5. FORESTRY

5.1. Introduction

5.1.1. 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 new Crossaig North 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 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 1-3** which form part of **Annex J** along with the Compensatory Planting Management Strategy and the Crossaig North Woodland Report.

5.2. Objectives

5.2.1. 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.

5.2.2. The forestry baseline surveys informing this chapter have been carried out by Scottish Woodlands Ltd, in line with the UK Forestry Standard (UKFS)[1] guidance.

5.3. Guidance

The following sources have been used to obtain information:

- Crossaig 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

Scope of the Assessment

5.4.1. This chapter considers the significance of the likely predicted impacts of the Project on forestry, including a cumulative assessment, based on the felling requirements identified for the Project as proposed by the Applicant.

[1] Forestry Commission (2017) https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/687147/The_UK_Forestry_Standard.pdf

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 Long-Term Forest Plans (LTFPs) of the wider resource (outside the area identified for the Project within the RLB). Any felling undertaken outside the RLB 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.

Extent of the Study Area

5.4.2. The study area for this assessment is based around the requirement to form and maintain an OC for the Associated Development and the requirement to fell forestry within the RLB to allow for construction of the substation. 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.

5.4.3. 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.

Sensitivity, Magnitude and Significance of Effect

5.4.4. There are 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 effects, 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.

5.4.5. The criteria for assessing sensitivity and magnitude are outlined in **Tables 1** and **2** below, while **Table 3** outlines the methodology for calculating the significance of the effect.

Table 1 - The four categories of 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 Having undergone substantial development such that their character is one of change.

Table 2 – The four categories of 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 3 – Criteria for 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

Baseline Data Collection (Desk Study)

5.4.6. The Proposed Development RLB, the Associated Development OC, the surrounding forestry and landscape and the proposed new access tracks (see **Figures 1** and **2**) 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.

Forest Walkover (Field Survey)

5.4.7. 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 proposed developments would have on the woodland resource. Photographic records were captured using mobile phone devices and drone footage to provide visual samples of the woodland types and evidence of woodland characteristics throughout the RLB (see the **Crossaig North Woodland Report** in **Annex J**).

5.4.8. The forest walkover survey 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.

Limitations and Assumptions

5.4.9. 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

Baseline

5.5.1. The Proposed Development is located within a commercial conifer plantation with a RLB area of 42.2 ha. The site consists mainly of mature commercial conifer plantation with large pockets of windblow and 'checked' Sitka spruce,

and areas of integrated open ground. The Inveraray to Crossaig OHL currently connects to the existing Crossaig substation approximately 250 m east/southeast of the Proposed Development and will be realigned as part of the Associated Development to connect to the new substation. The 85 m OC will be fully encompassed by a recent clear-fell area, associated with management felling undertaken as part of the existing Inveraray to Crossaig OHL Reinforcement.

5.5.2. In total, 11.65 ha of the 42.2 ha RLB is classified as woodland, which requires clear-felling to facilitate the construction of the Proposed Development. A detailed breakdown can be found in the Crossaig North Substation Woodland Report (**Annex J**). The site is in private ownership.

Field Survey

5.5.3. Age classes and growth rates vary throughout the site. Within, and directly west of the Proposed Development lies a commercial conifer plantation consisting of mature Stika *spruce Picea sitchensis* with intertwined areas of Lodgepole pine *Pinus contorta* and Scots pine *Pinus sylvestris.* This crop has evidence of significant windthrow, and there are pockets of 'check' (areas of poor quality/stunted growth trees) due to areas of deep peat. However, felling will follow the RLB as no viable windfirm edge could be established. All possible windfirm forest rides were investigated, but many areas were impassable with large pockets of windthrow. As mentioned above, the 85m wayleave corridor for the OHL alignment will run across a recent clear-fell area associated with the existing Inveraray to Crossaig OHL Reinforcement.

5.5.4. A 2-3-year-old deer-fenced broadleaf plantation (including pedunculate oak *Quercus robur,* silver birch *Betula pendula,* and willow *Salix sp.*) lies in the area of the proposed new substation platform. Many of these young trees have failed due to browsing exposure, grass and weed competition, and an abundance of natural Sitka spruce and Lodgepole pine regeneration is present (see Aerial view 1 below).

Aerial view 1 *– Fenced broadleaf plantation*

5.5.5. There is a second, similar deer-fenced broadleaf planting site approximately 250m southeast of the Proposed Development (adjacent to the existing forestry/farm track and the B842, see Aerial view 2 below). This planting site also has a level of weed competition and natural regeneration of mixed conifers however it lies on sloped ground with effective drainage, which has helped the mixed broadleaves outcompete small areas of weed growth. The Proposed Development could benefit from managing weed growth in this area and retaining this plantation as a screen.

