Chapter 13
Forestry

This page is intentionally blank.

13 Forestry

Contents

Figures

Appendices

This page is intentionally blank.

13 Forestry

13.1 Executive Summary

13.1.1 The northern development area is situated within Dungavel, a commercial forest originally planted between 1979 and 1986. The southern development area consists primarily of agricultural land, intersected by three narrow mixed-species shelterbelt woodlands.

13.1.2 In the northern development area, the first phase of clear felling began in spring 2022 under Scottish Forestry (SF)-approved Felling Permission (FPA-8659). This felling was required by a Statutory Plant Health Notice to remove Larch trees infected with Phytophthora ramorum.

13.1.3 Scoping for a Forest Plan covering the entire Dungavel Forest commenced in summer 2022, and Scottish Forestry approved the plan on 12 December 2023. This plan serves as the baseline for this forestry chapter. No Forest Plan exists for the southern development area's woodland, so its baseline was established through a field survey.

13.1.4 The design approach optimises alignment between the Proposed Development and the baseline, with subsequent analysis of differences to assess potential impacts.

13.1.5 The northern development area includes a Forestry Felling Area of 363.49 ha, comprising a 106.2 ha Proposed Development Felling Corridor and an additional 257.19 ha of felling to windfirm boundaries. Of this, 301.94 ha will be restocked which leaves a tree-free area of 61.45 ha associated with the Proposed Development infrastructure and associated tree-free buffers.

13.1.6 Of the 61.45 ha required to be felled but not replanted, 17.94 ha has been identified as open ground in the baseline forest plan, giving rise to a compensatory planting requirement of 43.51 ha, to be delivered offsite and secured via a suspensive Compensatory Planting Condition.

13.1.7 In the northern development area, a proportion of timber harvesting will take place before the main construction phase, with extracted timber transported via the existing forest road to the B743 and onward to market. A Forest Residue Management Plan has been developed to quantify brash and stump volumes and outline their intended use.

13.1.8 The southern development area requires 0.52 ha of permanent woodland removal, which will be compensated offsite.

13.1.9 The project includes approximately 56.63 ha of peatland restoration under the Habitat Management and Enhancement Plan (HMEP). As part of this, 31.16 ha of non-economic woodland will be removed to restore the bog. This removal does not require compensation, as it aligns with the Scottish Government's 2019 Policy on the Control of Woodland Removal, which prioritises public benefit.

13.1.10 The Proposed Development aligns well with the baseline forest plan and is expected to have a minor positive impact on the social, economic, and environmental benefits provided by the woodland. This is primarily due to peatland restoration and compensatory planting, which effectively balance the increased Phase One felling area.

13.2 Introduction

13.2.1 The purpose of this chapter is to assess and address the potential impacts of the Proposed Development on forestry resources. This chapter examines the existing forested areas within the site, detailing the required tree felling, forest management, and replanting strategies. It also considers the mitigation measures to minimise environmental disruption, including peatland restoration and compensatory planting. Additionally, the chapter outlines how the Proposed Development aligns with sustainable forestry practices, ensuring that any changes to the landscape are managed responsibly and in accordance with relevant regulations. The overall goal is to ensure that the Proposed Development integrates with the surrounding forestry environment in a way that minimises negative ecological impacts while promoting long-term environmental sustainability.

13.2.2 A comprehensive project description can be found in Environmental Impact Assessment (EIA) Report **Chapter 3: Project Description**, however the main design aspects include:

- The northern development area, featuring 18 wind turbines, with a rotor diameter of up to 163 m.
- 17 turbines with a tip height of 230 m and one (T06) at 200 m.
- The southern development area, which includes a 60MW solar array (up to three meters in height), a short-duration Battery Energy Storage System (BESS) (~25MW), and a long-duration BESS (~200MW).

13.2.3 Both development areas include supporting infrastructure, such as borrow pits, access tracks, electrical cables, and temporary construction compounds. Two potential locations are designated for the substation and short duration BESS, both of which are assessed in the EIAR Report, though only one will be constructed.

13.2.4 The western and southern parts of Dungavel Forest are located in the northern development area (refer to **Figure 3.1**), with the total area of Dungavel Forest extending to a landholding of approximately 1,324 ha. The forest is commercially managed, with Sitka spruce (*Picea sitchensis*), the main productive species. The Proposed Development includes the construction of 18 wind turbines, 17 of which are within the forest, with one situated on open ground at the forest edge. Of the turbines located within the forest, 15 are located within areas of mature crops and two turbines are positioned on recently felled and replanted ground. All associated infrastructure, including roads, borrow pits, laydown areas, control buildings, inverter stations, electrical cabling, temporary construction compounds, and substation compounds, are also located within the forest.

13.2.5 Dungavel Forest was originally planted between 1979 and 1986, predominantly with Sitka spruce alongside smaller proportions of other conifers, including Norway spruce (*Picea abies*), hybrid larch (*Larix × eurolepis*), and mixed broadleaves. Integral open ground is distributed throughout the forest, primarily along rides, riparian corridors, and hilltops. Yield classes vary significantly across the forest, ranging from Sitka spruce yield class 6 to 22, with most of the crop achieving yield classes between 8 and 18. Apart from the poorest areas (yield class 6), Dungavel Forest is considered a productive commercial forestry asset.

13.2.6 The forest is in the early stages of restructuring, with both the Forest Plan and Proposed Development Forest Plan aiming to enhance species diversity. Plans include introducing diverse conifers, native broadleaved trees in riparian corridors, and designed open ground to improve landscape integration.

13.2.7 The southern development area (refer to **Figure 3.2**), consists primarily of farmland interspersed with shelterbelt woodlands of varying ages, ranging from mid-rotation to maturity. All three shelterbelts are mixed-species plantations. Compartment one comprises a mix of broadleaf species and Scots pine (Pinus sylvestris), while compartment two consists of Norway spruce, and compartment three is composed of native broadleaves.

13.2.8 The access road servicing the southern development area will traverse the three shelterbelts, necessitating a small amount of woodland removal, which will be compensated for off-site.

13.2.9 Dungavel Forest serves as the backdrop for the northern development area, where restructuring has begun. An initial felling coupe was restocked in 2023, and a second coupe is currently being felled in winter/spring 2024/25. Riparian restocking connected to the Habitat Management Plan for the neighbouring Dungavel Windfarm occurred in 2022. The approved Forest Plan (Baseline Plan) details sequential felling (refer to **Figure 13.1)** and replanting (refer to **Figure 13.2)** over 20 years, concluding in 2043.

13.2.10 No equivalent baseline plan exists for the southern development area, but a baseline species map is provided in **Figure 13.3**. Given the minimal impact on shelterbelts, compensation will be based on gross woodland removal rather than net loss, which typically informs compensatory calculations.

13.2.11 The northern development area incorporates an area for bog restoration (refer to **Figure 13.4**) as part of the Proposed Development HMEP. This involves the removal of non-economic Sitka Spruce and the restoration of peat bogs rather than replanting in line with the Forest to Bog restoration guidance for crops less than yield class 8.

13.2.12 In the northern development area, due to turbine placement and the need to adhere to windfirm and legal boundaries, the felling phases (refer to **Figure 13.5**) have been redesigned. The replanting design (refer to **Figure 13.6**), derived from the Baseline Forest, has also been modified. However, with the exception of the peat restoration, it follows the same design methodology. Replanting will extend up to the Tree-Free Buffer footprint, incorporating keyhole areas and bat protection buffer zones (60-100 m radius around turbine bases). This footprint also includes infrastructure such as borrow pits, construction compounds, substation compounds, inverter stations, crane pads and roads.

13.3 Legislation, Policy and Guidelines

13.3.1 Relevant legislation and guidance have been reviewed for this forestry assessment. Policies from the South Lanarkshire Local Development Plan 2 (2021), East Ayrshire Council Local Development Plan 2, National Planning Framework 4, and other pertinent documents are considered. The key policies informing this assessment include:

- Climate Change (Scotland) Act 2019;
- Forestry and Land Management (Scotland) Act, 2018;
- Scotland's Forestry Strategy (SFS), 2019;
- Scottish Land Use Strategy (SLUS), 2021;
- National Planning Framework for Scotland 4 (NPF4), 2023;
- Control of Woodland Removal Policy (CoWRP), 2009;
- Guidance to FCS staff on implementing the Scottish Government's Policy on Control of Woodland Removal, 2019;
- Supplementary guidance to support the FC Forests and Peatland Habitat Guidance Note, 2000;
- Management of Forestry Waste, 2017;
- Use of Trees Cleared to Facilitate Development on Afforested Land – Joint Position Statement and Guidance, 2014;
- Forestry and Woodland Strategy for the Glasgow City Region 2020; and
- Ayrshire and Arran Forest and Woodland Strategy (2014).

13.3.2 These documents and their relevance to the Proposed Development are described in more detail below.

National Policies

13.3.3 The Forestry and Land Management (Scotland) Act 2018 marked a new era for forestry in Scotland. Both the Act and the Strategy have the principles of sustainable forest management at their core, including adherence to the principle of 'the right tree, in the right place, for the right purpose,' and recognising the opportunities to better integrate forestry with other land uses and businesses.

13.3.4 The Scottish Government's 2018 Climate Change Plan outlines the crucial contribution of forestry to mitigating climate change through sequestering carbon dioxide from the atmosphere and storing carbon in sustainably managed forests and wood products. The Plan sets targets for increasing forest cover and woodland creation, and for increasing the use of timber in construction.

13.3.5 The *Scotland's Forestry Strategy (SFS) 2019* envisions a future where forests are sustainably managed, integrated with other land uses, and contribute to economic, environmental, and community well-being.

13.3.6 This vision is built on the key strategic themes of Wood and Wood Fibre Supply and Demand, Climate Change Mitigation, Market Value and Efficiency, Adaptation and Resilience, Integrated Land Use, Skills and Workforce, Natural Assets, Environmental Quality and Biodiversity, Sustainable Thriving Rural Communities, Landscape and the Historic Environment, Health and Well-Being, and Urban Forestry.

13.3.7 The SFS sets out the following objectives:

- Ensuring Forest and Woodlands are Sustainably Managed
- Expanding the area of forests and woodlands, recognising wider land-use objectives
- Improving efficiency and productivity, and developing markets
- Increasing the adaptability and resilience of forests and woodlands
- Enhancing the environmental benefits provided by forests and woodlands
- Engaging more people, communities and businesses in the creation, management and use of forests and woodlands

13.3.8 The SLUS is a strategic framework for achieving the 'best' use from Scotland's land resource. The strategy aims to achieve a more integrated approach to land use, maintaining the future capacity of the land resource and is based on the three pillars of sustainability: economy, environment and communities. Attaining multiple benefits from land is a key theme, and the focus on forestry is the identification of areas best for tree planting in an integrated land use system. Regional Forestry and Woodland strategies developed by local authorities are identified as the delivery mechanism to promote good practice and multi benefit land use.

13.3.9 NFP4 highlights the role of woodlands in climate change mitigation, biodiversity enhancement and sustainable development. NPF 4 encourages increasing tree planting and expanding forest areas to support environment goals and the green economy. It also outlines policies for the protection of existing forests, ensuring their integration into land-use planning and spatial strategies.

13.3.10 In general, there is a strong presumption against woodland removal, and replanting of harvested forests is a normal condition of gaining felling approval. The ability of woodlands to sequester carbon, and hence their role in possible mitigation of climate change, is an important factor in shaping regulatory mechanisms.

13.3.11 The control of forestry felling is usually administered under the Forestry and Land Management (Scotland) Act, (2018). Woodland removal, defined as *"the permanent removal of woodland for the purposes of conversion to another land use"* falls within the scope of Forestry (Environmental Impact Assessment) (Scotland) Regulations 2017, except in cases when woodland removal is associated with development. In the case of renewable energy development, potential significant environmental effects of woodland removal are assessed by the Scottish Ministers for consent applications over 50 MW as is proposed here.

