Forestry and Land Scotland
Coilltearachd agus Fearann Alba

# West Region

## Glen Loy Land Management Plan (including Glen Loy, Gairlochy & Mucomir)

We manage Scotland's National Forest Estate 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.

FSC
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PEFC/16-40-1002
Promoting Sustainable Forest Management
www.pefc.org

Plan Reference No:

Plan Approval Date:

Plan Expiry Date:

Forestry and Land Scotland
Coilltearachd agus Fearann Alba

**FORESTRY AND LAND SCOTLAND**
**Application for Land Management Plan Approvals in Scotland**

Forestry and Land Scotland - Property

| | |
|---|---|
| Region: | West |
| Woodland or property name: | Glen Loy (inc. Gairlochy & Mucomir) |
| Nearest town, village or locality: | Gairlochy |
| OS Grid reference: | NN 150 820 |
| Local Authority district/unitary Authority: | Highland Council |
| Plan Area | 2023 Ha |

| *Areas for Approval* | *Conifer Ha* | *Broadleaf* | *Open Space (exc. Peat)* | *Other Land* | *Peatland Restoration* |
|---|---|---|---|---|---|
| *Clear felling* | *265.19* | *6.59* | *68.35* | | |
| *Restocking (including legacy RS)* | *171.46* | *81.55* | *82.64* | | *4.56* |
| *Selective Fell (CCF)* | | | | | |
| *Natural Regeneration* | | *49.58* | *16.75* | | |
| *Thinning* | *1.33* | *4.82* | | | |

*Notes: existing broadleaves will be retained wherever possible; restock includes areas felled under previous Plan*

1. I apply for **Land Management Plan** approval for the property described above and in the enclosed Forest Plan.
2. * I apply for an opinion under the terms of the **"The Forestry (Environmental Impact Assessment) (Scotland) Regulations 2017" for ~~road building /quarries~~ /afforestation /~~deforestation~~** as detailed in my application.
3. I confirm that the initial scoping of the plan was carried out with FLS and SF staff in April 2024.
4. I confirm that the proposals contained in this plan comply with the UK Forestry Standard.
5. I confirm that the scoping, carried out and documented in the Consultation Record attached, incorporated those stakeholders which the SF agreed must be included.
6. I confirm that agreement has been reached with all of the stakeholders over the content of the forest plan and that there are no outstanding issues to be addressed. Copies of consultee endorsements of the plan are attached.
7. I undertake to obtain any permissions necessary for the implementation of the approved Plan.

Signed …… Regional Manager

Signed …… Conservator

Region: West

Conservancy:

Date :

**Date of Approval:** ……

**Date approval ends:** ……

# Glen Loy - Land Management Plan 2026 – 2036

## Contents

# 1 Regulatory Requirements

## 1.1 Summary of Proposals

Glen Loy comprises the three forests of Glen Loy, Mucomir and Gairlochy, which lie along the lower part of the Great Glen between Loch Linnhe and Loch Lochy. The total LMP area covers 1,418 ha. The forests are predominantly spruce with a greater diversity introduced in the second rotation stands; restructuring has been ongoing for around twenty years. The Caledonian pinewood SSSI of Coille Phuiteachain lies within Glen Loy and there are other semi-natural (e.g. Erracht oakwoods) and Plantation on Ancient Woodland Sites (PAWS) in both Glen Loy and Gairlochy. There are areas of deep peats throughout Mucomir.

Over the next ten years of this plan, the restructuring of these forests will continue, heading towards being more diverse ecologically while also producing high quality timber. While production of sustainable timber supply is a key priority, there will also be a focus on restoring ancient and native woodlands in Glen Loy and Gairlochy, and small areas of peat bog in Mucomir. There will be a major push on bringing the SSSI at Phuiteachain into favourable condition.

During the period, approximately 167,759 tonnes of timber will be brought to the market and areas that have lain fallow will be restocked. Thinning will continue to be carried out as far as possible in Glen Loy.

### Objectives

- Maintain a sustainable, long term supply of softwood sawlog timber production
- Increase the resilience of the forest and its ecosystems to future climate change and other threats
- Protect, restore and expand native woodland, focused particularly on the pinewood at Coille Phuiteachan, the oakwood at Erracht and riparian woodland.
- Assess the areas of deep peat for opportunities to prevent carbon loss and for habitat restoration
- Engage with the local communities in developing the plans for the future development of the forests
- Seek opportunities to work in partnership at a landscape scale for ecosystem restoration and increased the resilience of the environment
- Enable access into attractive forest areas for improved health and wellbeing as well as a backdrop to tourism

## Summary of Management Proposals

The felling proposals in the first twenty years of the plan are summarised below:

| Felling | Phase 1 | Phase 2 | Phase 3 | Phase 4 | Open |
|---|---|---|---|---|---|
| Area in ha | 190.68 | 149.45 | 134.56 | 88.56 | 106.81 |
| % of area (not including other land) | 14.07 | 11.03 | 9.9 | 6.63 | 7.88 |
| Volume (m3) | 92058 | 75701 | 57545 | 40779 | |

The species composition over the first twenty years is:

| Species Group | Current – 2026 | | Year 10 – 2036 | | Year 20 – 2046 | |
|---|---|---|---|---|---|---|
| | Area (ha) | % | Area (ha) | % | Area (ha) | % |
| Sitka Spruce | 779.4 | 57.51 | 618.3 | 45.53 | 575.9 | 42.41 |
| Norway Spruce | 35.7 | 2.63 | 34.3 | 2.53 | 38.3 | 2.82 |
| Larches | 37.8 | 2.79 | 24.1 | 1.77 | 18.4 | 1.35 |
| Scots pine | 105.2 | 7.76 | 119.9 | 8.83 | 151.0 | 11.12 |
| Mixed Conifers | 70.5 | 5.2 | 72.9 | 5.37 | 78.1 | 5.75 |
| Mixed Broadleaves | 36.1 | 2.66 | 28.2 | 2.08 | 21.8 | 1.61 |
| Native Broadleaves | 163.1 | 12.04 | 211.2 | 15.55 | 310.2 | 22.84 |
| Felled (awaiting restock/ NR) | 68.6 | 5.06 | 201.20 | 14.82 | 109.80 | 8.09 |
| Internal Open Space | 58.81 | 4.34 | 47.91 | 3.53 | 54.51 | 4.01 |
| **Forested Area Total** | **1355.21** | **100** | **1358.01** | **100** | **1358.01** | **100** |
| Open Hill | 43 | 89.77 | 43 | 95.34 | 43 | 100 |
| Agriculture | 2.8 | 5.85 | 0 | 0 | 0 | 0 |
| Open Water | 2.1 | 4.38 | 2.1 | 4.66 | 2.1 | 4.66 |
| **Open Habitat Total** | **47.9** | **100** | **45.1** | **100** | **45.1** | **100** |
| **LMP area Total** | **1403.11** | | **1403.11** | | **1403.11** | |

