Fred. Olsen Renewables

Author	James Anderson	10/05/2021
Checked	Emma Thackeray	12/05/2022
Approved	Kirsty Clarke	13/05/2022

Client Details	
Contact	Julie Aitken
Client Name	Fred. Olsen Renewables Limited
Address	c/o Fred. Olsen Renewables Ltd.2nd Floor, 36 Broadway London, SW1H 0BN, United Kingdom

Issue	Date	Revision Details
A	11/05/2021	First Draft
B	01/06/2022	Second Draft
C	03/06/2022	Third Draft for Legal Review
D	08/09/2022	Final Draft for Submission

Chapter 11

Forestry Assessment

Contents

INTRODUCTION 3

11.2 LEGISLATION, POLICY AND GUIDANCE 3
- 11.2.1 Forestry and Land Management (Scotland) Act 2018 3
- 11.2.2 Scotland's Forestry Strategy 2019 – 2029 4
- 11.2.3 Scotland's Third Land Use Strategy 2021 – 2026 4
- 11.2.4 Third National Planning Framework 4
- 11.2.5 Fourth National Planning Framework 4
- 11.2.6 Scottish Planning Policy 4
- 11.2.7 Right Tree in the Right Place 5
- 11.2.8 Control of Woodland Removal Policy 5
- 11.2.9 The Dumfries and Galloway Forestry and Woodland Strategy 5

11.3 FORESTRY STUDY AREA 6

11.4 FOREST PLAN 6

11.5 DEVELOPMENT OF A WIND FARM FOREST PLAN 6
- 11.5.1 Introduction 6
- 11.5.2 Wind Farm Felling Plan 6
- 11.5.3 Wind Farm Restocking Species Plan 7

11.6 BASELINE CONDITIONS 7
- 11.6.1 Baseline Planting Year/Age Class Structure 7
- 11.6.2 Species Composition 7
- 11.6.3 Baseline Felling Plan 7
- 11.6.4 Baseline Restocking Species Composition 7

11.7 PROPOSED DEVELOPMENT FOREST PLAN 7
- 11.7.1 Introduction 7
- 11.7.2 Proposed Development Felling and Restocking Plans 8

11.8 REQUIREMENT FOR COMPENSATORY PLANTING 8

11.9 FORESTRY WASTE 8

11.10 FORESTRY MANAGEMENT PRACTICES 8
- 11.10.1 Crop Clearance 8
- 11.10.2 Restocking / Planting Methodology 9
- 11.10.3 Aftercare Works 9
- 11.10.4 Standards and Guidelines 9

11.11 SUMMARY 9

Glossary

Term	Definition
Environmental Impact Assessment	Environmental Impact Assessment (EIA) is a means of drawing together, in a systematic way, an assessment of the likely significant environmental effects arising from a Proposed Development.
Environmental Impact Assessment Report	A document reporting the findings of the EIA and produced in accordance with the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017.
Forestry Study Area	The location of the study area as shown in Figure 11.1.
Forestry	Areas currently dominated by trees.
Proposed Development area	The project development area within the site boundary should be referred to as the 'Proposed Development Area'.
Sites of Special Scientific Interest	Sites of Special Scientific Interest are protected areas that represent the UK's most important wildlife and/or geological sites.
Woodland	Area covered by trees and vegetation within the Forestry Study Area.

List of Abbreviations

Abbreviation	Description
CEMP	Construction Environmental Management Plan
CoWRP	Control of Woodland Removal Policy
DGC	Dumfries and Galloway Council
DGFWS	Dumfries and Galloway Forestry and Woodland Strategy
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
FCS	Forestry Commission Scotland
FES	Forest Enterprise Scotland
FLS	Forestry and Land Scotland
FSA	Forestry Study Area
NFE	National Forest Estate
NPF3	Third National Planning Framework
SEPA	Scottish Environment Protection Agency
SF	Scottish Forestry
SFS	Scotland's Forestry Strategy
SPP	Scottish Planning Policy
SSSI	Site of Special Scientific Interest
UKFS	UK Forestry Standard
UKWAS	UK Woodland Assurance Standard

INTRODUCTION

11.1.1 This chapter considers the potential significant effects of the Proposed Development on the forest and woodland resource within the Proposed Development Area (as shown in Figure 1.3) and its long-term management. This chapter was prepared by DGA Forestry LLP.

11.1.2 DGA Forestry LLP is one of Scotland's leading independent forestry consultants established in 1972 to provide an independent management and consultancy service to clients and forest owners. The firm undertakes project and consultancy work for a variety of individuals and organisations in both the private and public sectors covering a wide range of topics. The project team are all forestry graduates with up to 47 years' experience. Since 2000 the firm has been involved in over 100 development and wind farm projects within forestry plantations including some of the largest and most complex forestry sites in Scotland e.g; Windy Standard III, Windy Standard II, North Kyle; Whitelee; Arecleoch; Crystal Rig Wind Farm; Black Law Wind Farm; Harestanes and Kilgallioch.

11.1.3 In addition to work on wind farms DGA Forestry has provided consultancy services on forestry aspects of overhead line projects; substations; pumped storage projects; other construction projects within forestry plantations; and environmental issues such as the removal of woodland from Sites of Special Scientific Interest (SSSIs) and National Nature Reserves.

11.1.4 Forestry is not being regarded as a receptor for Environmental Impact Assessment (EIA) purposes. Commercial forests are dynamic and their structure continually undergoes change due to normal felling and restocking by the landowner; natural events, such as storm damage, pests or diseases; and external factors, such as a wind farms or other development.