13.3.12 The Scottish Government's policy document on Control of Woodland Removal provides the broad framework under which accompanying implementation guidance has been produced to give details and background on the latest guidance, policy and to discuss the principles, criteria and process for managing the policy's implementation in respect of forestry removal on development sites.

13.3.13 Principal aims of the Control of Woodland Removal Policy are to provide a strategic framework for appropriate woodland removal and to support climate change mitigation and adaptation.

13.3.14 The Control of Woodland Removal Policy is built on the following principles:

- A strong presumption in favour of protecting Scotland's woodland resource.
- Woodland removal should be allowed only where significant and clearly defined additional public benefit can be demonstrated. A proposal for compensatory planting may add additional public benefit.
- Approval for woodland removal should be conditional on the undertaking of actions to ensure full delivery of the defined additional public benefits.
- Planning conditions and agreements are used to mitigate the environmental impacts arising from development and SF will also encourage their application to development-related woodland removal.
- Where felling is permitted but woodland removal is not supported, conditions conducive to woodland regeneration should be maintained through adherence to good forestry practices as defined in the UK Forestry Standard.

13.3.15 The Control of Woodland Removal Policy identifies the following criteria for areas where woodland removal may occur without a requirement for compensatory planting:

- Enhancing priority habitats and their connectivity.
- Enhancing populations of priority species.
- Enhancing nationally important landscapes, historic environment and geological Sites of Special Scientific Interest (SSSIs).
- Improving conservation of water resources.
- Improving conservation of soil resources.
- Public safety.

13.3.16 The requirements raised in the policy may be addressed by implementing changes to forest design, adapting design and/or undertaking compensatory planting.

13.3.17 In 2014, SEPA issued guidance on the management of forestry waste in response to renewable energy developments on afforested land. This was followed in 2017 by the joint position statement and guidance titled "The Use of Trees Cleared to Facilitate Development on Afforested Land," produced by SEPA, SNH, and FCS to complement the initial advice (Scottish Environment Protection Agency, Scottish Natural Heritage, FCS, 2014). These guidance notes do not apply to conventional forestry activities, as no land use change is involved, and there are exclusions under the EU Waste Framework Directive applicable to forestry (European Commission, 2008). When trees are removed for conversion to non-forestry land use, the guidance advises the following considerations:

- Professional forester input: Quantify the likely volumes, markets, and economic uses of trees to be exported from the site. The applicant should commit to employing a professional forester to implement and maximise the removal of timber and forest residue on-site.
- Quantify non-economic material: Assess the likely volumes of material for which no economic off-site use can be found.
- Identify valid on-site uses: Determine if there are valid on-site uses for material with no economic off-site use, using professional ecological consultant input for ecological uses and professional water quality expertise when material is to be retained on-site. Boundaries of areas proposed for such uses should be outlined on plans, and information on the depth and size of material to be used should be provided within the EIA Report.

Regional Policy

13.3.18 The Proposed Development spans two local authority areas. Most forestry is found within South Lanarkshire Council which is covered by the South Lanarkshire Local Development Plan 2, 2021 and supported by the Forestry and Woodland Strategy for the Glasgow City Region, 2020.

13.3.19 The Strategy aims to support and integrate national policies with all eight Local Authorities covered by the Strategy (including South Lanarkshire), guiding forestry and woodland expansion in the region, providing a policy and spatial framework to maximise the contribution of woodland and forestry to the people, environment and economy of the region.

13.3.20 The Strategy is in line with national policy, emphasising a presumption against woodland removal. The facilitation of other forms of renewable energy development has been identified where it does not result in a net reduction of woodland cover.

13.3.21 Regional priorities for woodland expansion and management are detailed by spatial landscape zones, with the Proposed Development falling within the Plateau Moorlands zone. South Lanarkshire's Plateau Moorland zone is characterised by gently sloping moorland with a mixture of peatland, grassland and coniferous forests. The Strategy identifies the surrounding land as either preferred or sensitive to woodland expansion.

13.3.22 One of the key issues identified within this zone is the restructuring of commercial forests to retain commercial productivity while improving their landscape and ecological value, as well as having potential for a significant increase in new woodland cover including:

- Productive commercial woodlands with suitable access.
- Mixed and energy woodlands close to communities or associated with mineral working to provide screening and forming part of site restoration when extraction is complete.
- Native woodland expansion to contribute to habitat networks along river valleys.

13.3.23 The southern development area is located within East Ayrshire Local Authority which is covered by the East Ayrshire Council Local Development Plan 2 and the Ayrshire and Arran Forestry and Woodland Strategy (East Ayrshire Council, 2014). This categorises the landscape zone as the Muirkirk Upland Zone, much of which is open moorland covered by the Muirkirk and North Lowther Uplands (SPA) and is identified as being "sensitive" to woodland expansion (new woodlands) or compensatory planting.

13.4 Consultation

13.4.1 **Table 13.1** Summarises the responses received during the Scoping process and additional post-scoping comments received relevant to forestry and how these have been addressed in the Environmental Impact Assessment EIAR.

13.4.2 In addition to the formal Scoping process, pre-application consultation was undertaken with Scottish Forestry (SF), including two site meetings to review and discuss iterations of the Proposed Development Forest Plan.

Table 13.1 - Summary of Forestry related Consultation Responses

Consultee	Consultee Response	Applicant Response
SF	The key issues identified by Scottish Forestry in relation to forestry policy, support, and regulation for the project include: 1. Opposition to Permanent Woodland Removal: Scottish Government policy and the Climate Change Plan (2018–2032) oppose permanent woodland removal for conversion to other land uses unless significant public benefits are demonstrated. 2. Commitment to Minimise Woodland Removal: Scottish Forestry acknowledges and welcomes the Applicant's intent to limit woodland removal to what is necessary for the project but advises on managing the permanent loss that will occur. 3. Compensatory Planting: • Woodland removal must include a Compensatory Planting Plan that aligns with the UK Forestry Standard. The plan should detail: • The area of deforestation and its calculation. • Planting specifics, including species composition, design, deer management, maintenance, and monitoring. • Land for compensatory planting must be owned by the Applicant or secured under a long-term lease, and it must be capable of supporting sustainable woodland growth. 4. Alignment with National Planning Framework 4: Planning authorities must consider how projects protect, enhance, and improve woodland resilience when approving plans that involve woodland removal. 5. Compliance with Forestry Standards: Changes to the UK Forestry Standard applicable in Scotland (effective October 2024) should be integrated into project planning to ensure compliance.	• This forestry chapter has been prepared by a suitably qualified professional and supported by all necessary data and maps. • Pre-application consultation and site meetings were conducted with Scottish Forestry on 15 December 2022 and 20 March 2024 to agree proposals before use in this report. Further drafts of the felling and replanting plans were shared with SF on 14 January 2025 with feedback received and responded to. • Mitigation measures relating to replanting and compensatory planting are detailed in this chapter (**Section 13.8**). • A commitment to deliver all forestry operations to UKFS standards is included in this chapter along with commitment to a compensatory planting plan (**Section 13.8.2**). • The report details compliance with UKFS, including progressive restructuring, landscape considerations and species diversity requirements.

13.5 Assessment Methodology and Significance Criteria

13.5.1 This chapter follows the assessment methodology set out in the Guidance on Implementing the Scottish Government's Policy on Control of Woodland Removal – Annex 1 Environmental Statement (FCS 2015). This report also draws on the principals set out in *The Forestry (Environmental Impact Assessment) (Scotland) Regulation 2017* in assessing the overall significance of environmental effects (Scottish Government, 2017).

13.5.2 Several parameters were considered when determining the requirements for the Proposed Development, including creating the following corridors:

Northern Development Area

- 60 m radii tree free bat protection buffers around 18 turbines which are 230 m to tip.
- 100 m radii tree free bat protection buffer around one turbine which is 200 m to tip.
- 10 m tree-free areas around hard standing areas associated with turbine bases and substation.
- 30 m wide tree free road corridors.
- 10 m wide road construction corridor (within the 30m tree free road corridor).
- 10 m offset around temporary construction compounds, borrow pits and control buildings.
- 60 m access track felling corridor (required to provide safe working from falling trees).

Southern Development Area

- 10 m tree free standoff from infrastructure.
- 20 m wide tree free road corridors.

13.5.3 Permanent infrastructure areas and their associated buffers will be cleared and maintained as tree free while temporary infrastructure areas will be cleared, restored, and replanted following construction.

13.5.4 Only permanent infrastructure, including tree-free buffers, are considered in compensatory planting calculations. Temporary construction areas that will be restored and replanted following construction, as well as HMEP peat restoration areas, have been excluded from these calculations.

Desk Study

13.5.5 The northern development area benefits from an existing Baseline Plan for Dungavel Forest and comprehensive base data regarding current tree species, planting years, Yield Class (refer to **Figure 13.7**), and Wind Hazard Class. Tree crop height data was obtained during site surveys. Together, these data sources provide reliable information to support silvicultural decision-making.

13.5.6 A Baseline Plan does not exist for the southern development area. However, a species map based on field surveys has been produced to inform the assessment (**Figure 13.3**).

Site Visit

13.5.7 Ground-truthing of specific aspects of the forest and woodlands was conducted during 2024 and early 2025 to support the desk study and provide quantitative validation for key elements of the proposal. The field survey focused on:

- Tree canopy heights.
- Windfirm boundaries.
- Felling phasing in relation to access road alignments to assess the appropriateness of the Forestry Felling Area and Tree-Free Buffer.
- Soil suitability for HMEP peat restoration and selection of restocking species.

Assessment of Potential Effect Significance

Forest Plans

13.5.8 The Forestry Commission was established in 1919 to encourage large-scale forest expansion and create a strategic timber reserve for the United Kingdom. Afforestation primarily took place in upland areas, where only a limited number of tree species could successfully establish. As these

forests have matured and forestry policies have evolved, there has been a shift towards developing more diverse, multi-purpose woodlands.

13.5.9 The restructuring of even-aged, single-species forests is a key requirement under the UK Forestry Standard (UKFS) and certification systems such as the UK Woodland Assurance Standard (UKWAS, 2018). Forest restructuring is approved through the forest planning process, typically in the form of a Forest Plan, which is assessed and authorised by SF as the Competent Authority.

13.5.10 Forest Plans apply to individual forests or groups of woodlands and serve as strategic documents outlining planned forestry operations, including harvesting, replanting, and road construction, over a 20-year period, divided into four five-year phases. These plans seek to balance management objectives with silvicultural prescriptions while accounting for factors such as landscape, access, biodiversity, and the historic and water environments. The management strategy outlined in a Forest Plan aligns with the structural requirements of the UKFS and UKWAS. Silvicultural prescriptions are informed by site-specific conditions, including location, species composition, woodland age structure, and the risk of windblow damage to commercial conifer crops.

13.5.11 A Baseline Plan is in place for Dungavel Forest. As part of the EIA consultation process, proposed felling and restocking plans have been developed in consultation with SF, supported by two site visits conducted on 15 December 2022 and 20 March 2024. These visits facilitated discussions regarding the principles of the felling and replanting plans for the Proposed Development. Further drafts of the felling and replanting plans were shared with SF on the 14th of January 2025 with feedback received and requested detail provided in this chapter.

13.5.12 The Felling and Replanting Plans from the Baseline Forest Plan are presented in **Figure 13.1** and **Figure 13.2** along with the Felling and Replanting Plans for the Proposed Development Forest Plan which are detailed in **Figure 13.5** and **Figure 13.6**. The southern development area baseline woodland plan is detailed in **Figure 13.3** and the associated woodland removal plans for the same area are detailed in **Figure 13.8.**

The Baseline Forest Plan provides a reference point for evaluating changes introduced by the Proposed Development Forest Plan. By comparing forest statistics—such as felling and replanting plans—it is possible to accurately assess the potential impact of the Proposed Development. These statistics will be applied consistently to both the Baseline and Proposed Development Forest Plans to ensure accurate impact assessment.

