

# Red John Pumped Storage Hydro Scheme

Volume 2, Chapter 12: Forestry

ILI (Highlands PSH) Ltd.

November 2018



### Quality information

| <u>Prepared by</u> | <u>Checked by</u> | <u>Verified by</u> | <u>Approved by</u> |
|--------------------|-------------------|--------------------|--------------------|
| James Anderson     | Sandy Anderson    | David Lee          | Catherine Anderson |
| DGA Forestry       | DGA Forestry      | Principal Engineer | Associate Director |

### Revision History

| <u>Revision</u> | <u>Revision date</u> | <u>Details</u> | <u>Authorized</u> | <u>Name</u>        | <u>Position</u>    |
|-----------------|----------------------|----------------|-------------------|--------------------|--------------------|
| 1               | November 2018        | Submission     | CA                | Catherine Anderson | Associate Director |

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# 12 Forestry

## 12.1 Introduction

- 12.1.1 This chapter of the Environmental Impact Assessment (EIA) Report describes the forestry aspects of the proposed Development.
- 12.1.2 Forestry is not being regarded as a receptor for EIA purposes in this chapter. Woodlands are dynamic and their structure continually undergoes change due to normal felling and restocking by the landowner; natural events, such as windblow, pests or diseases; and external factors, such as development. This EIA Report chapter therefore describes the plans for felling, restocking and forest management practices as a result of the construction of the Development; the process by which these were derived; and the changes to the physical structure of the forest. It further discusses the issue of forestry waste arising from the Development. The forestry proposals are interrelated with environmental effects, which are assessed separately. This chapter should be read in conjunction with the other EIA Report chapters, in particular, Chapter 2: Project and Site Description, Chapter 3: Alternatives and Design Evolution; Chapter 6: Terrestrial Ecology and Chapter 11: Landscape and Visual Impact Assessment as they are interrelated to the changes in the forest structure.
- 12.1.3 This chapter will identify areas of woodland to be removed for the construction and operation of the Development (as described in Chapter 2: Project and Site Description, and Chapter 3: Design Evolution and Alternatives) and outlines the proposed management practices, while identifying the restocking proposals and future land management of the forest within the Development Site.
- 12.1.4 The Development (as shown in Figure 2.1, Volume 3) lies within existing commercial forestry plantations and native woodlands. The forestry is privately owned and managed. The forestry proposals have been developed to:
- Identify areas of woodland to be removed for the construction and operation of the Development, including habitat management works;
  - Identify those areas which may or may not be replanted as part of the Development;
  - Identify opportunities for on-site compensatory planting; and
  - Propose management practices for the forestry works.
- 12.1.5 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 Development. Data labelled 'development' refers to the forestry plans incorporating the Development.
- 12.1.6 This chapter is structured as follows:
- Legislation, Policy and Guidance;
  - Forestry Study Area;
  - Forest Plans;
  - Development of the Development Forest Plan;
  - Baseline Conditions;

- Development Forest Plan;
- Requirement for Compensatory Planting;
- Forestry Waste;
- Forestry Management Practices; and
- Summary.

## 12.2 Legislation, Policy and Guidance

### **Summary of Relevant Planning Policy**

12.2.1 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 Development Area is located. Forestry related policies and documents listed below have been considered within this forestry assessment. The following section provides an outline of those planning policies which are relevant to the Development and in particular to forestry.

### **National Legislation and Policy**

#### *Scottish Forestry Strategy (SFS)*

12.2.2 The SFS (Scottish Government, 2006) provides the wider context and Scottish Ministers' vision for multi-benefit woodland management and expansion focussing on the key themes of climate change, timber, business development, community development, access and health, environmental quality and biodiversity. It sets out a vision that acknowledges the central role that the forestry resource will play in the culture, environment and economy of Scotland. The SFS informs other policies and guidance about woodland expansion and removal in Scotland.

12.2.3 The SFS set the following targets:

- 25 % woodland cover in Scotland by the second half of this century;
- A woodland creation target of 10,000 hectares per year over the period 2012 - 2022; and
- The forestry sector delivering annual carbon savings of 0.6 million tonnes of carbon (MtC) by 2010, 0.8 MtC by 2015, and 1.0 MtC by 2020.

#### *The Scottish Land Use Strategy*

12.2.4 The Scottish Land Use Strategy (Scottish Government, 2011) sets out a strategic framework for getting the best out of Scotland's land resources. It looks at the potential of the land and the ways in which it is used, both now and in the future. Principles of sustainable land use are central to its vision for the future. With specific reference to forestry, the strategy seeks to identify more closely which types of land are best for tree planting in the context of other land-based objectives and promote good practice and local processes in relation to tree planting so as to secure multiple benefits. This will be achieved by a partnership approach through Forestry and Woodland Strategies to be developed by the local authorities.