The age class composition over the first twenty years is:

| Age Class | Current – 2026 | | Year 10 – 2036 | | Year 20 – 2046 | |
|---|---|---|---|---|---|---|
| | Area (ha) | % | Area (ha) | % | Area (ha) | % |
| 0 – 10 yrs | 47.6 | 3.88 | 179.7 | 16.21 | 310.8 | 26.04 |
| 11 – 20yrs | 111.7 | 9.10 | 47.1 | 4.25 | 172.8 | 14.48 |
| 21 – 40 yrs | 459.9 | 37.46 | 323.2 | 29.15 | 150.3 | 12.59 |
| 40 – 60yrs | 385.1 | 31.37 | 298.8 | 26.95 | 282.8 | 23.69 |
| 60+ yrs | 223.4 | 18.20 | 259.8 | 23.43 | 277 | 23.21 |
| **Total** | 1227.7 | 100 | 1108.6 | 100 | 1193.7 | 100 |

**UKWAS Summary for year 50**

| Description | Area | % of LMP Area[1] | Location of Data |
|---|---|---|---|
| Restock main conifer spp. | 425.6 | 30 | Forester Restock Layer |
| Restock other conifer | 332.66 | 24 | Forester Restock Layer |
| Open Space[2] | 290.10 | 21 | Forester Restock Layer |
| Native broadleaves[3] | 354.75 | 25 | Forester Restock Layer |
| Management for biodiversity as primary objective (incl NR and MI area) | 448.73 | 31.98 | Forester Management Layer |
| LISS | 18.24 | 1.30 | Forester Management Layer |
| Natural Reserves | 3.57 | 0.25 | Forester Management Layer |

**Notes**

1. The % will total more than 100% as the species and management categories overlap.
2. Open space includes open hill and internal open space
3. The native broadleaves will be at variable stocking densities.

## Planned Roading Operations

| Planned operations | 2026 – 2036<br>10 plan period |
|---|---|
| Road Construction | No new roads planned |

No road construction is planned during the lifetime of the LMP.
No new forwarder/ATV tracks are planned although tracks within coupes may be identified post-harvesting and will be submitted for local authority Prior Notification (PN) approval where required.

Any unexpired PN's and EIAs are listed in Appendix VIII.

## 1.2 Activity Summary

| 1.2.1 Felling Phase 1 | | | | | |
|---|---|---|---|---|---|
| **Coupe No.** | **Total Area (ha)** | **Tree spp present** | **Open land approx. %** | **Restock Year** | **Prescriptions** |
| 33165 | 78.2 | SS, LP, HL | 26.88 | 2031 | |
| 54020 | 22.69 | SS, NS, EL, DF, JL | 4.72 | 2031 | |
| 54019 | 6.74 | SS, EL, NS, SP | 4.45 | 2031 | |
| 53128 | 52.42 | SS, NS, NMBl | 9.94 | 2031 | |
| 53124 | 9.26 | SS, DF, NS, HL | 0.22 | 2031 | |
| 53091 | 21.37 | SS, JL, BI, DF, NMBLs | 2.87 | 2031 | |
| **1.2.2 Felling Phase 2** | | | | | |
| 33167 | 34.77 | SS, LP | 0 | 2036 | |
| 53085 | 8.19 | SS, MB, MC | 0.47 | 2036 | |
| 53132 | 38.45 | SS, NS, MBls, SOK | 2.57 | 2036 | |
| 53095 | 19.08 | SS, JL, NS, DF, OMS, BI, NMBLs, MBLs | 1.25 | 2036 | |
| 54010 | 48.96 | EL, JL, SP, SS, MC, MBLs | 20.45 | 2039 | |
| | | | | | |

| 1.2.3 Table of CCF Felling (Phase 1) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Coupe No.** | **Total Area (Ha)** | **Volume ($M^3$)** | **Spp by Ha (SS)** | **Spp by Ha (SP)** | **Spp by Ha (LP)** | **Spp by Ha (NS)** | **Spp by Ha (MC)** | **Spp by Ha (MBL)** | **Open Land by Ha** | **Silv.Method** | **Monitoring Comments** |
| | | | | | | | | | | | |
| **Totals** | | | | | | | | | | | |

**Commented [MC1]:** This is only needed if there is a final fell in a CCF coupe

| 1.2.4 Table of Thinning (Phase 1 & 2, LISS and Selective Felling (excluding road edges and watercourses) | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Coupe No.** | **Total Area (Ha)** | **Species** | **Thin-able Area (Ha)** | **Prescription for Thinning** | **Final Thinned Area (Ha)** | **Final Vol/Ha Removed** | **Monitoring Comments** |
| 53155 | 6.15 | 1988 MBLS; 1994 SS | 6.15 | Coupe includes approx. 1.33 ha 1994 SS. Remove SS and any non-native regeneration found in rest of coupe. Manage as irregular shelterwood | | | |
| 53087 | 1.07 | 1988 MBLs | 1.07 | Irregular shelterwood. Light occasional thinning to promote native species | | | |
| 53145 | 1.90 | 1940/ 1999 MBLs | 1.90 | Irregular shelterwood. Light occasional thinning to promote native species | | | |
| 53079 | 169.36 | NBls 2000 SS | 26.56 | Remove small area (net 1.33 ha) SS planted in 2000, to protect the SSSI and adjacent native woodland | | | |
| 53104 | 27.86 | 1998 SS & JL 2001 SS & HL 2002 NS & SS | 24.38 | Halo thin any veteran NBLs. Where possible, remove HL & JL (1.3 ha net) | | | |

