

## 5. FORESTRY

### 5.1 Introduction

This chapter provides an assessment of the significance of predicted residual effects on forest and woodland areas arising from the construction and operation of the proposed new Craig Murrail Substation and accompanying infrastructure located within the site boundary, also known as the 'Red Line Boundary' (RLB) (hereby referred to as 'the Proposed Development') and the associated Inveraray to Crossaig Reinforcement overhead line (OHL) tie-in operational corridor (OC) (hereby referred to as 'the Associated Development'). These two developments are together known as 'the Project'.

**Annex J** contains a Woodland Report which describes the woodland baseline conditions in the area of the Project, the potential windthrow risk, the short- and long-term potential impacts on commercial woodland, mitigation measures proposed and an assessment of the required area for compensatory planting. This chapter is also supported by **Figures 5.1 – 5.3** which form part of the Annex.

### 5.2 Objectives

The baseline purpose of this chapter is to:

- Describe the assessment methodology and significance criteria used in completing the impact assessment;
- Describe the potential direct and indirect effects on forestry resources associated with the Project;
- Describe the cumulative effects on the forestry resources associated with the Project;
- Describe the mitigation measures proposed to address the likely significant effects; and
- Assess the residual effects remaining following the implementation of mitigation.

The forestry landscape assessment and baseline surveys informing this chapter have been carried out by Scottish Woodlands Ltd, in line with the UK Forestry Standard (UKFS)<sup>1</sup> guidance.

### 5.3 Guidance

The following sources have been used to obtain information:

- Craig Murrail Substation Woodland Report;
- UKFS Guidelines;
- Argyll and Bute Woodland and Forest Strategy; and
- Site walkover surveys conducted in April and May 2022.

### 5.4 Methodology

#### 5.4.1 Scope of the Assessment

This chapter considers the significance of likely predicted effects of the Project on forestry, including cumulative assessment, and is based on the felling requirements identified for the Project as proposed by the Applicant. It defines the potential impacts on the forest structure and management of the resource, and the likely level of impact based on an assessment of the sensitivity of the affected forestry areas which may arise as a result of the Project but does not address the Land Management Plans (LMPs) of the wider resource (outside the area identified for the Project). Any felling undertaken outside the Project's Red Line Boundary would be at the discretion of the landowner, and the Applicant would not have any control over this. Consequently, this assessment is limited to consideration of the effects of the Project on the present forest composition and yield.

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<sup>1</sup> Forestry Commission (2017) [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/687147/The\\_UK\\_Forestry\\_Standard.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/687147/The_UK_Forestry_Standard.pdf)

#### 5.4.2 Extent of the Study Area

The study area for this assessment is based around the requirement to form and maintain an Operational Corridor (OC) for the Associated Development and the requirement to fell forestry within the RLB to allow for construction of the substation and these areas have been identified by the Applicant based on requirements for construction, maintenance and operation of the Project, and any site constraints identified. As provided in terms of the Electricity Safety, Quality and Continuity Regulations (ESQCR) 2002 and Schedule 4 to the Electricity Act 1989, the Applicant has the necessary statutory powers to remove woodland for the purposes of construction and ongoing maintenance of new overhead lines and to ensure clearance and protection of electrical infrastructure and equipment.

The OCs for OHLs are defined with reference to the distance at which a tree could fall and cause damage to the OHL, resulting in a supply outage. As a result, the final OC width would be based on the safety distance required to allow for a mature tree falling towards the OHL at the mid-point of an OHL span between two towers taking into consideration key factors such as gradient, topography, and crop height. The OC for a 275kV line (as is proposed in this case) is usually set to a width of 85 m. However, where going through valuable habitat such as ancient and/or native woodland, it can, depending on the tree species present, be reduced to ensure the retention of as many trees as is reasonably practicable.