#### *Third National Planning Framework (NPF3)*

12.2.5 Scotland's NPF3 (Scottish Government, 2014a) recognises woodlands and forestry are an economic resource, as well as an environmental asset (NPF3 Paragraph 4.2). It further 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 10,000 ha per annum of new woodland from 2015.

*Scottish Planning Policy (SPP)*

12.2.6 The SPP (Scottish Government, 2014b) 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 considered in determining planning applications.

*Control of Woodland Removal Policy*

12.2.7 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'. The guidance relating to the implementation of the policy was revised and updated in 2015.

12.2.8 The purpose of the policy is to provide direction for decisions on woodland removal in Scotland. The policy 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 relative to the Development.

12.2.9 The principal aims of the policy include:

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

12.2.10 The guiding principles behind the policy include:

- There is a strong presumption in favour of protecting Scotland's woodland resources;
- There will be a strong presumption against removing the following types of woodland: ancient semi-natural woodland; or woodlands listed as 'Plantations on Ancient Woodland Sites' (PAWS); 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.

12.2.11 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; or
- Public safety.

12.2.12 Woodland removal, with compensatory planting, is most likely 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.

12.2.13 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).

12.2.14 Addressing the policy requirements can be met through changes to forest design, increasing designed open space, changing the woodland type, changing the management intensity, or completing off-site compensatory planting.

### **Regional Policy**

#### *The Highland Council Forestry and Woodland Strategy*

12.2.15 The Highland Council Forest and Woodland Strategy (The Highland Council, 2006) was published prior to publication of the Scottish Government's Control of Woodland Removal Policy. The five key themes of the strategy are:

- Measures to increase community benefits from forest;
- Enhancement of the region's attractiveness for tourism and recreation;
- Expansion of native woodland;
- Expansion of productive forest; and
- Improvement of the infrastructure for forestry and local processing.

12.2.16 The strategy makes no reference to the location of developments within forestry plantations or to the Scottish Government's Control of Woodland Removal Policy. However, supplementary guidance to the Forest and Woodland Strategy (2006) was published in 2013. (The Highland Council, 2013). This guidance updates the Highland Council's objectives in line with changes in national policy subsequent to the publication of the Forest and Woodland Strategy (2006).

12.2.17 The purpose of the Supplementary Guidance is stated as being to ensure applicants; *"effectively consider and subsequently manage existing trees and woodlands, as well as identifying opportunities for planting and management of new trees and woodlands"* The Guidance directly references the Scottish Government's Control of Woodland Removal Policy and iterates the Highland Council's strong presumption in favour of protecting its woodland resource.

12.2.18 The Guidance notes that whilst the Control of Woodland Removal Policy allows for compensatory planting anywhere within Scotland, the Highland Council has a strong presumption for planting to remain within the Highlands.



- 12.2.19 Section 3.2.2 of the Guidance says that “*certain woodlands can be adapted through careful management to accommodate an appropriate level of development*” and that “*woodland edges can also provide a visual backdrop and shelter, helping new developments integrate with the surrounding landscape*”.
- 12.2.20 Figure 2 of the Guidance lists 5 factors that can influence development potential within woodland and lists criteria for these. The factors are:
- Site Suitability - such as the impact on the wider landscape and the impact on the green network (habitat connectivity);
  - Compatibility – for example the transition from non-native to native species;
  - Integration – provision of recreation facilities within the woodland such as footpaths;
  - Innovation – the opportunity for community led businesses such as firewood supply or pony trekking; and
  - Sustainability - the development providing positive benefits for the management of the remaining woodland.
- 12.2.21 The guidance also states that the Highland Council will generally support developments which are designed to create and co-exist with significant areas of new woodland. It goes on to elaborate that this can bring multiple benefits such as landscape enhancement, biodiversity, timber resource amenity, recreational opportunities and improved connectivity of the green network.
- 12.2.22 An Arboricultural Impact Assessment (AIA) is also considered a key component of any development to identify any areas of conflict between the development and high value individual trees within the development area. A Tree Survey Report including reference to an AIA and Tree Protection Plan is included in Technical Appendix 12.1 (Volume 5).
- 12.2.23 A new Highland Council Forest and Woodland Strategy is currently under consultation, due to be released in 2018. This document will replace the current Forest and Woodland Strategy (2006) and Supplementary Guidance (2013). At the time of preparing this report, the new Strategy had yet to be officially adopted by the Highland Council.