**Commented [MC2]:** Needs to be completed

| 1.2.4 Table of Thinning (Phase 1 & 2, LISS and Selective Felling (excluding road edges and watercourses) | | | | | | | |
|---|---|---|---|---|---|---|---|
| 53080 | 4.17 | 2015 NBLs<br>2015 SS | 4.17 | Remove the SS (0.79 ha net) to protect the native woodland and adjacent SSSI woodland | | | |
| 53097 | 5.64 | 2012 EL, NS, DF | 4.51 | Assess for thinning in 2030. Remove EL during thinning; remove all EL early if possible. | | | |
| 53133 | 20.51 | 2003 SS<br>1933 SS | 13.0 | Assess for thinning 2026. Intermediate line thin on an initial 5 year cycle, but with a harder thin on coupe margins. Retain 1933 SS and any BLs along watercourses and ride / track edges. | | | |

| 1.2.5 Table of Total Felling for plan period | | | | |
|---|---|---|---|---|
| **Method** | **Total Area (Ha)** | **Total Volume ($M^3$)** | **Open Land by Ha** | **Comments** |
| **CF** | **340.13** | **167,759** | **68.35** | **Any native BLs will be retained unless absolutely necessary to fell during operations** |
| **LISS** | **6.15** | **425** | | **Includes 1.33 ha SS in coupe 53155** |
| **Silv thin/ Sel fell** | **20.93** | **856** | | **Fig is for net areas** |
| | **367.21** | **169,040** | | |

| 1.2.6 Table of Restocking – including incomplete RS from previous plan | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Coupe No.** | **Total Area (Ha)** | **SS (Ha)** | **LP (Ha)** | **SP (Ha)** | **NS (Ha)** | **Other Con. (Ha)** | **Native Mixed B/Leaf** | **Other B/Leaf** | **Open (Ha)** | **Year** | **Restock Method & Density (Restock/Nat Regen/Alt Area/Coppice/Open)** | **Monitoring Comments (Including any reason not to restock)** |
| **FELLED** | | | | | | | | | | | | |
| 54007 | 14.44 | | | 14.44 | | | | | | 2027 | Restock. 2500/Ha. | Gairlochy old CF site. Not regenerating. Heavy peaty gley. Perched and hidden in the landscape. |
| 54014 | 8.99 | | | 5.39 | | | 3.6 | | | 2027 | Restock SP/BI (60/40%) 1800/ Ha. | Old CF site. Partially PAWS and conspicuous in the landscape. Regenerating with SS in places. Enrich with birch and SP. |
| 53127 | 7.37 | 7.16 | | | | | | | 0.21 | 2027 | Restock. 2500/Ha. | Glen Loy south Windblow |
| 53099 | 22.75 | 10.69 | | 3.3 | | 2.95 | | 5.81 | 7.5 | 2027 | Restock. 2500/Ha. Upper part of site unstocked. | Glen Loy south. |
| **Phase 1** | | | | | | | | | | | | |
| 33165 | 78.20 | 23.76 | 0 | 5.79 | 0 | 0 | 7.95 | 0 | 40.7 | 2030 | Restock SP/BI (60/40%) 1800/ Ha. | Plant with wider spacing where there are parallel road features |

**Commented [MC3]:** Area for indiv spp not neded but for fell and restock tables, overall trees and area of open ground needed - estimate for felling. Restock coupes will be accurate if scenario has been validated

| 1.2.6 Table of Restocking – including incomplete RS from previous plan | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 54020 | 22.69 | | | 6.45 | | | 8.74 | | 7.5 | 2030 | | |
| 54019 | 6.74 | | | 4.04 | | | 2.7 | | | 2030 | | |
| 53128 | 52.42 | 26.31 | 0 | 0 | 0 | 6.05 | 8.08 | 0 | 11.98 | 2030 | | |
| 53124 | 9.26 | | | | 2.88 | 0.72 | 5.66 | | | 2030 | | |
| 53091 | 21.37 | 4.39 | | | 0.59 | 7.6 | 8.2 | | 0.66 | 2030 | | |
| **Phase 2** | | | | | | | | | | | | |
| 33167 | 34.77 | 17.22 | | | | | 5.94 | | 11.61 | 2037 | | |
| 54010 | 48.96 | | | 4.32 | | | 35.70 | | 8.94 | 2037 | | |
| 53095 | 19.08 | 4.67 | | | 4.58 | 3.77 | 5.06 | | 1.0 | 2037 | | |
| 53085 | 8.19 | | | | | 2.28 | 5.59 | | 0.32 | 2037 | | |
| 53132 | 38.45 | 7.01 | | | 4.16 | 5.02 | 21.40 | | 0.86 | 2037 | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

| 1.2.7 Table of New Planting | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Coupe No.** | **Total Area (Ha)** | **SS (Ha)** | **LP (Ha)** | **SP (Ha)** | **NS (Ha)** | **Other Con. (Ha)** | **Native Mixed B/Leaf** | **Other MBL** | **Open (Ha)** | **Year** | **Planting Method & Density (Planting/Nat Regen)** | **Monitoring Comments** |
| 53119 | 2.05 | | | | | 2.05 | | | | 2031 | 100% DF; open ground <10% | Planting on agricultural ground |

| 1.2.8 Table of Civil Engineering | | | | |
|---|---|---|---|---|
| **Proposed Activity (Road/Quarry)** | **OS Grid Reference** | **Forest/Coupe** | **Description (Length/Area/Construction)** | **Monitoring Comments** |
| | | | | |

| 1.2.9 Table of Other Projects | | | | |
|---|---|---|---|---|
| **Proposed Activity** | **OS Grid Reference** | **Forest/Coupe** | **Description (Length/Area/Construction)** | **Monitoring Comments** |
| Environment works | | | See thinning section for halo thinning veteran BLs in PAWS | |
| Environment works | | Various – Glen Loy / Gairlochy | INNS removal – Rhododendron and Gunnera | |
| Deer fence | NN 1025 8418 | 53079 | Deer fence to protect SSSI/ native pinewood | |

## 1.3 EIA Screening Determination

An EIA is required for afforestation of the agricultural field – see separate document

# 1.4 Other Regulations

## Standards and guidance

This land management plan has been produced in accordance with a range of government and industry standards and guidance as well as recent research outputs. A full list of these standards and guidance can be found here:

https://forestryandland.gov.scot/what-we-do

## 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 in 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 destabilized or made unsafe by wind, physical damage or impeded drainage.