#### 5.4.3 Sensitivity, Magnitude and Significance of Effect

There are currently no published criteria, guidance or methodologies for the assessment of effects on forestry. As a result, the assessment is made based on professional judgement, with reference to:

- The sensitivity of the different types of woodland present in the study area, taking into consideration the degree and rate of change in the woodland, both in the recent past and that anticipated in the near future, and therefore the susceptibility/vulnerability of the woodland change; the quality of the woodland and the extent to which it is rare or distinctive, and the value attributed to the woodland through designations;
- Magnitude of change and extent of woodland removal;
- Duration and reversibility, i.e., the timescale of the effect of the Project (days/weeks/months/years) until recovery. Permanent effects are described as such, and likelihood of recovery is detailed where appropriate; and
- Adverse/beneficial, i.e., an assessment of whether the effects of the Project will be beneficial or detrimental to the feature in question.
- The effect of tree felling on woodland is normally considered to be of an adverse nature, however, in some areas beneficial effects may arise where the introduction of the Project allows for the removal of ecologically habitat-poor conifer plantation.

The criteria for assessing sensitivity and magnitude are outlined in **Tables 5.1 and 5.2** below, while **Table 5.3** outlines the methodology for calculating the significance of the effect.

**Table 5.1 Criteria for assessing sensitivity.**

Category	Description
High	Highly valued, subject of national designation, e.g. Ancient Woodland Category 1a; Particularly rare or distinctive in a national context; or Considered susceptible to small changes.
Medium	Valued more locally, subject to local designation; Rare or distinctive in a regional context; and/or Tolerant of moderate levels of change.
Low	Generally, more commonplace and not designated; Considered potentially tolerant of noticeable change; or Undergoing substantial development such as that their character is one of change.
Negligible	Already fundamentally changed (e.g. second rotation commercial conifer); Considered tolerant of noticeable change; or

Category	Description
	Having undergone substantial development such that their character is one of change.

**Table 5.2 Criteria for assessing magnitude of change**

Category	Description
High	A noticeable change to the woodland over a wide area or an intensive change over a limited area.
Medium	Small changes to the woodland over a wide area or noticeable change over a limited area.
Low	Very small changes to the woodland over a wide area or small changes over a limited area.
Negligible	No discernible change to the woodland.

**Table 5.3 Criteria for calculating the significance of effects.**

Magnitude of Change ↓	Sensitivity of Woodland →			
	High	Medium	Low	Negligible
High	Major	Major	Moderate	Minor
Medium	Major	Moderate	Minor	None
Low	Moderate	Minor	None	None
Imperceptible	Minor	None	None	None

#### 5.4.4 Baseline Data Collection (Desk Study)

The Proposed Development RLB and the Associated Development OC (see **Figures 5.1 and 5.2 in Annex J**), the surrounding forestry and landscape, and the proposed new access were analysed for existing woodland cover through desk-based studies using maps and aerial photography. Web-based data on local, regional, and national designations and public access issues were also consulted.

#### 5.4.5 Forest Walkover (Field Survey)

Forest walkover and mapping surveys were undertaken in April and May 2022, to confirm the extent of the woodland areas affected by the Project and to further assess the current woodland characteristics and the wider impacts the developments would have on the woodland resource. Photographic records were captured to provide visual samples of the woodland types and evidence of woodland characteristics throughout the RLB, see the accompanying Woodland Report in **Annex J**. An estimate of standing woodland volume of the commercial conifer resource was calculated during the forest walkover survey, see the accompanying Woodland Report in **Annex J**.

The forest walkover also included a visual assessment of tree health, vigour, ground conditions and existing woodland stability. Observations were also made of potential woodland windfirm boundaries, investigating the RLB, forest rides and other potential green edges as identified during the baseline desk survey.

#### 5.4.6 Limitations and Assumptions

Consultation with the landowner on their Land Management Plans (LMPs) is ongoing in association with the woodland removal proposals of the Project.

## 5.5 Results

### 5.5.1 Baseline

The Proposed Development is located within a commercial conifer plantation with an RLB area of 26.8 ha of mainly conifer thicket and recent restock with integrated open ground. The Inveraray to Crossaig Reinforcement 275kV OHL, recently completed by the Applicant, runs through the Proposed Development site and the line will be temporarily realigned as part of the Associated Development to allow development of the proposed substation. Following construction, the overhead line will be realigned to its existing alignment and connected into the new substation via downleads and the temporary towers will be removed. An 85 m wide wayleave corridor will be felled through the commercial conifer plantations to accommodate the proposed temporary OHL alignment, and 20 m wide corridors will be cut to facilitate construction of new access tracks. In total, 13.22 ha is classified as woodland which requires clear-felling to facilitate the construction of the Proposed and Associated Development.