11.1.5 This chapter describes the following:

- The plans as a result of the Proposed Development for felling;
- Restocking and forest management practices as a result of the Proposed Development;
- The process by which these were derived; and
- The issue of forestry waste arising from the Proposed Development.

11.1.6 The forestry proposals are interrelated with environmental effects, which are assessed separately in the Environmental Impact Assessment Report (EIAR). This chapter should therefore be read in conjunction with other EIAR chapters which are interrelated to the proposed changes in the forest structure.

11.1.7 The responsibility for the management of the remainder of the forest outwith the Proposed Development Area and shown in Figure 11.1 lies with the landowner The wider felling operations, restocking, and aftercare operations which are ongoing in the Forestry Study Area (FSA) outwith the Proposed Development Area do not form part of the Proposed Development for which consent is sought.

11.1.8 The Proposed Development (as shown in Figure 1.3: Site Layout) lies partly within existing commercial forestry plantations. The woodlands are privately owned and managed. The forestry proposals which are set out/ proposed as part of the Proposed Development within this chapter have been developed to:

- Identify areas of forest to be removed for the construction and operation of the Proposed Development;
- Identify those areas which may or may not be replanted as part of the Proposed Development; and
- Propose management practices for the forestry works associated with the Proposed Development.

11.1.9 In general, throughout this chapter data labelled "baseline" refers to the current crop composition and any existing plans without any modification as a result of the Proposed Development. Data labelled "wind farm" or "Proposed Development" refers to the forestry plans incorporating the Proposed Development.

11.1.10 This chapter is structured as follows:

- Legislation, Policy and Guidance;
- Forestry Study Area;
- Forest Plans;
- Development of the Wind Farm Forest Plan;
- Baseline Conditions;
- Wind Farm Forest Plan;
- Requirement for Compensatory Planting;
- Forestry Waste;
- Forestry Management Practices; and
- Summary.

11.2 LEGISLATION, POLICY AND GUIDANCE

11.2.1 Relevant overarching planning policies for the Proposed Development are detailed within the Planning Statement that accompanies the application. A desktop study was undertaken drawing upon published National, Regional and local level publications, assessments and guidance to establish the broad planning and forestry context within which the Proposed Development is located.

11.2.2 Forestry related policies and documents listed below have been considered within the forestry assessment. The following section provides an outline of those planning policies which are relevant to the Proposed Development, and forestry.

11.2.1 Forestry and Land Management (Scotland) Act 2018

11.2.3 Until 1st April 2019, the Scottish Ministers owned the National Forest Estate (NFE), provided funding and had responsibility for forestry strategy and policy, but the management of the NFE and delivery of forestry functions had been the responsibility of the Forestry Commissioners.

11.2.4 The Forestry Commission was a cross-border public authority and a UK non-ministerial department with a statutory Board of Commissioners. The Commission was made up of a number of parts, including in Scotland:

- Forest Enterprise Scotland (FES), which carried out forestry operations and managed the NFE on Scottish Ministers' behalf; and
- Forestry Commission Scotland (FCS), which was responsible for the other forestry functions in Scotland.

When full devolution of forestry to the Scottish Government was completed on 1 April 2019, FCS and FES became two new agencies of the Scottish Government:

- Scottish Forestry (SF), responsible for regulatory, policy and support functions; and
- Forestry and Land Scotland (FLS), responsible for the management of the NFE and any other land managed for the purposes of the Forestry and Land Management (Scotland) Act 2018.

11.2.5 With the introduction of the Forestry and Land Management (Scotland) Act 2018[1] and its associated Regulations on April 1st 2019, the old regulatory regime of felling control under the Forestry Act 1967[2] was repealed in Scotland. From 1 April 2019, anyone wishing to fell trees in Scotland requires a Felling Permission issued by SF, unless an exemption applies or another form of felling approval such as a felling licence (including a forest plan) has previously been issued.

[1] The Scottish Government (2018). The Forestry and Land Management (Scotland) Act 2018, Edinburgh. Available at http://www.legislation.gov.uk/asp/2018/8/contents/enacted [accessed on 15.04.19].

[2] UK Government (1967). Forestry Act 1967 (as amended). HMSO, London. Available at https://www.legislation.gov.uk/ukpga/1967/10/contents [accessed on 15.04.19]

11.2.6 Under the new Regulations felling which is authorised by deemed planning permission continues to be exempt from the Regulations and does not require a Felling Permission issued by SF.

11.2.2 Scotland's Forestry Strategy 2019 – 2029

11.2.7 The Scotland's Forestry Strategy 2019 – 2029 (SFS)[3], was published in 2019. The strategy provides an overview of contemporary Scottish forestry; presents the Scottish Government's 50-year vision for Scotland's forests and woodlands; and sets out a 10-year framework for action.

11.2.8 The vision is that *"...in 2070, Scotland will have more forests and woodlands, sustainably managed and better integrated with other land uses. These will provide a more resilient, adaptable resource, with greater natural capital value, that supports a strong economy, a thriving environment, and healthy and flourishing communities."*

11.2.9 SFS lists a number of objectives summarised below:

- Increase the contribution of forests and woodlands to Scotland's sustainable and inclusive economic growth;
- Improve the resilience of Scotland's forests and woodlands and increase their contribution to a healthy and high quality environment; and
- Increase the use of Scotland's forest and woodland resources to enable more people to improve their health, well-being and life chances.