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

The maximum volume of felling in exceptional circumstances covered by this approval is 70 cubic metres per Land Management Plan per calendar year. A record of the volume felled in this way is detailed below and will be considered during the five-year Land Management Plan review.

| Table of Other Felling | | | | |
|---|---|---|---|---|
| **Date** | **Coupe/Area** | **OS NGR** | **Volume** | **Comments** |
| | | | | |
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## 1.5 Tolerance Table

| | Adjustment to felling coupe boundaries | Timing of restocking | Changes to species | Changes to road lines | Designed Open Ground | Wind blow clearance |
|---|---|---|---|---|---|---|
| Scottish Forestry Approval not normally required (record and notify SF) | 10% of coupe size | Up to 5 planting seasons after felling (allowing for fallow periods for Hylobius) | Change within species group e.g. Native broadleaves<br><br>Non-native conifers e.g Sitka spruce to Douglas fir<br><br>Non-native to native species (allowing for changes to facilitate Ancient Woodland policy)<br><br>For Caledonian pine woodland – SP to native BL to allow for disease issues | Departures of up to 60m from the centre of the roadline | Increase by up to 5% of coupe area | |
| Approval by exchange of emails and maps | 10-15% of coupe size | 5 years + | Change of coupe objective likely to be consistent with current policy e.g. from productive to open, open to native species | Departures of greater than 60m from the centre of the roadline | Increase between 5-10% coupe area.<br><br>Any reduction in open ground within coupe area | Up to 5 ha |
| Approval by formal plan amendment may be required | > 15% of coupe size | | Major change of objective likely to be contrary to policy e.g. native to non-native species, open to non-native | As above, depending on sensitivity | Increase >10% of coupe area | More than 5 ha |

# 2 LMP ANALYSIS

## 2.1 Introduction

The three forests of Glen Loy, Mucomir and Gairlochy are being combined into a single Land Management Plan (LMP) – Glen Loy. The current LMPs are now all beyond their expiry date and require revision.

The total LMP area covers 1,418 ha, comprising Glen Loy (1,040 ha); Mucomir (253 ha) and Gairlochy (125 ha), located in the Great Glen north-west of Fort William. The forests are predominantly spruce with a greater diversity introduced in the second rotation stands; the restructuring of all three forests is well underway through the implementation of previous LMPs. The Caledonian pinewood SSSI of Coille Phuiteachain lies within Glen Loy and there are other semi-natural and Plantation on Ancient Woodland (PAWS) sites in both Glen Loy and Gairlochy. Mucomir has the potential for some peatland restoration while Gairlochy and Glen Loy both have steep afforested slopes. The geological Parallel Roads of Lochaber SSSI underlies part of Mucomir.

### Glen Loy

Glen Loy is the largest forest of the group (1,041 ha) and sits in a broad U- shaped valley with a varied geology, on steep afforested slopes. Glen Loy has a small area of open hill but is mainly forested, most of which is commercial conifers, dominated by SS but with MC, NS, DF, LP and 19 ha of larch species. At the West end, the Coille Phuiteachain native pinewood SSSI is one of the most structurally intact in Lochaber and contains a range of bryophytes and native pinewood fauna, including beetle species of national importance. At the East end, the Erracht oakwoods ASNW contains oak and a variety of other native broadleaved species that support several indicator species.

Much of the forested area (ca 55%) is second rotation planted in the 1980s and 90s. Of the first rotation stands, ca 19% are pre 1950 and of these, 71 ha were planted before 1920. Yield classes are mostly good > YC 12, with higher yield classes occurring at the eastern end, reflecting both species and soil conditions.

There are areas of PAWS of high ecological value, where halo thinning of veteran trees would improve their survival prior to conifer stands being clear felled. Herbivore browsing impacts are reported as medium – low in these areas although browsing pressure may be higher in the western part of the forest and where broadleaves are establishing. The forest is currently deer fenced although this is not completely secure.

Species noted in the forest include pine marten, badger, goosander, black grouse, chequered skipper butterfly, pearl bordered fritillary and a variety of nationally scarce beetle species.

Heritage identified is mainly dykes, sheepfolds and agricultural buildings with the most significant being the remains of a township at Barre. Management should protect heritage features and protect and promote visitor access where possible.

## Gairlochy

Gairlochy forest covers 126 ha, of which approx. 71 ha is currently open ground or felled. Of the forested ground, 99% (53 ha) is under conifers, with only 1% broadleaves. SS comprises almost 50% of the conifer cover, which also includes SP, MC, NS, LP, DF and 8 ha larch species. The forest road network is sufficient for managing the forest and the B8005 is an agreed timber haul route south - west to Banavie.

Much of the forest has been felled recently, with most of the remaining crops planted before 1960. There are considerable areas of mixed species regeneration on the slopes. Higher up, the natural regeneration is more sporadic. The location of the forest and the soils provides the opportunity for more diverse range of conifer species to be grown.

The forest is very visible in the landscape, including from the Commando memorial and the A82. It lies between woodlands owned by Achnacarry Estate.

There are small areas of PAWS of low – medium ecological value. Schedule 1 raptor breeding sites and evidence of red squirrels are present within the forest. At the top NW corner are some old Scots pine and the gully on the northern edge, outside FLS woodland, is of botanical interest. The forest is currently deer fenced.

Heritage interest recorded comprises an old track cut into the NW part of the block.
Several residential properties lie between the public road and the loch, some of which draw their water from catchments covering part of the forest.

The Great Glen Way touches the forest just above the B8005.

## Mucomir

Mucomir covers approximately 250 ha; 180 ha currently covered by trees of which SS is the predominant species (144 ha). Lodgepole pine and mixed conifer are minority components and there are 4 ha larch species and 9 ha Scots pine, with only 5 ha broadleaves. Most of the standing trees were planted in the 1960s, with further areas of planting in the 1980s, 2000s and since 2011.