A detailed breakdown of woodland characteristics and woodland removal requirements can be found in the Craig Murrail Substation Woodland Report (**Annex J**).

A single primary landowner, Forestry and Land Scotland (FLS) was identified, and communication will remain ongoing throughout the project.

### 5.5.2 Field Survey

Age classes vary throughout the conifer plantations on site. Directly west of the of proposed substation platform lies a 1-2-year-old Sitka spruce *Picea sitchensis* and Scots pine *Pinus sylvestris* mound restock of fairly poor quality due to significant browsing exposure. To the north and northwest is an area of 6-9-year-old Sitka and Norway spruce *Picea abies* thicket, and to the north a small block of 10-12-year-old Sitka spruce thicket. To the north and northeast is a block of 10-15-year-old Sitka spruce, which in the middle of the compartment is in 'check' (of poor quality/stunted growth) due to wet and peaty ground conditions. This block also contains some Scots pine and Western hemlock *Tsuga heterophylla*.

To the east of the substation platform (directly south of the proposed permanent access track) lies an area of 7-10-year-old Sitka spruce thicket. To the south and southeast of the substation platform, adjacent to the SuDS pond and outfall pipe, is an area of Sitka spruce, Scots pine and Western hemlock regeneration. Natural regeneration of broadleaves (silver birch *Betula pendula* and willow *Salix sp.*) is also evident along the existing access track. These could be retained as a screen. Outside the north-western RLB is an area of the 2-3 year old Sitka spruce restock, which has recently been beat up.

The Temporary Works Areas (TWA) which will service the Proposed Development cover a total area of approximately 2.58 ha. The northernmost TWA extends into a block of Sitka spruce (between 15-20 years old) that straddles the red line boundary, with a total area of approximately 2 ha. To mitigate windthrow risk it would be advisable to fell this block to achieve a windfirm edge (this would involve an extra 2.18 ha of management felling outside the RLB).

## 5.6 Assessment of Effects

The assessment of effects from the construction and operational phases of the Project considers the following:

- Direct construction effects: loss of areas of forest through woodland removal to create the Proposed Development substation site, ancillary infrastructure and access, and the Associated Development alignment OHL OC and access,

in the context of the regional forest resource for both commercial conifer forest and ancient woodland and semi-natural woodlands;

- Indirect construction effects: increased windthrow and secondary felling agreed with landowners;
- Indirect operational effects: effects on forest management systems and restrictions on forest access; and
- Cumulative effects: combined loss of woodland from direct and indirect (secondary) felling.

## 5.7 The Proposed Development (Substation)

### 5.7.1 Construction Effects

#### *Woodland Removal*

The total loss of woodland resulting from the Proposed Development has been calculated using the project Geographic Information System (GIS) and equates to 10.23 ha, assuming broadleaf removal is also required. However, 10.23 ha of off-site compensatory planting will offset that total net loss of woodland. If broadleaf removal of 0.48 ha is not required, then the felling figure equates to 9.75 ha, and accordingly, the off-site compensatory planting figure is amended to 9.75 ha.

The woodland removal for the Proposed Development consists mainly of young commercial conifer plantation. The removal of thicket and pre-thicket commercial conifers has been assessed as having a high magnitude of change but a negligible sensitivity, meaning that the effect is minor and not significant.