11.2.10 SFS describes the priorities for the expansion and sustainable management of Scotland's as:

- Ensuring forests 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;
- Protection from adverse impacts of development;
- Enhancing the environmental benefits provided by forests and woodlands; and
- Engaging more people, communities and businesses in the creation, management and use of forests and woodlands.

11.2.11 SFS contains ambitious targets for new woodland creation including the following:

- 10,000 ha per year in 2018;
- 12,000 ha per year from 2020/21;
- 14,000 ha per year from 2022/23; and
- 15,000 ha per year from 2024/25.

11.2.12 The stated objective is to increase Scotland's woodland cover from the current 18.5% to 21% by 2032.

11.2.3 Scotland's Third Land Use Strategy 2021 – 2026

11.2.13 Scotland's Third Land Use Strategy 2021 – 2026[4] stresses the importance of forestry in the balancing the demands on land use in Scotland and its transition to a net zero economy. It states: *"…there will need to be a significant land use change from current uses to forestry and peatland restoration."* The document advises that this will involve rapidly increasing the pace of woodland and forest creation. This is supported by SFS which emphasises the continued protection of Scotland's forest resource.

11.2.4 Third National Planning Framework

11.2.14 Scotland's Third National Planning Framework (NPF3)[5] recognises that woodlands and forestry are an economic resource, as well as an environmental asset (NPF3 Paragraph 4.2). It supports the continued expansion of Scotland's woodland and forestry resource (NPF3 Paragraph 4.23). A key action of NPF3 (NPF3 Paragraph 6.10) is a commitment to create on average 10,000ha per annum of new woodland from 2015 onwards, a target which has been superseded by the SFS.

11.2.5 Fourth National Planning Framework Consultation Draft

11.2.15 The Scottish Government issued a draft consultation of Scotland 2045: Our Fourth National Planning Framework[6] on 10th November 2021. The document, in particular Policy 19: Green Energy refers to supporting the creation of new renewable energy developments as well as repowering and extensions of existing wind farms.

11.2.16 The document under Policy 34: Trees, woodland and forestry states (inter alia):

"a) Local development plans should identify and protect existing woodland and potential for its enhancement or expansion …..

b) Development proposals should not be supported where they would result in:

- *any loss of ancient woodlands, ancient and veteran trees, or adverse impact on their ecological condition;*
- *adverse impacts on native woodlands, hedgerows and individual trees of high biodiversity value or identified for protection in the Forestry and Woodland Strategy;*
- *fragmenting or severing woodland habitats, unless mitigation measures are identified and implemented;*
- *conflict with Restocking Direction, Remedial Notice or Registered Notice to Comply issued by the Scottish Government Forestry Regulator, Scottish Forestry.*

c) Development proposals involving woodland removal should only be permitted where it would achieve significant and clearly defined additional public benefits. Where woodland is removed in association with development, developers will generally be expected to provide compensatory planting."

11.2.17 The document as presently drafted therefore supports the Scottish Government's other policies on the protection of the existing woodland resources.

11.2.6 Scottish Planning Policy

11.2.18 The Scottish Planning Policy (SPP)[7] includes a section on woodlands (SPP Paragraphs 216 - 218). This refers to the Scottish Government's Control of Woodland Removal Policy (Forestry Commission Scotland, 2009) which is discussed in more detail below. The SPP states that woodland removal should only be permitted where it would achieve significant and clearly defined additional public benefits. It further states that where woodland is removed in association with development proposals, developers will generally be expected to provide compensatory planting and that the acceptability of woodland removal, in the context of the Control of Woodland Removal Policy, should be taken into account in determining applications.

[3] The Scottish Government (2019). Scotland's Forestry Strategy 2019 -2029, Edinburgh.

[4] Scottish Government (2021): Scotland's Third Land Use Strategy 2021 - 2026 https://www.gov.scot/publications/scotlands-third-land-use-strategy-2021-2026-getting-best-land/ [accessed 10/03/202])

[5] The Scottish Government (2014). Scotland's Third National Planning Framework (NPF3). Edinburgh.

[6] Scottish Government (2021): Scotland 2045: Our Fourth National Planning Framework. Available at https://www.gov.scot/publications/scotland-2045-fourth-national-planning-framework-draft/ [accessed 10/03/2022]

[7] The Scottish Government (2014). Scottish Planning Policy. Edinburgh.

11.2.7 Right Tree in the Right Place

11.2.19 Right Tree in the Right Place - Planning for Forestry & Woodlands[8] sets out detailed guidance for planning authorities when considering development proposals involving forestry and woodland. It advises that planning authorities should:

- *Assess the current and likely future public benefits (social, economic and environmental) deriving from the existing woodland;*
- *Determine whether the development should be modified or the woodland redesigned to avoid or reduce woodland loss (e.g. by accommodating new development within 'open space' within woodlands);*
- *Where woodland loss cannot be avoided, assess the public benefit of the proposed development to see if it would justify the loss of the woodland;*
- *Consider whether any loss of woodland should be mitigated by compensatory planting; and*
- *Consider whether any felling consent needs to specify the timing of forestry operations to avoid disturbance to wildlife present on the site*.

11.2.20 The document advises that if a Planning Authority decides that a development proposal involving woodland loss should receive planning permission, it should specify the precise area of felling permitted and ensure that planning conditions and/or agreements ensure the provision of any compensatory planting which is required.

