



Forestry and
Land Scotland
Coilltearachd agus
Fearann Alba

Carron Valley

Land Management Plan

2026-2036

Central Region

Plan Approval Date: June 2026

Plan Expiry Date: June 2036

We manage Scotland's national forests and land to the United Kingdom Woodland Assurance Standard – the standard endorsed in the UK by the international Forest Stewardship Council® and the Programme for the Endorsement of Forest Certification. We are independently audited.

Our land management plans bring together key information, enable us to evaluate options and plan responsibly for the future. We welcome comments on these plans at any time.



The mark of
responsible forestry



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Version History

Version	Date	Comments
V1.1	20.06.2025	Copied initial text to accessible template
V1.2	13.08.2025	Updated constraints / opportunities table (B1)
V1.3	30.09.2025	Updated soils and water sections
V1.4	03.11.2025	Updated text (various sections)
V1.5	04.11.2025	Updated following Planning Manager comments
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V2.1	10/02/2026	Updates to A.6.4, C.2.7, C.2.8, Tables 1 and 3.
V2.2	18/03/2026	Minor text updates based on SF feedback.
V2.3	31/03/2026	Text updates following Scottish Water comments.
V2.4	20/05/2026	Phase change 66049 P2 to P1.
V2.5	18/06/2026	Minor updates as requested by SF



A Description of Woodlands

A.1 Property Details

A.1 Property Details			
Property Name:	Carron Main Block, Cairnoch		
Business Reference Number:	N/A	Main Location Code:	N/A
Grid Reference: (e.g. NH 234 567)	NS 6912 8344	Nearest town or locality:	Denny
Local Authority:	Stirling / North Lanarkshire / Falkirk		
LMP Plan area (hectares):	3113.68		
Owner's Details			
Title:		Forename:	
Surname:			
Organisation:	Forestry and Land Scotland	Position:	Central Region
Primary Contact Number:	0300 067 6600	Alternative Contact Number:	N/A
Email:	planning.central@forestryandland.gov.scot		
Address:	Five Sisters House, Five Sisters Business Park, West Calder, West Lothian		
Postcode:	EH55 8PN	Country:	Scotland
Approval - to be completed by Scottish Forestry staff:			
LMP Reference Number: 032/26/03			
Plan Period: (ten years) (day/month/year)	From: 03 July 2026	To: 02/July 2036	
Operations Manager Signature:	[Redacted]	Approval Date: (dd/mm/yyyy)	03/07/2026

Declaration

I hereby apply for a permission to fell the trees described in this application and I certify that:

- I am the landowner or an occupier of the land with written permission of the landowner;
- Where the landowner is a business, I am authorised to sign legal contracts on behalf of that business;
- If I am acting on behalf of the landowner or occupier, I have been mandated to do so;
- Any necessary consents from any other person(s) if required, have been obtained;
- I have made the necessary checks with the local planning authorities regarding Tree Preservation Orders and Conservation Areas;
- I have notified all stakeholders that may be affected by the felling in this application and sought their views prior to submitting this application;
- I hereby acknowledge that Scottish Ministers may process any of my personal data contained in or relating to this application in accordance with the terms of Scottish Forestry's Privacy Notice, a copy of which is available at www.forestry.gov.scot;
- Where applicable and appropriate I have submitted an EIA screening opinion form for operations contained within this application under the Forestry (Environmental Impact Assessment) (Scotland) Regulations 2017;
- I have read and understand this application fully and, to the best of my knowledge and belief, the information given in this application is complete, true, and accurate;
- I accept that any false or misleading information provided in this application constitutes an offence and may result in any felling permission based on this application being revoked at any time, and

I have read and understand Scottish Forestry's Privacy Notice, a copy of which is available at <https://forestry.gov.scot/privacy-complaints-freedom-of-information-and-requests-for-information>

Do you give consent for Scottish Forestry to access your land? Delete as appropriate.	YES	
You are not obliged to give us consent to enter your land, however if we are denied access to your land, and cannot carry out an assessment because of this, we may reject your application. This consent is for access to assess this application as well as monitor compliance with any subsequent approval, where applicable		
Signed:		Print: Date:

A.2 Location and Background

The Carron Valley Land Management Plan (LMP) covers 3113.68ha around Carron Valley Reservoir, approximately 12km south west of Stirling and to the northwest of the Campsie Fells (see map **M1**).

The Land Management Plan area comprises two separate Forestry and Land Scotland (FLS) 'Forest Blocks' – Carron Main Block (2461.84ha) to the south of the reservoir, and Cairnoch (651.84ha) to the north. These are separated by the reservoir and the B818 single carriageway road running between Denny and Fintry. The main entrance to Carron Main Block is located at NS 7228 8390, and Cairnoch at NS 6997 8400, both of which exit onto the B818.

A.3 Existing Schemes & Permissions

Table: Existing Schemes & Permissions

Type	Ref. No.	Details
Carron Valley LMP 2015-2025	032/16/02	Land Management Plan renewal approved 17 August 2016 Expires 16 August 2026
Amendment	032/16/02	430m (0.22ha) new road approved 03/01/2018 with SOR
Amendment	032/16/02	240m (0.13ha) new road approved 01/12/2020 with SOR
Amendment	032/16/02	Change coupe 66070 from phase 3 to phase 2 due to windblow and access issues approved 15/03/2021
Amendment	032/16/02	Additional 7.62ha felling approved 09/12/2021 due to SPHN
Amendment	032/16/02	830m (0.4ha) new road approved 09/12/2021
Amendment	032/16/02	Additional 8.58ha felling approved 09/12/2021 due to windblow and SPHNs
Amendment	032/16/02	Additional 0.56ha felling approved 09/12/2021 due to SPHN
Amendment	032/16/02	Additional 6.2ha felling approved 09/12/2021 due to SPHN
Amendment	032/16/02	Near-complete change to phase 2 felling proposals to tackle increasing number of SPHNs 444.59ha felling and 396.55ha thinning approved 12/07/2022
Amendment	032/16/02	Additional 1ha felling approved 22/08/2022
Amendment	032/16/02	4.07ha forest quarries and 5.04km (5.09ha) forest roads approved 20/03/2023 with SOR
Amendment (2)	032/16/02	Update to felling and restocking proposals from 12/07/2022 – approved 18/03 and 13/05/2024

A.4 Stakeholder Engagement

Table: Stakeholder Engagement Summary	
Scoping – Main Points	LMP Reference (section/page):
Riparian management	A.5, A.6.4, B.1, C.2.8, C.2.19
Habitat networks	A.5, A.6.9/A.7, B.1, C.1, C.2.7/maps M5 and M9, C.2.14, C.2.19
Priority species (raptors)	A.5, A.6.9, B.1, C.2.4, C.2.14
Forest diversity	A.5, A.6.2, A.6.3, A.7, C.1, C.2.7/map M9
Public access	A.5, B.1, A.6.7, C.2.6, C.2.12
Historic environment	A.6.8, C.2.13

A full record of comments raised during public consultation is available in Appendix I.

A.5 Long Term Vision and Management Objectives

Our long-term vision is to maintain a productive working forest, contributing a significant volume of primarily softwood timber for a variety of end-use applications. Water quality within sensitive catchment areas will be maintained and riparian corridors will form part of a wider forest habitat network. Biodiversity within the forest will be improved with increased native tree cover, more deadwood, and an abundance of wildlife within the working forest. People will continue to enjoy the working forest as an environment for pursuing recreation, health and wellbeing activities.

Management Objectives		
No.	Objectives (including environmental, economic and social considerations)	Indicator of objective being met
1	Continue to address major forest resilience threats such as <i>Phytophthora ramorum</i> , windblow, and other pests or diseases; including through compliance with the Carron Valley Forest SPHN.	Removal of all larch as per the Carron Valley Forest SPHN. Increase in species and age diversity in line with LMP proposals.
2	Continue to protect the water environment, particularly in the context of drinking water supplies, and other sensitive catchments.	Strict compliance with relevant best practice. Forestry operations do not lead to reductions in water quality.
3	Ensure that long-term forest productivity is maintained and contributes a range of (primarily softwood) forest products.	Restocking in line with LMP and to required standards. Timber availability forecast across future rotations.
4	Ensure continuity of mature forest cover for key species such as red squirrel and osprey while limiting operational conflicts.	Population of key species maintained at sustainable levels. Suitable areas of coning crop and nesting/breeding sites.
5	Increase the area of native woodland, primarily located within a wider habitat network.	Restocking in line with LMP proposals. Increased proportion of native species within LMP area.
6	Maintain recreational provisions within the working forest through appropriate forest design and management.	Visitor numbers to the forest maintained or increased. Recreational provisions maintained or enhanced.

A record of progress against the previous LMP objectives is recorded in Appendix II.

A.6 General Site Description

A.6.1 Topography and Landscape

Elevation within the LMP area ranges from around 140masl along the Endrick Water in the north to 570masl on the summit of Meikle Bin. Generally, however, elevation ranges between around 230m on the shores of Carron Valley Reservoir to around 400m, with limited areas occurring out with this range.

NatureScot (formerly Scottish Natural Heritage) have produced a map-based Landscape Character Assessment for Scotland. This includes 390 distinctive Landscape Character Types (LCTs), which describe 'areas of consistent and recognisable landscape character'. While three LCTs cover the Carron Valley area, their wide geographical extent means these are not wholly accurate representations of the local landscape character. Therefore, the key features of these LCTs have been distilled below:

The 'Lowland Hills' (LCT 149) and 'Rugged Moorland Hills' (LCT 216) Landscape Character Types cover the majority of the LMP area and comprise the higher ground and the majority of the coniferous forest, including large open areas such as the summit of Meikle Bin. They are arbitrarily divided by the boundary between the Stirling and North Lanarkshire Local Authority areas, but in essence share similar key features:

- Large-scale landscapes with predominantly smooth, gently rounded, upper slopes and hill summits; and a simplicity and unity of landform.
- Sparsity of settlement with recreation generally limited to hill summits and fringes.
- Expansive areas of rough grassland and heather moorland with large coniferous forests generally associated with reservoirs, 'creating a more diversified landscape of moorland, forest and water'.

The 'Lowland River Valleys' (LCT 152) cuts through the LMP area, primarily comprising the body of Carron Valley Reservoir. It is enclosed and strongly influenced by the landscape of the surrounding hills, and in this area Carron Valley Forest, which adds to the sense of remoteness shared with the 'Lowland Hills' and 'Rugged Moorland Hills' landscapes. Key characteristics include:

- The well-defined, enclosed, river corridor – in this case dominated by the reservoir – with generally enclosed and focussed views along the river valley.
- A relatively high proportion of tree cover – dominated in this case by the surrounding conifer forest, but also including roadside and hedgerow trees.

- Road corridors and sparse settlement running parallel to the river/reservoir corridor forming a linear feature. Settlement is sparse in Carron Valley compared to other parts of the LCT area.

