

Annex J - Forestry

December 2022





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

December 2022





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1 Introduction

This Technical Appendix (TA) presents information relevant to the proposed Craig Murrail 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'). 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 2.93 ha within a wider Project boundary of 26.8 ha.

As detailed in **Chapter 5 Forestry**, the Project impacts a total area of 13.22 ha of woodland. There is an area of 0.48 ha of native broadleaves located adjacent to the existing access track which could be retained depending on the road clearance specification.

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 13.22 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; Amendment², 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.

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'³ woodland planting must be achieved.

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

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



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.

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



Woodland Report Craig Murrail Substation

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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 Craig Murrail 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) Temporary Diversion (hereby referred to as 'the Associated Development'). The Red Line Boundary (RLB) site is located in Achnabreac Forest 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 in 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 and adjacent to the access tracks, and for the Temporary Diversion;
- 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: Craig Murrail Forestry Project and Access Track Felling Map Figure 2: Craig Murrail Forestry Project and Access Track Felling Aerial Figure 3: Craig Murrail Plate Reference Aerial



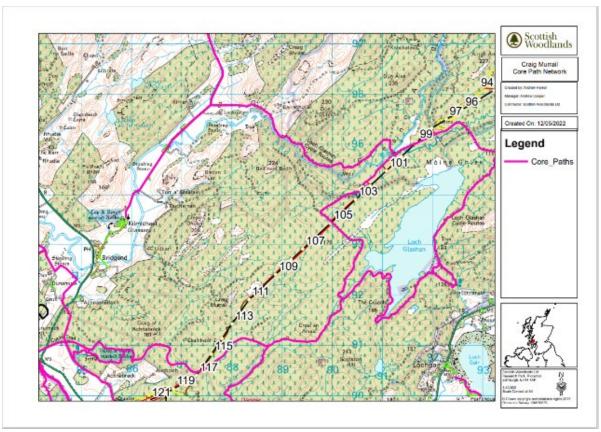
2. Site Location

The site location plan, including the proposed Craig Murrail 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** to **2** (see **Annex J**). In terms of the Proposed Development, the substation site (platform area) covers a total land area of approximately 2.92 ha and the RLB 26.8 ha (including the access track). The existing Inveraray to Crossaig OHL currently runs directly through the site and will be temporarily diverted to enable the construction of the proposed new substation. The temporary OHL Diversion will run just east of the proposed substation platform.

The existing commercial forestry access track runs through the RLB site, starting at the existing bellmouth at the A816 public road. The track runs east from the A816 towards the Proposed Development. The stretch of existing track which is proposed to service the new substation covers a total length of approximately 5 km. Furthermore, the Proposed Development will involve the construction of two new permanent access tracks and the Associated Development will require the construction of two new temporary access tracks (for location and context, see **Figures 1** and **2** in **Annex J**).

The RLB Site, including the entire extent of the substation platform, is located within a large commercial conifer plantation, the majority of which has been harvested and restocked with conifers (primarily Sitka spruce *Picea sitchensis* and Norway spruce *Picea abies* with pockets of Scots pine *Pinus sylvestris* and Western hemlock *Tsuga heterophylla*). The surrounding landscape comprises semi-mature conifer plantations, pre-thicket, thicket and recently felled, mounded, and restocked areas. One watercourse, Auchoish Burn, runs adjacent to the site along the south western RLB. The RLB site will be clear-felled; however, the existing access track adjacent to the south eastern edge of the RLB has a variety of naturally regenerating broadleaves that could be retained as a screen.

There is an extensive core path network utilising the existing forestry tracks throughout Achnabreac Forest. The site may therefore have a moderate level of foot traffic. The core path network is located south of the Proposed Development. As shown in the map below, Craig Murrail is located between Towers 111 to 113 of the Inveraray to Crossaig Reinforcement OHL.



Core Path Network



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 1-2 (see Annex J) and comprises the following:

- A substation platform approximately 2.92 ha at a height of 115 m AOD;
- Gas insulated Switchgear (GIS) building, maximum height 22 m and single storey control building annex;
- Two 275/33 kV grid transformers (GT), rated at 120 MVA, each located in a ventilated building of maximum height 16 m;
- 33kV Switchroom;
- Two gantries and electrical equipment to connect the OHL and the proposed substation;
- Three temporary work areas, one adjacent to the substation platform and two areas south west of the Proposed Development, adjacent to the existing access track, and temporary peat storage;
- Diesel generator;
- Borehole for water;
- Turning and parking areas;
- Use of existing forestry access track with some upgrades, approximately 5 km in length;
- Construction of a permanent access track approximately 153m long connecting the proposed substation to the existing forestry track;
- A permanent access track approximately 285m long providing access to the existing track to the north east of the site;
- A 2.4 m high security fence of palisade construction around the substation platform perimeter;
- Designation of the area around the substation site as bog/mire to provide biodiversity enhancement; and
- Foul and surface water drainage (Sustainable Drainage System (SuDS) pond and outfall pipe).

