existing substation towards the Proposed Development. The stretch of existing track which is proposed to service the new substation covers a total length of approximately 1.7 km. Furthermore, the Proposed Development will involve the construction of a new 174 m long permanent access track which will service the substation (and construction of another section of track to service the SuDS pond), whereas the Associated Development will require the construction of a new Y-shaped, 280 m permanent access track, and a further short section of access track to the north (for location and context, see **Figures 1 and 2**).

The RLB site, including the entire extent of the substation site, is located within a large commercial conifer plantation, the majority of which has been harvested and restocked with conifers (primarily Sitka spruce, *Picea sitchensis*). The surrounding landscape comprises semimature conifer plantations, pre-thicket and recently felled, mounded, and restocked areas. Two watercourses run adjacent to the site: Douglas Water to the north east, and Allt Tom a' Challtuinne 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:

- A substation platform approximately 1.3 ha at a height of 174 AOD;
- Gas insulated Switchgear (GIS) building, maximum height 22 m and single storey control building annex;
- 275/33 kV super grid transformer (SGT), rated at 120 MVA located in a ventilated building of maximum height 16 m;
- Two gantries and electrical equipment/downleads to connect the OHL and the proposed substation;
- A Temporary Works Area (TWA) adjacent to the Proposed Development site, of approximately 0.69 ha;
- Diesel generator housed in a building;
- Borehole for water;
- Turning and parking areas;
- Use of existing forestry access track with some upgrades, approximately 1.7 km in length;
- Construction of 280 m new access tracks;
- A 2.4 m high security fence of palisade construction around the substation platform perimeter;
- Deer fence around new areas of woodland planting;
- Landscape planting to screen the Proposed Development and provide biodiversity enhancement; and
- Foul and surface water drainage.

3.2 Associated Development

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

• Construction of six new steel lattice towers to support the realigned overhead line which will connect into the new substation;

- Two downleads from the realigned overhead line into the substation;
- Tree and vegetation clearance where required;
- Construction of three new permanent access tracks 295 m in total;
- Temporary overhead line diversions during construction; and
- Dismantling of the existing overhead line section connecting the existing 132 kV substation which comprises seven redundant towers and associated cabling.

4. Woodland Characteristics

4.1 Substation Site /Project Design Layout Area

The RLB site (comprising the Proposed Development) covers a total of 7.43 ha (of which 0.7 ha comprises the Temporary Works Area) of mainly harvested and restocked commercial conifer plantation with integrated open ground. Age classes vary throughout, with 2-3-year-old Sitka spruce and 5-8-year-old Sitka spruce and pine mix mound restock within, and directly south of, the development site. Immediately south east of the OHL /tie-in OC, bordering the existing access track, is an area of pre-thicket of approximately 6-8 years. Within this area, the principal tree species is Sitka spruce of variable age class and growth rates. The wet boggy ground conditions in areas across the RLB site has impacted tree growth rates and created 'checked' Sitka spruce (areas of poor quality/stunted growth timber).

To the north east of the RLB, encompassing the north eastern part of the Associated Development tie-in OC, is a deer fenced plantation of 10-year-old Douglas fir *Pseudotsuga menziesii* and Scots pine *Pinus sylvestris*, with silver birch *Betula pendula*, willow *Salix sp.* and rowan *Sorbus aucuparia* regeneration present. This crop is of fairly poor quality due to wet ground conditions and exposure to browsing. On the drier, elevated sloped ground to the west and southwest of the RLB, encompassing the south eastern part of the Associated Development tie-in OC, lies a semi-mature (30-35-year-old), un-thinned Sitka spruce plantation of approximately 12.97 ha. This area is connected to and forms part of a larger Sitka spruce woodland block. Wet, peaty pockets are evident and as a result timber quality varies throughout. An estimate of harvestable tree volume was carried out during the site walkover survey, identifying a standing tree volume of around 450 m³ per hectare in the semi-mature Sitka spruce crop. A more in-depth mensuration measure will be conducted at a later stage.