### 12.3 Forestry Study Area

- 12.3.1 The Forestry Study Area, as shown on Figure 12.1 (Volume 3), extends to approximately 950 hectares (ha) and contains a wide variety of woodland types and age classes. The main area of productive, commercial forestry lies to the south-east of the Forestry Study Area and is comprised principally of Scots pine with some areas of Sitka spruce and other conifers. There has been recent felling and restocking within the study area, with a few areas of ground currently felled awaiting restock. Further information on the composition of the woodlands in the Forestry Study Area is provided in the baseline description below.
- 12.3.2 The Forestry Study Area has large areas of conifer woodland on the upper slopes recorded under the Ancient Woodland Inventory as Long established (of plantation origin), largely managed on a commercial basis, and broadleaf woodland on the lower slopes by the shores of Loch Ness recorded as Ancient (of semi natural origin). These areas are detailed in Figure 12.4 (Volume 3).
- 12.3.3 The Forestry Study Area lies within the Pinewood Zone. This zone is an area in Scotland where *Pinus sylvestris* is regarded as a native species; outside of this zone it is believed that pine is not native.

- 12.3.4 Large areas of the Forestry Study Area are identified as core areas of the Native Woodland - Integrated Habitat Network with associated Primary and Secondary Zones for potential native woodland expansion. This data provides an Integrated Habitat Network (IHN) for native woodlands in Scotland. It identifies three levels of information - core native woodlands; primary zones that are within a distance of 500 m; and secondary zones that are within a distance of 2,000 m. These latter two zones represent the differing dispersal abilities of generic woodland species across surrounding land which is not source native woodland. The majority of unplanted ground within the Forestry Study Area is identified as being part of the Highland Native Woodland Target Area. This identifies a target area within Highland where higher intervention rates will be paid for native woodland creation under the Forestry Grant Scheme (FGS). The data is primarily based on information derived from the Highland Council's Forest and Woodland Strategy (2006).
- 12.3.5 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.

## 12.4 Forest Plans

- 12.4.1 A Forest Plan will typically contain felling and restocking proposals covering a 10 year period in detail, with outline proposals for the remainder of the forest. There is currently no Forest Plan covering any of the woodlands within the Forestry Study Area; any felling and restocking has been covered by the issuing of a Felling Licence by Forestry Commission Scotland. A Felling Licence grants permission to fell standing trees with conditions attached.
- 12.4.2 Restructuring 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 Development within the forest is an example of one such external factor. The current guidelines 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 restructuring process is well underway across the Forestry Study Area.
- 12.4.3 The incorporation of the Development into the forest would result in earlier restructuring of some crops compared with the baseline.
- 12.4.4 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) (Forestry Commission, 2017) and the UK Woodland Assurance Standard 4th Edition (UKWAS) (UKWAS, 2018), under which the woodlands would be managed if certificated.
- 12.4.5 Producing a 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 all aspects, such as conservation, archaeology, landscape and the local community in addition to forestry and silvicultural considerations. Restructuring of age class

and species are important factors in this process, to ensure proposals meet the current standards. The Development Forest Plan will be prepared along the same principles with the relevant information contained within the EIA Report.

## 12.5 Principles of the Development Forest Plan

### Introduction

- 12.5.1 Existing crop information, where available, was provided by the landowner and further data was gathered by crop surveys undertaken within the Forestry Study Area. Landowner information comprised existing sub-compartment data incorporating species and age class data. Site inspections were undertaken in July and August 2018 to verify the data and update information. Information from aerial photographs was incorporated including more accurate mapping of species, open ground, and management boundaries.
- 12.5.2 Details of new engineering works, tracks, storage compounds, and other associated infrastructure were provided by the Applicant and this was amalgamated with the forestry data to construct the forestry proposals. The location of infrastructure is heavily influenced by site constraints and technical considerations. The final location of the Development above-ground infrastructure takes the various site constraints into consideration. Environmental constraints, together with any land management requirements associated with the proposed construction of the Development, would also be incorporated into the forestry proposals, where appropriate.
- 12.5.3 The Development felling programme would largely be driven by technical constraints. Within forests habitats, areas of crop require to be felled to accommodate the construction and operation of a Development. Typically, buffers are placed around each item of infrastructure, in addition to the area required for the main engineering works, though this is project and site dependent (as outlined in Section 4.6 of Chapter 4: Approach to EIA). In certain cases, further felling may be required for landscape, ecology and forest management purposes in addition to the felling required for the infrastructure.
- 12.5.4 In this case taking into account technical and environmental constraints, a 50 m corridor will be felled for the Permanent Access Track and a 30m for the Temporary Access Track. There will be additional felling to facilitate a variety of objectives concerning construction, landscape and visual impact, ecology and forest landscape design.