**Table 5.4** below sets out the woodland characteristics of the area affected by the Proposed Development.

**Table 5.4 Woodland characteristics of the area affected by the Proposed Development**

Habitat Type	Area (ha)
Coniferous plantation (1-2-year-old spruce restock)	1.53
Coniferous plantation (7-10-year-old spruce mix thicket)	1.44
Coniferous plantation (10-15-year-old spruce thicket)	3.65
Coniferous mixed woodland (regeneration)	1.03
Semi-mature Sitka spruce plantation	2.01
Broadleaved mixed woodland regeneration (at bellmouth)	0.09
<b>Total (excluding broadleaf removal at eastern RLB edge)</b>	<b>9.75</b>
Broadleaved mixed woodland regeneration - at eastern RLB edge	0.48
<b>Total (including broadleaf removal at eastern RLB edge)</b>	<b>10.23</b>
Semi-mature Sitka spruce plantation – in management felling area	2.18
<b>Total (including management felling area)</b>	<b>12.41</b>

#### *Windthrow*

The windthrow risk impact of the main area of woodland removal for the substation site is generally low, due to the woodland characteristics of young conifer plantation with areas of open ground (see **Figures 5.1 and 5.2 in Annex J**). During the construction and tree felling/vegetation clearance required for the Project the effects in terms of windthrow will therefore be minimal as forest edges will largely remain stable. However, there is an area on the north-eastern edge of the RLB where the boundary cuts through a semi-mature block of commercial conifer plantation. Accordingly, removal of this crop to the linear RLB edge would create an increased windthrow risk of moderate to high of the adjacent, retained conifer woodland block. To mitigate the windthrow risk, a larger management felling area of 2.18 ha has therefore been identified (the term 'management felling' refers to carrying out additional tree felling outside the relevant development boundary to secure

green, windfirm edges and as such helping to reduce the risks of windthrow in the retained crop. Mature trees are more at risk of windthrow, especially after being exposed). This would include felling of the full block to a viable windfirm edge, and the significance of the effect would therefore be minor and not significant.

#### 5.7.2 Operational Effects

##### *Woodland Removal*

There may be requirements for routine vegetation clearance and management along the access tracks (see **Figures 5.1 and 5.2 in Annex J**) and immediately adjacent to the substation to facilitate clear, safe access for operation and maintenance works. Overall, the effects during operation of the Proposed Development are assessed as none and not significant.

It is worth recognising that there is potential to maintain biodiversity within the RLB of the Proposed Development. As previously mentioned, there is a total area of 0.48 ha of native broadleaves located adjacent to the existing access track which could be retained. However, these native broadleaves may need to be cleared as part of the road clearance specification. They do not currently provide valued habitat and so would not be deemed a significant loss to the overall biodiversity level on-site. They do provide a level of screening but are classified as low-lying scrub.

##### *Effects on Forest Management Systems*

It is anticipated that the Proposed Development will have low impacts on local forest management systems, in terms of individual LMPs having to be revised to address the construction of the Proposed Development and any future tree clearance or management of the site to ensure safe access to and operation of the Proposed Development. The sensitivity of the management system to revision is considered to be low. The magnitude of change associated with restructuring the individual LMPs to incorporate the felling required for the Proposed Development could be, locally or for the individual landowner of medium magnitude, as the site walkover suggested the area is under standard forestry management (clear-fell and restock). Together, this suggests that the impacts locally on and on individual landowners is likely minor and not significant.

##### *Restrictions on Forest Access*

At the time of tree harvesting, the forestry industry has a range of operations, some of which can be restricted by the presence of an overhead line or the proximity to the substation. Live electrical overhead lines provide a number of risks in terms of tree felling and extraction of the timber to the roadside near the OHL. Loading and haulage of the timber off site can also be restricted within proximity of live electrical equipment. However, the substation site and the RLB will not be replanted with commercial forestry. The site will be restored to a bog/mire habitat (see **Landscape Mitigation Plan in Annex E**) which means that the risks arising from the Proposed Development associated with access for commercial forestry purposes are assessed as none and not significant.

### **5.8 The Associated Development (OHL Alignment and Operational Corridor)**

#### 5.8.1 Construction Effects

##### *Woodland Removal*

The total loss of woodland required for the Associated Development has been calculated using the project Geographic Information System (GIS) and equates to an area of 2.99 ha, see **Table 5.5**. However, off-site compensatory planting should take the total net loss of woodland to nil.

The removal of thicket and pre-thicket conifers and young conifer restock has been assessed as having a high magnitude of change but a negligible sensitivity, and the effect is therefore minor and not significant.