The Inveraray to Crossaig Reinforcement OHL currently connects to the existing An Suidhe substation approximately 500 m south 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 will be cut through the 10-year old Douglas fir and Scots pine plantation and the 30-35-year-old Sitka spruce plantation as described above. The middle section of the corridor is partly encompassed by the RLB and runs through pre-thicket Sitka spruce and young Sitka and pine restock, part of which will be clear-felled for the Proposed Development and part of which will be clear-felled for the Associated Development.

The RLB encompasses part of the riparian woodland corridor established on the banks of Allt Tom a' Challtuinne, the watercourse running north west of the Proposed Development. Prior to construction works a further assessment of these trees will be undertaken to identify if greater retention can be achieved through selective felling. The assessment will be based on retaining broadleaved trees that are not impacting the safe working and operations of the Project.

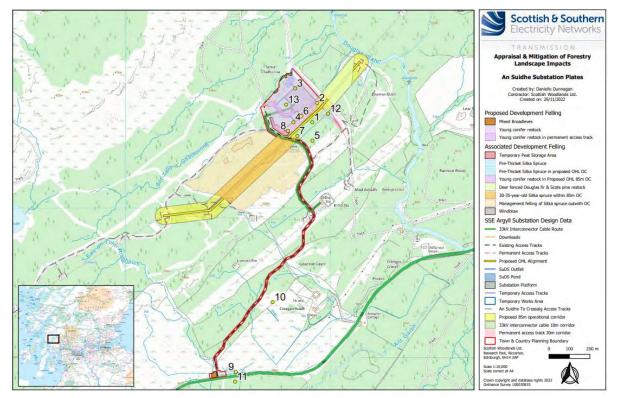


Figure 3 illustrates the location of the plates.

Plates 1 to 6 below illustrate the different woodland characteristics of the Project.



Plate 1 – View to the south east of Sitka spruce pre-thicket.



Plate 2 – View to the north east showing Douglas fir and Scots pine restock in deer enclosure.



Plate 3 – View to the north showing the riparian corridor.



Plate 4 – View to the south west shows semi mature Sitka spruce varying in growth rates.



Plate 5 – View to the north west shows semi mature Sitka spruce varying in growth rates.



Plate 6 – View to the north within proposed substation layout shows restock of varying ages classes (2-3-year-old to 5-6-year-old).

4.2 Existing Access Track Upgrade and Widening

Figures 1 and **2** show the approximate 1.7 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. This track has been recently upgraded as part of the Inveraray to Crossaig OHL Reinforcement Project, however any regeneration (willow, birch) will be cleared (felled-to-waste or target pruned) to 10 m either side of the track centre line, as well as to 6 m height, to facilitate the construction phase of the Project. Approximately 30 m from the bellmouth sits a large, mature willow tree that will be retained but target pruned. There is also an area of approximately 0.06 ha of semi-mature to mature broadleaves present in the widened bellmouth (within the RLB). In a worst-case scenario this would all be felled; however, this area will be assessed further, and it is anticipated that some trees can be retained.



Plates 7 to 11 below show the woodland characteristics of the existing access track.

Plate 7 – View to the north west shows the block of semi-mature Sitka spruce by the existing access track at chainage 1.4 km from the bellmouth.



Plate 8 – View to the south west shows the block of semi-mature Sitka spruce by the existing accesstrack at chainage 1.5 km from the bellmouth.



Plate 9 – Shows view of mature willow circa 30 m from the bellmouth by the existing access track.



Plate 10 – View of broadleaves along the existing access track, looking south towards the A83 road.



Plate 11 – Existing bellmouth off the A83 road (also showing some of the broadleaves present here).