### Felling Plan

- 12.5.5 Felling required for the Development can be divided into two categories. Firstly, that required during the construction phase of the Development. Secondly, felling required during the operational period of the Development. In this case no additional felling due to the operation of the Development is planned during this period.
- 12.5.6 The crops were assessed to identify those areas which would require to be felled for a number of reasons. Due to the nature of the crops and the scale of engineering works to be undertaken there will be no key holing on-site.
- 12.5.7 Additional felling was required for forest management purposes, for example, to reduce the risk of subsequent windblow; to reduce coupe fragmentation; to ensure access for future forest operations; to improve the landscape character; and to enhance and protect high value habitats identified within ecological surveys.
- 12.5.8 The resultant Development felling plan shows which woodlands within the Forestry Study Area would be felled as a result of the Development and when this felling would take place.

### **Restocking Plan**

- 12.5.9 The Development restocking plan shows which woodlands would be restocked and with which species. Where possible the areas to be felled for the Development would be restocked except for the areas discussed below:
- Land required for the Development's aboveground infrastructure subject to the buffer zones described above; and
  - Land to be left unplanted for forest management or forest design purposes.
- 12.5.10 It has been assumed that temporary infrastructure, such as construction compounds would be reinstated and available for restocking post completion of construction.
- 12.5.11 In the creation of the restocking plan a number of points are taken into account as detailed below:
- 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.
- 12.5.12 In addition, the opportunity to provide on-site compensatory planting would be identified where possible to offset any loss of woodland area resulting from the Development.
- 12.5.13 Species composition was also considered taking into account existing restocking plans, the Development operational objectives, landowner objectives and forestry policies.
- 12.5.14 The forestry proposals have been assessed by each of the separate environmental disciplines / consultants as part of the EIA process and the effects are reported in individual chapters of this EIA Report and supporting Technical Appendices where required.

## **12.6 Baseline Conditions**

### **Baseline Planting Year / Age Class Structure**

- 12.6.1 The woodlands contain a wide variety of different woodland types and as a result there is a broad range of age classes across the study area. Many woodlands established in the mid to late twentieth century, 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.
- 12.6.2 The current recommendations contained within the UKFS are for a minimum interval between felling adjacent coupes of 8 - 15 years in the uplands and 7 - 15 years in the lowlands. There can be implications from such a strategy, which involves both advancing and delaying felling, on crop stability and financial returns. For forest planning purposes the target interval between felling adjacent coupes is taken as 7 years or at least 2 m in crop height. It is recognised that in large even-aged plantations, especially in the uplands, restructuring age class structure to meet this target may take more than one rotation.
- 12.6.3 The current age class composition of the Forestry Study Area is detailed in Figure 12.2 (Volume 3) of the EIA Report and in Table 12.1 below. The age class structure of the crops within the Forestry Study Area are considered sufficiently diverse that no further specific restructuring felling would be required.

**Table 12.1 Baseline Age Class Structure**

| Age Class   | Area (ha) | Area (%) |
|-------------|-----------|----------|
| 0 yrs       | 8.1       | 0.9 %    |
| <1 yr       | 15.5      | 1.6 %    |
| 1 - 5 yrs   | 6.8       | 0.7 %    |
| 16 - 20 yrs | 79.7      | 8.4 %    |
| 21 - 25 yrs | 3.7       | 0.4 %    |
| 36 - 40 yrs | 7.6       | 0.8 %    |
| 41 - 45 yrs | 50.9      | 5.4 %    |
| 46 - 50 yrs | 27.6      | 2.9 %    |
| 51 - 55 yrs | 48.6      | 5.1 %    |
| 56 - 60 yrs | 98.9      | 10.4 %   |
| 80+ yrs     | 14.5      | 1.5 %    |
| n/a         | 391.6     | 41.3 %   |
| no data     | 195.4     | 20.6 %   |
| Totals      | 948.9     | 100.0 %  |

### **Species Composition**

12.6.4 The current baseline species composition of the woodlands within the Forestry Study Area is shown in Figure 12.3 (Volume 3) and illustrated in Table 12.2 below:

**Table 12.2 Baseline Species Composition**

| Species                        | Area (ha) | Area (%) |
|--------------------------------|-----------|----------|
| Open ground                    | 391.6     | 41.3 %   |
| Mixed broadleaves              | 58.7      | 6.2 %    |
| Native broadleaf woodland      | 121.6     | 12.8 %   |
| Scots pine                     | 168.5     | 17.8 %   |
| Scots pine / mixed broadleaves | 76.4      | 8.1 %    |
| Other conifer                  | 132.0     | 13.9 %   |
| Totals                         | 948.9     | 100.0 %  |

12.6.5 The main species are commercial conifers, principally Scots pine, which accounts for approximately 17.8 % of the total area. Other conifer woodland, including Sitka spruce and other non-native species, forms 13.9 % of the woodlands. Open ground accounts for 41.3 % of the study area. The largest stocked area of woodland is taken up by mixed / native broadleaves at 19 % of the area.