Yield classes are low – medium across most of the forest. There is an expectation that timber production will continue in the forest but with a more limited range of species and using clearfell systems due to the site conditions. There are 2 ha of upland sphagnum bog which needs to be protected and considered for restoration together with its catchment.

Productive conifer crops have already been established on a further 66 ha of deep peat soils. There is a presumption that these will continue to grow commercial crops provided the yield classes are suitable, with consideration given to establishing broadleaves where low yield classes are expected to be achieved.

A water course runs through the forest through an area of blanket bog, which offers the potential to create a wider riparian area incorporating the wetland features. The Parallel Roads of Lochaber SSSI lie beneath part of the forest. Continuation for forestry is permitted but there are some clusters of glacial features to be protected during felling and restocking. Lesser twayblade has also been recorded.

Wade's Military Road runs through the middle of the forest and there are occasional borrow pits that may have been associated with construction of the road. Structures relating to the railway that once went from Spean Bridge to Fort Augustus lie within and around the edge of Mucomir.

The current road network should be sufficient for the management of the forest which holds an important stone quarry for servicing other FLS forests in the immediate areas. The B8004 is a consultation route. The forest road is used informally for walking.

The forest is bisected by the Fort to Fort 132kv pylon line.

The forest is stock fenced against the crofting land of Stronaba lying to the North.

Visually, the forest is mostly seen from relatively close proximity off the A82 to the North and East and the B8004 to the South. It sits within an agricultural landscape and adjacent to the A82, the forest edge is set back from the road and natural regeneration has created an open woodland structure.

## 2.2 Plan Objectives

- Maintain a sustainable, long term supply of softwood sawlog timber production
- Increase the resilience of the forest and its ecosystems to future climate change and other threats
- Protect, restore and expand native woodland, focused particularly on the pinewood at Coille Phuiteachan, the oakwood at Erracht and riparian woodland.
- Assess the areas of deep peat for opportunities to prevent carbon loss and for habitat restoration

- Engage with the local communities in developing the plans for the future development of the forests
- Seek opportunities to work in partnership at a landscape scale for ecosystem restoration and increased the resilience of the environment
- Enable access into attractive forest areas for improved health and wellbeing as well as a backdrop to tourism

## Key Challenges

- Deer management to achieve sustainable deer populations that enable successful establishment of young conifer and broadleaved trees, particularly in Gairlochy and Mucomir, which are small blocks surrounded by neighbouring Estates that include sporting interests. Deer (especially Sika and Roe) move in and out of those blocks regularly

- Unifying the visual contrast between the forest and the wider landscape

- Restoring the ecological functioning of the remnant native woods and improving resilience by joining these physically through PAWS restoration and development of riparian native woodland

- Maintaining a sustainable level of productivity in the long term, among largely even-aged coupes and as the conifer component reduces

- Managing regeneration of non-native species in broadleaved restock, particularly in the oak woods and key riparian areas

## 2.3 Analysis and concept

| Objective | Opportunity | Constraint | Concept |
|---|---|---|---|
| Maintain a sustainable, long term supply of softwood sawlog timber production | Good soils on the slopes of Glen Loy and some good soils in Mucomir and Gairlochy Woods, all positive for the growing of quality timber for the sawlog market.<br>Potential to design coupes of commercially viable scale that fit well with landforms and minimise landscape impacts. | There are still large areas of even aged monocultures in Mucomir and Glen Loy that need to be felled.<br>Some of the better soils in Glen Loy conflict with the presence of Ancient Woodland Sites. | Continue to restructure the even aged- monocultures.<br>Create coupe design to even-out annual volume production as much as possible, while harvesting as close to MAI as possible.<br>Restock suitable sites with commercial species. Include alternative conifer species where growing conditions are suitable |
| Increase the resilience of the forest and its ecosystems to climate change and other threats | Opportunity to continue to diversify the age class structure and species composition in the three blocks. More sheltered areas on lower slopes with better soils may support alternative conifers. Restocking native broadleaves in riparian zones will improve freshwater habitats and protect drinking water catchments, as well as diversifying species mix.<br>Retain stands in the rotation for longer where possible, to increase proportion of older trees present. Retain broadleaves wherever possible during harvesting. | Herbivore pressures impact growth of natural regeneration and planted trees, potentially limiting the successful establishment of a diversity of species. Soil type and exposure limit species choices in parts of each forest. | Restock riparian zones, high value PAWS and some upper margins with native broadleaves. Retain existing non-native broadleaves in coupes that are not near riparian zones, ASNW, other existing native woodland and areas of PAWS with high ecological potential.<br>Include alternative conifers in restock where soil and climate conditions allow. Manage deer numbers to sustainable levels, |

| Objective | Opportunity | Constraint | Concept |
|---|---|---|---|
| Seek opportunities to work in partnership at a landscape scale for ecosystem restoration and increased environmental resilience | Opportunities to work with neighbours on deer management and native woodland restoration, to expand native woodland and improve connectivity | FLS blocks are small components in a wider landscape, which includes some sporting Estates. | PAWS restoration, development of native woodland in riparian zones and upper margins to create corridors and networks, where feasible.<br>Control deer numbers to achieve effective deer management within the context of the wider DMG area. |
| Protect, restore and expand native woodlands, particularly the pinewood at Coille Phuiteachain, Erracht oakwood and riparian woodland | Opportunity to connect the Pine wood and the Oakwood by developing native woodland networks along riparian zones and restock areas | The native woodlands occupy some of the better soils and conflict with some of the best productive conifer ground. | Protect and expand the existing native woodland. Prevent deer encroachment into Phuiteachain SSSI; control deer numbers to sustainable numbers. Allow native broadleaved woodland to develop along riparian corridors |
| Assess the areas of deep peat for opportunities to prevent carbon loss and for habitat restoration | Mucomir offers some opportunity for low key peatland restoration or creation of peatland edge habitat.<br>The LTFP lacks open ground overall. | A large proportion of Mucomir is affected by deep peats. The better soils have large powerlines running through them, which reduce productive potential. | Assess peat in line with SF policy document. Full peatland restoration not possible due to presence of designated site features. Create peatland edge broadleaved habitat where YC are low. Restock with commercial CONs elsewhere where YC suitable. Leave parallel road features open where appropriate.<br><br>Retain productive spruce on the marginal areas where a good quality crop of spruce might be achieved in the next rotation. |