13.5.13 This assessment uses summary statistics on:

- the area of forest felled in each felling phase;
- timber production estimates;
- haulage requirements;
- replanting areas, species composition, and proportions;
- compliance with UKFS requirements; and
- requirements for compensatory planting.

13.5.14 The significance of effects is evaluated using the following criteria:

- **Major** – A substantial alteration in forestry operations, resulting in long-term or irreversible changes to woodland composition, management, or biodiversity.
- **Moderate** – A noticeable change in forestry management that could influence local biodiversity, timber yield, or landscape character but remains within regulatory compliance.
- **Minor** – A limited effect on forestry that does not significantly alter overall management objectives or biodiversity outcomes.
- **Negligible** – An effect that is imperceptible or within the normal range of forestry operations, with no material impact on forest sustainability or land use.

13.5.15 The assessment of forestry effects also considers two key factors:

- **Sensitivity** – How sensitive the receptor is to change. For example, certain woodland types or forestry operations may be more sensitive than others.
- **Magnitude of impact** – The scale of change, such as whether a large area is felled at once or gradually over time.

Design Methodology

13.5.16 Initial proposals were scoped with Scottish Forestry during a site meeting in December 2022 to assess the potential impact of the Proposed Development. Following feedback from SF and other consultees, multiple design iterations were undertaken to balance forestry impacts with considerations related to ecology, landscape, peat environments, and other environmental factors.

13.5.17 The design of the Proposed Development took into account a range of factors, including detailed consultee feedback, tree height and crop age structure, the felling and replanting plans in the Baseline Forest Plan, as well as landscape and topographical constraints at individual turbine locations. The design process sought to:

- Minimise woodland removal by positioning turbines in areas where restructuring was already planned in the Baseline Forest Plan, such as existing open ground.
- Utilise existing infrastructure where possible by placing turbines near established forest roads and rides to reduce crop loss due to new infrastructure.
- Reduce impact on planned forestry operations by situating turbines in younger crop areas or compartments already scheduled for felling.
- Minimise keyhole clearings to the smallest area necessary to accommodate turbines and associated bat protection zones.
- Minimise impact on Dungavel HMP areas.
- Minimise impact on deep peat.
- Implement a Felling Corridor to facilitate the safe construction of the Proposed Development, reducing the risk of windblown trees striking personnel. Restocking will be carried out up to the tree-free buffer, ensuring a managed transition between forested areas and open infrastructure while maintaining long-term forestry and safety objectives.
- Position the solar array and BESS in agricultural fields rather than shelterbelt woodlands, ensuring woodland removal is limited to that required for access road construction.

13.5.18 The following section explores how these design considerations were integrated into an iterative process, ultimately shaping the final design.

Keyholing

13.5.19 The primary design objective is to minimise woodland loss, with keyhole clearings kept as small as possible. Keyhole size depends on various factors, including tree crop characteristics, turbine selection, and ecological constraints such as the presence of protected species.

13.5.20 Key Factors in Keyhole Design

- Tree Height Considerations – Trees with top heights under 12 meters are considered to have minimal windblow risk, allowing keyhole insertion of infrastructure without requiring additional felling to windfirm boundaries. Mature crops, however, may require more extensive felling to windfirm boundaries before inserting infrastructure and replanting to the desired keyhole design.

- Turbine Selection – Taller turbine hub heights reduce keyhole size, as rotor blades remain higher above the canopy. This approach enhances wind resource potential while reducing interference from surrounding forestry.
- Limiting Factors:
  - Rotor Blade Length – The largest single transportable component.
  - Landscape Considerations – Ensuring turbine selection aligns with the scale, setting, and visual appearance of neighbouring developments.

13.5.21 Turbines with a maximum tip height of 200-230 m have been selected for the Proposed Development in order to maximise potential for woodland retention and wind resource, while balancing other key considerations. The selected turbines would permit retained tree heights of 25 m adjacent to turbines minimising woodland removal and allowing a full rotation commercial tree crop to be grown.

13.5.22 A further important design consideration in keyhole size is the presence of bats, which are European Protected Species and require tree free stand-off zones between tree canopies and the swept edge of the turbine blades (refer to **Chapter 7: Ecology**). In this design approach, a bat protection buffer zone has been the limiting factor in how close the tree edge can be to the base of turbines. For the turbines and rotor blades proposed, the bat protection buffer zone radius used for this assessment is 60 m for the 17 turbines up to 230 m to tip and 100 m for the one turbine up to 200 m to tip (T06).

Windblow Risk

13.5.23 Windblow risk was assessed based on experience with similar nearby crops and standard Critical Height and Terminal Height figures for Wind Hazard Classes (WHC) at each turbine location.

- Majority of the site – Classified as WHC 5, with some WHC 4 areas in lower, more sheltered elevations.
- Critical Height – The height at which windblow is expected to begin.
- Terminal Height – The height at which significant windblow (≥40% stand loss) is likely.

13.5.24 **Table 13.2** details the age at which the yield classes within the Proposed Development area reach Critical and Terminal Heights for WHC five conditions.

Table 13.2 - Ages at Which Yield Classes Reach Critical and Terminal Heights for WHC five (Sitka Spruce)

Yield Class (YC)	Non-thin Critical Height (16 m)	Systematic Thin Critical Height (12 m)	Terminal Height (19.5 m)	Systematic Thin Terminal Height (15.5 m)
6	56 years	44 years	69 years	55 years
8	48 years	38 years	59 years	47 years
10	42 years	33 years	51 years	41 years
12	37 years	29 years	44 years	36 years
14	33 years	26 years	40 years	32 years
16	30 years	24 years	37 years	29 years
18	28 years	22 years	34 years	27 years
20	27 years	21 years	32 years	25 years
22	26 years	20 years	31 years	25 years

13.5.25 Field observations from nearby forests support the data in **Table 13.2**, indicating that non-thinned Sitka spruce crops between 18 m and 23 m in height begin to experience significant windblow. Yield classes across the forest range widely from 6 to 22. **Figure 13.7** provides the general yield class distribution across the Forestry Felling Area with yield classes spanning from 6 to 18. The systematic thinning data serves as a proxy in the absence of published data on the impact of cutting into crops and creating a brown edge. Experience from local forests suggest that brown edges may lead to windthrow earlier than systematic thinning projections indicate, as these crops are more exposed to wind and have poorer soils than in standard thinning scenarios.

13.5.26 By 2027, when the Proposed Development is expected to commence construction, all existing crops within the Forestry Felling Area will have reached the systematic thin critical height of 12 m (at age 44) or older, with the majority having already reached terminal height.

13.5.27 Given the risk of wind throw from the creation of brown edges, the Forestry Felling Area extends to the nearest windfirm boundary.

13.5.28 Shelterbelt woodlands in the southern development area were assessed for windblow risk:

- Compartments one and three: Tree heights of eight and four meters, respectively, well below the critical 16 m height.
- Compartment three: Tree height of 19 m—above the critical height but below the 19.5 m terminal height. The proposed felling area coincides with the very edge of the forest in a historic windblown zone, mainly caused by waterlogged soil due to ineffective drainage. Since the windblown edge has remained windfirm for an estimated three to five years and is sheltered from prevailing westerly winds, full removal of the shelterbelt is deemed unnecessary for access track construction.

Topography and Landscape

13.5.29 A landscape and visual assessment is provided in **Chapter 5: Landscape and Visual**, with an additional forestry landscape appraisal provided in **Appendix 13.1**.

13.5.30 The forestry and landscape elements were reviewed in the context of the Proposed Development and the existing Baseline Forest Plan, which aligns with UK Forestry Standard (UKFS) best practices, including:

- UKFS Guidelines - Forests and Landscape (Forestry Commission, 2017)
- Forestry Commission Guidance Notes, *e.g.*, Design Techniques for Forest Design Planning (Forestry Commission, 2014)

13.5.31 Felling beyond the Proposed Development Felling Corridor requires approval through a Forest Plan amendment. The ongoing regulatory process remains under the authority of Scottish Forestry (SF), as stated in the Long-Term Forest Plans: Applicants Guidance (Forestry Commission Scotland, 2016).

13.5.32 SF has explicitly advised the Energy Consents Unit (ECU) and planning authorities to approve only the felling necessary for construction. In a statement to the Applicant from Central Scotland Conservancy (10.12.2024), SF confirmed its role as the primary forestry regulator, ensuring that ongoing forest management aligns with long-term objectives.

13.5.33 The design approach for the Proposed Development prioritises:

- Minimising windthrow risk by felling to windfirm boundaries.
- Reducing woodland removal by replanting up to the Restocking Tree-Free Buffer.
- Maintaining Baseline Plan principles concerning restocking species, coupe design, and the phased felling approach.

Timber Harvesting Volume Calculation Methodology

13.5.34 Timber volumes are derived from Forestry Commission Yield Models, based on the age of tree crops and estimated Yield Class. These estimates use sub-compartment data provided by the local forest manager and field verification. All estimates are based on volumes as of 2025 as the precise felling dates are unknown with the Forest Plan allowing a five-year felling window. Species specific yield models were used, with an initial planting spacing of two meters and no thinning. A standard conversion factor of 1.25 has been applied to convert net volume into tonnage, which was then used to estimate timber volumes.

Summary of Design Methodology

13.5.35 The design methodology for the Proposed Development was shaped through an iterative process incorporating feedback from SF and other consultees. Key considerations included minimising woodland removal, optimising turbine placement to align with existing forestry plans, and reducing environmental impacts on ecology, peatlands, and landscapes. The design leveraged existing infrastructure and forest restructuring plans to limit new disturbance while also considering windthrow risks, topographical constraints, and ecological factors such as bat protection zones. A keyholing approach was adopted to maintain forest cover and minimise woodland loss. The Proposed Development's impact was assessed against the Baseline Forest Plan, aligning with UK Forestry Standards. Additionally, timber volume calculations were based on Forestry Commission Yield Models, considering age, species, and forest conditions to estimate harvesting potential.

Requirements for Mitigation

13.5.36 Where woodland removal is an unavoidable consequence of land-use change, compensatory planting will be undertaken in accordance with the Implementation Guidelines for the Control of Woodland Removal Policy (Scottish Government, 2019). The details for this will be outlined in a compensatory planting plan, ensuring that forest cover is maintained in the long term.

13.5.37 Where woodland removal is proposed, non-forestry residues may be produced. In such cases, a forest residue management plan will be developed to address the handling and disposal of residues, minimising potential environmental impacts.

13.5.38 To mitigate the significant risk of windthrow, felling will be carried out to windfirm boundaries, and replanting to infrastructure keyholes. Ongoing monitoring will be implemented to assess tree stability post-felling. Additional adaptive management strategies will be developed if unforeseen windthrow impacts occur.

13.5.39 Restocking will be carried out as part of the planned replanting strategy to ensure long-term woodland cover is maintained. This will align with forestry management objectives and biodiversity enhancement goals, resulting in a negligible significance on overall forestry land use.

13.5.40 Forest-to-bog peat restoration will remove 31.16 ha of non-commercial Yield Class 6 Sitka spruce, representing a major beneficial effect significance. A HMEP has been developed to secure the reinstatement of the peatland habitat, ensuring long-term carbon sequestration benefits.

Assessment of Residual Effect Significance

13.5.41 Comparative forest statistics will be generated for both the Baseline Forest Plan and the Proposed Development Forest Plan. These statistics will assess the scale, magnitude, and pace of changes between the two plans, ensuring compliance with UK Forestry Standard (UKFS) requirements.

Limitations to Assessment

13.5.42 The northern development area has existing felling approvals. Therefore, felling could continue as planned, while the Proposed Development undergoes assessment for approval. This would have an impact on the baseline and potentially reduce the amount of felling required for the Proposed Development.