3.2 Associated Development

The Associated Development layout is shown in Figures 1 to 2 (see Annex J) and involves the following:

- Construction of two temporary steel lattice towers to support the temporary realignment of the existing overhead line during construction. Post construction, the overhead line will be realigned to its existing alignment and connected into the new substation and the temporary towers will be removed;
- Two downleads from the realigned overhead line into the substation and
- Two temporary access tracks leading from the proposed substation access track to the temporary towers.



4. Woodland Characteristics

4.1 Substation Site /Project Design Layout Area

The RLB site (comprising the Proposed Development) covers a total of 26.8 ha of pre-thicket, thicket, and semimature coniferous plantation. The principal tree species is Sitka spruce of varying age class and growth rate. Directly west of the of proposed substation platform is a 1-2-year-old Sitka spruce and Scots pine mound restock of fairly poor quality due to significant browsing exposure. To the north and northwest lies an area of 6-9-year-old Sitka and Norway spruce thicket, and to the north a small block of 10-12-year-old Sitka spruce thicket. 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 and north east is a block of 10-15-year-old Sitka spruce, which, again, in the middle of the compartment is in 'check' (of poor quality/stunted growth) due to wet and peaty ground conditions. This compartment also contains some Scots pine and Western Hemlock. The RLB northeast of the substation platform extends into a block of semi mature Sitka spruce covering approximately of 2.18 ha. To mitigate windthrow risk it would be advisable to management fell this full block to achieve a windfirm edge.

To the east of the substation platform (directly south of the proposed permanent substation access track) lies an area of 7-10-year-old Sitka spruce thicket. To the south and south east of the substation platform (adjacent to the location of the SUDs pond) is an area of Sitka spruce, Scots pine and Western hemlock regeneration. There is natural regeneration of broadleaves (Silver birch *Betula pendula* and willow *Salix sp.*) along the existing access track that could be retained as a screen. Outwith the north western edge of the RLB is an area of 2-3-year-old Sitka spruce restock, which has been recently beat-up (replacement of dead and dying trees). Therefore, there will be no windthrow impact on the remaining plantation as a result of the RLB felling.

Plates 1 to 10 below show the woodland characteristics of the Project (see Figure 3 in Annex J for plate reference map).





Plate 1 – View to the south east from the southern edge of the RLB shows regeneration of Sitka spruce, Scots pine and Western Hemlock (image captured from drone footage).



Plate 2 – View to the North from the south eastern edge of the RLB shows peat area with naturally regenerating Sitka spruce, Scots pine and Western Hemlock, with young birch and willow being 'choked' out by long grasses.





Plate 3 – Sitka spruce thicket of approximately 7-10 years along the eastern edge of the RLB, looking north west at the area directly south of the proposed permanent substation access track.





Plate 4 – Sitka spruce thicket at the north eastern corner of the RLB, approximately 10-15 years old. The second (more northerly) permanent access track will be cut heading west from around the location the plate was taken.



Plate 5 - Looking south west shows 'checked' Sitka spruce thicket of approximately 10-15 years (image captured from drone footage).





Plate 6 – Looking north east along existing access track showing spruce plantation which will require management felling (image captured from drone footage).



Plate 7 – Sitka spruce thicket, approximately 10-12 years old at the northern edge of the RLB west of the existing 85m wayleave.





Plate 8 – View to the south from the most northerly corner of the RLB shows Sitka and Norway spruce thicket of approximately 6-9 years old.



Plate 9 – Sitka and Norway spruce thicket of approximately 6-9 years, facing north east (image captured from drone footage).





Plate 10- Poor quality, 1-2-year-old Sitka spruce mound restock.

4.2 Existing Access Track Upgrade and Widening

Figures 1 and **2** show the extent of the existing 5 km long access track upgrade route design, from the existing bellmouth off the main road, to the substation site. This track has been recently upgraded as part of the Inveraray to Crossaig Reinforcement Project and is already an established haulage route servicing the wider forestry property; however, any regeneration will be cleared (felled-to-waste or target pruned) up 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.

Plates 11 to 14 below show the woodland characteristics of the existing access track.





Plate 11 – A view of the bellmouth of the existing access road looking out onto the A816.



Plate 12 – A view of the bellmouth of the existing access road looking out onto the A816. There is a wide turning circle present.





Plate 13 – Shows view of the existing access track from the bellmouth facing east towards the Project. This track has recently been upgraded for the Inveraray to Crossaig OHL project with suitable clearance on either side of the track, self-seeded broadleaves can be seen next to the roadside ditch within 10 m from the track's centreline.





Plate 14 – Looking north east along the existing access track on the southern edge of the RLB identifying mixed broadleaves (predominantly willow and birch) at the roadside verge (image captured from drone footage).