4.3 Access Track Construction (New Build Section)

Several sections of permanent new access tracks are proposed: 280 m of Y-shaped design to the south east of the substation site and a 15 m section to the north (to service the Associated Development), and 280 m comprising a track to the west, connecting into the substation platform and a track to the SuDS pond (to service the Proposed Development). The Y-shaped track transects through the Sitka spruce pre-thicket, on which tree cutting will have minimal windthrow effect, while the substation access track transects through the 2-3year-old Sitka spruce restock encompassed by the RLB. As highlighted in **Figures 1** and **2**, a width of 20 m will be cleared to facilitate the construction of the new tracks (10 m either side of the track centre line). This applies to new tracks across the Project (i.e., both the Proposed and the Associated Developments). Approximately 0.33 ha of young spruce restock will be cleared for the Proposed Development track, and 0.12 ha of pre-thicket Sitka spruce for the Associated Development track.

Further, a 465 m long section of temporary access track will be constructed to service the Associated Development. This track is fully encompassed by the OHL tie-in OC, and no further tree felling/vegetation clearance is therefore required.

Plates 12 and **13** below show the current woodland characteristics of these two sections of new permanent access track.



Plate 12 – View to the south east shows the sections of pre-thicket Sitka spruce to be removed for the proposed new Y-shaped permanent access track which will service the Associated Development.



Plate 13 – View to the east shows the ground conditions where the proposed new substation permanent access track (174 m) to service the Proposed Development will run through 2-3 year old Sitka spruce restock.

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'/failed growth. The ground conditions improve on the south western RLB boundary where a semi-mature Sitka spruce crop lies on sloped ground with more effective drainage. However, areas of wet and open ground are evident, again causing 'check'. Wetground in combination with a semi-mature crop could result in shallow rooting, which further highlights the need to management fell the semi-mature Sitka spruce crop to mitigate windthrow.

The woodland site to be removed for the Project has a 'Detailed Aspect Method of Scoring' (DAMS)¹ windthrow hazard score of 14 (moderately to highly exposed). The local climate is classified as cool and wet. These factors suggest that a moderate range of tree species can be grown on-site.

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 plantation with areas of open ground. As the 2-3; 5-8; and 10-year-old spruce, fir and pine plantations are not yet susceptible to windthrow, no additional felling will be required to mitigate

¹ Detailed Aspect method of Scoring (DAMS) Ref. Forest Research, "Forest Gales software programme" and Forestry Commission Leaflet 85 "Windthrow Hazard Classification"

windthrow in these areas.

In regard to the Associated Development, the semi-mature conifer woodland to be removed for the 85 m tie-in OC to the west/south west of the Proposed Development is classified as moderately to highly exposed. Accordingly, its removal would create an increased windthrow risk of moderate to high of the retained conifer woodland block. As no windfirm edges could be established within this crop, a wider management felling coupe has been identified (see **Figures 1** and **2**) with the aim of achieving a windfirm boundary to mitigate the windthrow risk. It is recommended that this full compartment is clear-felled (i.e. an additional 9.41 ha to the 3.56 ha requiring clear-felling as part of the Associated Development).

5.2 Existing Access Track Upgrade and Widening

The felling-to-recycle of broadleaf and conifer regeneration and target pruning or felling of larger trees required for the existing track upgrade has no windthrow risk impact.

5.3 Access Track Construction (New Build Section)

As previously mentioned, the new section of temporary access track which will service the Associated Development is fully encompassed by the 85 m-wide OHL tie-in OC which will be clear-felled. No windthrow risk has therefore been identified as a result of the clearance works for the temporary access track.

In terms of the new permanent access tracks to service the Project, the removal of areas of the thicket-stage conifer plantation for the proposed Y-shaped track would result in a low windthrow risk impact on any surrounding retained trees. Similarly, no windthrow risk would result from the removal of young conifer restock for the substation access track.

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 fairly shielded location and it has been identified that the required woodland removal in association with the recommended management felling area will have an improved effect on the visible landscape. This will be achieved by the removal of the isolated semimature commercial conifer woodland block on the hillside with the management felling area being replanted by the landowner in the future.