13.6 Baseline Conditions

13.6.1 Forest Plans serve as critical tools for strategic forest management, balancing the owner's objectives with site-specific considerations such as landscape, biodiversity, soil and water protection, archaeology, and public access. These plans ensure the integration of social, economic, and environmental factors in forest management.

13.6.2 The Baseline Forest Plan spans from 2023 to 2043, with detailed approvals for felling and replanting for the first ten years (up to 2033) and indicative felling phases for the subsequent decade (2033–2043).

13.6.3 Key site factors assessed in the Baseline Forest Plan are summarised below.

Social

13.6.4 **Landscape**: Restructuring presents opportunities to enhance user experience by diversifying species and age structure along core paths and vantage points. The plan includes greater species diversity than in the first rotation, incorporating Pacific Silver Fir (Abies amabilis), expanded Norway Spruce, and native broadleaf planting, particularly along public roads and core paths.

13.6.5 **Access and Recreation**: The plan proposes maintaining recreational routes through the property, with potential expansion as the forest road network extends into new areas.

Economic

Northern Development Area

13.6.6 Dungavel Forest is a medium-sized commercial forest with an even-aged crop, spanning only a seven-year range in original planting years. However, growth varies significantly across the site. Compartments on better soils and at lower elevations have reached commercial maturity for felling, while those at mid-elevations are still 10 to 15 years away from harvesting. In the upper elevations, growth lags even further behind as a result of altitude, exposure and poor waterlogged conditions dominated by deep peat. Adding to this complexity is the presence of the Dungavel Windfarm in the north-east of the property, as well as a proposed Habitat Management Plan area for Dungavel Windfarm in the southern section of the forest.

13.6.7 Dungavel Forest has been managed since planting as a commercial forest, primarily focused on Sitka spruce timber production. The Baseline plan continues this approach, with high percentages of Sitka spruce incorporated into the baseline restructuring plan. A key benefit of the plan is its role as a benchmark for "normal" forest management, against which the Proposed Development can be assessed.

13.6.8 Tree crop variation at Dungavel Forest presents several opportunities in planning the Proposed Development:

- Existing Baseline Forest Plan – A detailed forest management framework balancing economic, social, and environmental considerations, developed through full public consultation.
- Comprehensive Crop Data – Good contemporary knowledge of the property among both Forest Managers and Scottish Forestry staff.
- Young Restocks – Opportunities for siting turbines using keyhole techniques in young crops, reducing the need for clear felling to windfirm edges.
- High-Density of Forest Rides – The forest design includes a dense network of rides, allowing for felling to windfirm boundaries where keyholing is unsuitable due to tree height and windblow risk.

13.6.9 A primary management objective in the Baseline Forest Plan is to maximise financial returns from timber production through sound silvicultural practices, balanced with site-specific considerations. Reliable timber production supports regional rural economies, benefiting both in-forest and downstream industries.

13.6.10 Baseline Forest Plan achieves this objective through:

- Development of felling coupes that allow for regular, economically viable harvesting.
- Replanting plans that maximise future timber production by planting suitable tree species in appropriate locations.
- Compliance with UKFS while optimising commercial forestry areas through enhanced site preparation, drainage, and improved planting stock.
- Allocating less suitable land for non-commercial forestry benefits, including riparian buffer zones, habitat networks, and open ground for archaeological and recreational access.

Southern Development Area

13.6.11 The southern development area includes three shelterbelt woodlands totalling 7.9 ha:

- Compartment one (3.93 ha) – A 26-year-old, semi-mature mixed woodland of Scots pine *(Pinus sylvestris)*, Hawthorn *(Crataegus monogyna)*, Sessile oak *(Quercus petraea)*, and Grey willow *(Salix cinerea)*. Tree heights average 12 meters for the pine and eight meters for the broadleaves.
- Compartment two (0.33 ha) – A mature, 47-year-old Norway spruce woodland with an average tree height of 19 meters.
- Compartment three (3.64 ha) – A slow-growing, 17-year-old broadleaf woodland in its establishment phase, primarily composed of Downy birch *(Betula pubescens)* and Rowan *(Sorbus aucuparia)*, with trees averaging four meters in height.

13.6.12 The shelterbelts in the southern development area act to protect livestock from adverse weather.

Environmental

13.6.13 Recognising the ecological importance of the Muirkirk and North Lowther Uplands Special Protection Area (SPA) and the Muirkirk Uplands Site Special Scientific Interest (SSSI) adjacent to the site, the baseline plan includes safeguards developed in consultation with NatureScot, these include:

- Conducting forestry operations outside of the bird nesting season.
- Implementing significant native broadleaf replanting in areas near the designated site.

13.6.14 The plan emphasises the site's natural characteristics by maintaining generous open spaces in upper reaches and riparian corridors. Narrower buffers are applied where watercourses become more incised, with native broadleaf planting enhancing these areas, particularly in lower sections of the property.

A Scheduled Monument (SM) is located in open ground near the summit of Dungavel Hill, Dungavel Hill cairn (SM2848). The plan preserves its setting by maintaining open ground and improving access through forest restructuring.

13.7 Scope of the Assessment

Spatial Scope

13.7.1 The spatial scope of this EIA Report encompasses the geographic areas affected by the Proposed Development, including:

- Northern Development Area – Dungavel Forest: A medium-sized commercial forest primarily composed of Sitka spruce, with varying growth rates due to soil quality and elevation. This area

includes compartments designated for commercial forestry operations and is subject to ongoing forest management planning.

- Southern Development Area: Three distinct shelterbelt woodlands totalling 7.9 ha, composed of a mixture of coniferous and broadleaf species at varying stages of maturity.
- Surrounding Environments: The assessment considers adjacent landscapes, access routes, hydrological features, and biodiversity zones that may experience direct or indirect effects from the Proposed Development.

Temporal Scope

13.7.2 The assessment examines potential impacts across different temporal phases:

- Construction Phase (2 years): Includes land preparation, felling, road construction, and turbine/solar/BESS installation.
- Operational Phase (40 years): Covers the 40 year period in which the Proposed Development is actively generating energy and interacting with forest management activities.
- Decommissioning Phase (1.5 to 2 years): Encompasses the removal of infrastructure and restoration of affected forestry areas (excluding roads).

Receptors Requiring Assessment

13.7.3 The EIA Report identifies key environmental and socio-economic receptors that may experience significant effects due to the Proposed Development:

- Forestry and Land Use

  Scoped In:

  - Changes to felling schedules and associated timber yields – The Proposed Development may impact timber production, requiring analysis of economic and resource availability implications.
  - Alterations in species composition due to replanting – Changes in planting strategy could affect biodiversity, forest resilience, and ecological balance.
  - Structural changes in forestry management plans and associated impacts on forest sustainability – The Proposed Development may necessitate modifications to long-term forestry planning, impacting sustainability objectives.
  - The above changes must be reviewed in against the UK Forest Standard, including potential archaeological impacts.

- Landscape and Visual Impact

  Scoped In:

  - Alterations to forested landscapes due to felling and replanting strategies – The change in land cover could impact regional landscape character and perception.
  - Impacts on the visual amenity of the area, particularly in relation to key viewpoints.

- Woodland Removal Impact

  Scoped in:

  - Loss of afforested areas to the Proposed Development must be considered against relevant polices to determine the correct course of action both in terms of peatland restoration and compensatory planting requirements.

Environmental Measures Embedded into the Development Proposals

13.7.4 Embedded mitigation measures for the Proposed Development have been designed to align with industry best practices and relevant regulatory frameworks, including the UK Forestry Standard where applicable. These measures, which are integral to the design, construction, operation, and decommissioning phases, aim to minimise environmental impacts while ensuring compliance with forestry and environmental management requirements. Key embedded mitigation includes adherence to Construction and Environmental Management Plans (CEMP) outlined in **Chapter 3** and **Technical Appendix 3.1**, incorporating best practices for soil conservation, water management, and biodiversity protection within the commercial forestry setting. Additionally, sustainable forest management principles will be followed to ensure that tree felling, replanting, and habitat restoration are conducted in a manner that supports both renewable energy generation and long-term environmental stewardship.

13.8 Assessment of Potential Effects

Overview

13.8.1 As outlined in **Section 13.6**, the design of the Proposed Development considers both the Landowner's management objectives and Scottish Government policy, aiming to minimise its impact on the Baseline Plan. The proposal integrates sustainable energy production within the forest planning process while maintaining the social, economic, and environmental aspects of the Baseline Plan.

13.8.2 The following sections discuss and assess the social, economic, and environmental impacts of the Proposed Development Forest Plan in relation to the Baseline Plan.

Social

Archaeological Considerations

13.8.3 Any known or newly discovered archaeological features will be marked on-site before felling and protected from operations. Major features will have 20 m unplanted buffers, while minor features will have 10 m open ground buffers. The Dungavel Hill cairn SM, will remain unaffected by the proposed forestry changes.

Cultural Heritage

13.8.4 A detailed discussion on the archaeological aspects of the Proposed Development is provided in **Chapter 10: Cultural Heritage**, which assesses its impact on archaeology and cultural heritage.

Landscape Considerations

13.8.5 The **Forestry Landscape Appraisal** can be found at **Appendix 13.1**. It provides a comprehensive assessment of forestry landscape impacts. Where possible, the progressive restructuring approach to coupe design in the Baseline Plan has been maintained. The phasing of coupes is based on yield class data, supported by ground-truthing of tree heights. The Phase One felling area has increased in size to accommodate the Forestry Felling Area and HMEP areas. However, efforts have been made to retain as many Phase One to Four coupes as possible to maintain landscape balance. The undulating landform in the northern development area limits visibility, with Dungavel Hill restricting views of approximately 64% of the Phase One felling area. Only the western section of Dungavel Hill

is visible from the A71 Darvel-to-Strathaven road key viewpoint. SF has been consulted on the Windfarm Forest Plan for Dungavel Forest.

13.8.6 General Forestry Practice Guideline 12, (page 18) of the UK Forestry Standard (UKFS) states: *"Maintain or work towards creating a range of stand structures and silvicultural approaches across the forest, including veteran trees, open-crowned trees, occasional windthrow, understorey layers, open space, and areas of natural regeneration."*

13.8.7 The Proposed Development Forest Plan transitions from an even-aged crop structure to four felling phases, including areas designated for long-term retention. Due to the increased Phase One felling area (474.19 ha, including the Proposed Development Felling Corridor), Phase Two has been reduced to 33.26 ha to balance the plan, allowing for larger retained areas in Phases Three (124.78 ha) and Four (105.20 ha). These phases are detailed in **Table 13.3**. The Proposed Development Felling Corridor in the southern development area totalling only 0.52 ha will be mitigated by compensatory planting.

Table 13.3 - Proposed Development Phased Felling Areas

Phase	Felling Area (Ha)	Percentage of Forest (%)
Northern Development Area		
Felling Corridor	106.02	12.10
Phase 1 (2023 to 2028)	368.17	42.00
Phase 2 (2028 to 2033)	33.26	3.79
Phase 3 (2033 to 2038)	124.78	14.23
Phase 4 (2038 to 2043)	105.20	12.00
Outwith Plan Period	113.30	12.93
Long-Term Retention	25.85	2.95
Total	**876.10**	**100.00**
Southern Development Area		
Felling Corridor	0.52	5.70
Shelterbelt woodlands (Compartment (Cpt) 1 – 3)	8.61	94.30
Total	**9.13**	**100.00**

13.8.8 The coupe and replanting designs in the Baseline Forest Plan reflect site-specific considerations, using windfirm boundaries with interlocking designs appropriate to the landscape's scale and sensitivity. This approach has been carried through to the Proposed Development Forest Plan.

13.8.9 Key considerations for felling include:

- Minimising the area required for infrastructure.
- Aligning with the Baseline Plan.
- Utilising existing windfirm boundaries.
- Ensuring appropriate scale and landscape fit.