Generally speaking, the landscape character of Carron Valley is dominated by the hills and coniferous forest framing the manmade reservoir, with the open summit of Meikle Bin rising above the forest and providing a key reference point. The landscape is generally large in scale with relatively simple landform and landcover, in this instance dominated by coniferous forest; but softened by areas of native woodland around the fringes. Despite it's proximity to major urban areas, and the artificial nature of the forest and the reservoir, this landscape enjoys a sense of remoteness, somewhat separated from the bustle of the lowlands.

Slopes are typically gentle, with rounded hill tops – although there are some craggy areas and steep valleys or gully features associated with watercourses.

A.6.2 Geology and Soils

Soil types

Soil surveys of Carron valley were carried out at a six inch (circa 1:10,000) scale in 1964 by D.G Pyatt and this survey provides the basis for information on soil types within the forest. However, it should be noted that soil characteristics on the ground can often appear to vary from those reported, and these classifications should therefore be confirmed through on-site observations.

The predominant bedrock geology is basaltic in nature, often overlain with heavy glacial till. Surface-water gleys are common (both typical and peaty), with some extensive areas of blanket peat on the upper slopes. There are more limited areas of typical brown earths, as well as some areas identified as ironpans. In reality many of these soil types intergrade, and there can be marked variations in soil characteristics within a very small area.

Impact on growth

Overall, the predominant soil types are eminently suitable for softwood timber production – although species choice and management methods will be limited by nutrient and moisture levels and in some areas a 'nurse' species will be required where nutrient levels are very poor. Rooting depth and soil wetness increase windthrow risks in some areas; reduce species and management choices; and, where rooting is restricted, may increase the risks of drought – especially where shallow soils coincide with vigorous weed growth. Vigorous weed growth can similarly present a major challenge for tree establishment.

A.6.3 Climate

Predominantly, the climate is cool, wet and moderately exposed although there are some areas of high exposure. DAMS scores generally range from 13 to 17, although there are several more exposed areas, and limited areas of shelter. The average annual rainfall is around 1758mm, as recorded by the SEPA monitoring station at Earlsburn Reservoir, approximately 2km north of the LMP boundary. Overall, the climate is well suited for the growth of a range of conifer species – especially those from the Pacific northwest – although topographic exposure will present a challenge for some species. Similarly, the combination of exposure and rainfall presents some forest management challenges (such as an increased risk of windthrow).

Forestry and Land Scotland policy is to plan for at least 2°C of global warming by 2100. For this area, current models suggest this would increase annual rainfall by up to 2%, although there may be an associated decrease in summer rainfall of 8%; and increase in average annual temperatures of 1°C over a 1981-2010 baseline (source: <https://uk-cri.org/>).

A.6.4 Hydrology

Catchment areas and water quality

Carron Valley Reservoir (375ha) is the main waterbody present, being outwith, but surrounded by the LMP boundary; with the smaller Faughlin Reservoir (4ha) to the east, and both of these supporting fisheries. Several watercourses within the forest are used as spawning burns, although in some places physical barriers (both natural and manmade) can inhibit fish movement. Within the LMP boundary there are a few small ponds and other wetland habitats. SEPA data records all three major watercourses in and around the LMP area (the Endrick Water, Earl's Burn and River Carron), and Carron Valley Reservoir as being in 'good' overall condition.

The majority of the LMP area lies within the catchment of Carron Valley Reservoir which provides public drinking water to around 135,000 people in the Forth Valley. In addition, the area feeds into smaller public drinking water catchments at the Earl's Burn, Faughlin Burn and Slarfarguhar. Other catchments of note include a small number of private water supplies, and the Endrick Water Special Area of Conservation (SAC). Within all of these catchments, water supply is primarily through small surface tributaries and five larger watercourses; these being the River Carron, Bin Burn, Faughlin Burn, Endrick Water, and the Earl's Burn.

Water quality is an important consideration for forest management given that the majority of the area is located within environmentally sensitive catchments. For catchments draining into a public water supply, or supporting priority habitats or species, felling should be limited to less

than 20% of the catchment area in any three year period. Notable challenges in protecting water quality include historic drainage infrastructure often directly connected to watercourses; wildlife constraints often requiring winter working; numerous surface watercourses and associated springs/flushes; and areas of wet and erodible soils which increase the risk of diffuse pollution. In many areas, conifer plantations have historically been established over surface hydrology (e.g. watercourses and springs), which adds to the challenges outlined above. As per the UK Forestry Standard, appropriate buffer zones are now established around hydrological features at the time of restocking. This has received positive feedback from Scottish Water staff, particularly regarding the application of watercourse buffer zones. However, in some locations Sitka regeneration can invade these buffer areas; therefore it may take multiple rotations to establish these across the LMP area.

Private Water Supplies

A small number of Private Water Supply (PWS) sources are located within the LMP boundary. As part of the LMP scoping process, owners for all three supplies have been contacted to confirm the location of these PWS sources (abstraction points), the type of supply, and the location of any associated infrastructure. There is only one known supply within the block, which has been ground-truthed as part of the LMP process. All known PWS have been considered as part of the LMP design, and will be suitably protected during operations. Where operations will be taking place within a PWS source catchment or in close proximity to an abstraction point, the supply owners will also be contacted in advance of these operations.

Flooding

The river Carron flows through several areas which are vulnerable to flooding, including Denny and Dunipace, Larbert and Stonehousemuir, and Falkirk and Grangemouth; however, based on the thresholds set out in the UKFS (5th edition), the total area of forest cover within these catchments is not large enough for any forest management activities to significantly influence downstream flooding.

A.6.5 Windthrow

Moderate to high exposure together with restricted rooting depth and high yield classes in some areas makes much of Carron Valley Forest highly vulnerable to windthrow; and in 1964 D.G. Pyatt suggested significant winthrow would commence at c.40 feet (12 metres) top height in areas of shallow rooting (ref section A.6.2). Analysis of historical aerial photography shows that windblow occurs in a range of areas; including thinned stands, stands adjacent to recently felled areas, and high forest interiors. In the majority of instances however, windthrow appears to be associated with wetter soil types and areas of moderate to high exposure and wind hazard

(down to DAMS 13), although this can be exacerbated by forest operations such as delayed thinning, or clearfelling to an unstable brown edge. Windthrow hazard has been modelled using a variety of systems and information including ForestGALES, DAMS, soil types and stand data.

Windthrow is already the most significant disturbance mechanism in European forests and the risk of windthrow is likely to become worse with climate change due to wetter winters and more intense weather events. Unfortunately, unfavorable soil conditions (limiting tree rooting depth) severely limits the potential to develop individual tree stability through thinning across much of the LMP area. Forest planning and design should therefore seek to minimize the risk of future windthrow by diversifying age structure, establishing windfirm edges, and promoting stand and individual tree stability wherever possible. At an operational level, the selection of appropriate machinery; thinning intensity; use of windfirm boundaries; and establishment of future windfirm edges will be key aspects of reducing windthrow risk.

A.6.6 Adjacent Land Use

Prior to its establishment, Carron Valley Forest was used predominantly for sheep grazing, and this remains the primary land use around much of the site. In addition there are two smaller areas of connected conifer plantation at Waterhead and Denny Muir to the east and the west of Carron Main Block respectively. Within these two forests there is only one coupe (at Waterhead) where adjacent felling has taken place within the same five year period (as per the current Lennox Forest Plan, and the 2015-2025 Carron Valley LMP, as amended). There is also a small area of community woodland (established via Community Asset Transfer from Forestry and Land Scotland in October 2018) to the east of the main carpark in Carron Main Block, which is bordered to the south, east and west by Carron Valley Forest and to the north by the River Carron. FLS notes the presence of Felling Permission Applications within this area and envisions no adjacency issues or other conflicts with these LMP proposals. As mentioned previously, the LMP area is bisected by Carron Valley Reservoir which is owned and managed by Scottish Water; and by the B818 carriageway which forms the main access and haulage route to and from the LMP area. The wider surrounding landscape is dominated by grazed upland moorland or acid grassland, with patches of coniferous woodland, numerous reservoirs and two windfarms at Craigengelt and Hart Hill.

A.6.7 (Public) Access

Despite being managed primarily for timber production, Carron Valley is also an important visitor destination, estimated to receive well over 100,000 visitors each year. The main visitor attractions include 8km of mountain bike trails, the 4.5km Loch Shore Trail, and a longer walk to the summit of Meikle Bin (570m). In addition, although the forest is accessible to responsible access under the Scottish Outdoor Access Code (SOAC), there are also several core paths, and rights of way present. Carron Valley Fishery and the Duncarron Medieval Village (both operated by third parties) are other important visitor attractions located in and around the forest, and the Carron Valley Community Woodland is located just to the east of the main car park at Carron Main Block. The Loup of Fintry waterfall (located on the northernmost boundary of Carron Main Block) is also a popular visitor attraction.

A.6.8 Historic Environment

The most significant historic environment features are Sir John de Graham's Castle (SM4278) in Cairnoch and the Waterhead standing stones (SM2719) in Carron Main Block; both of which are designated as Scheduled Ancient Monuments by Historic Environment Scotland.

In addition, Carron Valley Forest contains a number of undesignated historic sites, with the majority being associated with pre-afforestation farming within the valley, prior to the construction of the reservoir. The remains of three farmsteads are present within Carron Main Block, and two in Cairnoch; and there are numerous drystone dykes and other historic infrastructure associated with past farming activities. A small cemetery and the site of a Kirk are located at Kirk o' Muir on the south-eastern corner of Cairnoch. (See map **M4**.)

On the slopes of Meikle Bin are the remains of a Fairey Firefly which crashed on 8 January 1950 with the loss of two crew members. The bodies of both crew were subsequently recovered but debris from the aircraft are scattered across a wide area of hillside. Although not scheduled for its historic interest, this site is considered to be protected under the Protection of Military Remains Act 1986. It is therefore considered an offence to tamper with, move or unearth any items from this site without first obtaining a license from the Ministry of Defence.

A.6.9 Biodiversity

Native habitats

Carron Valley Forest is dominated by coniferous plantation, with few areas of native woodland; most of which has been established over the past 30 years as part of forest restructuring, with some being recorded in the 2014 Native Woodland Survey of Scotland. There are no records of

ancient woodland, although a small strip of long-established plantation (LEPO) woodland is present on the northern edge of the reservoir. Of the native woodland habitats, the majority are dominated by wet woodland with the predominant native species in the forest being birch, willows and alder. Open habitats within the LMP area include acid grassland, blanket bog, flush/mire habitats and small areas of upland heath; many of which occur as habitat mosaics.

Designated sites

The Endrick Water Special Area of Conservation (SAC) and Site of Special Scientific Interest (SSSI) runs from the Loup of Fintry to Loch Lomond, with the upper length (c.1.5km) occurring within or adjacent to the LMP boundary. In addition, there are a number of 'Local Nature Conservation Sites' Within and around the LMP area relating to the reservoir, areas of plantation forest, and adjoining moorland.