11.2.8 Control of Woodland Removal Policy

11.2.21 In parallel with the SFS and other national policies on woodland expansion, there is a strong presumption against permanent deforestation unless it addresses other environmental concerns. In Scotland, such deforestation is dealt with under the Scottish Government's 'Control of Woodland Removal Policy'[9]. The guidance relating to the implementation of the policy was revised and updated in 2019[10].

11.2.22 The purpose of the Control of Woodland Removal Policy (CoWRP) is to provide direction for decisions on woodland removal in Scotland. The document lays out the background to the policy, places it into the current policy and regulatory context, and discusses the principles, criteria and process for managing the policy implementation. The following paragraphs summarise the policy relevant to the Proposed Development.

11.2.23 The principal aims of the policy include the following:

- To provide a strategic framework for appropriate woodland removal; and
- To support climate change mitigation and adaptation in Scotland.

11.2.24 The guiding principles behind the policy include the following:

- *A strong presumption in favour of protecting Scotland's woodland resources; and*
- *Woodland removal should be allowed only where it would achieve significant and clearly defined additional public benefits. In appropriate cases, a proposal for compensatory planting may form part of this balance.*

Woodland removal, without a requirement for compensatory planting, is most likely to be appropriate where it would contribute significantly to:

- *Enhancing priority habitats and their connectivity;*
- *Enhancing populations of priority species;*
- *Enhancing nationally important landscapes, designated historic environments and geological sites of special scientific interest (SSSI);*
- *Improving conservation of water or soil resources; and*
- *Public safety.*

11.2.25 The document advises that woodland removal, with compensatory planting, is most likely to be considered to be appropriate where it would contribute significantly to:

- *Helping Scotland mitigate and adapt to climate change;*
- *Enhancing sustainable economic growth or rural/community development;*
- *Supporting Scotland as a tourist destination;*
- *Encouraging recreational activities and public enjoyment of the outdoor environment;*
- *Reducing natural threats to forests or other land; or*
- *Increasing the social, economic or environmental quality of Scotland's woodland cover.*

The consequences of the policy are stated as:

- *Minimising the inappropriate loss of woodland cover in Scotland;*
- *Enabling appropriate woodland removal to proceed with no net loss of woodland -related public benefits other than in those circumstances detailed in the policy; and*
- *Facilitating achievement of the Scottish Government's woodland expansion ambition in a way that integrates with other policy drivers (such as increasing sustainable economic growth, tackling climate change, rural/community development, renewable energy and biodiversity objectives).*

11.2.26 The Control of Woodland Removal Policy advises that addressing the policy requirements, of the document can be met through changes to forest design, increasing designed open space, changing the woodland type, changing the management intensity, or completing off site compensation planting.

11.2.9 The Dumfries and Galloway Forestry and Woodland Strategy

11.2.27 The Dumfries and Galloway Forestry and Woodland Strategy (DGFWS)[11] supports national policies whilst integrating with other Dumfries and Galloway Council (DGC) strategies and plans. It provides a framework for guiding forestry and woodland practice within Dumfries and Galloway. It is intended to guide both woodland creation and the restructuring and management of existing forests and woodlands, to maximise the benefits for the local economy, communities and environment. The document advises that the strategy supports Scottish Ministers' desire to see an expansion in woodland cover, delivering multiple benefits across the country.

11.2.28 The DGFWS forms Supplementary Guidance to the Dumfries and Galloway Local Development Plan 2.

11.2.29 In DGFWS Paragraph 4.32, the document recognises that the region has attracted a lot of interest from wind energy developers and that many afforested areas are also potentially suitable locations for wind farms. It states that integrating wind energy developments into wooded areas can have advantages in that the visual impacts of infrastructure may be screened or softened by planting whilst contributing to overall forest design objectives.

11.2.30 Policy LAN 9 states "*Work with emerging guidance on integrating wind energy developments within forest landscapes*."

[8] Forestry Commission Scotland (2010): Right Tree in the Right Place - Planning for Forestry & Woodlands. Forestry Commission, Edinburgh.

[9] Forestry Commission Scotland (2009). The Scottish Government's Policy on Control of Woodland Removal. Edinburgh.

[10] Forestry Commission Scotland (2019): Scottish Government's policy on control of woodland removal: implementation guidance. Available at https://forestry.gov.scot/publications/349-scottish-government-s-policy-on-control-of-woodland-removal-implementation-guidance

[11] Dumfries and Galloway Council (2014): The Dumfries and Galloway Forestry and Woodland Strategy. Dumfries.

11.2.31 Under the of Theme of '"*Woodlands, Forestry and Climate Change*"' one of the key policy objectives, of the DGFWS, is to encourage effective development of renewable energy from forests in the form of biomass wood fuel and the integration of appropriate renewable energy schemes within forests and woodlands.

11.2.32 Paragraph 6.13 of the DGFWS states that there may be potential within some of the existing forested areas for the siting of wind farms; however, this needs to be balanced against the loss of trees and carbon emissions from their construction. Both the Local Development Plan and the Wind Energy Supplementary Guidance emphasise the need for replacement planting of woodland lost as a result of development.

11.2.33 Paragraph 6.14 of the DGFWS identifies that the access and transportation needs of both the timber industry and wind farm construction should be planned for in a comprehensive and inclusive manner.

11.2.34 This is reflected in Policy DRE 2 (page 39) states: "*Develop effective local guidance and practice to minimise woodland loss from renewable energy developments*." The DGFWS goes on to state in Paragraph 8.5 that locating wind farms or turbines within woodland or productive forests can lead to a loss of woodland cover and refers specifically to the Scottish Government's policy on 'The Control of Woodland Removal'.