13.8.10 The resulting coupe design is acceptable in the landscape setting, maintains progressive restructuring with interlocking coupes and achieves separation within the limits of the Proposed Development layout.

13.8.11 The Baseline restructuring plan aimed to break up geometric patterns from first-rotation crops by incorporating native broadleaf woodlands along riparian corridors and adjacent to the Muirkirk SSSI/SPA. However, the HMEP proposes 56 ha of blanket bog restoration through the removal of 31.16 ha of low-yield class conifers, rewetting of the bog, and drain blocking. This alternative approach is ecologically more beneficial given the site's habitat and climate constraints which would have severely limited native broadleaf establishment and growth.

Summary of Potential Social Effects

13.8.12 The potential social effects of the Proposed Development Forest Plan include:

- Archaeological and Cultural Heritage Protection – Identified archaeological features will be marked and protected during operations, with buffer zones to prevent damage. The Dungavel Hill SM remains unaffected from a forestry perspective.
- Landscape Impact Management – The coupe design and felling phases are carefully planned to maintain landscape balance and minimise visual impact. As detailed in **Technical Appendix 13.1: Forest Landscape Appraisal**, the appraisal identified that four out of five viewpoints experienced **minor adverse** to **no effects**. However, Viewpoint 5 showed short-term **moderate adverse** impacts, which are expected to reduce to **minor adverse** over time as the replanted land matures into woodland post-construction**.**
- Sustainable Forestry Practices – The plan aligns with UK Forestry Standard guidelines by promoting a diverse stand structure, including areas for long-term retention and natural regeneration.

13.8.13 Overall, the Proposed Development Forest Plan is assessed as having a **minor adverse** effect, **not significant** in EIA terms, on the social criteria as it seeks to integrate sustainable energy development while preserving cultural heritage, minimising landscape disruption, and maintaining environmental balance.

Economic

Economic Impact

13.8.14 The Proposed Development continues to support sustainable economic objectives. While long-term timber income will decrease due to the Proposed Development felling baseline Phase Three and Four crops before Mean Annual Increment is reached, this is offset by annual revenue from renewable energy generation. Additionally, the expanded and upgraded forest road infrastructure installed by the Proposed Development will lower long-term cash flow requirements for forest management.

13.8.15 The immediate restocking following Phase One felling will introduce improved planting stock with enhanced genetics, leading to approximately 20-25% faster growth rates compared to the baseline which will help offset the 61.45 ha of conifer forest lost to the Proposed Development infrastructure. Off-site compensatory planting will also ensure that there is no net loss of woodland area to the Scottish economy. The removal of low-yield class conifers for peat restoration will not significantly impact the forest's productive capacity, as these crops (Yield Class six) are not considered commercially viable.

Summary of Potential Economic Effects

13.8.16 The Proposed Development is expected to have a **moderate** beneficial effect, **significant** in EIA terms. While long-term timber revenue will decline due to early felling, this will be compensated by steady income from renewable energy generation. Enhanced forest road infrastructure will also

reduce future management costs. Additionally, restocking with improved planting stock will accelerate growth by approximately 20-25%, while off-site compensatory planting will ensure there is no net loss of woodland for down-stream timber processors or industries. The removal of low-yield conifers for peat restoration will have minimal economic impact, as these trees are not commercially viable. Overall, the Proposed Development supports sustainable economic objectives by balancing forestry adjustments with renewable energy benefits.

Environmental

Environmental Considerations

13.8.17 The increase in Phase One and Felling Corridor felling to 318.21 ha, compared to the baseline Phase One felling of 155.98 ha, represents a significant expansion. To mitigate potential impacts on habitat connectivity, soil stability, and landscape integrity, immediate replanting of Phase One areas will be undertaken. Additionally, 263.24 ha will be retained for felling across Phases Two to Four, with further retention of 113.30 ha Outwith Plan Period and 25.85 ha designated for Long-Term Retention. These measures aim to maintain ecological balance and landscape continuity.

13.8.18 The construction of new access roads will enhance forest management, facilitating improved environmental practices. A key initiative includes the removal of 31.16 ha of non-economic Sitka spruce to support HMEP bog restoration, delivering substantial carbon sequestration benefits. Although there is a reduction in native broadleaf planting compared to baseline projections, this is counterbalanced by the expansion of HMEP forest-to-bog peatland restoration efforts. The reduction in broadleaves is directly associated with the bog restoration efforts as the baseline plan proposed restocking with broadleaves on the same space.

13.8.19 To prevent any net loss of woodland, compensatory planting totalling 43.51 ha will be implemented offsite, ensuring overall forest coverage in Scotland remains stable.

Summary of Potential Environmental Effects

13.8.20 The Proposed Development is assessed as having a **negligible** beneficial effect, **not significant** in EIA terms. The increase in felling will temporarily impact habitat connectivity, soil stability, and the visual landscape. However, these effects will be mitigated through immediate replanting, phased felling, and designated retention areas, reducing long-term disruption.

13.8.21 The introduction of new access roads will improve forest management, enabling effective conservation strategies such as the removal of non-native Sitka spruce for bog restoration. This will enhance carbon sequestration and contribute to climate change mitigation. While there is a reduction in native broadleaf planting, the forest-to-bog restoration initiative provides meaningful ecological benefits, supporting biodiversity and habitat restoration on an area of land where restocking with broadleaves is not well suited due to wet soils and high exposure.

13.8.22 Furthermore, compensatory planting of 43.51 ha ensures that there will be no net loss of woodland, maintaining the overall forest cover and promoting sustainable land use. Collectively, these measures balance the environmental impact of the Proposed Development, ensuring long-term ecological stability and resilience.

Summary of Differences between the Baseline and Proposed Development Forest Plans

Felling Plans

13.8.23 To assess the potential impacts of the Proposed Development within a forestry context, it is necessary to compare the Baseline and Proposed Development Forest Plans using comparable statistics.

13.8.24 **Table 13.4** provides a comparison of the Baseline and Proposed Development Felling Plans.

Table 13.4 - Comparison of Baseline and Proposed Development Felling Plans

Felling Phase	Baseline Forest Plan (Gross ha)	Proposed Development Plan (Gross ha)	Variance (ha)	Change (%)
Northern Development Area				
Felling Corridor	0	106.02	+106.02	N/A
Phase 1 (2023 to 2028)	155.98	368.17	+212.19	135.93
Phase 2 (2028 to 2033)	98.45	33.26	-65.19	-66.21
Phase 3 (2033 to 2038)	97.28	124.78	+27.50	28.28
Phase 4 (2038 to 2043)	222.39	105.20	-117.19	-52.72
Outwith Plan Period	276.63	113.30	-163.33	-59.02
Long-Term Retention	25.85	25.85	0	0.00
Total	**876.58**	**876.58**	**0**	**0.00**
Southern Development Area				
Felling Corridor	0	0.52	+0.52	N/A
Total	**0**	**0.52**	**+0.52**	**N/A**

Northern Development Area

13.8.25 The combined felling corridor and Phase One felling (2023–2028) will result in an additional 318.21 ha being felled compared to the baseline (155.98 ha). While this represents a significant increase, it accounts for 54.1% of the total forest area (876.58 ha). Notably, 31.16 ha of the Phase One felling area is below yield class six, making it non-economic. This area is being cleared to facilitate peat restoration on blanket bog.

13.8.26 The additional Phase One felling is necessary to establish windfirm boundaries, which are crucial for preventing catastrophic windthrow. Compartments seven and 14 already exhibit signs of windblow, indicating that felling is overdue. Since all Yield Class 16 crops or higher have already reached economic maturity, the initial Phase One felling plan could have been more extensive. The Proposed Development Phase One felling is strategically distributed throughout the forest, interwoven with later phases, thereby minimising the perceived scale of impact.

13.8.27 In Phase Two (2028–2033), felling will decrease by 65.19 ha (-66.21%), helping to offset the increase in Phase One.

13.8.28 Phase Three felling will increase by 27.5%, while Phase Four will decrease by 52.72%. These adjustments accommodate changes in Phase One, ensuring separation of felling phases and improving the forest's age-class structure.

Timber Harvesting and Production

13.8.29 **Table 13.5** compares timber production under the Baseline and Proposed Development Felling Plans (**Figure 13.1** and **Figure 13.5**).

Table 13.5 - Comparison of Timber Production between the Baseline Plan and Proposed Development Plan

Felling Phase	Baseline Felling Tonnage (T)	Proposed Development Felling Tonnage (T)	Variance (T)	Change (%)
Northern Development Area				
Felling Corridor	0	32,210	+32,210	—
Phase 1 (2023–2028)	85,277.85	155,214	+69,936.15	+82%
Phase 2 (2028–2033)	56,855.00	14,923	-41,932.00	-73.8%
Phase 3 (2033–2038)	53,230.40	51,304	-1,926.40	-3.6%
Phase 4 (2038–2043)	125,134.82	44,929	-80,205.82	-64.1%
Southern Development Area				
Shelterbelt woodlands (Cpt 1-3)	—	12	—	—
Total	**320,498.07**	**298,592.40**	**-21,905.67**	**-6.8%**

13.8.30 The table is based on a combination of forest sub-compartment database information, including forest yield class data provided by the forest manager, which has been subsequently ground-truthed. Additionally, estimates have been derived using the Forest Research software package Forest Yield 1.0. These estimates represent projected forest volumes for the phased felling periods and have been converted to tonnes using a 1.25 conversion factor.

13.8.31 The comparison between the Baseline Plan and the Proposed Development Plan reveals notable variations in timber production across different felling phases. The introduction of a felling corridor in the northern development area adds 32,210 tonnes, while Phase One sees an 82% increase in timber yield. However, subsequent phases experience reductions, with Phase Two showing a decline of 73.8%. Similarly, Phase Four records a 64.1% decrease in felling tonnage. The southern development area sees minimal impact, with only 12 tonnes added from shelterbelt woodlands. Overall, the total estimated timber production decreases by 6.8%, primarily due to the Proposed Development Plan accelerating felling in the earlier phases. This results in a loss of volume increment that would have otherwise accumulated over time, leading to reduced yields in later years.

13.8.32 Most harvesting activities associated with the Proposed Development are routine in terms terrain and crop size. As such, they will be carried out using conventional forestry practices in accordance with relevant guidelines. While timber production increases significantly in Phase One, there is sufficient harvesting, haulage, and sawmilling capacity to fully process the additional timber. All timber harvested from the site will be transported to standard timber markets via the existing forestry access road leading to the B743.

Timber Haulage

13.8.33 **Chapter 11: Traffic and Transport** provides a more detailed overview of the considerations related to the Proposed Development. Changes to the felling programmes associated with the Proposed Development may have potential implications for traffic and transport, particularly in relation to timber haulage. The number of timber lorry round trips has been assessed for both the Baseline and Proposed Development Forest Plans, based on 25 tonnes of timber per loaded lorry. **Table 13.6** presents a comparison of timber haulage over the 20-year Forest Plan period for both the Baseline and Proposed Development Forest Plans.

Table 13.6 - Comparison of Baseline and Proposed Development Forest Plan Timber Haulage

Felling Phase	Baseline Felling No. of 25 T Timber Lorries	Proposed Development Felling No. of 25 T Timber Lorries	Variance (T)	Change (%)
Northern Development Area				
Felling Corridor	0	1,288	+1,288	—
Phase 1 (2023–2028)	3,411	6,209	+2,798	+82%
Phase 2 (2028–2033)	2,274	597	-1,677	-73.8%
Phase 3 (2033–2038)	2,129	2,052	-77	-3.6%
Phase 4 (2038–2043)	5,005	1,797	-3,208	-64.1%
Southern Development Area				
Shelterbelt Woodlands	0	1	+1	—
Total	**12,820**	**11,943**	**-877**	**-6.8%**

13.8.34 The comparison of timber haulage between the Baseline Plan and the Proposed Development Plan highlights significant shifts in transportation demand over the felling phases. The introduction of a felling corridor in the northern development area results in 1,288 additional lorry trips. Phase One sees the highest increase, with an 82% rise in haulage requirements, reflecting the earlier concentration of felling activity. However, subsequent phases experience notable reductions, particularly Phase Two (-73.8%) and Phase Four (-64.1%), due to the earlier harvesting of timber that would have otherwise been felled later. This accelerated felling leads to a reduction in volume increment, as trees have less time to grow before being harvested, ultimately decreasing the overall timber yield in later years. The southern development area sees minimal impact, with only one additional lorry trip for shelterbelt woodlands. Overall, the total number of timber lorry trips decreases by 6.8%, demonstrating a front-loaded haulage demand under the Proposed Development Plan, followed by reduced transportation needs and lower timber availability in later years.