Priority species

There are significant populations of numerous priority and protected species within the LMP area – including several species of raptors (significantly, osprey, goshawk, and long-eared owls); a recently established breeding population of nightjar; a population of red squirrels (>125); pine marten; otter and various species of bats (although at present there are few natural roost sites available for the latter species). Black grouse have historically been present within the forest although no active lek sites have been recorded since before 2014. Carron Valley Reservoir also hosts introduced populations of Powan, a rare species of fish which occurs naturally in only two locations in Scotland, in addition to carrying a stock of trout. Management of the forest must account for the presence of all these species and seek to maintain or enhance habitat availability where possible. In addition, there is the potential for new species to colonise the forest over the next 10 years, including, for example, beavers and white-tailed eagles.

The main challenges associated with biodiversity include the encroachment of Sitka spruce regeneration into important habitats (including open habitats and native woodland); maintaining a sufficient area of mature conifer forest for priority species (much of which is becoming increasingly vulnerable to windthrow); and diversifying the forest structure (species and age composition) in the context of soil and climatic constraints. Similarly to the other habitats, Sitka regeneration can also encroach into riparian areas and some watercourses contain man-made barriers to fish migration (see A6.4). In addition, priority and protected species can cause significant constraints and disruption to forestry operations, often requiring areas to be worked during the winter months when there is a greater risk of pollution. Balancing the needs of these species alongside water quality protection and the operation of a productive working forest (see A.5) is therefore a key challenge.

A.6.10 Invasive Species

A single giant hogweed plant was discovered in/around the Kirk o' Muir cemetery in 2024. Two areas of Japanese knotweed have been reported along the southern shore of the reservoir, although these are currently both outwith FLS ownership.

A.7 Woodland Description

Carron Valley Forest was established on upland pasture around the site of the new Carron Valley Reservoir primarily in the 1930s and 1940s, with further areas of woodland expansion in the 1980s. Previous land use is indicated by the remains of various farmsteads throughout the forest and indicated on old maps, and prior to forest establishment there were very few areas of woodland within the landscape. Throughout its lifetime, the forest has been dominated by coniferous species, in particular Sitka spruce, which has suited the prevailing environmental constraints and management objectives over the past eighty years. There are limited areas of native semi-natural woodland, none of which are recorded as ancient, although some LEPO woodland occurs along the northern reservoir shore.

Earlier planting appears to have been relatively diverse, with a range of species including Sitka and Norway spruce, European larch and Scots pine. Sitka spruce and larch become more dominant in planting from the 1970s onwards, and from the 1990s there have been greater efforts to establish areas of broadleaf woodland. While there have been some successes in this, the establishment of broadleaves in other areas has been a challenge due to a number of factors including environmental conditions, browsing pressure, and, in some locations, Sitka spruce regeneration. The suitability of the site for Sitka spruce is demonstrated by this regeneration, which can be prolific in some areas, and this can present both an opportunity and a challenge in establishing the next rotation – especially where a transition to other species may be desired. Over the past ten years the diversity of planting has increased and included a greater proportion of 'diverse' conifer species such as Norway spruce, Douglas fir and western red cedar; although larch is no longer used due to the risk of *Phytophthora ramorum*. See map **M2** and Table 1.

It is evident that clearfelling has been the predominant management technique employed in the forest throughout its lifetime. Some areas have been thinned previously although generally this not practiced across large areas of the forest. Similarly, there have been a few areas managed towards the implementation of Continuous Cover Forestry, although together with other areas of thinning these have proven vulnerable to windthrow. Despite some areas now progressing into their third rotation, there is still a relative lack of age diversity, with approximately half the forest area being less than 25 years old and approximately one third being less than 10 years old.

and/or recently felled. This lack of diversity is due to a number of factors, but has been recently exacerbated by the need to remove areas of larch since the first infections of *Phytophthora ramorum* in 2021, which unfortunately included several areas previously identified for long-term retention in addition to several young stands c.20 years of age.



Table 1 - Area by species

This shows the current and future species composition within the entire Land Management Plan area.

Species (Add relevant species groups, or OG/OL)	Current*		Year 10*		Year 20*	
	Area (ha)	%	Area (ha)	%	Area (ha)	%
Native mixed broadleaves	97.4	3.1%	232.70	7.5%	327.80	10.5%
Other mixed broadleaves	69.8	2.2%	59.30	1.9%	57.70	1.9%
Scots pine	48.6	1.6%	57.4	1.8%	57.9	1.9%
Lodgepole pine	60.3	1.9%	123.1	4.0%	194.6	6.2%
Larch spp.	56.3	1.8%	0	0.0%	0	0.0%
Douglas fir	20	0.6%	31.6	1.0%	43.9	1.4%
Western red cedar	2.5	0.1%	13.8	0.4%	40	1.3%
Mixed/other conifer	7.3	0.2%	7.60	0.2%	7.90	0.3%
Norway Spruce	111.4	3.6%	218.9	7.0%	240.4	7.7%
Sitka Spruce	1800.18	57.8%	1651.9	53.1%	1394.08	44.8%
Other/open	839.9	27.0%	717.38	23%	749.4	24.1%
<i>of which successional</i>			383.78	12.3%	415.8	13.4%
Total**	3113.68	100	3113.68	100	3113.68	100

* Of whole LMP area (including open ground (OG)). Any mixtures such as Mixed Conifer (MC) should be broken down and included as an individual species component where a species occupies more than 10%.

Notes: Areas of LP may be assumed as SS after 20 years of growth due to self-thinning but will remain as individual species components at least up to year 20.

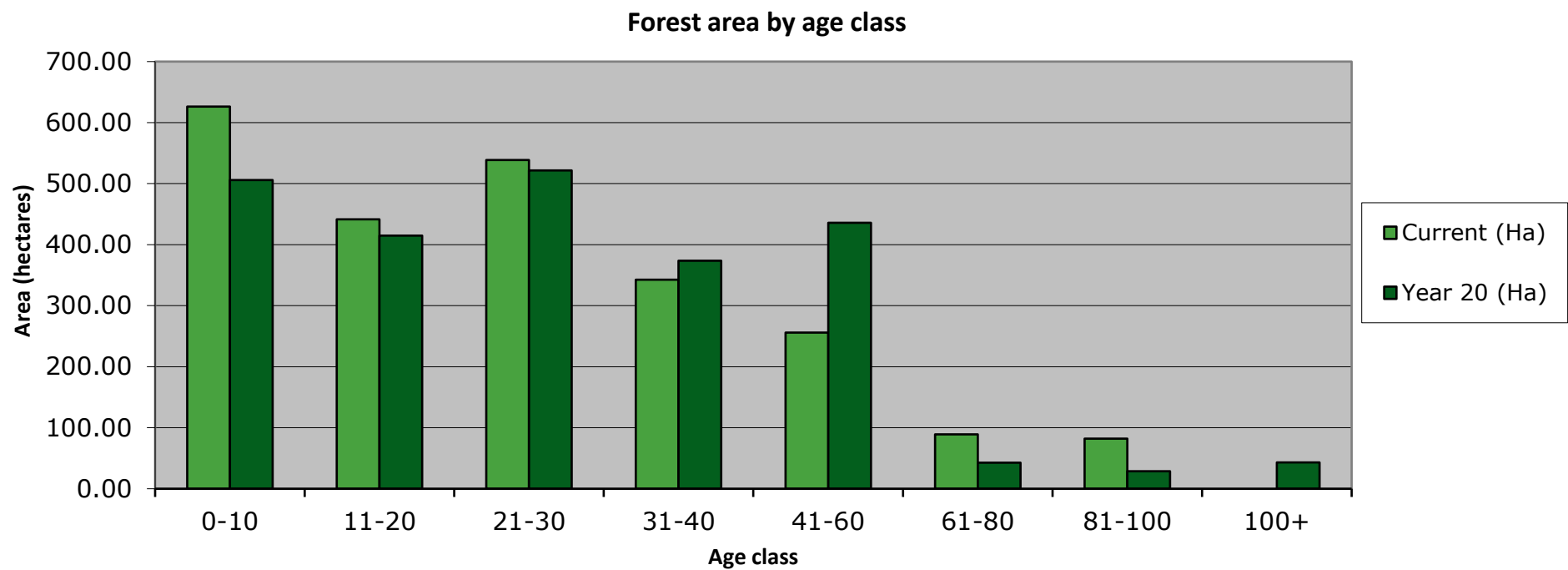
'Successional open' areas will be permitted to naturally regenerate and may be assumed as afforested (SS) after year 10.

Table 2 – Area by age

This shows the woodland area broken down by age class and will show how well the woodland is distributed across the age classes.

Age class (years)	Current	Year 20
	Area (ha)	Area (ha)
0 to 10	626.38	505.88
11 to 20	441.5	414.70
21 to 30	538.5	521.80
31 to 40	342.7	373.70
41 to 60	256	435.90
61 to 80	89	42.70
81 to 100	82	28.90
100+	0	43.10
N/A	737.6	747.00
Total*	3113.68	3113.68

* Differences between report and LMP area are due to presence of multiple storeys in the sub-compartment database resulting in a correct double count of species.
Difference between current and Year 20 areas are due to inability to account for multiple storeys in the future restock areas layer.





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A.8 Plant Health

The main plant health issue in Carron Valley Forest is *Phytophthora ramorum*, which was first discovered in this area in 2021 and for which the whole LMP area is under a Statutory Plant Health Notice (SPHN). Actions to remove larch from the plan boundary have been ongoing since 2022 and are on track to be completed by August 2029 as per the current SPHN deadline.

Ash dieback is present across Scotland and a small number of ash trees are present at Carron Valley, and have subsequently been impacted by this disease. The management of ash trees at Carron Valley will therefore be prioritised on the basis of safety as set out in section C.2.15.

Dothistroma needle blight (*Dothistroma septosporum*) (DNB) has historically been recorded at Carron Valley on Scots pine, although no recent surveys have been carried out and the relatively low percentage of pine at Carron Valley means it is not a priority site for DNB surveys.

The large pine weevil (*Hylobius abietis*) is present throughout the UK and can cause extensive damage particularly to young trees up to c.5 years of age, often causing significant mortality on restock sites. Damage by *Hylobius* has traditionally been mitigated through integrated pest management (IPM); including the use of chemical insecticides and/or fallow periods.

The presence of *Dendroctonus micans* was detected at Carron Valley by FLS staff in summer 2025, and confirmed by Forest Research who have subsequently released the authorized biological control *Rhizophagus grandis*. There are currently no breeding populations of *Ips typographus* out with the South East of England (where measures are currently underway to monitor and eradicate the population); and the threat of populations establishing in Scotland is believed to be low while suitable plant health controls are implemented at a national level. The potential threats posed by these two bark beetles, and other pests/diseases may increase as a result of climate change and should be periodically reviewed in the context of the Land Management Plan. At present, however, given the implementation of suitable control actions, these pests have no significant impact on forest management proposals for this LMP.