12.6.6 There is an important distinction between mixed broadleaf and native broadleaf woodland. Native broadleaf woodlands contain species classed as native to Scotland whereas mixed

broadleaf woodlands may contain species classed as non-native or even invasive to Scotland.

- 12.6.7 The species composition, in particular the high broadleaf woodland presence and the high proportion of Scots pine, reflect the landscape character of the area where the woodlands are planted. These woodlands are fairly typical of the Highlands.

### **Baseline Felling and Restocking Plans**

- 12.6.8 There are currently no baseline felling or restocking plans for the woodlands within the Forestry Study Area. Recent woodland operations have been managed under Felling Licences issued by Forestry Commission Scotland, therefore the Development Forest Plan will be assessed against the baseline species data currently available.

## **12.7 Forest Plan for the Development**

### **Introduction**

- 12.7.1 The effect of the Development on the structure of the woodlands within the Forestry Study Area has been compared against the baseline species. This has concentrated on changes to the species composition, subsequent restocking design and the area of felling required to accommodate the Development.

### **Development Felling Plan**

- 12.7.2 The Development felling plan is shown in Figure 12.5 (Volume 3) and summarised in Table 12.3 below.

**Table 12.3 Development Felling Plan**

| <b>Felling Prescription</b> | <b>Area (ha)</b> | <b>Area (%)</b> |
|-----------------------------|------------------|-----------------|
| No felling                  | 750.7            | 79.1 %          |
| Clear fell for construction | 161.7            | 17.0 %          |
| Landscape felling           | 10.7             | 1.1 %           |
| Thinning / small clear fell | 25.7             | 2.7 %           |
| Totals                      | 948.9            | 100.0 %         |

- 12.7.3 161.7 hectares of woodland would require to be clear felled to facilitate the construction of the Development.
- 12.7.4 A further 10.7 hectares are to be felled for landscaping / habitat enhancement purposes. These are non-native woodlands in prominent positions on the hillside.
- 12.7.5 25.7 hectares of predominately Scots pine woodland have been identified for thinning / selective felling to a desired density of 400 stems per hectare of mature trees. The purpose of this is twofold:
- To create conditions for restructuring the woodland into a productive native woodland; and
  - To remove the hard landscaping edge that is detrimental to the overall landscape character.
- 12.7.6 There would be felling taking place within areas designated as either ancient semi-natural woodland or long-established woodland of plantation origin. The extent of this felling is detailed in the Table 12.4 below.

**Table 12.4 Felling in Designated Areas**

| Felling Prescription        | Designation            |                  |
|-----------------------------|------------------------|------------------|
|                             | Ancient (semi-natural) | Long-established |
|                             | Area (ha)              | Area (ha)        |
| Clear fell for construction | 8.7                    | 103.7            |
| Landscape felling           | 0.0                    | 6.5              |
| Thinning / small clear fell | 0.0                    | 24.5             |
| Totals                      | 8.7                    | 134.7            |

**Development Restocking Plan**

12.7.7 The current species plan has been amended to integrate the Development infrastructure and other landscape or ecological requirements into the forest design and to take account of the site conditions. The Development restocking plan is shown in Figure 12.6 (Volume 3) and summarised in Table 12.5. This includes areas of on-site compensatory planting to offset the loss of woodland area resulting from the Development. Areas of new planting and areas of permanent woodland loss are shown on Figure 12.7 (Volume 3).

**Table 12.5 Development Restock Plan**

| Species                    | Area (ha) | Area (%) |
|----------------------------|-----------|----------|
| Open ground                | 403.7     | 42.5 %   |
| Mixed broadleaves          | 15.0      | 1.6 %    |
| Native broadleaf woodland  | 193.4     | 20.4 %   |
| Scots pine                 | 79.3      | 8.4 %    |
| Other conifer              | 48.3      | 5.1 %    |
| Mixed native woodland      | 142.6     | 15.0 %   |
| Productive native woodland | 66.6      | 7.0 %    |
| Totals                     | 948.9     | 100.0 %  |

12.7.8 The key principle of the restocking proposals is to restore and enhance native woodland habitats within the Forestry Study Area whilst creating a woodland that integrates the Development into the landscape.