There is also potential to manage species-rich bog/mire habitat within the OC, to provide medium or long-term biodiversity enhancement. Lower growing shrubs associated with this type of habitat would provide valuable habitat for local fauna and flora. The assessment of this effect is provided in **Chapter 4: Ecology and Ornithology**.

**Table 5.5 Woodland characteristics (Associated Development).**

Habitat Type	Area (ha)
Coniferous plantation (10-15-year-old spruce thicket) - in OHL alignment and along temporary access tracks	1.84
Coniferous mixed woodland (regeneration)	1.15
<b>Total</b>	<b>2.99</b>

#### *Windthrow*

The 85 m OC for the Associated Development (temporary OHL diversion) will run through a section of naturally regenerated pre-thicket Sitka spruce, Scots pine and Western hemlock to the south and 10-15-year-old spruce thicket to the east and north-east through large areas of 'checked' crop. Due to the conifers being immature the risk of windthrow to the site is low. The Associated Development OC is also fully encompassed by the Proposed Development RLB clear-felling area, and removal of conifer thicket within the OC will have no risk of windthrow. The effect is therefore none and not significant.

### 5.8.2 Operational Effects

#### *Woodland Removal*

The operational effects on forests and woodland resulting from the Associated Development would involve periodic vegetation clearance and management to maintain the OC whilst the temporary overhead line is in situ. The adverse effect during operation is assessed as none and not significant.

#### *Effects on Forest Management Systems*

Engagement with the landowner Forestry and Land Scotland (FLS) has been undertaken to review and discuss the Project felling. Continued liaison will be undertaken for the duration of the Project between the Applicant and the Landowner.

It is anticipated that generally the Associated Development will have low impacts on local forest management systems, in terms of individual LMPs having to be revised to address the tree felling required for the OHL alignment OC, the associated management felling to mitigate windthrow, and any future tree clearance or management of the site to ensure safe access to and operation of the Associated Development. The sensitivity of the management system has been assessed as likely to be moderate. The magnitude of change associated with restructuring the LMPs to incorporate the felling required for the Proposed Development will also likely be moderate. However, the entirety of the temporary realignment corridor is encompassed by the Proposed Development RLB, and the overall impact locally and on individual landowners from the Associated Development is therefore likely minor and not significant.

#### *Restrictions on Forest Access*

At the time of tree harvesting, the forestry industry has a range of operations, some of which can be restricted by the presence of overhead lines and substations. Sufficient tree clearance from the electrical apparatus will be established within the red line boundary and therefore the risk of the Associated Development to future forestry activities is assessed as none and not significant.

### 5.9 Cumulative Assessment

#### *Woodland Removal*

The Proposed and Associated Developments will involve clearing a total of 13.22 ha of young conifer plantation and native broadleaf regeneration. Off-site planting, however, will take the total net loss of woodland to nil. The cumulative effect is assessed to have a moderate to high magnitude of change, but a negligible sensitivity due to the nature of second rotation commercial forestry. There may be minor, indirect effect on the wider woodland resource (outside the RLB) during construction as the woodland is cleared but overall the effect is assessed as minor, short-term, and not significant. A breakdown of woodland removal can be seen in **Figure 5.1 and 5.2**.

### *Windthrow*

In forestry there is a general commitment to fell to viable (green) windfirm edges to minimise the risk of windthrow to retained crops. This is contrary to felling a linear 85 m wide OC, as this will expose trees that were previously sheltered, and hence increase the risk of windthrow to the retained crop. However, as mentioned above, the Associated Development OC is encompassed by the wider Proposed Development RLB clear-felling. On the other hand, an additional management felling area has been identified to mitigate windthrow as a result of the RLB clear-felling for the Proposed Development. The resulting cumulative risk of windthrow to the site is therefore assessed as none and not significant.

### *Forest Management*

Engagement with the landowner Forestry and Land Scotland (FLS) has been undertaken to review and discuss the Project felling Continued management liaison will be undertaken for the duration of the Project between the Applicant and the Landowner.