B. Analysis of Information

B.1 Constraints and Opportunities

B.1 Constraints and Opportunities		
Factor	Constraints	Opportunities
Objective 1 (Tree Health and forest resilience)	Need to comply with SPHN deadline although removal of the remaining young stands is likely to be uneconomical. Windblow is endemic throughout the forest, and is exacerbated by soil and climatic conditions. Lack of windfirm boundaries in some areas. Limited opportunities to increase forest diversity or due to soil and climatic constraints. Nature of current and future threats is unpredictable; but risks are likely to increase due to climate change.	Where access allows whole tree harvesting can be used to remove young larch more economically. Localised areas of shelter and more favorable soils present opportunities to introduce greater diversity. Maintain and improve resilience through design and the continued use of site-suited species.
Objective 2 (Water quality)	Extensive areas of historic plantation which are not compliant with modern forestry standards. Large areas of wet soil types, and high number of surface watercourses; often unmapped. Wildlife constraints often require winter working when rainfall is higher and pollution risk greater.	Historic issues can be remediated at the time of restocking (e.g. correction of historic drainage). Appropriate buffers can be applied to watercourses and other areas as necessary (e.g. surface springs). Maintain existing good working relationships with Scottish Water and other relevant stakeholders.



	Unpredictability of extreme weather events which could increase pollution risks and cause wider catchment issues (e.g. reduced water yield); with potential to be exacerbated by climate change.	Maintain a suitable supply of brash in areas where timber production is an objective (e.g. Sitka spruce).
Objective 3 (Productivity)	Necessary forest diversification and restructuring will reduce timber yields from the previous rotations. Soils (and climate) limit yield in some areas of the forest. Removal of young larch reduces overall productivity and may result in some nutrient loss.	Significant areas of the forest can achieve high yield classes for timber production, especially in spruce. Small areas with potential for diversification and/or increased yields (e.g. through use of improved stock). Nurse mixtures can help improve growth in nutrient deficient areas.
Objective 4 (Biodiversity – priority species)	The removal of larch negatively impacts several key species, especially in older stands. Loss of some long-term retention areas due to larch removal. Previous clearfelling, especially in combination with larch removal, has fragmented the forest habitat. Remaining areas of old (first rotation) forest are becoming increasingly vulnerable to windthrow and are of a similar age, limiting opportunities for phased felling. Unpredictability of where some species will turn up, which can conflict with wider productivity and forest management objectives.	Several areas of older (first rotation) forest remain which can serve as replacement long-term retentions. Small-scale windthrow can diversify the forest structure, increases deadwood, and can provide a habitat for key species such as pine marten. Many species (e.g. osprey goshawk) are territorial and/or site faithful; and/or have preferred habitats, which could aid the ability to plan around these species.

Objective 5 (Biodiversity – native habitats)	Limited areas of existing native woodland to provide linkages. Soil types also limit opportunities to achieve diversity in native planting. Undesirable regeneration of Sitka spruce into priority habitat areas.	As the forest is progressively diversified, the area of native woodland cover is increasing. Lower deer numbers are now allowing native tree regeneration in many areas. In some areas native woodland may have the potential to be actively managed for biodiversity and timber.
Objective 6 (Recreation)	Forest operations can impact on recreational use and vice versa. Limited parking capacity in some areas (out with scope of the LMP). Limited resource capacity (including financial) to expand recreational provision (out with scope of LMP).	Carron Vally already has good provision for recreation (see A.6.7). The forest provides a good basis for recreation under SOAC, including a significant forest road network. Potential to limit conflicts between forest operations and recreational use through good design where possible.

Concept

(The following concept is largely unchanged from what was presented for the external LMP scoping, although some of the concept areas have changed. Map **M5** shows the updated concept.)

- Felling will target areas of larch and windblow for removal as a priority.
- Sitka spruce will remain the predominant softwood species for timber production. Additional species will be established on better soils and at lower elevations to improve forest diversity.
- Appropriate silviculture and design used to improve resilience – e.g. through appropriate species selection, use of mixtures, and by establishing a network of windfirm forest rides.
- Forest design will account for protection of the water environment including suitable buffers on all surface watercourses and seeking to limit watercourse crossings where possible.
- Older and more diverse stands are identified for retention, along with suitable replacements.
- The core habitat network will be expanded; incorporating native woodland, conifer retentions, open land; and linking with other features (e.g. watercourses) where possible.

C. Management Proposals

C.1 Silvicultural Practices

Clearfelling with associated restocking will remain the predominant silvicultural practice at Carron Valley – primarily in light of the prevailing soil and climatic conditions. While the previous (2016) plan identified significant areas of ‘Low Impact Silvicultural Systems’ (LISS) (i.e. Continuous Cover Forestry, or CCF), several of these were located in areas which are generally considered unsuitable for such management as the underlying soil types (e.g. peaty gleys) would not support long-term tree stability. Clearfelling is also preferred over CCF in areas where a species change (generally to introduce increased species diversity) is desired to reduce the proportion of Sitka spruce regeneration compared to the target species.

Although this LMP will see a reduction in the area proposed for management under CCF, there will be an increase in the area of Long-Term Retentions (LTR), in recognition of the value mature conifer woodland provides both as habitat (e.g. for woodland raptors) and as a food source (e.g. for red squirrel); and in some locations for amenity value. In addition, while much of the current forest requires relatively large clearfell coupes due to the lack of structural diversity and windfirm edges, going forward, with an improved forest structure becoming established, it may be possible to implement a system of smaller patch clearfelling (and/or CCF management).

As per sound silvicultural practice, felling plans will be suitably phased to promote a diversity of age class within the forest, for the benefit of biodiversity, landscape amenity and forest resilience; and to provide a sustained output of forest products over the long-term (Table 2). Felling and restocking proposals have also been designed with due consideration to landscape character and relevant landscape design techniques.

While Sitka spruce will remain the predominant species given the aforementioned soil and climatic constraints, and the primary objective of sustained timber production, opportunities to diversify the species composition of the forest will be taken where practical and site-suitable. Species mixtures, including self-thinning ‘nurse’ mixtures, will also be applied more widely to improve tree establishment, forest resilience, and productivity.

As the predominant drivers for increasing species diversity are to improve forest resilience and biodiversity value, the species chosen for diversification and locations for establishment have been selected based on these criteria and using the ESC DSS and professional judgment to ensure site suitability.

C.2 Prescriptions

C.2.1 Clearfelling

Clearfelling will remain the predominant management technique for the period of this Land Management Plan, and for the foreseeable future. Given the apparent scale of felling conducted over the previous 10-15 years, it was intended to minimise the area being felled over the next 10 year period. In practice, this has been difficult to achieve due to the ongoing need to address *Phytophthora ramorum* (see sections A.8 and C.2.15), ongoing wind damage (see section A.6.5), and to facilitate some normal forest restructuring for landscaping and/or long-term forest resilience. This has resulted in a relatively heavy Phase 1 felling intervention (c. 9% of the LMP area) but with less felling proposed in Phase 2 (c.3% of the LMP area) (Table 3). The combined area of felling across Phase 1 and Phase 2 and Phase 3 and Phase 4 never exceeds c.15% of the forested area (c.12% of the LMP area); demonstrating that measures have been taken to limit the scale of felling and avoid 'overcutting'. To achieve this, the prioritization of felling coupes has been determined roughly as follows (although in practice felling coupes meet several of these criteria):

1. Felling to remove all remaining areas of larch by August 2029 (a legal requirement).
2. Felling to salvage areas of windblow and address ongoing wind damage and resilience.
3. Felling for forest restructuring and to meet objectives for timber volume.

While there have been significant efforts to restructure Carron Valley over several decades, there are still relatively extensive areas of even-aged stands, often without windfirm boundaries. Together with the scale of felling over the previous 10-15 years, including that undertaken due to *Phytophthora ramorum*, this presents a challenge in terms of forest restructuring, windthrow resilience, and adjacency issues. In several areas of Carron Main Block this has, or will, result in coupes being felled before the adjacent coupe has achieved >2m in height.

The preference is that stands adjoining felled areas will be retained until the restocking of the adjacent coupe has reached a minimum height of 2m; however in some situations this may be impractical, or undesirable from a design perspective. This is particularly the case where adjacent coupes are at a high risk of windthrow or where a redesign of the coupe boundaries via restocking is preferred (e.g. to alleviate existing landscape issues). Phase 1 and 2 clearfell coupes identified in this plan with known adjacency issues are listed below.

In general, departure from normal adjacency guidelines will be due to coupes suffering from windblow, the need to remove larch, and in some instances to alleviate landscape issues by establishing a new coupe structure through restocking. Adjacency issues will typically be

mitigated by the establishment of new forest rides to provide windfirm boundaries and/or by species differentiation between coupes. Adjusting the timing of restocking will not be a primary method for addressing adjacency issues as this needs to primarily address issues of weed growth and damage by *H. abietis*, both of which can be significant within Carron Valley, and which are capable of causing severe tree mortality and negatively impacting forest sustainability.

Adjacency issues in 10 year LMP period:

Coupe (Phase or Year)	Adjacent coupe (Phase or Year)	Reason for adjacency felling	Mitigation (if any)
66870 (Phase1)	66484 66157	Windblow	Forest ride
66145 (Phase1)	66898 and 66133	Windblow	Forest ride Species diversity
66417 (Phase1)	66600	Windblow	Forest ride Species diversity
66119 (Phase1)	66122	Windblow	N/A – previously a single coupe.
66120 (Phase1)	66381 and 66218	Windblow	Forest rides
66071 (Phase1)	66069 and 66070	Windblow	Forest ride Species diversity
66046 (Phase1)	66045	Habitat works	N/A / species diversity (broadleaves retained)
66049 (Phase 1)	66070 66052	Habitat works	Species diversity
66171 (Phase 2)	66166 (2025) 66168 (Phase 1) 66153 (felled 25)	Landscaping	(N/A) Forest rides Species diversity
66024 (Phase 2)	66010 (Phase 1)	Windblow	Forest ride

Felling for the next 10-year LMP approval period is shown on map **M7**, with longer-term proposals shown on map **M6**.

C.2.2 Thinning and Respacing

Thinning will normally be carried out at, or below, the level of marginal thinning intensity (i.e. removing no more than 70% of the maximum MAI, or YC, per year). Higher intensities (no more than 140 % of maximum MAI, or YC, per year) may be applied where thinning has been delayed, larger tree sizes are being sought or as part of a LISS prescription. Where trees need to be removed to accommodate facilities to support approved thinning and CCF, including stacking areas, ramps and access racks within adjacent management coupes, this should ideally be identified in thinning maps and thinning plans as part of the LMP submission. Where this is not the case, additional felling necessary for reasonable infrastructure can be agreed by exchange of email. In all cases work plans will define the detailed thinning prescription before work is carried out and operations will be monitored by checking pre and post thinning basal areas for the key crop components.

Much of Carron Valley is currently considered to be unsuitable for thinning due to a combination of shallow rooting, wet soils and climatic exposure. In addition to these factors, high yield classes can make the timing of first thinning challenging, often needing to be considered several years earlier than typical.