12.7.9 Figure 12.4 (Volume 3) details the type and location of the development restocking prescription. The restocking principles are detailed below:

- Enhance native woodland through removal of invasive species / control of browsing herbivores;
- Enhance / protect identified juniper habitat;
- Remove non-native species to enhance habitat and improve landscape;
- Retain existing field network on lower slopes to maintain landscape characteristics;
- Restructure forest coupes to remove hard landscape edges;
- Improve ride network to allow access for recreational use;

- Selective clear fell / thinning of existing mature Scots pine to integrate with new planting scheme;
  - Native woodland with low density edge to slopes of the Landscape Embankment to improve landscape integration;
  - Create new native woodland to improve habitat connectivity; and
  - No planting on areas identified as having peat depth over 0.5 m.
- 12.7.10 Native broadleaf woodland classed as Ancient (of semi-natural origin) by the shores of Loch Ness will be brought into active management. Invasive species will be removed and browsing herbivores excluded through fencing and an active deer management plan. Natural regeneration of native species will be encouraged.
- 12.7.11 Woodland designated as long-established of plantation origin will be enhanced through the removal of invasive species and the reintroduction of complementary native species to improve the overall condition of the habitat.
- 12.7.12 The restocking on the Landscape Embankment would be variable in density, reducing in density towards the upper slopes of the embankment. This is outlined in detail within the LEMP (Appendix 3.2. Volume 5)
- 12.7.13 There are three distinct woodland designations in the restock plan:
- Native broadleaves;
  - Mixed native woodland; and
  - Productive native woodland.
- 12.7.14 Native broadleaves: W19 NVC classification Juniper woodland. Juniper is the dominant species in these areas which have been identified as Juniper habitat by the NVC surveys as detailed in Chapter 6: Terrestrial Ecology. The mix will include Juniper, Silver birch and Rowan at a planting density of 1,100 stems per hectare. The species mix would be approximately:
- Juniper: 60 %;
  - Rowan: 20 %; and
  - Silver birch: 20 %.
- 12.7.15 Mixed native woodland: This woodland type will follow closely the W18 Scots pine woodland NVC classification with a species mix of predominately Silver birch, Rowan and Scots pine. In the areas around the Headpond, the mix would be closer to W17 and will include a variety of other native species such as Oak, Elder, Holly and Wild cherry with Willow planted on the wetter areas. Planting density will be 1,100 stems per hectare. An indicative species mix is given below:
- Scots pine: 15 %;
  - Rowan: 30 %;
  - Silver birch: 30 %; and
  - Other native broadleaves: 25 %.
- 12.7.16 Productive Native Woodland: W18 Scots pine woodland with the emphasis on establishing a commercial crop of both conifer and broadleaf trees. The mix would include Scots pine, Silver birch, and Rowan with other native broadleaves such as Oak, Elder, Holly and Wild cherry, with Willow planted on the wetter areas. Ground flora such as heather, bilberry, bell



heather and cowberry will be seeded in open areas to enhance the native habitat. Planting density will be 2,500 stems per hectare. The species mix is given below:

- Scots pine: 80 %;
- Silver birch: 10 %;
- Rowan: 5 %; and
- Other native broadleaves: 5 %.

12.7.17 The baseline current species and Development restocking data have been analysed to assess the changes construction of the Development would have on the species composition of the forest. These data are presented in Table 12.6.

**Table 12.6 Development Restocking Plan Comparison**

| Species                        | Baseline Species Composition | Development Restocking Plan | Difference Post Construction |       |
|--------------------------------|------------------------------|-----------------------------|------------------------------|-------|
|                                | Area (ha)                    | Area (ha)                   | Area (ha)                    | (%)   |
| Open ground                    | 391.6                        | 403.7                       | 12.1                         | 1.3%  |
| Mixed broadleaves              | 58.7                         | 15.0                        | -43.7                        | -4.6% |
| Native broadleaf woodland      | 121.6                        | 193.4                       | 71.8                         | 7.6%  |
| Scots pine                     | 168.5                        | 79.3                        | -89.2                        | -9.4% |
| Scots pine / mixed broadleaves | 76.4                         | 0                           | -76.4                        | -8.1% |
| Other conifer                  | 132.0                        | 48.3                        | -83.7                        | -8.8% |
| Mixed native woodland          | 0.0                          | 142.6                       | 142.6                        | 15.0% |
| Productive native woodland     | 0.0                          | 66.6                        | 66.6                         | 7.0%  |
| Totals                         | 948.9                        | 948.9                       |                              |       |