Plates 14 and **15** below show the views of the site from the A83 road and dwellings just north of the site.

Woodland replanting within the RLB area will provide further landscape mitigation, as referenced in Section7 of this report.



Plate 14 – View of the site from the A83 road.



Plate 15 – View of the site from nearby dwellings.

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 in the form of a tree planting design plan and as not to affect the functioning of the Project (see **Annex E Figure E4: Landscape Mitigation Plan**). The OHL tie-in OC will be left open or designated as improved grassland/wildflower meadow/low-growing shrubland as appropriate to ensure safe operation of the OHL.

Also, the felling areas and 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.

The management felling area would be replanted by the Landowner, in-line with the Scottish Forestry felling licence regulations.

8. Woodland Removal Impact

8.1 Woodland Removal for Infrastructure				
	Item	Woodland Type	Area (ha)	
Proposed Development	RLB (including the substation platform, Temporary Works Area, new permanent and	Mixed broadleaves at north west of the substation platform and at the bellmouth	0.13	
	existing access track 20m corridor, bellmouth, and 33 kV inter-connector cable 30m corridor	2-3- and 5-6-year-old Sitka spruce and pine mix plantation	3.73	
Associated Development		Semi-mature Sitka spruce plantation	3.56	
		10-year-old conifer mix plantation	1.62	
	OHL alignment corridor	6-8-year-old Sitka spruce pre-thicket	0.61	
		2-3- and 5-6-year-old Sitka spruce and pine mix plantation	0.76	
	Permanent access track outwith Proposed OHL Alignment	6-8-year-old Sitka spruce pre-thicket	0.12	

8.2 Compensatory Planting					
	Compensating	Planting Proposal	Area (ha)		
Proposed Development	RLB (including the substation platform, Temporary Works Area, new permanent access track 20m corridor, existing access track, bellmouth, and 33 kV inter-connector cable 30m corridor	Mixed broadleaves; mixed non-commercial conifers; commercial conifer plantation	3.86		
Associated Development	OHL alignment corridor	Mixed broadleaves; mixed non-commercial conifers; commercial conifer plantation	6.55		
	Permanent access track outwith Associated OHL Alignment corridor	Mixed broadleaves; mixed non-commercial conifers; commercial conifer plantation	0.12		

8.3 Woodland Removal Impact of Infrastructure				
	Total Loss of Woodland Area	Total On-site Compensatory Planting Area	Total Off-site Compensatory Planting Area	Total Net Loss of Woodland Area
Proposed Development	3.86	1.81	2.05	0.00
Associated Development	6.67	0.00	6.67	0.00
Total Net Loss of Woodland Area			0.0 ha	

8.4 Woodland Removal for Management Felling			
	Item	Woodland Type	Area
Associated Development	Management Felling	Semi-mature Sitka spruce plantation	9.41 ha
	Replanting/Restocking On- Site	Commercial conifer plantation	9.41ha
	Total Net Loss of Woodland Area		
Note: Felling approval is via the Scottish Forestry Felling Licence application process or Long-Term Forest Plan application or amendment process.			

9. Compensatory Planting

A combination of on-site and 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 RemovalPolicy² to achieve no net loss of woodland. The on-site planting will fall within the RLB site on land to be acquired by the Applicant and the required 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 I**.