## **5.10 Mitigation**

### *Mitigation During Construction*

No significant effects are predicted based on the area of woodland removal proposed for the construction of the Associated Development, however in terms of the Proposed Development, mitigation should include felling of the semi-mature conifer plantation to a windfirm edge. The forest outside the RLB is anticipated to be replanted with commercial forestry, however this will be influenced by the peat depth and associated tree planting guidance. This, alongside standard good practice working methods, will ensure that significant effects on ecological and hydrological receptors and the wider forest resource are avoided.

This site has 0.48 ha of self-seeded native broadleaves of varying age classes mainly adjacent to the existing access track which could be retained. The remaining 0.09 ha of broadleaved woodland (adjacent to the bellmouth) and all other loss of woodland should be fully compensated through a Compensatory Planting Scheme (see **Annex J**).

In order to address the potential significant effect on forest land-use management, the Applicant has produced a Woodland Report (Craig Murrail Woodland Report, see **Annex J**) which identifies all areas of felling required for the Proposed and Associated Developments. These reports will also be reviewed by the landowner to link in with the site's LMP. It is crucial that the proposed felling operations comply with UKFS guidelines as this forms part of the Scottish Forestry approval process. This approval is required before any of the proposed felling can be carried out. In addition, the Woodland Report aims to reduce the risk of future windthrow by identifying viable windfirm edges (outside the RLB and/or OHL OC). Any additional felling as identified in the Woodland Report will require joint working with the landowner to deliver felling and restocking in these areas. The Craig Murrail Substation Woodland Report recommended that an additional 2.18 ha of semi-mature Sitka spruce is felled adjacent to the northern RLB, to achieve a windfirm edge.

The Craig Murrail Woodland Report also identified a core path network situated 500m south of the proposed development, which for 3 km follows the main access road which would also be utilised by construction traffic. Timber extraction and haulage will be required and the Applicant, FWM and/or Construction Contractor will need a traffic management plan which effectively mitigates interface between core path users and construction traffic.

### *Mitigation During Operation*

The Applicant is fully committed to meeting the Control of Woodland Removal Policy (CoWRP) objectives set out by the Scottish Government. The primary objective of this is no net loss of woodland resulting from the development. This will be achieved through a Compensatory Planting Scheme which will involve agreements with landowners within the Argyll and Bute local authority area. Similarly, the Applicant is prepared to work with landowners as set out in the Woodland Report for the property, to address the potential effect on LMPs or management systems.

No further operational mitigation measures have been identified.



## 5.11 Appraisal Summary

This chapter has considered the potential for significant effects on the forest resource, forest management and access during construction and operation. According to Argyll and Bute Woodland and Forestry Strategy the loss of woodland associated with the Proposed and Associated Developments would equate to 0.007% of the commercial plantation resource.

The loss of woodland required to facilitate the proposed development has been assessed as having a low magnitude of change. This was based on the context of the regional resource and the low sensitivity of the type of woodland present within the RLB. In terms of mitigation for woodland loss, it has been deemed acceptable that woodland loss will be recovered through a compensatory planting scheme. The management felling of semi-mature coniferous plantation required to facilitate the Proposed Development RLB clear-felling has been assessed to have a moderate significance of effect, owing to the restructuring the LTFP for the area, which will fall on the landowner. To mitigate this, the Applicant shall liaise with the landowner regarding replanting and future management.

A summary of the appraisal of forestry is provided in **Table 5.6** below.

**Table 5.6 Appraisal of Forestry.**

Environmental Feature	Development Interaction	Mitigation Measures	Receptor Sensitivity	Magnitude of effect	Significance of effect
Conifer plantation	Mulch	Compensatory Planting	Low	Low	None
Coniferous plantation (semi-mature)	Clear-fell	Replanting (in liaison with landowner)	Low	High	Moderate

## 5.12 Mitigation Proposals

The key mitigation measures considered to reduce the potential effects of the Project are described in Table 5.7.

**Table 5.7 Mitigation Summary.**

Topic	Mitigation Measure	Responsible
Forestry	Compensatory Planting Scheme (to ensure no net loss of woodland)	The Applicant
Forestry	Replanting Scheme (management felling area)	The Landowner