12.7.18 The changes in the structure of the woodlands are discussed below. The changes refer to a comparison of the Development restocking plan against the baseline species plan:

- There is a net reduction in the area of Scots pine / mixed Scots pine woodland of 165.6 ha;
- The area of mixed broadleaf woodland decreases by 43.7 ha due to conversion to native broadleaf woodland;
- Other conifers reduce by 83.7 ha;
- Native broadleaf woodland increases by 71.8 ha;
- Mixed native woodland increases by 142.6 ha; and
- Productive native woodland increases by 66.6 ha.

12.7.19 Figure 12.7 (Volume 3) shows the areas of land use change, including the areas of new planting and woodland loss. These data are presented below in Table 12.7.

**Table 12.7 Land Use Change**

| Land Use Change         | Area (ha) |
|-------------------------|-----------|
| No change               | 572.0     |
| Change of woodland type | 209.7     |
| Loss of woodland area   | 89.6      |
| New woodland creation   | 77.5      |
| Total                   | 948.9     |

12.7.20 The land use changes comprise of:

- 209.7 ha of woodland returned to native status;
- 89.6 ha of woodland loss; and
- 77.5 ha of new woodland creation.

12.7.21 The composition of the new woodland creation is shown in Table 12.8.

**Table 12.8 New Woodland Creation Composition**

| New Woodland Creation      | Area (ha) |
|----------------------------|-----------|
| Mixed native woodland      | 25.0      |
| Native broadleaf woodland  | 43.4      |
| Productive native woodland | 9.1       |
| Total                      | 77.5      |

12.7.22 The change in area of stocked woodland due to the Development is shown in Table 12.9 below.

**Table 12.9 Stocked Woodland Area Comparison**

| Stocked Area   | Baseline Species Composition | Development Restocking Plan | Difference Post Construction |          |
|----------------|------------------------------|-----------------------------|------------------------------|----------|
|                | Area (ha)                    | Area (ha)                   | Area (ha)                    | Area (%) |
| Stocked Area   | 557.3                        | 545.1                       | -12.1                        | -1.3%    |
| Unstocked Area | 391.6                        | 403.7                       | 12.1                         | 1.3%     |

12.7.23 As a result of the woodland redesign, the stocked area of woodland in the Forestry Study Area would decrease under the Development restocking proposals by 12.1 ha.

## 12.8 Requirement for Compensatory Planting

12.8.1 As a result of the construction of the Development, there would be a net loss of woodland area. The area of stocked woodland in the study area would decrease by 12.1 ha, equivalent to 1.3 % of the Forestry Study Area.

12.8.2 In order to comply with the criteria of the Scottish Government's Control of Woodland Removal Policy, off-site compensatory planting would be required. The Applicant is committed to providing appropriate compensatory planting. The extent, location and

composition of such planting to be agreed with FCS, taking into account any revision to the felling and restocking plans prior to the commencement of construction.

## 12.9 Forestry Waste

12.9.1 The SEPA guidance document WST-G-027, "*Management of Forestry Waste*" (SEPA, 2013) 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), which amended Section 34 of the Environmental Protection Act (EPA) 1990 (duty of care) (UK Government, 1990). 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), 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.

12.9.2 Further guidance is contained in LUPS-GU27, "*Use of Trees Cleared to Facilitate Development on Afforested Land*" (SEPA, 2014).

12.9.3 A hierarchy of uses for forestry materials is proposed, derived from the waste hierarchy contained within the regulations, 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;
- There is no valid recycling 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 delivers the best overall environmental outcome.

12.9.4 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.

12.9.5 As discussed in this chapter, where possible crops will be replanted except where required for infrastructure. Where the crops are being replanted, brash would be left in situ to provide nutrients for the next rotation as per standard forestry practice and stumps would be left in situ as per good practice guidance.

12.9.6 There are areas of younger crops which will be removed to make way for development infrastructure. The objective would be to recover as much merchantable timber from these crops and failing that to treat them in line with the hierarchy outlined above.

12.9.7 It is proposed that full consideration and further clarification on this issue should be included in a Forestry Waste Management Plan to form part of the Construction Environmental Management Plan (CEMP) during the detailed design phase following consent.