11.3 FORESTRY STUDY AREA

11.3.1 The Forestry Study Area (FSA) for the Proposed Development, as shown on Figure 11.1, extends to approximately 3479.8 ha and is comprised of privately owned and managed woodlands and is managed under the approved Carsphairn Forest Plan, plan reference 3667503 which expires in February 2023.The crops are comprised largely of commercial conifers with areas of mixed conifers, native broadleaves and open ground. The woodlands are currently in the production phase with ongoing felling and restocking.. Further information on the composition of the woodlands in the FSA is provided in the baseline description below.

11.4 FOREST PLAN

11.4.1 One of the original key objectives of the Forestry Commission was forest expansion, in both state and private forests, to produce a strategic reserve of timber, and consequently, a limited range of species was planted. More recently, greater emphasis has been placed on developing multi-purpose forests, which require a restructuring of age and species in existing woodlands. Restructuring is achieved through the forest planning process.

11.4.2 A Forest Plan relates to individual forests or groups of woodlands. It describes the woodlands, places them in context with the surrounding area, and identifies issues that are relevant to the woodland or forest. Forest Plans describe how the long-term strategy would meet the management objectives of the owner, the criteria of the UK Forestry Standard (UKFS)[12] and the UK Woodland Assurance Standard 4th Edition (UKWAS)[13], under which the woodlands are managed if certificated.

11.4.3 The Forest Plan involves a scoping exercise whereby the views of Statutory Consultees, neighbours and stakeholders are sought, resulting in an agreed Scoping Report. The results of the scoping exercise are incorporated into the Forest Plan. The Forest Plan covers social and environment aspects, such as conservation, archaeology, landscape and the local community, in addition to forestry and silvicultural considerations.

11.4.4 Restructuring of age class and species are important factors in this process to ensure proposals meet the current standards. A Wind Farm Forest Plan is prepared along the same principles with the relevant information being provided by the project team. A Forest Plan without wind farm will typically contain felling and restocking proposals covering a 10 year period in detail, with outline proposals for the remainder of the forest.

11.4.5 Restructuring, a Forestry Plan area presents forest managers with many challenges and opportunities, particularly in relation to the management of potential catastrophic windblow. The forest planning process allows forest managers to review and revise proposals in a structured way to take account of such external factors. The inclusion of a wind farm within the forest is an example of one such external factor.

11.4.6 The current guidelines outlined in paragraph 11.1.4 require diversification of species and woodland types as part of the forest planning process, specifically an increase in the proportion of broadleaf woodland, other conifers, and open ground. The incorporation of the Proposed Development into the forest would result in further restructuring of the crops.

11.4.7 The whole forest management unit is assessed in order to comply with the CoWRP[14] methodology for compensatory planting (CP) and to assess compliance with the UK Forestry Standard.

11.5 DEVELOPMENT OF A WIND FARM FOREST PLAN

11.5.1 Introduction

11.5.1 Only a small proportion of the FSA will be affected by the Proposed Development. While the baseline plans illustrate the current species composition for the whole FSA, these are analysed in detail in this EIA Report. The Wind Farm Forestry Plan focuses on those areas directly affected by the Proposed Development.

11.5.2 This section describes the process by which a Wind Farm Forest Plan has been prepared. Existing crop information has been collated from the landowner current forestry information, field surveys and a desk-based assessment as necessary, including species, planting year and felling and restocking plans where available.

11.5.3 Details of turbine locations, new tracks, storage compounds, borrow pits, substation and other infrastructure have been provided by other disciplines within the project team. This data has been amalgamated with the forestry data to construct the Proposed Development forestry proposals.

11.5.4 In any wind farm design the location of turbines and infrastructure is heavily influenced by environmental constraints and technical considerations, e.g. sensitive habitats, wind capture, ground conditions, etc. The final location of turbines and infrastructure of the Proposed Development has taken into account the various site constraints into consideration (see Chapter 4: Site Design and Design Evolution of the EIAR for further details). Land management requirements associated with the construction of the Proposed Development have also been incorporated into the forestry proposals, where appropriate.

11.5.5 The Proposed Development felling programme would largely be driven by technical constraints, both forestry and development. Within forests and woodlands, areas of crop may require to be felled to accommodate the construction and operation of the Proposed Development. In this case taking into account technical and environmental constraints an 85 m keyhole was adopted around turbines. These keyholes are for construction, operation and environmental mitigation (including bats). A 10 m clear fell buffer will be applied around each other item of temporary and permanent infrastructure, in addition to the area required for the infrastructure. An indicative 30 m corridor has been applied to all new and upgraded existing tracks to be used for turbine delivery and construction purposes. This would be reviewed at the detailed design stage post consent and prior to construction.

11.5.2 Wind Farm Felling Plan

11.5.6 Felling required for a development can be divided into two categories. Firstly, that required during the construction phase of the development, which for the purposes of this assessment, has been anticipated as commencing in 2025; secondly, felling required during the operational period of the development. In this case there is no felling required outwith that required for the construction phase.

11.5.7 The existing crops were assessed to identify those areas which would require to be felled for a number of reasons as described in paragraph 11.5.5. Due to the crop growth rates and current crop height, it has been assessed that

[12] Forestry Commission (2017). The UK Forestry Standard: The Government's Approach to Sustainable Forestry, Forestry Commission, Edinburgh.

[13] UKWAS (2018). The UK Woodland Assurance Standard Fourth Edition, UKWAS, Edinburgh.