Aerial view 2 *– Broadleaf plantation adjacent to forest road*

5.5.6. The watercourses Allt na Buaile Salaich and Allt a Ghobhainn run towards the southwestern corner of the RLB at the SuDs outfall pipeline.

5.6. Assessment of Effects

5.6.1. 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.

The Proposed Development (Substation and Ancillary Infrastructure)

Construction Effects

Woodland Removal

5.6.2. The total loss of woodland resulting from the Proposed Development has been calculated using the project Geographic Information System (GIS) and equates to 11.13 ha. A total of 4.01 ha on-site and 7.12 ha of off-site compensatory planting will be required to take the total net loss of woodland area to 0.0 ha.

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

5.6.4. The calculations within **Table 4** do not include the woodland characteristics of the Associated Development, which is included in **Table 5**.

Table 4 – Woodland characteristics (Proposed Development).

Habitat Type	Area (ha)
Failed Broadleaf plantation (2-3-year-old) - within permanent access track 20m corridor	0.2
Coniferous plantation (35+year-old overmatured) in permanent access track 20 m corridor	0.41
Broadleaved Plantation woodland (2-3-year-old)	1.49
Coniferous plantation (35+year-old overmatured)	7.18
Coniferous plantation in check (35+year-old overmatured)	1.32
Coniferous regeneration	0.53

Habitat Type	Area (ha)
Total	**11.13**

Windthrow

5.6.5. The windthrow risk impact of the main area of woodland removal for the substation site is moderate to high, due to the woodland characteristics of mature conifer plantation with areas of open ground. All viable forest rides were investigated for windfirm edges however none were found, and the felling will follow the RLB. During the construction phase of the Proposed Development, the effects in terms of windthrow will therefore be high.

Operational Effects

Woodland Removal

5.6.6. There may be requirements for routine vegetation clearance and tree pruning along the access tracks and immediately adjacent to the substation to facilitate clear, safe access for operation and maintenance works. Overall, the adverse effect during operation of the Proposed Development is assessed as none and not significant.

Effects on Forest Management Systems

5.6.7. The introduction of new substation infrastructure in areas of managed forest would require a review by the landowner of the existing management system. The landowner of this woodland property is currently progressing a LTFP application which will identify the forestry (felling/replanting) operations intended for the ongoing management of the forest over a 20-year period.

5.6.8. It is anticipated that the Proposed Development will have moderate impacts on forest management systems, in terms of individual LTFPs having to be revised to address the construction of the substation and ancillary works, and any future tree clearance or management of the site to ensure safe access and operation. The sensitivity of the management system has been assessed as likely to be moderate. The magnitude of change associated with restructuring the LTFP(s) to incorporate the felling required for the Proposed Development will likely be medium, as the site walkover suggested the area is under standard forestry management (clear-fell and restock). Additionally, there is a moderate to high risk of windthrow resulting from the felling for the Proposed Development. Together, this suggests that the impacts locally and on individual landowners is likely moderate and significant.

Restrictions on Forest Access

5.6.9. During forestry operations, live electrical equipment including the proposed substation and ancillary works, could restrict movements as they may pose several risks in terms of adjacent tree felling operations and the extraction of timber to roadside. 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 have an associated landscape replanting plan of native trees and shrubs. Therefore, there will be no future access requirement to the immediate site for commercial forestry purposes. The adjacent commercial forestry will be situated approximately 30 m west from the

proposed new substation. The risks associated with access for commercial forestry purposes is therefore assessed as moderate and significant.

5.6.10. It is assumed that planning work for any proposed future felling would follow standard health and safety management measures and best practice, e.g., Forest Industry Safety Accord (FISA)[2] guidelines. Overall, the impact of the Proposed Development on future forestry activities is assessed as minor and not significant.

The Associated Development (OHL Realignment and Operational Corridor)

Construction Effects

Woodland Removal

5.6.11. The total loss of woodland resulting from the Associated Development has been calculated using the project Geographic Information System (GIS) and equates to 0.52 ha (for the temporary bypass operational corridor). Off-site compensatory planting of 0.52 ha will take the total net loss of woodland area resulting from the Associated Development to 0.0 ha.

5.6.12 The removal of mature conifers has been assessed as having a medium magnitude of change but low sensitivity. The effect of removing 0.52 ha of Sitka spruce (taking into consideration that the adjacent Inveraray to Crossaig OHL management felling area has also been clear-felled and will be partly restocked with commercial conifers) is therefore minor and not significant.

Table 5 – Woodland characteristics (Associated Development).

Habitat Type	Area (ha)
Coniferous plantation (mature) - within 85m temporary bypass operational corridor	0.52
Total	**0.52**

Windthrow

5.6.13. The 85 m temporary bypass operational corridor skims the edge of a semi-mature conifer plantation adjacent to the B842. The Project would benefit from retaining the remaining forestry as a screen, and no management felling area has therefore been identified, although the windthrow risk is moderate. As the forestry around the alignment corridor is already clear-felled, the windthrow impact here is negligible.