## 12.10 Forestry Management Practices

### **Crop Clearance**

- 12.10.1 It is anticipated that areas of older and higher yield class crops would be of sufficient tree size and standing volume that they would be harvested conventionally. Timber operations would be undertaken with conventional harvesting and forwarding equipment utilising flotation tracks. The flotation devices are fitted to each machine wheel which gives the machines very low ground pressure and minimises the ground disturbance during the forestry operations.
- 12.10.2 Stemwood down to 7 cm or below would be removed from the Development Site and sold into the timber markets. The harvester would maximise timber recovery wherever possible by cutting a fuelwood product, 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.
- 12.10.3 Lop and top resulting from such felling would be left in 'brash mats' created by the harvesting machines and would be used to aid extraction of the timber to roadside. These brash mats would remain in place to degrade naturally and provide nutrients for the next rotation in areas being replanted. Brash would be removed in areas where excavation would be carried out to facilitate construction or where crops would be permanently cleared with no replanting. Such material would be treated in line with the hierarchy of uses described above. 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.
- 12.10.4 In areas of 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.
- 12.10.5 For example, where there was suitable access and ground conditions the trees could be whole tree harvested and extracted to roadside for chipping as biomass, for which there are established local markets. Where trees are very small or ground conditions prevent access, 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 could potentially be used on-site in the base of floating roads, extracted and processed for biomass, or used for ecological enhancement.
- 12.10.6 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) except where they would be removed for borrow pits, excavated roads, and other infrastructure requiring excavation. Such material would be treated as described above.

### **Restocking / Planting Methodology**

- 12.10.7 Restocking and compensatory planting would be carried out to current standard practice and in accordance with the guidelines contained in the UKFS and, where applicable, 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 but should not be regarded as definitive.

12.10.8 On commercial conifer areas the methodology would normally include:

- Site preparation by machine mounding 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.

12.10.9 Restocking within the broadleaf woodland areas would be carried out to the same specification with the following changes:

- The principal species and density would be as described in the Development restocking plan;
- The sites to be protected by new fencing as required;
- Peat pockets with a depth over 0.5 m would be identified during planting operations and would be left unplanted;
- Buffers to be applied to watercourses if required, as described in the UK Forestry Standard Guidelines - Forests and Water;
- Native tree and shrub species to be established in clusters of high density plantings appropriate to site type and framing any other significant habitats;
- Native broadleaf species selected to be suited to the Development Site and of local provenance;
- Up to 20 % of the native broadleaves could be native woody shrubs as recommended for the National Vegetation Classification woodland type in Forestry Commission Bulletin 112 (Rodwell & Patterson, 1994);
- Variable stocking densities to be used depending on-site with decreasing density towards the riparian zones and woodland margins. Mimicking natural patterns of plant spacing and distribution will encourage these native broadleaf woods to become semi-natural in the long-term;
- Minimum cultivation to be used to ensure satisfactory establishment, retaining little or no artificial drainage. Excavators would be used to produce small mounds as planting positions and targeted to specific microsites where the Development Site is suitable, otherwise by hand cultivation if necessary; and
- While natural regeneration of all native species would be accepted, it is intended that the initial stocking density would be achieved by manual planting.

#### **Aftercare Works**

12.10.10 Aftercare establishment works would normally 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;
- The woodlands would be weeded as necessary to ensure satisfactory establishment by year 5;
- 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 to be carried out as reasonably required to ensure satisfactory establishment of the woodlands.

### 12.11 Standards and Guidelines

- 12.11.1 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); and
  - Forest Industry Safety Accord (FISA, 2014) Guides (or equivalent).
- 12.11.2 All operations would be carried out in accordance with current relevant legislation including, but not limited to, Health and Safety at Work Act 1974 (UK Government, 1974).

### 12.12 Summary

- 12.12.1 The total Forestry Study Area extends to approximately 948.9 ha and is comprised of privately-owned woodlands.
- 12.12.2 161.7 hectares of woodland would be clear felled to facilitate the construction of the Development with a further 10.7 hectares to be felled for landscaping / habitat enhancement purposes. There would be 25.7 ha of thinning in mature Scots pine woodland. The species composition of the forest would change as a result of the Development forestry proposals. There would be a decrease in mixed, commercial woodlands of 293 ha, however the area of native woodlands would increase by 281 ha.
- 12.12.3 As a result, there would be a net loss of woodland area of 12.1 ha.
- 12.12.4 In order to comply with the Scottish Government's Control of Woodland Removal Policy, off-site compensation planting would be required, which would be secured by the legal agreement attached to any consent. The applicant is committed to providing the appropriate compensatory planting.
- 12.12.5 The Development would significantly improve the existing woodland habitat and continue to provide multiple benefits to the ecosystem and local community long past the lifespan of the development.

### 12.13 References

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