| Objective | Opportunity | Constraint | Concept |
|---|---|---|---|
| Work with neighbours and partners to reduce grazing/browsing pressure from deer and livestock, to protect planted and naturally regenerating trees. | Identify opportunity to work collaboratively on limiting incursions from deer and sheep. Contribute to an active and collaborative atmosphere in the local DMG. | Some areas are difficult to protect from deer and sheep due to geography and cost. | Focus attention on the most critical sites such as Coille Phuiteachain and the oakwood at Erracht, ensuring that deer are managed, and sheep excluded. |
| Engage with local communities in developing the plans for the future development of the forests | Opportunities for residents and communities to engage with plans, particularly in identifying opportunities to improve access | Available resources constrain provision that can be made to accommodate community requests. Options must be compatible with necessary forest management. | Liaise with Lochaber Trail Association and others to optimise compatibility between public use and forest management and to minimise any areas of potential conflict. Work with neighbours such as Achnacarry Estate, on relevant issues e.g. such as deer management; public access; INNS control and potential landscape scale projects. |
| Enable access into attractive forest areas for improved health and wellbeing as well as a backdrop to tourism | There is good access to the hills (see section on public access) and through forest on roads and tracks. Glen Loy and Mucomir are well used for walking and cycling. Mountain / trail biking is popular in Glen Loy. | Available resources present significant constraints on provision that can be made to improve public access. But some access provision for forest management purposes may also benefit forest users. | Where possible, new access for forest management may also help improve public access, for example, through routing of ATV tracks and forest rides. Where appropriate, felling may open- up views from forest roads, |

# 3 LMP Proposals

## 3.1 Management

(See Maps 4 a – c for Management Proposals)

### Clear felling

Each forest area has slightly different characteristics in terms of management history and structural composition. Clear felling will remain the predominant management type across the forest during the current rotation.

Management (felling) coupes have been designed to best fit the landscape, taking account of windblow risk and steepness of slopes, and as far as possible, to produce a sustainable timber volume across the rotation. Where possible, the next rotation will manage some of the forest under Continuous Cover Forestry but clear felling will still be required for most of the conifer coupes.

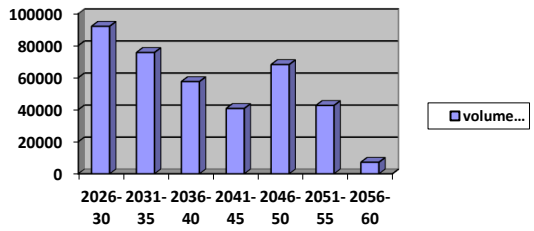
Conventional mechanised harvesting and extraction will be adopted across much of the forest, applying use of brash mats to protect soils and log bridges at watercourse crossing points. All felling operations will comply with UKFS Forest and Water guidelines and will consider impacts on watercourses. SEPA guides and Confor advice and guidance will also be followed. During felling, precautions will be taken to minimise run-off, including use of buffer zones along watercourses and avoiding felling during periods of extremely wet weather, where possible. Forestry drains will be designed and maintained to avoid discharge direct into watercourses; silt traps will be deployed during operations. The Clerk of Works or similar will prepare a diffuse pollution plan before works commence.

Native broadleaves will be retained during felling operations wherever feasible and standing dead trees will also be retained for their habitat value, where these do not present a hazard.

Pre-operational checks will be conducted by the FLS Environment team or an Environmental Clerk of Works, to identify features, mark buffers and advise on any mitigations. Operational teams will have responsibility for identifying areas for machine maintenance, fuel storage, welfare and timber stacking areas. FLS operates a Work Plan system, which all teams input to prior to sign-off by senior managers.

During the 10 year LMP lifespan, 11.43 larch will be clear felled. The remaining larch are either accessible or will be Fell–to-Recycle in the event of a SPHN.

The total conifer volume production ($m^3$) per felling period over the next 40 years is:




## Thinning

Thinning is regarded as being a beneficial activity where it is operationally expedient. It allows light into the forest environment, provides an early output of timber and concentrates remaining volume onto the most valuable part of the tree. Early thinning creates a range of options for future management.

Within this LMP area, opportunities have been taken to thin in the past, primarily in the more sheltered areas of Glen Loy. Other areas of conifers have not been thinned due to exposure, lack of operational access, cost or slope stability issues. Where early thinnings have been missed and no internal structure exists, it is not possible to introduce thinning at a later stage due to issues of crop stability. Young crops will be thinned as appropriate, where conditions are suitable. Halo thinning will be considered around veteran trees in PAWS area, to enable canopy development ahead of clear fell. Areas requiring thinning approval are shown in Table 1.2.4.

As per Clear Fell, all felling operations (i.e. thinning, selective felling, LISS) will comply with UKFS Forest and Water guidelines and will consider impacts on watercourses. During felling, precautions will be taken to minimise run-off, including use of buffer zones and avoiding felling during periods of extremely wet weather. Forestry drains will be designed and maintained to avoid discharge direct into watercourses; silt traps will be deployed during harvesting as required.

Pre-operational checks will be conducted by the FLS Environment team or an Environmental Clerk of Works, to identify features, mark buffers and advise on any mitigations. Operational teams will have responsibility for identifying areas for machine maintenance, fuel storage, welfare and timber stacking areas.

Areas where thinning or selective felling may take place, and areas of LISS, are indicated in map M5.

## Selective felling

Any non-native regeneration, primarily Sitka spruce, which has infilled some open spaces and riparian areas need to be felled, to restore habitats and to prevent them seeding into native woodland areas. It is expected that natural regeneration of native species will replace these felled trees, excepting

managed open ground. Where trees are above 10 cm DBH, approvals will be required and these areas are included in the thinning map (see Map 5) and thinning table (see Table 1.2.4).