Operational Effects

Woodland Removal

5.6.14. The direct operational effects on forests and woodland associated with the Associated Development would be limited to periodic vegetation management to maintain the operational corridor. Within the operational corridor following the construction of the proposed development there would be an ongoing need to manage the growth of vegetation to facilitate access for maintenance of the overhead line and to maintain the required tree clearance

[2] FISA (2022) Safety Guides https://ukfisa.com/Safety/Safety-Guides

zones for the safe and resilient operation of the line. The operational corridor, after woodland removal, is deemed to be of negligible sensitivity and the impact of vegetation management is considered to represent a low magnitude of change. Overall, the adverse effect during operation is assessed as none and not significant.

Effects on Forest Management Systems

5.6.15. The introduction of a new overhead line through areas of managed forest would require a review by the landowner of the existing management system. The landowner of this woodland property is currently progressing a LTFP application which will identify the forestry (felling/replanting) operations intended for the ongoing management of the forest over a 20-year period.

5.6.16. The Associated Development will have impacts on forest management systems and in terms of individual LTFPs having to be revised to address the areas of the forest which cannot be replanted due to the presence of a new overhead line 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 medium. The magnitude of change associated with restructuring the LTFP(s) to incorporate the above requirements will also likely be medium. Together, this suggest that the impacts locally and on individual landowners from the Associated Development is likely moderate and significant.

Restrictions on Forest Access

1.6.17 During forestry operations, live electrical OHLs could restrict movements as they pose several risks in terms of adjacent tree felling operations and the extraction of timber to roadside. Loading and haulage of the timber off site can also be restricted where within proximity of OHLs. The adjacent forestry once replanted will be approximately 42.5m away from the proposed new section of OHL, and it is assumed that standard health and safety management measures and best practice, e.g., FISA guidelines, will be followed during landowner forestry operations. The risk of the Associated Development to future forestry activities is therefore assessed as none and not significant.

