

Annex J - Forestry

September 2022





Craig Murrail Proposed Substation Development

Annex J

Woodland Planting Management Strategy

September 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 2 Project Description and Chapter 5 Forestry**, for full details of the Proposed Development.

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 new substation will connect into the recently completed overhead line between Inveraray and Crossaig which is capable of operation at 275kV. Works are required to the overhead line to divert it temporarily to allow for the substation to be constructed, with the construction of two temporary towers. Post construction, the overhead line will be realigned to its existing alignment and the temporary towers will be removed. The two developments are hereby collectively referred to as 'the Project'. The substation and overhead line will support the continued export of renewable energy generated within the Argyll area. The substation platform would cover an area of 2.93ha within a wider Proposed Development boundary of 26.55ha.

As detailed in **Chapter 5 Forestry,** the Project impacts a total area of 14.91 ha of woodland. Within this, there is a small area of 0.46 ha of mixed broadleaves adjacent to existing access tracks that could be retained.

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 14.91 ha (with the potential to be reduced by 0.46 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 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

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

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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.

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 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 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 planting 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





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Woodland Report Craig Murrail Substation

September 2022



SSEN Transmission 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 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 at national grid reference point 'NR899917', 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 Felling Map
- Figure 2: Craig Murrail Forestry Project Felling Aerial
- Figure 3: Craig Murrail Access Track Map (Location and Context)
- Figure 4: Craig Murrail Access Track Aerial (Location and Context)
- Figure 5: Core Path Network
- Figure 6: 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 **4** (see **Annex J**). In terms of the Proposed Development, the substation site (platform area) covers a total land area of 2.93 ha, the RLB 26.55 ha (including the access track), and the associated Temporary Works Areas across three locations cover a total of 0.31 ha. The existing Inveraray to Crossaig OHL currently currently runs directly through the site and will be temporarily diverted to enable the construction of the proposed new substation. The 472 m long temporary OHL Diversion will run just east of the proposed substation platform (from grid reference point 'NR877911' to grid reference point 'NR875908'). The Associated Development (the OHL tie-in corridor) covers 4.57 ha.

The existing commercial forestry access track runs through the RLB site, starting at the existing bellmouth at the A816 public road (national grid reference point 'NR843909'). 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 5km. Furthermore, the Proposed Development will involve the construction of a new 153 m long permanent access track which will service the substation, whereas the Associated Development will require the construction of one new permanent access track, approximately 191 m long, as well as two new temporary access tracks, 51 m and 36 m long respectively (for location and context, see **Figures 3** and **4** 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. The removal of young conifers will likely result in the Proposed Development being visible from the track. As shown in **Figure 5** Craig Murrail is located between Towers 111 to 113.





Figure 5 – 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 1-4** (see **Annex J**) and comprises the following:

- A substation platform in the region of 2.93 ha at a height of 117 m AOD;
- Gas insulated Switchgear (GIS) building, maximum height 22 m and single storey control building annex;
- 275/132 kV super grid transformer (SGT), rated at 480 MVA located in a ventilated building of maximum height 16 m;
- Two gantries and electrical equipment to connect the OHL and the proposed substation;
- Temporary works areas (TWA):
 - One area will be adjacent to the Proposed Development site, of approximately 2.26 ha and
 - Two areas south west of the Proposed Development site, adjacent to the existing access track, of approximately 0.5 and 0.2 ha respectively.
- 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 two new permanent access tracks:
 - One of approximately 153 m long, connecting the substation to the existing private forestry tracks adjacent to the Proposed Development site; and
 - One of approximately 191 m, providing access to the TWA and existing Inveraray to Crossaig overhead line (OHL).
- 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 to 4 (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 existing forestry access track to the temporary towers:

One of approximately 51 m in length; and

One of approximately 36 m in length.



4. Woodland Characteristics

4.1 Substation Site /Project Design Layout Area

The RLB site (comprising the Proposed Development) covers a total of 26.55 ha of pre-thicket, thicket, and semi-mature 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 Temporary Works Area northeast of the substation platform extends into a block of Semi mature Sitka spruce covering a total of 2.58 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 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) in the last year. Therefore, there will be no windthrow impact on the remaining plantation.

Plates 1 to 10 below show the woodland characteristics of the Project. Please see the below map as reference to the plate locations (see **Figure 6** for full map with legend).





Figure 6 – An aerial image containing the locations of the plates below. Also mapped is the Craig Murrail RLB, proposed substation platform, proposed Temporary Diversion OHL route with 85 m corridor and proposed permanent access routes with 20 m corridors.





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, as referenced in **Figure 5** and the excerpt above.



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 due to the updated RLB (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 3 and **4** 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 are proposed: a 153 m S-shaped stretch to the southeast of the proposed substation site (to service the Proposed Development), and a 191 m straight stretch to the north east (to service the Associated Development). The former cuts through 10–15-year-old Sitka spruce thicket, while the latter cuts through the same Sitka spruce plantation of 10–15-year-old. The proposed 85m corridor for the Temporary Diversion will also run through this thicket. Further, two temporary access tracks measuring 51 m and 36 m respectively will also be constructed 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-to-waste 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 and permanent 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 track to service the Proposed Development, as above, this is 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.

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



6. Woodland Management and Landscape Impact

The required woodland removal (by clear-felling) areas within the RLB and to enable the Temporary Diversion 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 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.



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 E.4: Landscape Mitigation Plan**). The Temporary Diversion operational corridor 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		Semi-mature Sitka spruce plantation	2.01	
		Recent restock (1-2 years)	2.73	
	RLB (including the substation platform, Temporary Works Area, new permanent access	Thicket Norway and Sitka spruce plantation (7-10 years)	1.75	
	track, and existing access track)	Thicket Sitka spruce (7- 15 years)	3.36	
		Regenerated conifer mix	1.21	
		Mixed Broadleaves (3-7 years)	0.46	
Associated Development		Regenerated conifer mix	1.15	
	OHL alignment corridor, Permanent access track	Thicket conifer (10-15 years) OHL alignment and premanant access track	2.01	
	Permanent access track outwith Proposed OHL	0	0.21	
	Alignment	Mixed Broadleaves (3-7 years)	0.02	

8.2 Compensatory Planting				
	Compensating	Planting Proposal	Area (ha)	
Proposed Development	RLB (including the substation platform, Temporary Works Area, new permanent access track, and existing access track)	Mixed broadleaves; mixed non-commercial conifers	11.52	
Associated Development	OHL alignment corridor and associated permanent access track	Mixed broadleaves; mixed non-commercial conifers; commercial conifer plantation	3.39	



3.3 Woodland Removal Impact of Infrastructure				
	Total Loss of Woodland	Total On-site Compensatory	Total Off-site Compensatory	Total Net Loss of Woodland
	Area	Planting Area	Planting Area	Area
Proposed Development	11.52	8.65	2.87	0.00
Associated Development	3.39	0.00	3.39	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 conifer tree	2.18 ha	
	Wanagement rening	crop	2.10 11a	
	Replanting/Restocking On-	Commercial conifer	2.18 ha	
	Site	plantation		
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.				



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 Removal Policy² 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 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)