Over the next 10 years, thinning will be targeted in suitable areas typically at lower elevations and on the most suitable soil types. The priority is to target areas for first thinning, and there will be no subsequent thinning on areas which have been thinned prior to 2025 due the risk of exacerbating existing stability issues. In addition, some areas will also be ‘thinned’ not for silvicultural reasons but in order to remove larch due to *Phytophthora ramorum*, and for environmental purposes. Where such non-silvicultural thinning interventions are for the purposes of larch removal these will preferably be at or below MTI, but may be above MTI provided this does not compromise long-term stand stability or timber quality. Where non-silvicultural thinning is carried out purely for environmental purposes this may be significantly above MTI but will always ensure a continuity of woodland cover within the stand.

The total area requested for thinning approval is 261.9ha and is shown on map **M7**.

Respacing will also be required in several areas where dense Sitka regen has become established. Such respacing is expected to take place before the trees exceed 10cm diameter DBH and will be fully specified at the Work Plan stage.

C.2.3 LISS / CCF

There are no plans to actively manage areas as LISS/CCF over the next ten year period. However indicative areas for future LISS/CCF management are shown on map **M6**, and the implementation LISS/CCF applications in these and/or other areas will be revised in future LMP renewals.

C.2.4 Long Term Retentions (LTR) / Minimum Intervention (MI) / Natural Reserves (NR)

The intention of these areas is to identify and retain forest stands which have enhanced biodiversity, environmental and/or amenity value. Many of these areas include greater species and/or structural diversity than other parts of the forest, including high quantities of deadwood; and several are already home to priority and protected species (e.g. goshawk).

Long term retentions (LTR) – (567.1ha)

LTRs have been identified as areas of mature forest which are at or above the standard felling age or diameter typically adopted. These include some of the oldest stands remaining within the LMP area dating back to c.1939. By their nature, LTRs are not permanent retentions and therefore, in addition to these mature areas of LTR, suitable replacement LTRs have been identified of equivalent area and location – focusing on stands which exhibit characteristics of species and structural diversity which will provide equivalent (or greater) biodiversity value. On this basis, the sequence of felling of mature LTRs has, wherever possible, been specified to only occur after the replacement LTRs have achieved maturity (at least age 30).

Unfortunately, several of the mature LTRs are now reaching an age and height where they are becoming increasingly vulnerable to windthrow. In general, this is accepted as an inherent risk balanced against the need to retain reasonable areas of mature forest for their biodiversity value. However, if significant windblow does occur then these LTRs may need to be removed at an earlier date – either in part or as a whole coupe and in this instance an LMP amendment will be sought as appropriate.

Minimum Intervention and Natural Reserve areas – (118.9ha)

Minimum intervention and Natural Reserve areas have been identified primarily in existing broadleaf and native woodlands, and some coniferous stands, which are intended to be retained indefinitely for biodiversity and/or amenity purposes; although in coniferous Minimum Intervention areas (which are not Natural Reserves) some felling may be required in future, for example due to stability issues.

A strategic Natural Reserves review was completed in early 2025 which specified a number of new Natural Reserves in Carron Valley Forest for biodiversity enhancement – in both coniferous and broadleaf woodland habitats. Natural Reserves will be managed via minimum intervention in perpetuity and are recorded in the master Natural Reserves inventory.

C.2.5 Other Tree Felling in Exceptional Circumstances

FLS will normally seek to map and identify all planned tree felling in advance through the LMP process. However, there are some circumstances requiring small scale tree felling where this may not be possible and where it may be impractical to apply for a separate felling permission due to the risks or impacts of delaying the felling.

Felling permission is therefore sought for the LMP approval period to cover the following circumstances:

- Individual trees, rows of trees or small groups of trees that are impacting on important infrastructure (as defined below*), either because they are now encroaching on or have been destabilised or made unsafe by wind, physical damage, or impeded drainage.

*Infrastructure includes forest roads, footpaths, access (vehicle, cycle, horse walking) routes, buildings, utilities and services, and drains.

The maximum volume of felling in exceptional circumstances covered by this approval is 75 cubic metres per Land Management Plan per calendar year. A record of the volume felled in this way will be maintained and will be considered during the five year Land Management Plan review.

C.2.6 Woodland Management in Visitor Zones

Visitor Zones have been identified in areas where FLS encourage and manage access or where the woodland managed by FLS interacts with popular visitor sites or access routes. Visitor Zones are shown on map **M8**.

In these areas, single trees or small groups of trees will be removed when necessary to protect facilities, infrastructure and trails, or to enhance the setting of features, or to maintain existing views.

Woodland in these zones will also be thinned, or trees re-spaced, for safety reasons (including to increase visibility to ensure that sites are welcoming and feel safe), and where it is necessary to enhance the experience of the forest setting; such as through the development of large trees, or preferential removal of trees to favour a particular species.

C.2.7 Restocking Proposals / Natural Regeneration

Species selection and restocking design

At Carron Valley the primary species will remain Sitka spruce (SS) as this is eminently suited to the site conditions and primary objective of timber production. In appropriate areas, secondary coniferous species will be established to improve biodiversity value and forest resilience, including Norway spruce (NS), western red cedar (WRC), Scots pine (SP) and Douglas fir (DF). A variety of broadleaved species will also be established, primarily for their biodiversity and environmental value, but also including some areas which may be managed for future timber production, including species such as oak, birch, aspen, and alder. The proposed species choices and planting design will be in keeping with the current landscape character of the area.

Species choice and planting design has taken careful consideration of site suitability (using soil and climatic information, site observation, and ESC DSS software). In addition, the proposed design accounts for the interaction between different elements of the forest – particularly aiming to locate diverse species (e.g. NS or SP) within or adjacent to the permanent habitat network where suitable. Due consideration has also been given to the quality and quantity of brash provided by different species, which is important to provide adequate soil protection during operations and reduce the risk of diffuse pollution. To this end, most coupes containing diverse conifers will contain an element of spruce (SS or NS) in order to provide sufficient quantities of high-quality brash during operations.

The layout of internal open ground has been specified to positively contribute to the environmental and social aspects of the forest. Importantly, only areas of significant open ground are mapped as such – such as major watercourses, forest roads, and rides which are important for forest design and/or environmental purposes. Other areas of open ground will be specified at the time of restocking to account for watercourse buffer zones or other unplanted areas; and a proportion of open ground is typically included within each of the mapped restock areas to accommodate for this. Such areas of unmapped open ground will only be established where necessary, therefore in some cases the total planted area may exceed that stipulated in Table 5. Further information on the management of open ground is detailed in section C.2.19.

Across the majority of the forest, species mixtures will be utilized in order to make full use of the available site types; aid tree establishment; and further enhance the forest's resilience, amenity, and environmental values. While these are identified as mixed species stands at a coupe level, the exact prescriptions of these mixtures will be determined at the workplan stage. In general, however, such stands are most likely to be established with individual species focused in distinctive areas according to microsite conditions; or as intimate mixtures, including self-

thinning mixtures such as pine with spruce. Restocking proposals for the next 10 years are shown on map **M10** and Table 5, with restocking proposals for the whole forest shown on map **M9**.

Natural regeneration

Coniferous regeneration, especially of Sitka spruce, can be prolific in some areas of Carron Valley and this presents both an opportunity and a challenge for forest management. Generally speaking, SS regeneration is likely to be accepted as a component of restocking in coupes to be restocked with productive conifer, and this will be assessed on a coupe by coupe basis. Any such use of SS regeneration will be in line with LMP tolerances with any changes agreed between FLS Planning and Delivery functions at the workplan stage; and where required LMP amendments will be requested from Scottish Forestry. Outwith productive conifer areas, the aim will be to control SS regen in a targeted, pragmatic, and cost-effective manner, with priority given to those areas where regeneration could have the most detrimental impacts, such as priority habitats. Generally, such control of regeneration will via one of the following options (depending on both priority and resource availability):

1. Removal of regeneration by felling or otherwise destroying individual trees (preferably at establishment of before the age of coning (c.20-25 years).
2. Removal of regeneration via whole tree harvesting where access allows (at c.20 years of age).
3. Removal of regeneration at the time of harvesting in adjacent stands (c.40-60 years of age).

Planting prescriptions

Productive conifers will be established to achieve a minimum density of 2500 stems per hectare, and native broadleaves 1600 stems per hectare by year five, or at higher densities (2500-3000 stems per hectare) for productive broadleaves. All sites will be assessed for stocking densities at year 1 and year 5 and remedial actions identified as necessary to ensure adequate stocking to achieve the coupe objectives.

‘Hot planting’ (i.e. restocking in the first planting season following harvesting) will be the preferred method of re-establishing felled stands at Carron Valley, primarily in order to address issues of weed growth and damage by *H. abietis*. This will especially be the case on higher nutrient sites at lower elevations; however on poorer sites and/or at higher elevation a longer ‘fallow’ period may be utilised (up to five years following harvesting), in order to avoid the largest *H. abietis* populations.

Productive conifers and any productive broadleaves will be of the best available provenance for timber production considering form, yield and resilience. Native broadleaved species will preferentially be of seed originating from native seed zone 107, 108, or 109; or from another

British seed zone if these are unavailable, with a preference for provenance region 10. The species choice and design of native planting has been developed based on local site types, guidance in FC Bulletin 112, and taking into the potential benefits to biodiversity.



Table 3 – Felling

This shows the scale of felling within the felling phases in the context of the whole LMP. This includes any areas of ‘LISS – Fell’ (i.e. removal of final overstorey). * See map **M6**.

SCALE OF PROPOSED FELLING AREAS (including LISS final fell areas)												
Total LMP Area:		3113.67	hectares									
Felling	Phase 1	%	Phase 2	%	Phase 3	%	Phase 4	%	Long Term Retention*	%	Area out-with 20yr plan period	%
Area (Ha)	283	9	92.3	3	193.7	6.2	128.6	4.1	156.1	5	1644	52.8



Table 4 – Thinning

This shows the gross thinning area over the first 10 years of the LMP (see map **M7**).

Species*	Thinning (ha)
Sitka spruce	124.7
Norway spruce	14.4
Larch	12.6
DF	5.3
Scots pine	8.7
Lodgepole pine	2
Other ¹	94.24
Total	261.9

* Percentages are given for the respective sub-compartment areas and not representative of the proportion of each species being removed in thinning prescriptions.

¹ Broadleaves and unmappable open areas where any thinning will be to remove non-native conifers only.



Table 5 – Restocking

This table provides information on the restocking proposals for the first 10 years of the LMP listed on a coupe by coupe basis (see map **M10**).