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

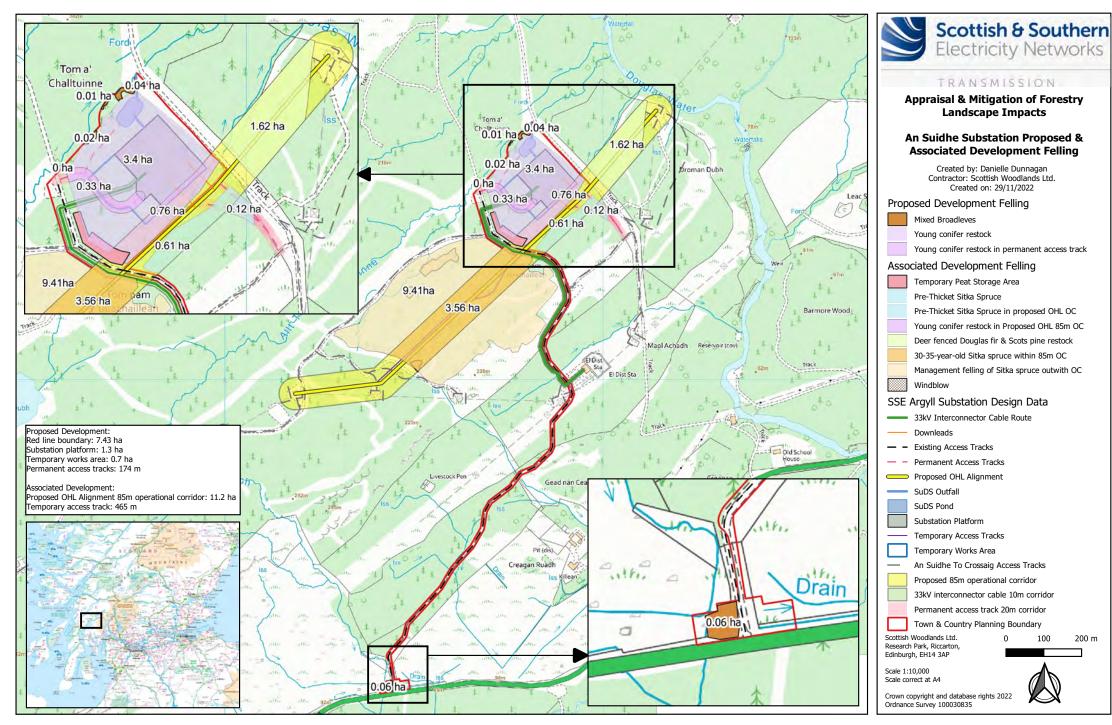
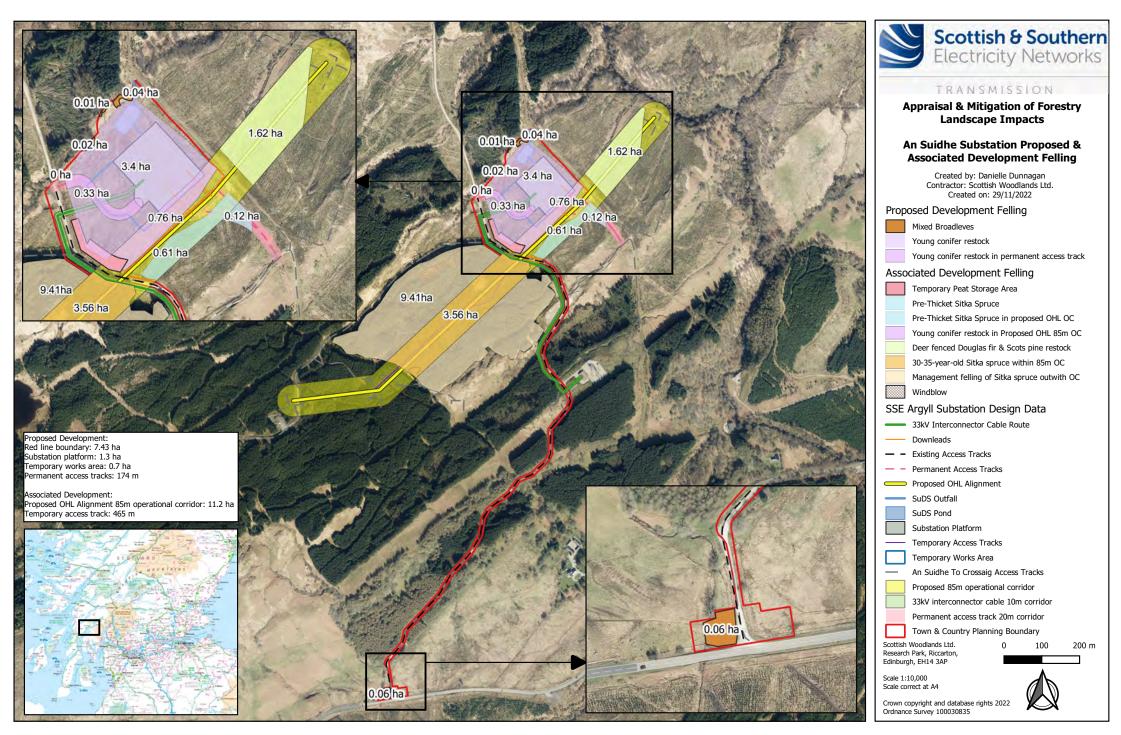