[14] Forestry Commission Scotland (2009) The Scottish Government's Policy on Control of Woodland Removal [Online] Available at: fcfc125.pdf Accessed 1/05/2022.

the infrastructure within woodland areas would require a combination of keyholing into younger crops and in the mature crops, clear felling of entire coupes back to either a wind farm edge or management boundaries. Where entire coupes are to be felled, the infrastructure would be incorporated into the restocking plan as described in paragraph 11.4.2.

11.5.8 Additional minor felling may be required for forest management purposes, for example, to reduce the risk of subsequent windblow; to reduce coupe isolation and fragmentation; and to ensure access for future forest operations.

11.5.9 The resultant wind farm felling plan (Figure 11.3) shows which woodlands within the FSA would be felled as a result of the Proposed Development and when this felling would take place.

11.5.3 Wind Farm Restocking Species Plan

11.5.10 The wind farm restocking species plan (Figure 11.4) shows which woodlands would be restocked and with which species. The majority of the areas to be felled for the Proposed Development would be restocked except for the following:

- Land required for the Proposed Development's permanent infrastructure including to the buffer zones described in paragraph 11.5.5; and
- Land to be left unplanted for forest management (see open ground on Figure 11.4); or forest design purposes.

11.5.11 It has been assumed that, where possible, some temporary infrastructure such as edges of re-profiled borrow pits would be re-instated and available for restocking post construction. To ensure that the forestry establishes successfully, the soil will be restored to a depth of 1 m.

11.5.12 In preparing the restocking plan, a number of objectives have been considered as follows:

- Fragmentation of coupes to be minimised as much as possible;
- Coupe shapes would be modified to ensure that access for future forestry operations, principally harvesting, is maintained; and
- Coupe shapes and edges would be modified to follow good practice.

11.5.13 Species composition was considered taking into account the Proposed Development operational objectives, landowner objectives and forestry policies.

11.5.14 The forestry proposals have been assessed by each of the separate environmental disciplines/consultants as part of the EIA process (as mentioned in paragraph 11.1.6), and the effects are reported in individual chapters of this EIAR and their supporting appendices.

11.6 BASELINE CONDITIONS

11.6.1 Baseline Planting Year/Age Class Structure

11.6.1 Many woodlands established in the mid to late 1900's, were planted in large contiguous blocks, often over a limited number of years and with a limited range of species. Such woodlands develop poor structural diversity, especially on upland sites. Restructuring the age class and species of such forests is desirable and would yield both forest management and environmental benefits. The woodlands within the FSA have limited structural diversity as described above, however the restructuring process is underway through felling and restocking.

11.6.2 The current guidelines contained within the UKFS are that in forests characterised by a lack of diversity due to extensive areas of even-aged trees, stands adjoining felled areas should be retained for 7 years or until the restocking of the first coupe has reached a minimum height of 2 m. For planning purposes, this is likely to be between 5 and 15 years depending on establishment success and growth rates. It is recognised that in large even-aged plantations, especially in the uplands, such as the Proposed Development Area, restructuring age class structure to meet this target may take more than one rotation.

11.6.2 Species Composition

11.6.3 The current baseline species composition of the woodlands within the FSA is shown in Figure 11.2 and illustrated in Table 11.1.

11.6.4 Please note there may be minor discrepancies in the totals within the tables contained in this chapter. This is due to rounding of the individual values for the different parameters in the database.

Table 11.1: Baseline Species Composition

Species	Area (ha)	Area (%)
Sitka spruce	1762.2	50.6%
Other conifer	471.9	13.6%
Native broadleaves	79.1	2.3%
Felled awaiting restock	161.9	4.7%
Open ground	1004.7	28.9%
Totals	**3479.8**	

11.6.5 The main species within the FSA are commercial conifers, principally Sitka spruce, which in pure or mixed stands, accounts for approximately 50.6% of the total FSA. Other conifers account for 13.6% of the FSA and broadleaf woodland accounts for 2.3% of the FSA. Open ground is the second largest component of the FSA and accounts for 28.9%.

11.6.6 The species composition reflects the practice and guidance which prevailed at the time the woodlands were established; restructuring as part of a long term forest plan would aim to introduce an increased proportion of broadleaves and other conifers into the woodland composition.

11.6.3 Baseline Felling Plan

11.6.7 The baseline felling plan forms part of the current Forest Plan prepared by the forest managers; however this plan will have expired by the time of construction of the Proposed Development. It considers the requirement to restructure the age class of even aged forests as described above. This is the current plan at time of preparing the EIAR, this plan may have been superseded by the time of construction of the Proposed Development.

11.6.8 The baseline felling programme is designed to provide the required separation between felling coupes, where possible. This may take more than one rotation to achieve, especially in the uplands where wind farm boundaries between felling coupes are limited.

11.6.4 Baseline Restocking Species Composition

11.6.9 As the Carsphairn forest plan will have expired by the time of construction and the Proposed Development affects such a small area of the FSA it has been decided not to include detailed restocking analysis.

11.7 PROPOSED DEVELOPMENT FOREST PLAN

11.7.1 Introduction

11.7.1 As set out earlier, the Proposed Development Forest Plan will only focus on the areas affected by the Proposed Development, not the whole FSA.

11.7.2 Proposed Development Felling and Restocking Plans

11.7.2 The Proposed Development felling plan is shown in Figure 11.3 and 11.4 respectively and summarised in Table 11.2 below.