## Low Impact Silvicultural Systems (LISS)

Small areas have been identified for management under LISS. Approximately 6.15 ha of mixed broadleaves and a birch / Sitka spruce mix in Glen Loy will be managed under irregular shelterwood. The Sitka will be removed during thinnings at an early stage. A further 1.9 ha in the northern part of Glen Loy will be lightly thinned to promote native species.

## Natural Reserves

Coupe 53122 (3.57 ha) which comprises 2.88 ha Norway spruce, 1.82 ha BLs and 0.35 ha European larch has been identified as a Natural Reserve (see Management Coupe map M4a). The larch may need to be removed in the event of a SPHN.

## Long Term Retentions (LTR)

A very small area (0.32ha) of 1937 Scots pine has been identified as LTR.

At the next plan review, suitable areas will be re-assessed and may be re-categorised, as necessary, moving into a regeneration phase as LISS/CCF; being retained as Natural Reserves; remaining as LTRs or being scheduled for felling.

## Minimum Intervention

Minimum Intervention has been selected where there is ASNW or established native woodland and where minimal operations are anticipated. The pinewood and oakwood at Glen Loy will be managed under minimum intervention. However, some works will still take place, such as removal of non-native regeneration or INNS; management of dangerous diseased trees (e.g. Ash infected with Chalara) and small - scale enhancement planting.

Minimum intervention areas under conifers that were identified previously in Glen Loy and Gairlochy have been revised due to the presence of larch, which must eventually be removed for plant health reasons.

# Resilience

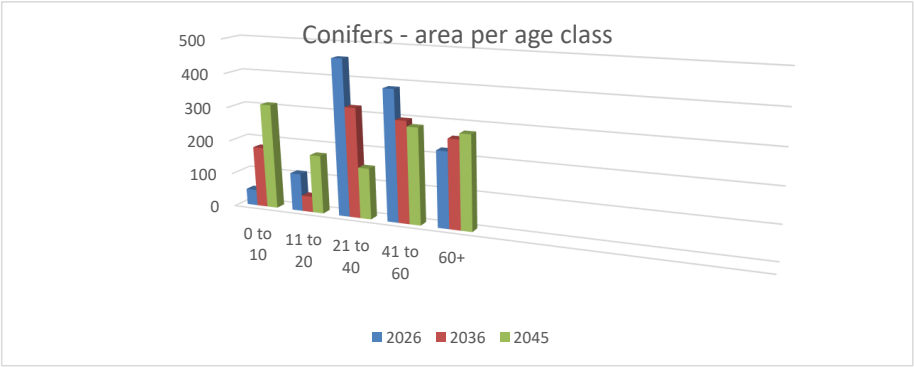
## Restructuring

The main purpose of restructuring is to create multi-purpose forests meeting a wide range of objectives including enhancing landscape, biodiversity, productivity and community/recreational opportunities whilst protecting and improving the setting of heritage features and restoring priority habitats. However, a key priority remains the production of a sustainable timber supply. Increased species and age class diversity also increases the resilience of the forest.

The aim will be to achieve a more diverse forest structure over the length of the rotation, although achieving this fully will take several rotations. In the meantime, the spread of age classes will vary widely, as mature crops are harvested and young restock establishes. By 2046, 23 % of the standing crop will be 60+, with 41% aged less than 20 years.

Opportunities to retain mature and veteran trees across the forest will be sought, through Long Term Retentions and through later felling where appropriate, although the risk of windblow and the lack of markets for larger timber limits options.

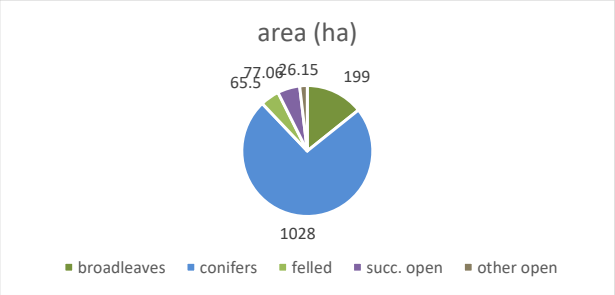
Expected changes in age structure:



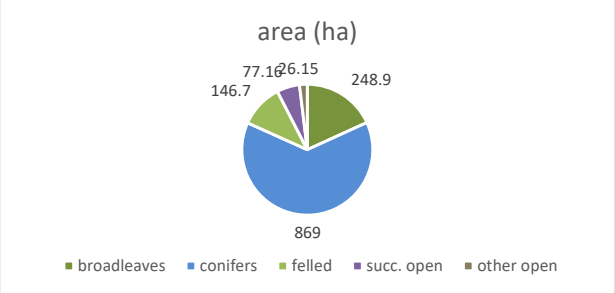

Clear fell coupes will be designed to minimise landscape impacts as much as possible although felling will be dictated by safety and technical requirements. Over the next 20 or so years, species diversity will be improved gradually, through restocking more alternative conifers where growing conditions are suitable; establishing a range of native broadleaves in riparian zones and high ecological potential PAWS and by growing productive broadleaves on lower, sheltered, accessible slopes on better soils. The reduction in Sitka spruce over the next 20 years is partly accounted for by increases in the proportion of alternative conifers and broadleaves but also due to an increase in felled coupes awaiting restocking. *See Maps 6a / 6b: Future Habitats and Species, and 6c: Restock P1 and P2.*

Changes in species composition:

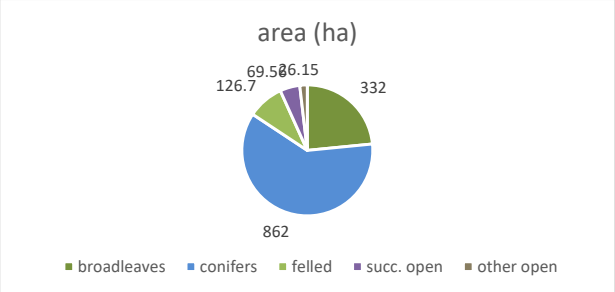
2026




2036




2046



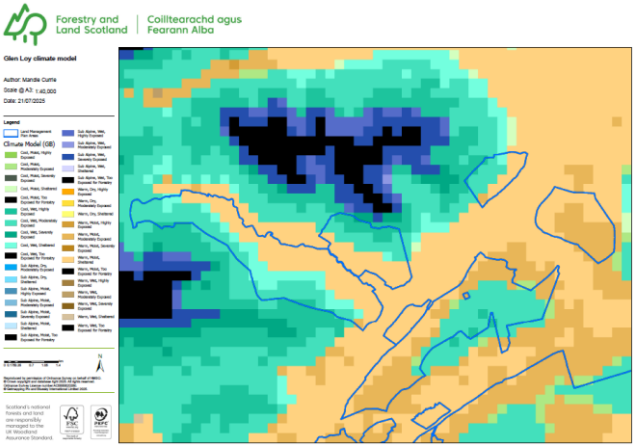

## Climate change

Climate change models suggest that the general trend will be towards a significantly warmer climate with higher winter rainfall and lower rainfall in the summer leading to a partial soil moisture deficit