Figure 1

200 m



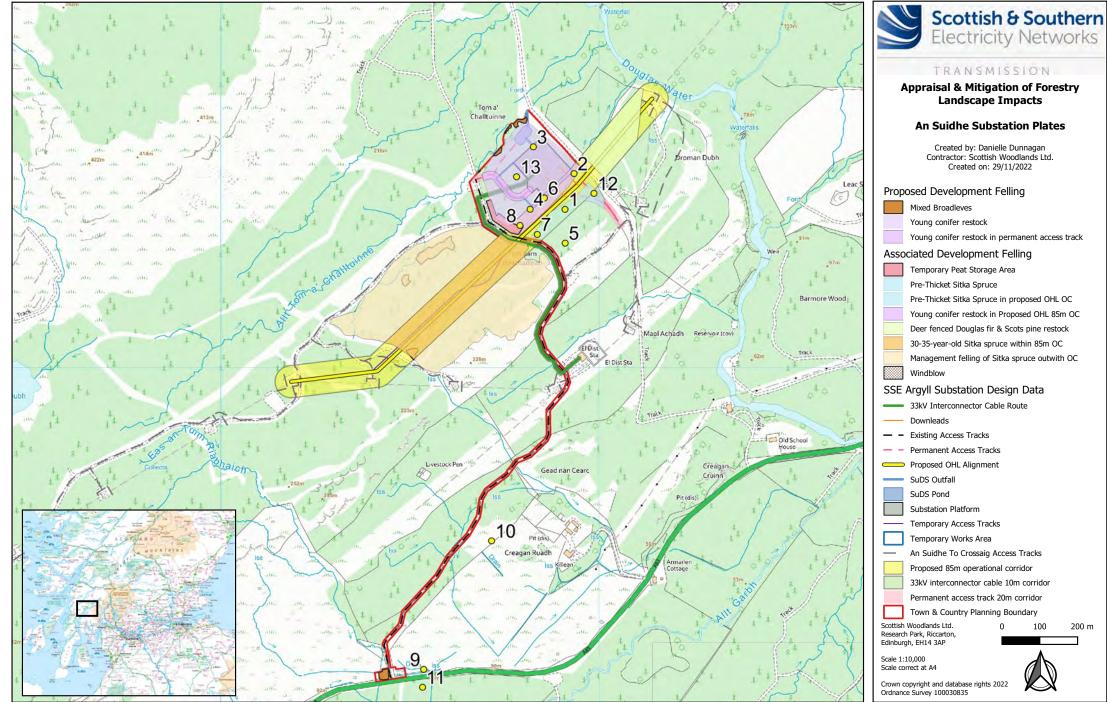
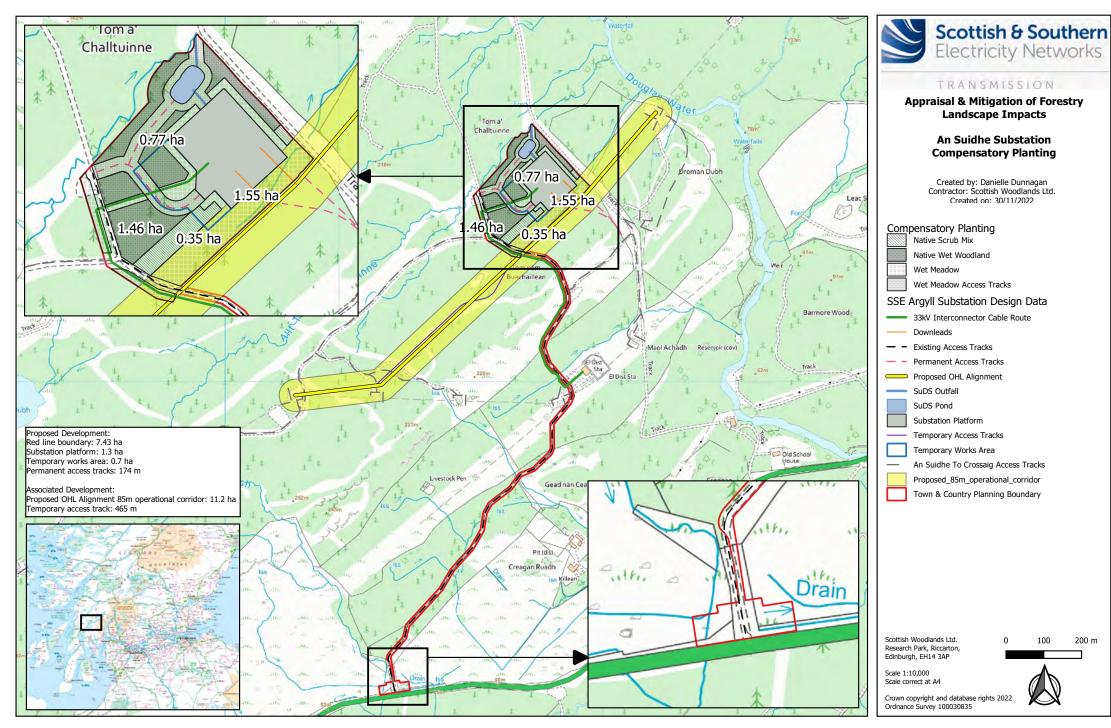