Table 11.2: Proposed Development Felling Plan

Development Felling Species	Area (ha)	Development Restocking Species	Area (ha)
Sitka spruce	3.6	Sitka spruce	3.6
Sitka spruce	5.4	Wind farm open ground	5.4
Other conifer	7.4	Other conifer	7.4
Other conifer	2.1	Wind farm open ground	2.1
Totals	**18.5**	**Totals**	**18.5**

11.7.3 There would be advanced felling of 18.5 ha resulting from the construction of the Proposed Development.

11.7.4 The changes in the structure of the woodlands are discussed in the following text. The changes refer to a comparison of the Proposed Development restocking species plan with the baseline restocking species plan. It is concluded that:

- there would be a net reduction in the area of conifer woodland of 7.5 ha (see Figure 11.4);
- Long term wind farm permanent open ground would total 7.5 ha; and
- the net reduction in stocked woodland area within the FSA would be 7.5 ha which is equivalent to 0.2% of the FSA.

11.8 REQUIREMENT FOR COMPENSATORY PLANTING

11.8.1 As a result of the construction of the Proposed Development, there would be a net loss of woodland area. The area of stocked woodland in the FSA would decrease by 7.5 ha.

11.8.2 In order to comply with the criteria of the Scottish Government's Control of Woodland Removal Policy, compensation planting is required. The Applicant is committed to providing appropriate compensatory planting. The extent, location and composition of such planting would be agreed with SF, taking into account any revision to the felling and restocking plans prior to the commencement of construction of the wind farm.

11.9 FORESTRY WASTE

11.9.1 The Scottish Environment Protection Agency (SEPA) guidance document WST-G-027, 'Management of Forestry Waste' (SEPA, 2017)[15] highlights that all waste producers have a statutory duty to adopt the waste hierarchy as per the Waste (Scotland) Regulations 2012 (the Scottish Government, 2012)[16], which amended Section 34 of the Environmental Protection Act (EPA) 1990 (duty of care) (UK Government, 1990)[17]. This places a specific duty on any person who produces, keeps or manages (controlled) waste to take all such measures available to them to apply the waste hierarchy in Article 4 (1) of the revised Waste Framework Directive (rWFD)[18], which is:

- Prevention;
- Preparing for re-use;
- Recycling;
- Other recovery, including energy recovery; and
- Disposal, in a way which delivers the best overall environmental outcome.

11.9.2 Further guidance is contained in the document LUPS-GU27, 'Use of Trees Clear Felled to Facilitate Proposed Development on Afforested Land'" (SEPA, 2014)[19].

11.9.3 A hierarchy of uses for forestry materials is proposed, derived from the waste hierarchy contained within the Regulations[16], summarised as follows:

- Prevention via the production of timber products and associated materials for use in timber and other markets;
- The re-use of materials on site for a valid purpose, where such a use exists e.g. Road construction including floating roads;
- There is no valid re-cycling use for forestry residues;
- Other recovery via collection and use as biomass for energy recovery or other markets, where not included above; and
- Where no valid on or off site use can be found for the material, disposal would be in a way that is considered to deliver the best overall environmental outcome.

11.9.4 Where no valid on or off site use, or other disposal method can be found for the material, it should be regarded as waste and handled accordingly. Disposal of timber residues as waste in or on land requires a landfill permit or a waste exemption licence and should be considered the option of last resort.

11.9.5 As discussed in this chapter, the crops felled as a result of the Proposed Development will be replanted except where required for infrastructure. Brash would be left in situ to provide nutrients for the next rotation where the crops are being replanted as per standard forestry practice. Where crops are not being replanted brash would be removed and treated in line with the waste hierarchy regulations.

11.9.6 Stumps would be left in situ as per good practice guidance, except where excavated as part of the construction activities. Excavated stumps would be treated in line with the waste hierarchy regulations.

11.9.7 In areas of lower yielding crops into which the Proposed Development infrastructure would be keyholed the objective would be to recover as much merchantable timber as possible. In cases where this is not possible o treat them in line with the waste hierarchy regulations. Where suitable, whole trees would be extracted and used in the biomass market. As a result, it is anticipated the forestry waste arising from the works will be minimal.

11.9.8 It is proposed that full consideration and further clarification on this issue will be included in a Forestry Waste Management Plan which would form part of the Construction Environmental Management Plan (CEMP)this document would be secured by way of a Planning Condition should consent be forthcoming. .

11.10 FORESTRY MANAGEMENT PRACTICES

11.10.1 Crop Clearance

11.10.1 When the felling for the Proposed Development is undertaken areas of crops of sufficient tree size and standing volume would be harvested conventionally. Timber operations would be undertaken with conventional harvesting and forwarding equipment utilising flotation tracks as required. The flotation devices are fitted to each machine

[15] SEPA (2017): SEPA Guidance Notes WST-G-027 "Management of Forestry Waste". https://www.sepa.org.uk/media/28957/forestry_waste_guidance_note.pdf [accessed 04/03/2022]

[16] The Scottish Government (2012): The Waste (Scotland) Regulations 2012 No. 148 available at https://www.legislation.gov.uk/sdsi/2012/9780111016657 [accessed 20/01/2019]

[17] UK Environmental Protection Act 1990 1990 c. 43 Part II Duty of care etc. as respects waste Section 34 available at http://www.legislation.gov.uk/ukpga/1990/43/section/34 [accessed 20/01/2019]

[18] EU Waste Legislation Waste Framework Directive https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32008L0098 [accessed 20/01/2019]

[19] SEPA (2014): LUPS-GU27 "Use of Trees Cleared to Facilitate Development of Afforested Land. https://www.sepa.org.uk/media/143799/use_of_trees_cleared_to_facilitate_development_on_afforested_land_sepa_snh_fcs_guidance-_april_2014.pdf [accessed 20/01/2019]

wheel which gives the machines very low ground pressure and minimises the ground disturbance during the forestry operations.