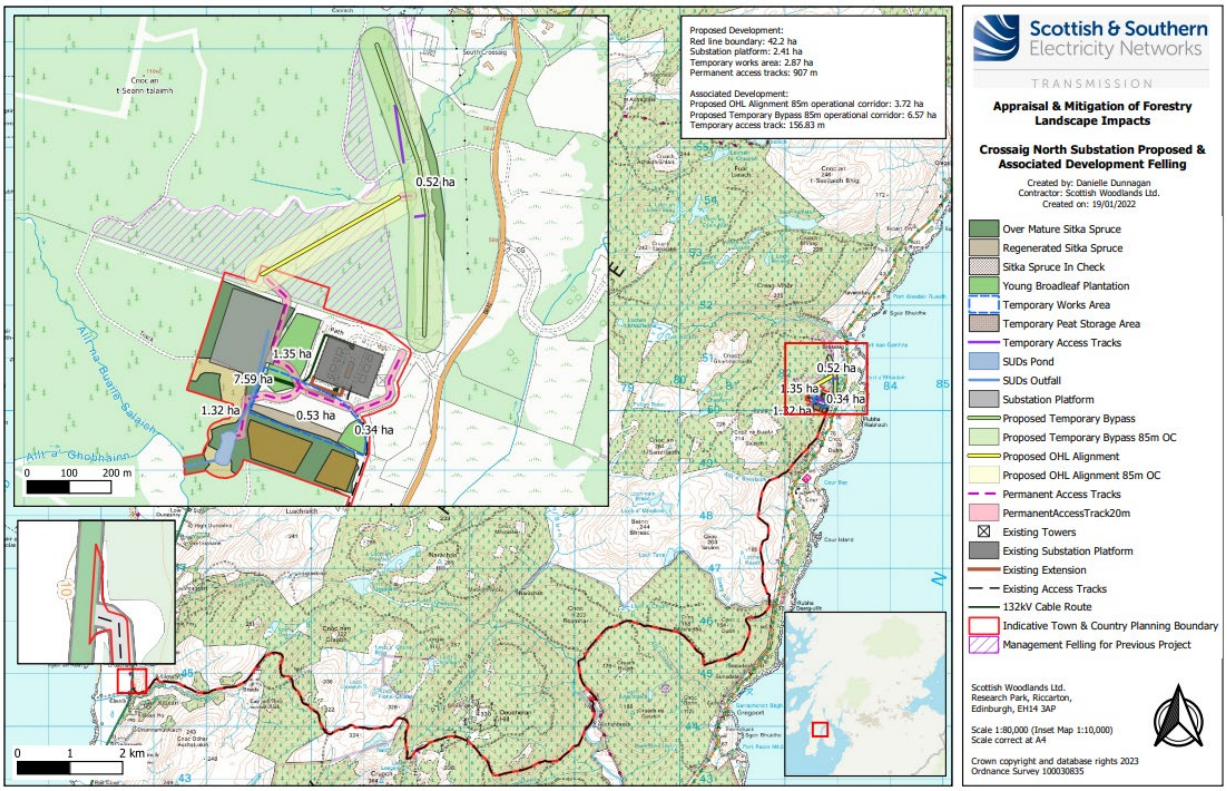
5.7. Cumulative Assessment

The Proposed Development and the Associated Development

Woodland Removal

5.7.1. The Proposed and Associated Developments will involve clearing a total of 11.65 ha of woodland, of which 9.43 ha is commercial forestry, 0.53 ha regenerated Sitka spruce, and 1.69 ha native broadleaved plantation. Compensatory planting on- and off-site will, however, 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 within the RLB is cleared, and during operation as the new non-commercial plantation is managed, but overall, the effect is assessed as minor, short-term, and not significant. A breakdown of woodland removal can be seen in **Figure 1** below.

***Figure 1** - Breakdown of cumulative woodland removal. Please also see Figure 1 in Annex J for full size map.*



Windthrow

5.7.2. In forestry there is a general commitment to fell to viable windfirm edges to minimise the risk of windthrow to retained crops. The woodland outside of the RLB was investigated for windfirm edges but, due to the age of the crop and existing pockets of windthrow, no viable windfirm edge could be established. Harvesting the crop to the RLB will increase the retained conifer crop's susceptibility to windthrow. However, the windthrow risk of the Associated Development is low due to being encompassed by the Inveraray to Crossaig OHL management felling which has been clear-felled. The cumulative windthrow risks of the Proposed and Associated Developments are, however, assessed as moderate and significant.

Forest Management

5.7.3. Engagement with the landowner has been undertaken to review and discuss the Project felling and any associated LTFPs including any impact on woodland windfirm edges. Continued management liaison will be undertaken for the duration of the Project between the Applicant and the landowner.

5.8. Mitigation

Mitigation During Construction

5.8.1. No significant effects are predicted based on the area of woodland removal proposed for the construction of the Associated Development. In terms of the Proposed Development, routine visual inspection of the conifer felling boundary will be undertaken to monitor ongoing tree stability. Once the outlined areas within the RLB are replanted

with broadleaved trees and shrubs and sufficient time has passed for successful woodland establishment, windfirm woodland edges will develop. This, alongside standard good practice working methods will ensure that significant effects on ecological and hydrological receptors and the wider forest resource are avoided.

5.8.2. Loss of woodland will be fully compensated through a Compensatory Planting Scheme through a combination of on-site and off-site planting. **Annex E** contains the proposed landscape mitigation plan for the site. In order to address the potential significant effect on forest land-use management, the Applicant has produced a Woodland Report (Crossaig North Woodland Report, see **Annex J**) which identifies all areas of felling required for the Proposed and Associated Developments. This report will be shared with the landowner to be coordinated with the woodland property's felling programme and LTFP. The proposed felling operations will comply with UKFS guidelines to further mitigate the effect on the wider forest land-use management.

Mitigation During Operation

5.8.3. 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 replanting on-site and agreements with off-site landowners within the Argyll and Bute Local Authority area. Similarly, the Applicant is prepared to work with the landowner as set out in the Woodland Report for the property to address the potential effect on LTFPs or management systems.

5.8.4. No further operational mitigation measures have been identified.

5.9. Appraisal Summary

5.9.1. 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 0.009% of the commercial plantation resource.

5.9.2. The loss of young coniferous woodland required to facilitate the Project has been assessed as having a low magnitude of change while the loss of mature coniferous woodland has been assessed as having a high 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. No other mitigation has been recommended.

5.9.3. The loss of young broadleaf plantation has been assessed as having a medium magnitude of change but low sensitivity, meaning that the overall impact will be minor and not significant. As with the loss of coniferous plantation, the loss of broadleaved woodland will be recovered through a compensatory planting scheme.

5.9.4. A summary of the appraisal of forestry is provided in **Table 6** below.

Table 6 – Appraisal of Forestry.

Environmental Feature	Development Interaction	Mitigation Measures	Receptor Sensitivity	Magnitude of effect	Significance of effect
Coniferous plantation (restock)	Mulch	Compensatory planting	Low	Low	None
Coniferous plantation (mature)	Clear-fell	Compensatory planting	Low	High	Moderate
Mixed broadleaf plantation	Fell	Compensatory Planting	Low	Medium	Minor

5.10. Mitigation Proposals

5.10.1. The key mitigation measures considered to reduce the potential effects of the Development are described in **Table 7**.

Table 7 - Mitigation Summary.

Topic	Mitigation Measure	Responsible
Forestry	Compensatory Planting Scheme (to ensure no net loss of woodland)	The Applicant