13.8.35 The felling corridor will be cleared to accommodate the Proposed Development ahead of the main construction activities, with all timber being transported to conventional timber markets via the existing forestry access roads. The felling of the corridor and Phase One is expected to be complete by the end of 2028.

Replanting Plans

13.8.36 **Table 13.7** below outlines the key replanting changes between the Baseline and the Proposed Development.

Table 13.7 - Comparison of Baseline and Proposed Development Replanting Plans

Species	Baseline Forest Plan (Gross ha)	Proposed Development Forest Plan (Gross ha)	Variance (ha)	Change (%)
Northern Development Area				
Sitka spruce	472.74	421.43	-51.31	-10.86%
Lodgepole in nurse	68.6	59.32	-9.28	-13.53%
Norway spruce	50.00	63.33	13.33	+26.66%
Hybrid Larch	0.00	0.00	0.00	0.00%
Lodgepole	0.06	0.06	0.00	0.00%
Pacific Silver Fir	26.86	25.85	-1.01	-3.76%
Scots Pine	1.33	1.33	0.00	0.00%
Native broadleaves	80.87	51.69	-29.18	-36.09%
Open ground	176.12	253.57	77.45	+43.98%
Felled	0.00	0.00	0.00	0.00%
Total	**876.58**	**876.58**	**0.00**	**0.00%**

13.8.37 The long-term forest structure, based on the Baseline and Proposed Development Replanting Plans for the northern development area, requires an additional 77.45 ha of open ground—8.84% of the total forest area to accommodate the Proposed Development. The area of native broadleaves decreases by 36.09% compared to the Baseline, primarily due to efforts to restore forested areas to bog peat. The area for diverse conifers increases by 22.9% overall, while Sitka spruce-dominated crops decrease by 24.39%. Although the species composition of the forest changes, the forest remains compliant with UKFS standards. Based on these changes, it can be concluded that the Proposed Development will have a **negligible beneficial** long-term impact on the forest environment, **not significant** in EIA terms.

13.8.38 The variations in replanting areas between the Baseline and Proposed Development Forest Plans, as outlined in **Table 13.7**, reflect several key changes in species distribution across the northern development area. The area designated for Sitka Spruce (SS) is reduced by 51.31 ha (-10.86%) under the Proposed Development. Similarly, the area of Lodgepole Pine in nurse (LP in nurse) decreases by 9.28 ha (-13.53%). Conversely, the area for Norway Spruce (NS) increases by 13.33 ha (+26.66%), indicating a shift toward this species. The area for Pacific Silver Fir (PSF) decreases slightly by 1.01 ha (-3.76%), while the area for Native Broadleaves (NBL) is reduced by 29.18 ha (-36.09%). The area of Open Ground (OG) increases by 77.45 ha (+43.98%), primarily due to peatland restoration efforts. No changes are proposed for Hybrid Larch (HL), Lodgepole (LP), or Scots Pine (SP). While the total replanting area remains unchanged at 876.58 ha in both the Baseline and Proposed Development Forest Plans, the distribution of species has been adjusted. These changes reflect a shift in replanting strategies, with increases in NS and OG, and reductions in SS, LP in nurse, and NBL.

13.8.39 No replanting is proposed for the southern development area, as only woodland removal is required.

13.8.40 **Table 13.8** demonstrates how both the northern development area Baseline Plan and the Proposed Development Forest Plan align with the UKFS species diversity guidelines. The southern development area is not detailed, as only a small 0.52 ha woodland removal is proposed, making species diversity calculations unnecessary.

Table 13.8 - Baseline and Proposed Development Forest Plan Compliance with UKFS Species Diversity Guidelines.

Species	Year 20 Baseline Area (ha)	Year 20 Baseline (%)	Year 20 Proposed Development Forest Plan (ha)	Year 20 Proposed Development Forest Plan (%)	Change (%)
Northern Development Area					
Sitka spruce	472.74	54	421.43	48	-6
Lodgepole in nurse	68.6	8	59.32	7	-1
Norway spruce	50	6	63.33	7	+1
Hybrid Larch	0	0	0	0	0
Lodgepole	0.06	0	0.06	0	0
Pacific Silver Fir	26.86	3	25.85	3	0
Scots Pine	1.33	0	1.33	0	0
Native broadleaves	80.87	9	51.69	6	-3
Open ground	176.12	20	253.57	29	+9
Felled	0	0	0	0	0
Total	**876.58**	**100**	**876.58**	**100**	**0**

13.8.41 The table compares the Baseline and Proposed Development Forest Plans for the northern development area, showing the area and percentage distribution of various species and land categories. The key differences include a slight reduction in Sitka spruce (from 54% to 48%) and a modest increase in Norway spruce (from 6% to 7%). There is a notable increase in open ground, rising from 20% to 29%, while native broadleaves decrease from 9% to 6%. Overall, the proportions of certain species shift slightly, but the total area remains unchanged at 876.58 ha, maintaining balance between the two plans.

13.8.42 Guidelines under the UKFS recommend owners diversify forest composition so that no more than 65% of the forest management unit is allocated to a single species and a minimum of the following are incorporated:

- 10% open space or ground managed for biodiversity as the primary objective.
- 10% of other tree species.
- 5% native broadleaved trees or shrubs.

13.8.43 The Proposed Development complies with key UKFS guidelines. The forest plan allocates less than 65% to any single species (48% to Sitka spruce), which is well within the recommended limit. Additionally, the proposed plan includes 29% open space, surpassing the 10% guideline for biodiversity. The proportion of native broadleaves is 6%, exceeding the 5% minimum requirement. The overall diversity of tree species (including 7% Norway spruce and 3% for Pacific Silver Fir) and the inclusion of open space indicate that the Proposed Development meets or exceeds UKFS guidelines for forest composition and biodiversity management.

13.8.44 Sitka spruce remains the primary commercial species, with a 6% reduction from the baseline. Site suitability limits the choice of conifer species, with the best ground identified for replanting with Norway and Pacific Silver Fir, accounting for 10% of the Proposed Development—a 1% increase from baseline. Native broadleaf planting decreases by 3% due to the inclusion of peatland restoration but

still exceeds the 5% UKFS minimum. In conclusion, both the Baseline and Proposed Development Forest Plans demonstrate compliance with UKFS guidelines on diversity.

13.8.45 Commercial conifer replanting methodology:

- Site preparation by machine mounding (essential for brash management) and drainage.
- Manual planting at a minimum density of 2,700 stems per hectare.
- Ongoing establishment maintenance such as the replacement of failed trees, weed control and pest protection as necessary to ensure satisfactory establishment.
- The option to construct deer fencing to protect diverse conifer restocks from deer browsing.

13.8.46 Native broadleaved replanting methodology:

- Site preparation by machine mounding and drainage where necessary.
- Manual planting at a minimum density of 1,600 stems per hectare using native, local provenance tree species best suited to the site.
- Protection of broadleaf trees and shrubs protected in 1.2 m or 0.6 m staked tubes.
- Ongoing establishment maintenance such as the replacement of failed trees, weed control and pest protection as necessary to ensure satisfactory establishment.

13.8.47 Replanted areas will be integrated into future crop establishment efforts. Measures will include protection from browsing by wild animals (deer, hare, rabbit, weevil) and domestic livestock, as well as drainage and weed maintenance to support healthy growth. Additionally, replanted areas will be protected and insured against fire, in line with the rest of the property.

Construction

13.8.48 Upon receiving planning approval, the Proposed Development Forest Plan amendment will be submitted to SF for approval. Felling associated with the Proposed Development Felling Corridor is scheduled to begin in advance of the main construction phase. All timber will be harvested following standard forestry practices:

- Harvesting coupes will be identified and agreed upon with SF and approved for felling through the formal Forest Plan approval process.
- Coupes will be marketed prior to harvesting, utilising conventional wheeled machinery.
- Low ground pressure tracked machinery will be required to assist in clearing the northern development HMEP area due to soft ground conditions and poor tree growth.
- In the northern development area, all felled material will be cut into product-specific lengths, forwarded to the forest road for collection, and transported to conventional local timber markets. The aim is to recover all merchantable material. Timber will be transported via the existing forest road network and may utilise roads constructed as part of the Proposed Development. Internal forest roads will need to be upgraded where they have not yet been brought up to full forestry road specifications.
- In the southern development area, all felled timber will be cut to length, forwarded to the woodland edge, and stacked. The woodland owner will then extract the timber once seasoned for use in an on-farm biomass boiler.
- Where site conditions allow, brash will be recovered from parts of the site and sold into biomass markets. Stumps excavated during road construction will also be recovered and sold to biomass markets unless required for constructing floating roads.

13.8.49 The Proposed Development will alter the scale and timing of forestry operations, particularly regarding Phase One felling and subsequent restocking activities, extending beyond the standard requirements. However, within the broader context of the forest's overall scale, these impacts are well-managed and align with the progressive restructuring principles of the UKFS.

13.8.50 Felling operations have been planned to minimise disruption while maintaining ecological balance and long-term sustainability. Additionally, the retention of mature forest in key areas helps preserve the site's ecological continuity.

Operation

13.8.51 The increased felling and restructuring activities will temporarily heighten local demand for harvesting, haulage, restock mounding, planting stock, and labour at different stages during the operation of the Proposed Development. While this may place short-term pressure on local resources, it is not expected to have a significant impact on the forestry industry as a whole. The sector is well-adapted to such fluctuations, with contract labour being highly mobile and experienced in relocating as needed. Consequently, additional resource demands can be met without substantial disruption, ensuring smooth operations within the proposed restructuring framework.

Decommissioning

13.8.52 The decommissioning of the Proposed Development will have no effect on forestry resources or operations.

13.9 Mitigation

Forest Residue Management Plan (FRMP)

13.9.1 Consideration has been given to the production of non-forestry residues in accordance with the Management of Forestry Waste (WST-G-027, Version 3, SEPA, 2017) and the accompanying guidance, Use of Trees Cleared to Facilitate Development on Afforested Land – Joint Position Statement and Guidance (SNH, SEPA, FCS, 2014). This mitigation measure is applicable during the construction phase.

13.9.2 These policies require assessment of unmerchantable timber, residual brash, and stumps produced during tree harvesting for development purposes where standard forestry replanting is not planned (refer to **Figure 13.9**).

13.9.3 For the Proposed Development, this applies to previously afforested areas, including:

Northern Development Area

- 60 m radii tree free bat protection buffers around 17 turbines which are 230 m to tip (brash only).
- 100 m radii tree free bat protection buffer around one turbine which is 200 m to tip (brash only).
- 10 m tree-free areas associated with hard standing areas around turbine bases and substation (brash and stumps).
- 30 m wide tree free road corridors (brash only).
- 10 m wide road construction corridor within the 30 m tree-free corridor (brash and stumps).
- 10 m offset around temporary construction compounds, borrow pits and control buildings (brash and stumps).

Southern Development Area

- 10 m tree free standoff from infrastructure (brash only).
- 20 m wide tree-free road corridors (brash and stumps).

13.9.4 The FRMP details the management of unmerchantable trees, brash, and stumps generated by tree harvesting within areas where replanting will not occur. The assessment focusses on the northern development area where brash and stumps will be generated. In the southern development area, the amount of brash and stumps recovered is negligible due to the small land area (0.52 ha) coupled with the small stature of trees to be removed.