11.10.2 Stemwood down to 7 cm or below would be removed from site and sold into the timber markets. The harvester would maximise timber recovery wherever possible, this would result in the maximum timber volume being recovered to ensure the volume used in the brash mats is kept to a minimum. On wetter ground the harvester would build stronger brash mats to ensure there would be minimal damage to the peat and soil structure by the forwarder during extraction. On soft ground, the bottom layers of brash mats become embedded into the soil and removal could result in more environmental damage than leaving the material to naturally degrade.

11.10.3 In areas of young or lower yield class crops, where little or no merchantable timber would be recovered, a number of options could be utilised depending on the factors prevailing at the time of clearance. The methodology used would depend on tree size; site conditions; the availability of suitable equipment; and the markets prevailing at the time of the works being carried out. Where there was suitable access and ground conditions the trees could be whole tree harvested and extracted to roadside for chipping as biomass.

11.10.4 Where trees are very small due to age or poor growth it may be more viable to fell the crop manually using scrub cutters or chainsaws. The end use of the material would depend on the factors mentioned above, but in some cases there would be no recoverable material. Where material was recoverable it could potentially be used on site in the base of floating roads; extracted and processed for biomass; or used for ecological enhancement if applicable.

11.10.5 Stumps would be left in situ as per the guidance contained in the Forestry Commission Research Note "*Environmental effects of stump and root harvesting*" (Forestry Commission, 2011)[20] except where they would be removed for borrow pits, excavated roads, turbine bases and other infrastructure requiring excavation. Such material would be treated as described in Section 11.9.3.

11.10.2 Restocking / Planting Methodology

11.10.6 Restocking would be carried out to current standard practice, the forest manager's internal guidance and practices and in accordance with the guidelines contained in the UKFS and UKWAS as a minimum. Methodology would vary depending on the type of restocking being carried out. The following information is provided for guidance as to the restocking methodology which may be adopted.

11.10.7 On commercial conifer areas the methodology would likely include:

- Site preparation by machine cultivation and drainage;
- Manual planting;
- Subsequent follow-up establishment operations such as the replacement of failures, weeding and protection measures until the crops are satisfactorily established; and
- Replanting would be carried out with the conifer species identified in the restocking plan at the minimum density of 2,500 trees per hectare.

11.10.8 Restocking within the broadleaf woodland areas would be carried out to the same specification, as commercial conifers, with the following amendments:

- A lower planting density of 1,600 trees per ha; and
- The principal species would be mixed native broadleaves including, for example, downy and silver birch with small components of other species as appropriate to site such as oak, rowan, hazel, gean, grey willow, goat willow, alder and woody shrubs.

11.10.3 Aftercare Works

11.10.9 Aftercare establishment works would be expected to include, but are not limited to, the following:

- The woodlands would be beaten up (replacement of failures) to ensure satisfactory stocking levels by year 5, broadleaf woodlands by year 10;
- The woodlands would be weeded as necessary to ensure satisfactory establishment by year 5 / year 10 for broadleaf woodlands;
- The woodlands would be protected against pine weevils by management inspections and remedial treatment as necessary;
- The woodlands would be protected against browsing damage from wild and domestic animals;
- The woodlands would be protected against fire;
- Fertiliser would be applied as necessary to ensure satisfactory establishment and growth; and
- Other works as reasonably required ensuring satisfactory establishment of the woodlands.

11.10.4 Standards and Guidelines

11.10.10 All forestry operations would be carried out in strict accordance with current good practice and guidelines. This would include, but not be limited to:

- UK Forestry Standard (Forestry Commission 2017);
- Forest Industry Safety Accord Guides[21] (or equivalent) (FISA, 2014); and
- Current relevant legislation including, but not limited to, Health and Safety at Work Act 1974 (UK Government, 2014)[22].

11.11 SUMMARY

11.11.1 The total FSA extends to 3479.8 ha and is comprised of privately owned and managed woodlands.

11.11.2 Felling would be advanced, on 18.5 ha to allow for the construction of the Proposed Development.

11.11.3 The area of unplanted ground, within the FSA, would increase as a result of the Proposed Development. As a result, there would be a net loss of woodland area of 7.5 ha. associated with the Proposed development.

11.11.4 In order to comply with the Scottish Government's Control of Woodland Removal Policy, compensation planting would be required to mitigate for the loss of woodland area. The Applicant is committed to providing appropriate compensatory planting which would be secured by way of a Planning Condition. The extent, location and composition of such planting to be agreed with SF, taking into account any revision to the felling and restocking plans prior to the commencement of construction.

[20] Forestry Commission Research Note "Environmental effects of stump and root harvesting" (Forestry Commission, 2011). https://www.forestry.gov.uk/pdf/FCRN009.pdf/$FILE/FCRN009.pdf [accessed 20/01/2019]

[21] Forest Industry Safety Accord (2014). FISA Safety Guides (various). Edinburgh.

[22] UK Government (1974): Health and Safety at Work etc. Act 1974 available at http://www.legislation.gov.uk/ukpga/1974/37/contents [access 20/01/2019]