4.3 Access Track Construction (New Build Section)

Two sections of permanent new access tracks with a total length of approximately 438 m are proposed to service the Proposed Development. The northernmost track will connect to an existing access track to the north east of the site and cuts through a semi-mature Sitka spruce plantation, while the southernmost track will service the substation site and cuts through Sitka spruce thicket of approximately 10-15 years. The proposed 85m corridor for the Temporary Diversion will also run through this thicket, as will the two temporary access tracks proposed to service the Associated Development. All proposed new access tracks are fully encompassed within the RLB, the area of which will be clear-felled. No further forestry impacts have therefore been identified as a result of these track-builds. For illustrations of the above, please refer to **Figures 1** and **2**, and **Plates 3 to 5**.



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 'checked' crop. Wet ground in combination with a semi-mature crop could result in shallow rooting, which further highlights the need to management fell the semi-mature crop at the northern RLB to mitigate windthrow.

The woodland site to be removed for the Proposed Development has a 'Detailed Aspect Method of Scoring' (DAMS)¹ windthrow hazard class score of 16 (highly exposed). The local climate is classified as warm 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. However, the removal of semi mature spruce along the northern edge of the RLB equals high windthrow risk to the retained crop, and management felling will therefore be required. As the Associated Development Temporary Diversion is fully encompassed by the RLB, no windthrow risks have been realised as a result of this development.

5.2 Existing Access Track Upgrade and Widening

The windthrow risk impact of the woodland removal for the existing access track corridor is low, as only felling-towaste of regeneration or target pruning of larger trees will likely be required due to the recent track upgrade. Furthermore, there are areas of dense regeneration (largely mixed broadleaf) next to the roadside ditch at the main access track which may require clearing, although the development could benefit from retaining these as a screen.

5.3 Access Track Construction (New Build Section)

As previously mentioned, the new sections of temporary access track which will service the Associated Development are fully encompassed by the RLB which will be clear-felled. No windthrow risk has therefore been identified as a result of the clearance works for these track-builds. In terms of the new permanent access tracks to service the Proposed Development, as above, these are fully encompassed by the RLB and no further felling will therefore be required, and therefore the windthrow risk resulting from this track-build is negligible.

6. Woodland Management and Landscape Impact

The required woodland removal (by clear-felling) areas within the RLB and to enable the Temporary OHL Diversion would be permanently lost for future forestry restructuring/planting within the woodland property area, as it would fall under ownership and/or 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 will result in some woodland removal, however, the long-term impact would be beneficial, creating upgraded forest road infrastructure to service the wider woodland property in the future.

The wider landscape impact of the woodland removal for the Project has also been considered. The site is in a shielded location at 5 km from the A816 road. The woodland removal area is not widely visible from public roads or dwellings. **Plate 13** above shows the views towards the site from the A816 road.

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



7. Mitigation Opportunities

The removal of woodland is required to facilitate the Project (construction, installation, and operation) and any ancillary works. It is proposed that the RLB area, including the Temporary Diversion OHL corridor, will be restored as a bog/mire habitat rather than restocked with trees (see Annex E **Figure E.4: Landscape Mitigation Plan**).

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 f	or Infrastructure		
	Item	Woodland Type	Area (ha)
		Semi-mature Sitka spruce plantation	2.01
Proposed Development	RLB (including the substation platform, Temporary Works Area, new permanent access tracks, and existing access track)	Recent restock (1-2 years)	1.53
		Thicket Norway and Sitka spruce plantation (7-10 years)	1.44
		Thicket Sitka spruce plantation (10-15 years)	3.65
		Regenerated conifer mix	1.03
		Mixed Broadleaves (3-7 years)	0.57
Associated Development	OHL alignment corridor and access tracks	Regenerated conifer mix	1.15
		Thicket conifer (10- 15 years) in OHL alignment and at the access tracks	1.84

8.2 Compensatory Planting			
	Compensating	Planting Proposal	Area (ha)
Proposed Development	RLB (including the substation platform, Temporary Works Area, new permanent access tracks, and existing access track)	Mixed broadleaves; mixed non-commercial conifers	10.23



8.2 Compensatory Planting			
Associated Development	OHL alignment corridor and associated access tracks	Mixed broadleaves; mixed non-commercial conifers; commercial conifer plantation	2.99



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	10.23	0.00	10.23	0.00
Associated Development	2.99	0.00	2.99	0.00
Total Net Loss of Woodland Area			0.0 ha	

8.4 Woodland Removal for Management Felling				
	Item	Woodland Type	Area	
Dreneged Development	Management Felling	Semi-mature conifer tree crop	2.18 ha	
Proposed Development	Replanting/Restocking On-Site	Commercial conifer plantation	2.18 ha	
Total Net Loss of Woodland Area 0.0 ha				
Note: Felling approval is via the Scottish Forestry Felling Licence application process or Long-Term Forest Plan application or amendment process.				



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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 Policy² to achieve no net loss of woodland. 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**.

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