Ground Conditions

13.9.5 A significant portion of the infrastructure is located in elevated and exposed areas with gley, peaty-gley, or peat-dominated soils. These conditions result in poor tree growth and increase the risk of soil damage from forestry operations.

13.9.6 Forestry machinery for felling, processing, and timber extraction can cause rutting, compaction, and erosion unless appropriate ground protection measures, are employed *i.e*. brash mats. Further details on ground conditions, including peat distribution, are provided in **Chapter 8: Geology, Peat, Hydrology and Hydrogeology**.

Access

13.9.7 In the northern development area, two existing forestry access points from the B743 will be upgraded and used for all forestry purposes (access Point A and Access Point B, as shown in **Figure 1.2**). In the southern development area, new access tracks will connect to the B743 at Access Pont C, facilitating forestry, as well as the other Proposed Development operations.

Timber Markets

13.9.8 Timber markets are currently strong, particularly for small roundwood and forest residues. The Proposed Development is well-located within easy reach of major timber markets in the South of Scotland, ensuring efficient marketing of harvested timber. Timber from the southern development area may be used on-site for the landowner's biomass boiler.

Materials Generated

13.9.9 The estimated forest residue generation is summarised in **Table 13.9**:

Table 13.9 - Proposed Development Footprint and Associated Tree Free Areas.

Feature	Area (ha)	FRMP Considerations
Mature crops being felled and not replanted	41.61	Includes 2.96 ha for floating roads.
Young Crops being felled and not replanted	11.04	Recently planted (2024); negligible brash.
Brash and Stumps area	16.07	Both brash and stumps will be recovered.
Brash only area	22.58	Brash will be recovered.
Floating Road	2.96	All material will be used to support the road.
Existing Open Ground	13.00	Not applicable

Merchantable Timber

13.9.10 A total of 41.61 ha of mature coniferous forest will be felled and not replanted, carrying merchantable timber (diameter >7 cm, over bark) as per SEPA guidance.

13.9.11 Harvesting will use standard forestry machinery, with merchantable timber stacked at the roadside for transport to market. Brash mats will be utilised to minimise soil damage.

13.9.12 Based on the average production of 575 cubic metres (m^3) or 460 tonnes per hectare over the 41.61 ha of ground to be felled and not replanted, 23,924 m^3 of merchantable timber, weighing approximately 19,140 tonnes and requiring 766 loaded lorry movements will be generated.

Brash and Stump Generation

13.9.13 Based on industry standards, brash and stump generation is estimated at 30% of standing merchantable timber weight, split equally between brash and stumps.

13.9.14 Total brash-only recovery: 22.58 ha, yielding approximately 1,563 tonnes of brash.

13.9.15 Total stump and brash recovery: 16.07 ha, yielding approximately 2,329 tonnes (1,164.5 tonnes each of brash and stumps).

Table 13.10 - Summary of Brash and Stump Production.

Feature	Area (ha)	Volume (m3)	Tonnage (T)
Brash only areas	22.58	1,953.75	1,563
Stumps and brash areas	16.07	2,911.39	2,329.11
Total	**38.65**	**4,865.14**	**3,892.11**

13.9.16 A total of 4,865.14 m^3 or 3892.11 T of brash and stump forest residues are estimated to be generated from the Proposed Development. This equates to an estimated 156 lorry movements to transport the material from the forest to market.

Destination of Forestry Material

13.9.17 The following section details the use and destination of the various forestry materials resulting from felling associated with the Proposed Development.

Merchantable Timber

13.9.18 Merchantable materials will be sold into existing markets, which for sawlogs are likely to include Glennon Brothers at Troon, BSW at Dalbeattie, James Jones & Son at Lockerbie and Forest Garden at Lockerbie. Small roundwood markets are likely to include Egger at Barony (Cumnock), UPM Caledonian at Irvine and Iggesund at Workington.

13.9.19 As trees are felled the branches and tips of the trees are removed to leave clean tree trunks, which are cut into product specification lengths, forming the merchantable material. The remaining branches and "lop and top" form the brash, which are collected up to form brash lanes/brash mats to protect the soil by helping support the weight of harvester and forwarder movements across the site. This results in brash lanes across the harvesting site approximately every 10-15 m, with the intervening areas being relatively free from brash.

13.9.20 The use of brash mats is particularly important on wet, peaty soils characteristic of those found over much of the Proposed Development. Following industry best practice, the use of brash mats is considered an essential part of routine harvesting. Brash mats, especially main extraction routes, are often replenished with “fresh brash” as their conditions declines with use and are renewed using fresh material generated from harvesting. As brash mats degrade in service, they can become embedded in the soft, wet ground, making removing them post harvesting virtually impossible. Every reasonable effort will be taken to recover the brash, but should this prove impractical, then it

may be left in-situ within keyhole areas and areas where there is no infrastructure post-harvesting, as the ground disturbance associated with digging out brash material from the ground is considered to be greater than leaving them in place.

13.9.21 Due to the risk of soil erosion associated with stump removal on peaty soils on elevated sites, tree stumps in areas to be harvested and maintained as tree free will remain in-situ and allowed to degrade naturally along with the brash as per standard forestry practice for areas reverting to open ground habitats in forests. Only areas required for the physical construction footprint of the Proposed Development will have stumps removed.

Conclusions

13.9.22 This FRMP demonstrates that all forestry materials generated as a result of felling to construct the Proposed Development can be sold into existing timber markets.

Compensatory Planting

13.9.23 In accordance with best practice, and as agreed with SF in pre-application consultation, approval is only being sought for felling directly associated with the infrastructure footprint and the restocking tree free areas under this submission.

13.9.24 Using the most up to date (February 2019) *Scottish Governments' Policy on Control of Woodland Removal: implementation guidance*, compensatory planting areas have been calculated on the basis of a net "hectare for hectare" replacement of woodland areas lost to the Proposed Development.

Baseline

13.9.25 The northern development area infrastructure and baseline restocking tree free footprint has a gross footprint of 61.45 ha and is comprised of the following tree species as detailed in **Table 13.11**.

Table 13.11 - Intersection of Baseline Restructuring Species and Restocking Tree Free Buffer.

Northern Development Area	
Tree Species	**Area (Gross ha)**
Native broadleaves	1.34
Native broadleaves / Open ground (50/50)	4.41/2.205
Norway spruce	0.68
Open ground	14.21
Pacific Silver fir	1.49
Sitka spruce	22.50
Sitka spruce/Lodgepole pine	16.82
Total	**61.45**

13.9.26 The northern development area Baseline Replanting Plan details that the current mature crop, once felled, are to be replanted predominantly with commercial Sitka spruce with some diverse conifers in the form of Pacific Silver Fir and Norway Spruce, while introducing native woodland and designed open space along the margins and riparian corridors.

13.9.27 The southern development area baseline current species totals 9.13 ha and is comprised of the following tree species as detailed in **Table 13.12**.

Table 13.12 - Baseline Current Species

Southern Development Area		
Compartment	**Tree Species**	**Area (Gross ha)**
1	Scots pine /NBL mixed woodland	3.93
2	Norway Spruce woodland	1.56
3	Native mixed broadleaf woodland	3.64
Total		**9.13**

Compensatory Planting Calculation Methodology

13.9.28 The northern development area Baseline Plan has been used as the starting point from which the compensatory planting area has been calculated. The compensatory planting area was determined by overlaying the restocking tree free buffer footprint on top of the baseline restructuring plan to arrive at the gross compensatory planting figure (61.45 ha). To establish the net figure, designed open ground (14.21 ha) as well as forest roads (4.25 ha), which in the absence of the Proposed Development, would have been required to manage the forest were deducted to arrive at the net compensation figure of 42.99 ha (refer to **Figure 13.10)**.

13.9.29 The shelterbelt woodlands located in the southern development area were not scheduled to be felled and therefore have adopted the current species as their baseline from which to calculate the compensatory planting requirements. Given how small the woodland removal (refer to **Figure 13.8)** associated with the shelterbelts are, totalling a combined (0.52 ha) the Proposed Development has opted to fully compensate the gross area (including open space) of woodland removed, rather than calculate the net position (only trees, not open space). In doing so, in excess of the net equivalent woodland area will be compensated for on a like for like basis.

13.9.30 **Table 13.13** summarises the considerations in arriving at the level of compensatory planting for addressing the Scottish Government's *Control of Woodland Removal Policy* in relation to the Proposed Development.

Table 13.13 - Compensatory Planting Calculation Associated with the Proposed Development

Feature	Southern Development Area (ha)	Northern Development Area (ha)	Total Area (ha)
Infrastructure and associated tree free area footprint	0.52	61.45	61.97
Less Designed Open Ground within Baseline Plan	n/a	-14.21	-14.21
Less forest roads	n/a	-4.25	-4.25
Area to be accounted for under the Control of Woodland Removal Policy	**0.52**	**42.99**	**43.51**

13.9.31 As detailed in **Table 13.13** an area of 43.51 ha has been identified as requiring compensatory planting under the *Control of Woodland Removal Policy*.

Compensatory Planting Plan

13.9.32 Compensatory planting, in line with the *Control of Woodland Removal*, will be delivered off site and secured via a Planning Condition. Due to the lack of appropriate open ground within the Forest, it is not possible to deliver compensatory planting on-site. The intention is to secure land as close to the Proposed Development as possible, however as a minimum and in keeping with the policy, it will be delivered somewhere suitable in Scotland. The compensatory planting will be delivered during the construction and operational phase of the Proposed Development.

13.9.33 A fully detailed compensatory planting plan will be produced to discharge any condition, and the plan will as a minimum address the following key issues which SF identified at scoping, these include:

- Details of how the compensatory area was calculated.
- The ground will be subject to full consultation and associated Environmental Impact Assessment determination by SF under the *Forestry (Environmental Impact Assessment) (Scotland) Regulations 2017*. The proposal will also conform to the UK Forest Standard 5th edition.
- High level details of whether the land has been secured under lease, contract or ownership.
- Details of the appointed clark of works, their qualifications and their remit in monitoring and reporting on the establishment of the compensatory planting scheme.

13.9.34 The intention is to secure land suitable for delivering a like for like commercial conifer scheme, however if this cannot be secured, then as a minimum and in line with the policy, the compensatory scheme will be of equivalent public benefit to the woodland area lost.

13.9.35 All areas will be suitably protected to ensure planted trees establish free from browsing. Ground preparation and drainage will be suited to site types and demonstrate compliance with the UK Forest Standard.

13.9.36 Target stocking density will be to achieve no less than 2,500 stems per hectare for commercial conifers, 1,600 stems per hectare for native woodland areas. Species composition will be designed to site types and to conform to UK Forest Standard species diversity requirements.

13.9.37 Delivery of the planting, establishment and maintenance will be overseen by professional foresters. Maintenance will include beat up and weeding (as required) to ensure crop establishment. All compensatory planting areas will be insured against fire.

13.9.38 Establishment will be defined as the point when the average tree height is 2.0 m or more with average stocking densities of 2,500 stems per hectare for conifers and 1,600 stems per hectare for native woodland areas. At this point a report will be produced by a professional forester/clark of works, following inspection and submitted to the planning authority for discharge. It is anticipated establishment will take five to ten years to achieve.

Replanting

13.9.39 Replanting will occur as soon as possible following felling to ensure the long-term sustainability of commercial forestry while mitigating the environmental impacts of felling. The replanting process will be guided by the approved forest plan and regulated by Scottish Forestry to ensure compliance with best practices. The replanting will be carried out during the construction and operational phase of the Proposed Development.

13.9.40 The replanting strategy will prioritise species that are well-suited to the site conditions, with a focus on maintaining biodiversity, improving habitat connectivity, and enhancing ecosystem resilience. The target stocking densities will be:

- 2,500 stems per hectare for coniferous plantations, ensuring sustainable commercial forestry productivity. Improved planting stock will be utilised to deliver the genetic gains and improved yield associated with this material.