Felling Phase	Map Identifier(s)	Species *	Area (ha) to be planted
Felled awaiting restocking, and/or restocking in progress			(235ha total)
Felled	66023A	SS	5.7
Felled	66023A	LP	2.8
Felled	66023B	NMB	3.8
Felled	66023C	DF	1.3
Felled	66023C	SS	1
Felled	66023D	NMB	1.5
Felled	N/A (66023)	OG	3.8
Felled	66045A	NS	3.8
Felled	66045A	DF	1.9
Felled	66045A	WRC	1.9
Felled	66045B	NMB	1.3
Felled	66045C	NMB	0.3
Felled	N/A (66045)	OG	3.8
Felled	66052A	SS	13.5
Felled	66052A	LP	6.8

Felling Phase	Map Identifier(s)	Species *	Area (ha) to be planted
Felled	66052B	NS	9.9
Felled	66052C	NMB	3.2
Felled	66052D	NS	3
Felled	N/A (66052)	OG	13.4
Felled	66069A	NS	5
Felled	66069A	SS	1.4
Felled	N/A (66069)	OG	2.3
Felled	66070A	NS	5.5
Felled	66070A	SS	4.4
Felled	N/A (66070)	OG	2.2
Felled	66075A	SS	7.2
Felled	66075A	LP	3.6
Felled	66075B	NMB	7.8
Felled	66075C	DF	2.2
Felled	66075C	WRC	2.2
Felled	66075D	NMB	0.7
Felled	N/A (66075)	OG	7
Felled	66122A	NS	2.4

Felling Phase	Map Identifier(s)	Species *	Area (ha) to be planted
Felled	66122A	ASP	2.4
Felled	66122C	NMB	0.2
Felled	N/A (66122)	OG	0.6
Felled	66133A	SS	11.3
Felled	66133B	ASP	3.3
Felled	N/A (66133)	OG	2.9
Felled	66136A	SS	5.7
Felled	66136A	SP	2.9
Felled	66136B	NMB	3.5
Felled	N/A (66136)	OG	3.2
Felled	66150A	NMB	2.4
Felled	66150C	SS	0.2
Felled	N/A (66150)	OG	1
Felled	66166A	NS	6.6
Felled	66166B	NMB	0.9
Felled	66166C	DF	2.9
Felled	66166D	NS	0.8
Felled	66166D	DF	0.3

Felling Phase	Map Identifier(s)	Species *	Area (ha) to be planted
Felled	66166D	SS	0.3
Felled	66166E	NMB	0.4
Felled	66166F	NMB	0.7
Felled	66166G	NMB	0.9
Felled	N/A (66166)	OG	5
Felled	66393A	NMB	2.1
Felled	66393B	WRC	1.4
Felled	66393B	NS	0.7
Felled	66393C	SOK	0.4
Felled	66393C	BI	0.4
Felled	66393D	SS	0.5
Felled	N/A (66393)	OG	1.6
Felled	66484A	NS	8.7
Felled	66484A	NMB	0.4
Felled	N/A (66484)	OG	2.1
Felled	66600A	NS	4.4
Felled	66600A	DF	2.2
Felled	66600B	SP	3.3

Felling Phase	Map Identifier(s)	Species *	Area (ha) to be planted
Felled	66600B	BI	2.6
Felled	N/A (66600)	OG	2
Felled	66898A	NS	3.6
Felled	66898B	NMB	0.1
Felled	N/A (66898)	OG	0.8
Felled	66994A	SOK	0.8
Felled	66994A	BI	0.8
Felled	66994A	CAR	0.8
Felled	N/A (66994)	OG	0.3
Coupes currently in delivery (approved under last plan) – shown as Phase 1 felling in Table 3 and on Maps M6 and M7			(see below)
Phase 1 / Felled	67235A	MB	2.2
Phase 1/ Felled	N/A (67235)	OG	0.6
Phase 1/ Felled	66016A	SS	4.2
Phase 1/ Felled	66016A	LP	2.1
Phase 1/ Felled	66016B	NMB	0.8
Phase 1/ Felled	N/A (66016)	OG	0.3
Phase 1/ Felled	66026A	SS	1.3
Phase 1/ Felled	66026A	LP	1.3

Felling Phase	Map Identifier(s)	Species *	Area (ha) to be planted
Phase 1/ Felled	66026A	CAR	0.3
Phase 1/ Felled	N/A (66026)	OG	0.7
Phase 1/ Felled	66791A	SS	3.1
Phase 1/ Felled	66791A	LP	1.5
Phase 1/ Felled	66791B	NMB	0.9
Phase 1/ Felled	N/A (66791)	OG	1.0
Phase 1 coupes (total includes 'in delivery')			(285ha total)
Phase 1	66051A	SS	0.5
Phase 1	N/A (66115)	OG	0.7
Phase 1	66153A	SS	12.3
Phase 1	66153A	LP	6.2
Phase 1	N/A (66153)	OG	3.4
Phase 1	67181A	SS	2.3
Phase 1	67181A	LP	2.3
Phase 1	67181B	NMB	0.4
Phase 1	N/A (67181)	OG	0.8
Phase 1	66046A	NMB	1.1
Phase 1	N/A (66046)	OG	1.1

Felling Phase	Map Identifier(s)	Species *	Area (ha) to be planted
Phase 1	66988A	NMB	0.8
Phase 1	66988A	SS	0.8
Phase 1	N/A (66988)	OG	1.0
Phase 1	67293A	SS	4.9
Phase 1	67293A	LP	4.9
Phase 1	N/A (67293)	OG	0.7
Phase 1	67498A	SS	4.4
Phase 1	67498A	LP	4.4
Phase 1	67498B	NMB	2.4
Phase 1	N/A (67498)	OG	1.8
Phase 1	67528A	NS	6.3
Phase 1	67528B	SS	6.0
Phase 1	67528C	SS	3.0
Phase 1	67528E	NMB	0.8
Phase 1	N/A (67528)	OG	5.2
Phase 1	67754A	NMB	0.6
Phase 1	67754A	SS	0.2
Phase 1	N/A (67754)	OG	0.4

Felling Phase	Map Identifier(s)	Species *	Area (ha) to be planted
Phase 1	66004A	SS	4.6
Phase 1	66004A	LP	2.3
Phase 1	66004B	NMB	4.9
Phase 1	66004C	NS	3.9
Phase 1	66004C	MB	1.9
Phase 1	N/A (66004)	OG	6.7
Phase 1	66015A	NMB	4.2
Phase 1	66015B	SS	1.1
Phase 1	66015B	LP	0.6
Phase 1	66015C	SS	0.9
Phase 1	66015C	NS	0.4
Phase 1	66015C	NMB	0.4
Phase 1	N/A (66015)	OG	2.5
Phase 1	66071A	NS	2.8
Phase 1	66071A	SS	0.8
Phase 1	N/A (66071)	OG	1.1
Phase 1	66111A	NS	5.5
Phase 1	66111A	SS	2.8

Felling Phase	Map Identifier(s)	Species *	Area (ha) to be planted
Phase 1	N/A (66111)	OG	2.4
Phase 1	66119A	NS	2.0
Phase 1	66119A	ASP	2.0
Phase 1	66119B	NMB	2.5
Phase 1	66119E	ASP	0.3
Phase 1	N/A (66119)	OG	2.6
Phase 1	66120A	SS	3.0
Phase 1	66120A	LP	1.5
Phase 1	66120A	NS	1.5
Phase 1	66120A	CAR	1.5
Phase 1	66120B	CAR	0.4
Phase 1	66120B	SS	0.4
Phase 1	N/A (66120)	OG	1.1
Phase 1	66124A	SS	3.8
Phase 1	66124A	WRC	1.9
Phase 1	N/A (66124)	OG	1.0
Phase 1	66125A	NMB	2.1
Phase 1	N/A (66125)	OG	0.5

Felling Phase	Map Identifier(s)	Species *	Area (ha) to be planted
Phase 1	66010A	SS	6.9
Phase 1	66010A	DF	2.0
Phase 1	66010B	NMB	1.7
Phase 1	66010C	CAR	0.7
Phase 1	N/A (66010)	OG	3.8
Phase 1	66041A	SS	4.1
Phase 1	66041A	WRC	2.1
Phase 1	66041B	NMB	0.4
Phase 1	N/A (66041)	OG	1.3
Phase 1	66105A	NS	6.2
Phase 1	66105A	ASP	3.1
Phase 1	66105B	NMB	0.9
Phase 1	66105C	NMB	2.3
Phase 1	N/A (66105)	OG	5.2
Phase 1	66145A	NS	2.0
Phase 1	66145A	ASP	1.0
Phase 1	66145C	NMB	0.1
Phase 1	66145D	CAR	0.1

Felling Phase	Map Identifier(s)	Species *	Area (ha) to be planted
Phase 1	66145D	PBI	0.1
Phase 1	66145E	SS	0.2
Phase 1	66145E	LP	0.1
Phase 1	N/A (66145)	OG	1.4
Phase 1	66168A	NS	3.9
Phase 1	66168A	DF	1.6
Phase 1	66168A	SS	1.6
Phase 1	N/A (66168)	OG	1.3
Phase 1	66175A	XNB (native woody shrubs)	1.2
Phase 1	N/A	OG	0.5
Phase 1	66927A	SS	4.7
Phase 1	66927A	NS	4.7
Phase 1	66927A	LP	4.7
Phase 1	66927B	NMB	4.4
Phase 1	N/A (66927)	OG	4.6
Phase 1	66417A	NS	6.1
Phase 1	66417A	ASP	3.1
Phase 1	66417B	CAR	1.2

Felling Phase	Map Identifier(s)	Species *	Area (ha) to be planted
Phase 1	66417B	ASP	1.2
Phase 1	N/A (66417)	OG	2.1
Phase 1	66870A	NS	3.6
Phase 1	66870A	SP	3.6
Phase 1	66870A	NMB	0.9
Phase 1	66870B	NMB	2.5
Phase 1	N/A (66870)	OG	1.9
Phase 1	66049A	NMB	1.0
Phase 1	N/A (66049)	OG	1.0
Phase 2 coupes			(90.3ha total)
Phase 2	N/A (66099)	OG	1.4
Phase 2	66171A	NS	10.6
Phase 2	66171A	SS	10.6
Phase 2	66171B	SS	10.6
Phase 2	66171B	LP	5.3
Phase 2	66171D	NMB	1.9
Phase 2	66171E	NMB	0.8
Phase 2	66171G	NMB	0.1

Felling Phase	Map Identifier(s)	Species *	Area (ha) to be planted
Phase 2	N/A (66171)	OG	6.9
Phase 2	66024A	SS	21.2
Phase 2	66024A	LP	10.6
Phase 2	66024B	NMB	2.6
Phase 2	N/A (66024)	OG	7.7
Total Restocking Area			610.3

*Establishment will typically be by via planting, with the exception of SS which may be established by natural regeneration.



C.2.8 Hydrology

Water Quality Management

For catchments draining into a public drinking water supply, Forest Research recommends that felling is limited to less than 20% of the catchment area within any three year period. For the catchment of Carron Valley Reservoir this would be 778.9ha, and given the application of standard felling phasing it is highly unlikely this threshold will ever be reached in this catchment.

Standard UKFS requirements and 'Guidance on Forestry Activities Near Scottish Water Assets' will be adhered to during all operations and the forest structure will be modified at the time of restocking to ensure full UKFS compliance going forward – namely through the application of appropriate buffer zones and the disconnection of non-compliant drainage where suitable. (Where historical drains cannot be safely disconnected from natural watercourses, these will be buffered in the same manner.) In addition, the LMP has sought to identify strategic methods for protecting water quality – for example, minimizing the potential crossing of watercourses within felling coupes and including mapped and/or unmapped areas of open ground and wet woodland which can be used as additional buffer and filtration zones for water quality management.