Figure 3





An Suidhe Proposed Substation

Development

Compensatory Planting Management

Strategy

November 2022





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1 Introduction

This Technical Appendix (TA) presents information relevant to the proposed An Suidhe 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 An Suidhe 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 which is capable of operation at 275 kV but at present is routed into the existing substation, so the overhead line requires to be realigned to connect into the new substation. The project will support the export of renewable energy generated within the Argyll area. The substation platform would cover an area of 1.3 ha within a wider Proposed Development boundary of 7.43 ha.

As detailed in **Chapter 5 Forestry**, the Project impacts a total area of 10.53 ha of woodland. Within this there is a small area of riparian woodland habitat that could potentially be retained for environmental benefits. The riparian corridor covers an area of approximately 0.77 ha, of which 0.07 ha is within the RLB area.

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 10.53 ha (with the potential to be reduced by 0.07 ha) for the Project will be replanted through the application of this Compensatory 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 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; Amendment², which extended the above

¹ Electricity Safety, Quality and Continuity Regulations 2002 (ESQCR, 2002) URL: WWW. legislation.gov.uk/uksi/2002/2665/contents/made

² Electricity Safety, Quality and Continuity (Amendment) Regulations 2006 (ESQCR, 2006) URL: WWW. legislation.gov.uk/uksi/2006/1521/made



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.

Due to the requirements of the ESQCR it is generally not feasible to replant woodland within the operational areas of the Project. Therefore, in order to replant the woodland removal area of the Project, 'off-site'³ woodland planting must be implemented.

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 Forestry⁴ 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.

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

⁴ Scottish Forestry - the Scottish Government agency responsible for forestry policy, support and regulations. URL: www.forestry.gov.scot