- 1,600 stems per hectare for native broadleaves, promoting ecological restoration and habitat diversity.

13.9.41 Ground preparation for replanting will be conducted in a manner that minimises soil disturbance, particularly in areas with peaty or sensitive soils. The use of appropriate drainage, scarification, and mounding techniques will be implemented in accordance with the UK Forest Standard and best forestry practices.

13.9.42 To ensure successful establishment, newly planted areas will undergo periodic monitoring, including survival rate assessments, growth performance evaluations, and remedial actions such as supplementary planting ("beating up") where necessary. Additionally, browsing protection measures (*e.g.*, tree shelters, deer control) will be implemented to safeguard young trees from herbivory.

13.9.43 The replanting programme will contribute to carbon sequestration, enhance the long-term sustainability of the forest resource, and support broader ecosystem services, such as soil stabilisation, water regulation, and wildlife conservation.

Archaeology

13.9.44 To safeguard archaeological interests within the forest environment, strict adherence to national heritage guidelines and best forestry practices will be maintained throughout all project phases. The approach will be guided by the UK Forest Standard and regulated via the planning and Forest Plan consents. The mitigation will be carried out during the construction and operation of the Proposed Development.

13.9.45 Pre-commencement walkover surveys will be conducted to identify any known or potential historical or cultural assets within the forest area. Buffer zones will be established around identified archaeological features to prevent accidental damage during forestry operations. These protective measures will be clearly marked on operational maps and adhered to by all personnel involved in felling, ground preparation, and replanting.

13.9.46 Any previously unrecorded archaeological finds encountered during forestry activities will be subject to a "stop-work" protocol. If such discoveries occur, forestry operations in the immediate vicinity will be paused, and appropriate heritage specialists will be consulted to assess and document the findings before work resumes.

13.9.47 Post-project reporting will include a summary of archaeological findings, mitigation actions taken, and recommendations for future forest management practices to ensure continued protection of cultural heritage within the site.

Peatland Restoration

13.9.48 The peatland restoration component will be delivered as part of a broader HMEP, aiming to restore degraded peatland areas, enhance carbon sequestration, and improve biodiversity. The restoration strategy will focus on converting afforested peatland back to functioning bog habitat, aligning with national climate and biodiversity targets. The restoration will be carried out during the construction and operation phases of the Proposed Development.

13.9.49 Restoration techniques will include:

- Blocking artificial drains using peat dams, bunds, or other low-impact water retention methods to raise the water table and restore natural hydrology.
- Removal of non-economic conifer trees to reduce moisture loss and facilitate the recovery of sphagnum mosses and other peat-forming vegetation.
- Assessment of regenerating conifers, with control measures implemented where they may reduce long-term effectiveness of restoration activities.

- Reprofiling and revegetating cultivated or eroded peat surfaces to prevent further degradation and enhance peat accumulation.
- Monitoring biodiversity recovery to measure the success of restoration efforts over time.

13.9.50 The restoration process will be phased over multiple years to allow gradual ecosystem recovery while minimising disruption to existing habitats. Additionally, an adaptive management approach will be adopted, where monitoring results inform refinements to restoration techniques based on site-specific conditions and ecological responses.

13.9.51 The peatland restoration efforts will contribute to climate change mitigation by enhancing carbon storage and reducing greenhouse gas emissions from degraded peat soils.

13.10 Residual Effects

13.10.1 The residual effects of the Proposed Development encompass social, economic, and environmental factors, particularly in relation to landscape, timber production, woodland removal, replanting and bog restoration.

Social

The Proposed Development will have residual social effects related to landscape changes. The visual impact on Key Viewpoint 1 is assessed as having a **minor adverse** residual effect due to a reduction in felling phase interlock, reducing to **negligible** over time, which is **not significant** in EIA terms. Key Viewpoint 5 initially experiences a **moderate adverse effect** due to increased visibility of felling. However, this impact reduces to a **minor adverse** residual effect over time as the replanted trees grow and improve the view, thereby mitigating the felling impact. This is also assessed as **not significant** in EIA terms. The other viewpoints experience either **minor beneficial, negligible, or no effects**, resulting in **no significant** residual impacts.

Economic

13.10.2 The residual economic effects focus primarily on timber production and revenue changes and are assessed as having a **moderate** beneficial effect, **significant** in EIA terms:

- The implementation of improved tree breeding genetics as part of the replanting strategy is expected to enhance timber yield by 20–25%, mitigating the area lost to the Felling Corridor.
- Despite the increased timber production of 93,275 tonnes due to the accelerated felling schedule, this will lead to a future reduction in timber availability, causing a gradual decline in economic activity across the property related to forest management over a 15-year period.
- The economic impact on local employment in timber-related industries is considered **negligible** adverse, as the transition in felling phases is balanced by long-term replanting and revenue compensation measures and is comparatively small compared to the overall scale of annual harvesting in the region.

Environmental Impacts

13.10.3 The environmental residual effects are assessed as a **negligible** beneficial effect, **not significant** in EIA terms, and are linked to woodland removal, replanting, and bog restoration:

- Immediate replanting and phased felling strategies will reduce the long-term environmental footprint of the Proposed Development, ensuring continued forest cover.
- The HMEP, which includes forest-to-bog peatland restoration, will contribute to biodiversity enhancement and ecosystem restoration.

- Although the initial felling will cause a temporary loss of habitat, the planned restoration efforts include offsite compensatory planting which will fully mitigate the loss.

13.11 Cumulative Assessment

13.11.1 The cumulative effects of tree felling and woodland removal associated with other developments within the cumulative dataset area are **negligible**. This is due to the stringent regulatory framework governing all development and forestry approvals, specifically the UK Forestry Standard (UKFS) and the Control of Woodland Removal Policy (CoWRP). The UKFS mandates progressive felling and restocking in every forest, while the CoWRP ensures that development designs incorporate keyhole felling and detailed compensatory planting. The adjacent Bankend Rig III Wind Farm, currently in planning, proposes similar progressive restructuring felling principles coupled with keyholding and compensatory planting.

13.12 Summary

13.12.1 The northern development area is dominated by a large commercial conifer forest, where the Proposed Development seeks to instal 18 wind turbines and associated infrastructure. While a Baseline Plan is already in place, the scale of the conifer plantation and the introduction of the Proposed Development infrastructure require adjustments to management strategies. The forest is primarily managed for timber production, while also supporting biodiversity conservation. Key constraints include designated environmental areas, soil conditions, and archaeological sites. Timber production contributes to the regional economy, while ongoing restructuring efforts aim to enhance biodiversity and improve the appearance of the forest. The southern development area is dominated by farmland with small rectangular shelterbelts providing a framework around field margins.

13.12.2 The construction and operation of the Proposed Development necessitate felling and replanting activities, for which consent is being sought:

- Felling Approval (northern development area):
  - Consent is required to remove approximately 106.2 ha of commercial forestry within the northern development area to accommodate project infrastructure. This follows the northern development area Felling Plan (**Figure 13.5**).
- Felling Approval (southern development area):
  - A total of 0.52 ha of mixed shelterbelt woodland will be felled in the southern development area to allow for access track construction, as detailed in the southern development area Woodland Removal Plan (**Figure 13.8**).
- Forest Plan Amendment:
  - Subject to consent, an amendment to the approved Forest Plan will be submitted to Scottish Forestry to enable legal felling of the Forestry Felling Area.

13.12.3 Mitigation measures are as follows:

- Forest Residue Management Plan (FRMP) will be implemented to manage unmerchantable timber, brash, and stumps, ensuring best practices and minimising environmental impact.
- Compensatory Planting:
  - A minimum of 43.51 ha of new planting will be undertaken in line with the Compensatory Planting Plan. This will be secured through a suspensive planning condition.
- Promptly replanting to secure the land in long term commercial forestry.
- Adherence to UKFS, including the protection of archaeology.

- HMEP securing forest to bog habitat improvements.

13.12.4 Despite mitigation measures, some residual effects will remain:

- Social: Potential visual impacts due to changes in forest landscape structure.
- Economic: Continued contributions to the timber market and local economy.

Environmental: Woodland loss offset by compensatory planting, with biodiversity enhancements helping to mitigate ecological impacts.

13.12.5 **Table 13.14** provides a summary of the residual effects and mitigation measures proposed following the assessment of potential effects on forestry resources by the Proposed Development.

Table 13.14 – Summary Table

Description of Effect	Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect	
	Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse
During Construction & Decommissioning					
Social Benefits of the Proposed Development Forest Plan	Minor	Adverse	Implementation of Proposed Development Forest Plan in compliance with UKFS including archaeological safeguards, phased felling and immediate restocking to address landscape considerations.	Minor	Adverse
Economic Benefits of the Proposed Development Forest Plan	Moderate	Beneficial	Implementation of improved tree breeding genetics to enhance timber yield and mitigate loss of commercial coniferous forest.	Moderate	Beneficial
Environmental Benefits of the Proposed Development Forest Plan	Negligible	Beneficial	Immediate replanting, phased felling, and designated retention areas, reducing long-term disruption. HMEP Forest to bog peatland restoration and compensatory planting. FRMP ensures appropriate use of forest residues (brash and stumps).	Negligible	Beneficial
During Operation					
None					
Cumulative Effects					
None					

13.13 References

Clydeplan (2020) Forest and Woodland Strategy for the Glasgow City Region. Available at: https://www.clydeplan-sdpa.gov.uk [Accessed 18 January 2025].

East Ayrshire Council (2014) Ayrshire and Arran Forestry and Woodland Strategy. Available at: https://www.east-ayrshire.gov.uk/Resources/PDF/A/AyrshireandArranForestWoodlandStrategy2014.pdf [Accessed 18 January 2025].

Forestry Commission (2014) Design Techniques for Forest Design Planning. Forestry Commission.

Forest Research (2023) The UK Forestry Standard: The Government's Approach to Sustainable Forest Management. Forestry Commission.

Forestry Commission Scotland (FCS) (2014) Supplementary Guidance to Support the FC Forests and Peatland Habitats Guideline Note (2000). FCS.

Forestry Commission Scotland (FCS) (2015) Guidance to FCS Staff on Implementing the Scottish Government's Policy on Control of Woodland Removal. FCS.

Matthews, R.W., Henshall, P.A., Duckworth, R.R., Jenkins, T.A.R., Mackie, E.D. and Dick, E.C. (2016) Forest Yield: a PC-based yield model for forest management in Britain. Edinburgh: Forestry Commission.

NatureScot (Scottish Natural Heritage), Natural England, Natural Resources Wales, RenewableUK, Scottish Power Renewables, Ecotricity Ltd, the University of Exeter and the Bat Conservation Trust (BCT) (2021) Bats and Onshore Wind Turbines: Survey, Assessment and Mitigation. Available at: https://www.nature.scot/doc/bats-and-onshore-wind-turbines-survey-assessment-and-mitigation [Accessed 18 January 2025].

Scottish Environment Protection Agency (SEPA) (2013) Management of Forestry Waste WST-G-027 Version 3. Scottish Environmental Protection Agency.

Scottish Environment Protection Agency, Scottish Natural Heritage and Forestry Commission Scotland (2014) Use of Trees Cleared to Facilitate Development on Afforested Land – Joint Position Statement and Guidance (Draft). Scottish Environmental Protection Agency, Scottish Natural Heritage, Forestry Commission Scotland.

Scottish Government (2019) Scotland's Forestry Strategy. The Scottish Government.

Scottish Government (2021) Scotland's Third Land Use Strategy 2021-2026. The Scottish Government.

Scottish Government (2017) Town & Country Planning (Environmental Impact Assessment) (Scotland) Regulation 2017. The Scottish Government.

Scottish Government (2023) The National Planning Framework 4. The Scottish Government.