Aquatic and riparian habitats

FLS will take a planned and pragmatic approach to removing artificial barriers to fish migration. Typically this will coincide with routine maintenance or upgrade work of the forest road network, although we may also undertake work to specifically remove such barriers, as resources allow. Several of these barriers are the responsibility of Scottish Water and we will work in partnership with Scottish Water to jointly remove redundant barriers along watercourses according to each organization's responsibilities and program of works. Any works to remove artificial barriers will ideally coincide with wider works to improve the riparian zone (e.g. through native woodland planting), and vice versa, with core (primarily native woodland) habitats located along major watercourses – in particular the river Carron, the Bin Burn and the Faughlin Burn. In addition to manmade barriers there have been several reports of natural/semi-natural partial or complete barriers to fish migration; either resulting from windblow or the presence of small woody debris in the watercourse. In many instances this is the result of historical planting being established within the buffer zones of watercourses, which is no longer practiced which is no longer practiced and will be improved through normal forest restructuring. As per the UKFS, FLS will not normally remove windblow from watercourses unless this is part of a planned harvesting operation; where possible we will seek to avoid harvesting debris entering watercourses during operations and aim remove any such debris provided it is safe and practicable to do so (as per

the UKFS and associated guidance). The decision to undertake such remedial works to remove either woody debris and/or windblow ultimately lies with the FLS delivery team; and taking full account of operational safety, pollution risks, and practicality in addition to the potential benefits of such operations.

C.2.9 Protection

Roe deer are the primary herbivore species present at Carron Valley, although there is an increasing population of red deer within the area in general. Deer management is guided by local site considerations and the wider Scottish Lowlands Deer Management Plan (SL DMP). We aim to prevent unacceptable damage to commercial tree crops and in key areas to maintain or enhance biodiversity and protect all designated sites. This will be done in a professional, humane and cost effect way, ensuring the physical wellbeing of the remaining deer populations within the forest boundaries. Key targets for deer management include:

- Achieving less than 10% leader browsing damage on all Phase 1 felling coupes.
- Ensuring adequate stocking densities to the point of stand establishment.
- Lowering deer densities to 2-5 per km² to meet the above objectives sustainably.
- Ensuring all designated sites are in favourable condition.

Deer population models have been built using historical cull and recruitment data and this population model will help guide the setting of cull targets to help ensure FLS objectives will be met whilst also ensuring the cull is sustainable. The spring mean deer density for 2025 was approximately three animals per km² for both roe deer and red deer across the LMP area. In the last full five year culls from April 2020 to April 2025, FLS have culled 893 roe deer, 56 red deer and a single sika deer from the LMP area.

In line with the wider SL DMP, stalking will remain the primary method of protecting replanting from deer damage, and encouraging natural regeneration, within the LMP area. Suitable glades/sighting rides to facilitate deer management have been identified in consultation with qualified local delivery staff and contractors, and will be maintained to preserve adequate sight lines which may include brashing of existing trees and/or small-scale clearance of trees as required. The control of red deer will also benefit from the maintenance of larger areas of open ground on internal hilltops and along the upper margins of the forest, which complements the maintenance of wider priority habitats. Felling permission is therefore sought to establish and maintain such glades and other open land with a maximum tree canopy cover of c.10-20% (preferably of native species) where suitable and these areas (where they are of sufficient scale) are depicted as open ground on map **M6** and detailed in section **C.2.19**.

The maintenance of suitable march boundary fencing where required will be the primary means of protection against livestock incursions and associated damage (as per section **C.2.10**, below).

C.2.10 Fence Erection / Removal

Stock fencing is located along the march boundary in several locations, and is suitably maintained to prevent incursion of livestock especially at the time of establishment in adjacent coupes. Some internal deer fencing is also present to protect particularly vulnerable areas of establishment (e.g. productive broadleaves and soft conifers). Where required, boundary stock fencing will be suitably maintained in collaboration with neighboring landowners. Where present, deer fencing will be suitably maintained to ensure adequate protection until establishment and will be removed once establishment has been achieved, in line with UKWAS requirements.

Although black grouse are not present within the forest, due to the presence of populations in the local vicinity (<10km), any new deer fencing will be marked in accordance with the relevant guidance where this borders on to suitable open habitat for foraging, breeding and lekking black grouse.

C.2.11 Road Operations and Timber Haulage

During the lifetime of this LMP, several new roads will be required to facilitate operations targeting the removal of larch. The total length of these roads will be 1.51km and an EIA SOR has been submitted accordingly. In addition, regular maintenance and upgrades will be undertaken on the existing forest road network as and when required. Existing and proposed roads are depicted on map **M11**, together with timber haulage exit points. Future roads anticipated for beyond the 10 year LMP period are shown on **M6** and will undergo further survey, planning and approvals, as required, prior to construction.

Timber haulage from Carron Main Block and from Cairnoch primarily exits onto the B818, which is an Agreed Timber Transport Route. A small volume will also require to be hauled for a short distance across the severely restricted Polmaise road running through the western edge of Cairnoch, in order to re-enter the forest block and exit onto the B818 at Cairnoch Main Entrance. In both instances, the relevant Local Authority will be contacted in advance of operations and measures taken to minimize negative impacts on the road and road users. Haulage will be compliant with any subsequent conditions agreed, and with the Timber Transport Forum's '*Transporting Timber on Public Roads Consultation and Engagement Guidance (Scotland)*', and any other relevant guidelines. Estimates of the projected timber haulage for each exit over the next 10 years are shown on map **M11** and listed below:

- Carron Main Entrance (NS 7228 8390); estimated 51,800 tonnes onto the B818 agreed route
- Todholes Entrance (NS 6723 8588); estimated 30,400 tonnes onto the B818 agreed route
- Gartcarron Entrance (NS 6683 8604); estimated 34,400 tonnes onto the B818 agreed route
- Cairnoch Main Entrance (NS 6996 8400); estimated 18,700 tonnes onto the B818 agreed route; including 940 tonnes via Sir John de Graham's entrance (NS 6997 8399) (east and west), crossing the Polmaise road severely restricted route at NS 6997 8399

The maintenance of a suitable road corridor is essential to provide operational access, establish windfirm boundaries, protect the road infrastructure, and provide additional benefits in terms of enhanced public access and ecological functioning. FLS Civil Engineering standards recommend a minimum road corridor width of 25m, therefore in order to maintain and protect the road corridor, felling permission is also sought for the removal of any trees within 13m of the center line of the forest road, or 10m from the edge of the road surface, whichever is greater. This includes clearance of any windblow impacting the road corridor. A standard 25m felling corridor (average width) is also requested for the construction of new roads, as detailed above, over the 10 year LMP period. These corridors for both new and existing roads are indicated on map **M11**.

C.2.12 Public Access

FLS welcome responsible public access in accordance with the Scottish Outdoor Access Code.

Where trails are affected by forestry operations, appropriate temporary closures will be implemented and, where possible, suitable diversions provided to maintain access while ensuring public and operator safety. Access to key routes such as core paths and rights of way will be maintained and restored as required after operations. Liaison with the Local Authority Access Officer will continue to be carried out as appropriate.

C.2.13 Historic Environment

Two Scheduled Monuments are present in the LMP area: Sir John de Graham's Castle (SM4278) in Cairnoch and the Waterhead standing stones (SM2719) in Carron Main Block. Both scheduled monuments are monitored bi-annually by FLS staff and remedial actions taken to ensure site conditions are maintained; with site condition scores and management actions recorded in the Regional Historic Asset Management Plan. Both of these features have been accounted for in the LMP proposals, with the setting of Sir John de Graham's Castle having been improved during the last LMP period.

All known heritage features are mapped on the FLS GIS database which allows these to be suitably identified and protected during operations. Works to improve the setting of heritage

features may be undertaken as part of general forestry operations, although no such activity is currently proposed. Harvesting coupes, access roads and fence lines will be surveyed prior to any work being undertaken to ensure that upstanding historic environment features can be marked and avoided. At establishment and restocking, work prescriptions remove relevant historic environment features from ground disturbing operations and replanting. Prior consultation will be sought with, and Scheduled Monument Consent obtained from, Historic Environment Scotland as appropriate for any operations taking place within 20m of a scheduled monument with mitigation measures deployed ahead of operations.

The Regional Historic Asset Management Plan includes conservation management intentions for those designated historic assets in Scotland's national forests. Details of all known historic environment features are held within the Forester Web Heritage Data (built using national and regional historic environment records) and included within specific operational Work Plans to ensure damage is avoided. Significant historic environment features will be depicted on all relevant operational maps. All currently known heritage features are depicted on map **M4**.

Any previously unmapped heritage features will be recorded and protected as necessary, including notification of the relevant authorities if appropriate, including the Ministry of Defence for any military remains.

C.2.14 Biodiversity

FLS will continue to manage the LMP area in such a way as to protect and maintain or enhance the biodiversity value of the site. As a minimum, all species and habitats will be suitably protected during operations and in line with the relevant and most up-to-date legislation and guidance such as Scottish Forestry's *'Forest operations and wildlife in Scottish forests'*. Other proposals to maintain or enhance biodiversity value within the LMP area are outlined below.

Native habitats

The LMP proposals seek to maintain, and where possible improve, the quality of key open and wooded habitats over time through the management of existing habitats and the creation of new habitats; and the LMP design seeks to link these areas to form an overall habitat network.

Deadwood

Areas of standing and fallen deadwood will be retained in line with FLS policy, UKWAS and the UKFS. Significant deadwood volumes will not be achieved in every felling coupe but instead averaged over the wider land management plan area with strategic retentions prioritised in areas of high ecological value such as Natural Reserves, riparian corridors, and wet flushes.

Designated sites

All operations conducted within the lifetime of this plan will adhere to the measures prescribed in the Endrick Water SSSI/SAC Management plan 2024-2034 and in strict adherence to forest and water guidelines to minimise the risk of adverse effects on this designated site and its features.

Although not statutorily protected, areas within or adjacent to Local Nature Conservation sites will be managed with cognisance of these sites which have been duly considered in the LMP proposals (e.g. through the establishment of more diverse conifers and/or native species).

Priority species

Although black grouse have not been recorded lekking in the forest for over 10 years, some lek sites are still present within the local area (<10km). The continued development of a forest habitat network will create a range of opportunities for roosting and foraging black grouse and opportunities will be taken to include beneficial species such as birch, rowan, and willow within these areas to diversify the range of forage available for this species. In addition, the clearance of Sitka spruce regeneration in open areas will maintain the habitat potential for lekking grouse.

Restructuring the forest to buffer watercourses and improve the habitat along core riparian corridors will provide benefits to aquatic species such as otter, trout and powan.

The LMP proposals have been designed and harvesting programmes phased in such a way as to provide a continuity of habitats capable of supporting red squirrel. FLS staff will continue to review the population carrying capacity of this block annually and assess potential impacts of any harvesting operations on squirrel populations, and FLS will proactively implement appropriate mitigation where necessary to ensure the continued success of this species. The future species composition will be progressively diversified with the inclusion of conifer species such as Douglas fir and Norway spruce within productive areas to improve the forest carrying capacity and provide a wider variety of cone bearing species; reducing the reliance on any single species as a source of seed in any given season or year. While grey squirrel are currently absent from the LMP area, FLS will continue to monitor for any encroachment of this species and work in partnership with adjacent landowners and stakeholders where appropriate to prevent the incursion of this species to the area.

Pine marten already benefit from the diverse structure of the woodland which provides a range of foraging opportunities for the species, and further diversification of the forest will ensure the

continued success of this species going forward. In addition, over the next 10 years, we will aim to install artificial den sites within areas of natural reserve and minimum intervention.

FLS will continue to monitor and protect bat roost sites within the LMP area in conjunction with local volunteers. The LMP proposals will improve connectivity along riparian margins and between open habitat areas and result in increased foraging opportunities for bat species. Artificial bat boxes have already been installed to improve the habitat availability for roosting and breeding bats within the forest and FLS staff will continue to monitor and maintain these features to support the species. In addition the protection and future development of veteran trees will provide increasing opportunities for the use of natural roost sites.

Woodland raptors including locally significant species such as osprey, goshawk and long-eared owl will continue to be monitored in conjunction with the Scottish Raptor Monitoring Scheme. These species will continue to be provided for with areas of minimum intervention woodland, natural reserves, and long-term retentions providing a continuity of suitable areas for nesting and hunting, together with the wider forest environment (see also section C.2.4). Nest sites will preferably be retained where appropriate, but exposed nests or unstable nests may be removed and in these circumstances artificial nest sites may be installed in suitable locations. Artificial nest sites are already present for osprey and owl species; and these sites and any new artificial nesting sites will be planned and located to avoid proposed areas of forestry operations, and other locations which may be prone to disturbance.

FLS staff will continue to monitor the establishing population of nightjar within the forest. The proposed cycles of clearfell management will continually generate new habitat areas for this species while proposed habitat enhancements will continue to improve the foraging opportunities for this species with an increased abundance and variety of prey items.

C.2.15 Tree Health

As mentioned previously, removal of larch from the LMP area will continue as per the timescales set out in the Carron Valley SPHN. As the majority of mature larch has now been removed from the forest, this will now focus primarily on the removal of areas of young larch through whole tree harvesting, motor-manual felling to recycle, or chemical destruction with ecoplugs. **Where ecoplugs are to be used, this will be agreed in advance with Scottish Forestry at the workplan stage.**

In general, FLS aim to manage ash dieback in alignment with Scottish Forestry's guidance (*Guidance on the management of individual ash trees affected by ash dieback in Scotland*), therefore, as part of this LMP FLS also seek formal approval to remove:

- **Any** ash with a condition score between 2 and 4 (i.e. less than 75% canopy cover) within falling distance of usage zones 1 and 2 (including all forest roads and recognised recreation routes), as per Scottish Forestry's '*Guidance on the management of individual ash trees affected by ash dieback in Scotland*'. and;
- **All** ash within the 'red zone' of any nearby utility infrastructure (based on the risks, costs and disruption associated with felling).

C.2.16 Invasive Species

Forestry and Land Scotland will continue to monitor and control invasive species within this land management plan area, taking a strategic and landscape scale approach to invasive non-native species control we will work in partnership with adjacent landowners and stakeholders to achieve common objectives.

Action to control invasive species will be prioritised in areas where the spread of these species threatens or directly impacts protected and priority habitats and species. Resources will be allocated to priority areas where the greatest overall benefit to these protected and priority species and habitats can be achieved. Control action for the small population of giant hogweed (single plant at Kirk O' Muir) will be planned for the first phase of the LMP period. Control of any Japanese knotweed will continue to be undertaken in partnership with Scottish Water, with each organisation undertaking control action within their respective ownership area(s).

C.2.17 New Planting

There are several areas of open ground within the LMP boundary which may be suitable for future native woodland creation projects, including around the shore of Carron Valley Reservoir; along the river Carron; and on the upper margins of the forest. Any areas which are proposed to be taken forward will be subject to a preliminary ecological assessment by FLS Environment Staff and an EIA Screening Opinion Request as appropriate.

C.2.18 Wildfire

FLS work closely with the Scottish Fire and Rescue Service (SFRS) to ensure a safe and consistent approach to help tackle wildfires on Scotland's national forests and land.

The general approach to managing fire risk will be to maintain suitable access to key areas of the woodland for fire control purposes and to avoid management actions which would further exacerbate fire risk, especially where the threat to key assets is particularly high. Fire risk has been assessed in accordance with *Forestry Commission Practice Guide 22: Building Wildfire Resilience into Forest Management Planning*; including consideration of forest management and restocking proposals.

Overall, the fire risk for this site is considered to be low based on the stand types, social use, (lack of) proximity assets and ignition sources, climate and topography; in addition to generally good access and presence of water source(s) (Carron Valley Reservoir) for fire control. Fire resilience will be further improved through forest restructuring, maintenance and the creation of access routes; and control measures may be further enhanced through the creation of additional ponds as more localized sources of water.

C.2.19 Management of open ground

A distinction is made between areas of ‘successional’ open ground within which the natural regeneration of will be trees will be tolerated and ‘managed’ open ground where we intend to remove tree regeneration order to permanently maintain the open area (although in these areas, low-density regeneration up to 20% may be tolerated).

In addition to that set out above, felling approval is therefore also sought for these areas of ‘managed’ open ground which are of importance for general forest management and/or environmental reasons. This includes deer glades, priority open habitats, forest rides* and the buffer zones of watercourses. Generally, felling in these areas will be small-scale in nature (often of trees <10cm DBH), with small volumes of material typically being left in-situ. Where these form distinct mappable areas (i.e. deer glades and other open habitats), these areas are shown as open ground on map **M6**, and listed by coupe reference number below. Otherwise, felling permission is assumed to extend to 20m either side of all mapped and unmapped surface watercourses, and along all existing forest rides* as shown on map **M2**.

(*Forest rides being defined as unplanted areas of primarily open ground, generally 20m or less in width and being managed for access, as windfirm edges, and/or for environmental purposes.)

List of open management coupes by map identifier:

Coupe	Management Objective(s)
67214	Biodiversity enhancement
66056	Deer glade for wildlife management / biodiversity enhancement
66554	Possible future infrastructure (e.g. additional car park capacity) if required.
66089	Biodiversity enhancement and visual amenity.
66137	Biodiversity / general forest structure
66576	Biodiversity enhancement - predominantly open with low density BL.
66110	Biodiversity enhancement / deer and wildlife management
66483	Deer glade for wildlife management
66992	Deer glade for wildlife management
66128	Forest quarry
66103	Biodiversity enhancement; visual amenity and public access; deer and wildlife management
66995	Lease to Clan Ranald Trust
66139	Biodiversity / general forest structure
67291	Forest quarry
66169	Deer glade for wildlife management
67208	Biodiversity enhancement
66138	Biodiversity / general forest structure
66092	Biodiversity enhancement / deer and wildlife management
66096	Biodiversity enhancement / deer and wildlife management
66055	Deer glade for wildlife management / biodiversity enhancement

66030	Biodiversity enhancement / deer and wildlife management
66028	Biodiversity enhancement / deer and wildlife management
66926	Biodiversity enhancement
66095	Biodiversity enhancement / deer and wildlife management
66017	Public access and recreation; visitor services and infrastructure.
66888	N/A
67125	Biodiversity enhancement and scheduled ancient monument setting
66867	Biodiversity enhancement
67577	Forest Quarry
66038	Forest quarry
66761	Biodiversity enhancement
66703	Deer and wildlife management
66844	Deer glade for wildlife management / biodiversity enhancement
66084	Biodiversity enhancement

C.2.20 Renewables

Eurowind are currently exploring the potential for a four turbine windfarm on Cairnoch Hill. The proposals are currently being developed and will be subject to a future Local Authority planning application by Eurowind and are therefore not considered in the LMP. Should the windfarm be granted planning consent by the Local Authority and the development consequently be progressed, FLS will amend this LMP as appropriate to accommodate the footprint of the windfarm and address any forest management issues caused by the development, or vice versa.

C.3 Environmental Impact Assessment and Permitted Development Notifications

Total area (hectares) for each project type and provide details as requested by sensitive or non-sensitive area.

Type of Project	Sensitive Area		Non-sensitive Area		Total
Afforestation	%Con	%BL	Con	BL	ha
Deforestation	%Con	%BL	%Con	%BL	0ha
Forest Roads	0.5ha*		1.05ha*		1.55ha*
Quarries	0ha		0ha		0ha

*Figures based on a total proposed length of 1.51km, rounded up to the nearest 0.05ha.



C.4 Tolerance Table

	Map Required (Y/N)	Adjustment to felling period*	Adjustment to felling coupe boundaries**	Timing of Restocking	Changes to Restocking species	Changes to road lines	Designed open ground ***	Windblow Clearance****
FC Approval normally not required	N	Fell date can be moved within 5 year period where separation or other constraints are met	Up to 10% of coupe area	Up to 2 planting seasons after felling	Change within species group e.g. evergreen conifers or broadleaves		Increase by up to 5% of coupe area	
Approval by exchange of email and map	Y		Up to 15% of coupe area	Between 2 and 5 planting seasons after felling subject to the wider forest and habitat structure not being significantly compromised		Additional felling of trees not agreed in plan Departures of more than 60m in either direction from centre line of road	Increase by up to 10% Any reduction in open ground within coupe area	Up to 5 ha
Approval by formal plan amendment may be required	Y	Felling delayed into second or later 5 year period Advance felling into current or 2 nd 5 year period	More than 15% of coupe area	More than 5 planting seasons after felling subject to the wider forest and habitat structure not being significantly compromised	Change from specified native species Change between species group	As above, depending on sensitivity	More than 10% of coupe area Colonisation of open areas agreed as critical	More than 5 ha

Note

*Felling sequence must not compromise UKFS in particular felling coupe adjacency. Felling progress and impact will be reviewed against UKFS at 5 year review.

** No more than 1 ha, without consultation with Scottish Forestry, where the location is defined as 'sensitive' within the Forestry (Environmental Impact Assessment) (Scotland) Regulations 2017.

*** Tolerance subject to an overriding maximum of 20% designed open ground.

****Where windblow occurs, Scottish Forestry must be informed of extent prior to clearance and consulted on clearance of any standing trees.



D. Production Forecast

N/A – FLS provide this nationally to Forest Research as per agreement with Scottish Forestry.

Appendices

Item number	Title
I	Consultation Record
II	LMP Objective Review

Maps

Item number	Title
M1	Location
M2	Current species
M3	Key Features
M4	Heritage
M5	Concept
M6	Management
M7	Felling and Thinning
M8	Visitor Zones and Access
M9	Future Species
M10	Restocking
M11	Timber Haulage

Please note, the above maps are designed to be viewed between A2 and A0 therefore some features may be obscured when used at smaller sizes.