during the summer months. In terms of the next rotation these figures have limited impact on species choice according to ESC models and the short rotation of SS across much of the site further reduces the risk of climatic impacts. However, this level of climatic change is likely to interact in the longer term with soil characteristics and this may have a positive impact on soil structure and widen the range of species potentially suitable for the site. There are also threats to the suitability of SS as a timber species if significant summer droughts become normal. This needs to be reviewed and our response agreed to climate change locally.

In Glen Loy, DAMS scores range from 11 – 12 on lower slopes and the river riparian area, to a maximum of 17 on the upper slopes in the northern part of the forest. Climate type ranges from warm, moist sheltered in the glen floor to cool wet sheltered and cool wet moderately exposed on upper slopes. DAMS scores are 12 – 14 through Gairlochy and climate type is cool, wet moderately exposed in most of the forest. Mucomir climate type varies between warm, moist sheltered and warm, moist moderately exposed, with DAMS scores 13 – 14.

Climate types in Glen Loy, Gairlochy and Mucomir:




## Tree Diseases and Pests

An increase in the type and scale of tree diseases and pests is increasingly impacting on species choice and forest management.

The most serious disease currently in the region is *Phytophthora ramorum* in larch and the only one subject to Statutory Plant Health Notices (SPHN). Larch is no longer a viable tree species for forestry on the west coast. An accelerated programme to remove the existing stands of larch is underway and it is no longer being planted.

There is 21.47 ha of larch in the three forest blocks, present both as discrete stands and in intimate mixtures; 11.43 ha will be removed during the lifetime of the LMP.

*Dothistroma* needle blight (DNB) affects pine species. Pine stands are being monitored and the worst affected brought forward for harvesting. Only the Alaskan Lodgepole pine has some level of resistance and Scots pine can only be planted away from the Caledonian pinewood inventory sites.

Ash Dieback is working its way through the Region; the expectation was that at least 90% of the ash will be lost. However, the disease is showing signs of reduced pathogenicity, or alternatively trees are developing resistance to the annual attacks. The high genetic variability within ash and its capacity to seed prolifically provide opportunity to select trees that are resistant to the disease. Therefore, pre-emptive felling of ash is not being undertaken in the hope of being able provide a seed source for the next rotation without further intervention. However, trees that are obviously dying will be removed where they present a safety risk to people, equipment and infrastructure.

## Fire Resilience

Due to climate change there is an increasing risk of fires across the National Forest Estate (NFE). The proposals within this plan aim to limit the risk through species and age diversity, as well as maintaining open rides. The road network will also provide a barrier for fires and enable access to areas if a fire did occur. Regular maintenance of forest road verges and drains, and focusing deadwood habitat in riparian, native and ASNW areas will further improve wildfire resilience and access.

Visitor behaviours present significant potential risk, particularly regarding campfires in woodland or on sensitive open habitats. Proactive management will require ongoing liaison with Access Officers, community, neighbours and outdoor access organisations, to promote responsible access under the Scottish Outdoor Access Code (SOAC).

FLS continues to work closely with Scottish Fire and Rescue Service (SFRS) to prevent and tackle wildfires that threaten Scotland's National Forests and Land. FLS support SFRS in their lead role for fire prevention and suppression through creating annual fire plans, maintaining a duty rota, and providing additional logistical support. FLS's primary objective is always to protect people's health, safety and wellbeing. FLS West Region has an Incident Plan in place which includes response to wildfire. Helicopter call-out forms part of the response, where required. FLS operate a Duty Officer system 24 hours a day throughout the year.

## Flood Risk

Glen Loy: The SEPA flood risk map indicates 5 – 10% risk of flooding from surface water or small watercourses, with a 10% chance of flooding from the river. The highest risk is part of the river riparian zone in the southern part of the forest, where some smaller watercourses meet the river. None of these areas are close to buildings, although the minor public road and electricity powerlines run along this area.

Mucomir: there is an up to 10% risk of flooding from surface water and a 10% risk of flooding at the North end of the forest, where water drains into the Uisge Dubh watercourse. There are no buildings in the immediate area, although the A82 runs to the East of the area.

Gairlochy: Various small watercourses run in a NW to SE direction on steep slopes and the SEPA map indicates up to 10% risk of flooding from surface water. This is restricted to a narrow riparian zone along each watercourse. Several houses and a public road are located close to these watercourses.

Clear felling operations in the forest will be managed to reduce any potential exacerbation of surface water run-off. This will be achieved by following Forest and Water Guidelines always, including protection of riparian zones with buffers; avoiding drains running directly into water courses; coupe design to reduce catchment run-off; and avoiding harvesting operations during prolonged, extreme wet weather where possible. SEPA guidelines and Confor advice and guidance will also be followed.

## Operational Access

Timber Haulage and road design within the forest area is set out in the following protocols: The-design-and-use-of-the-structural-pavement-of-unsealed-roads-Revised-2020.pdf (timbertransportforum.org.uk) and SNH's (now NatureScot) "Constructed tracks in the Scottish uplands" – revised Sept 2015.

A primary "in forest" route runs through each of the woodlands and the woods are generally well served with roading and transfer points. No new roads are planned.

The U1023 serves Glen Loy and is a consultation route. This joins the B8004, which is an agreed route (Timber Transport Forum).
Mucomir joins into a different section of the B8004 between Gairlochy and the Commando Memorial. This section is currently a Consultation Route.
Gairlochy joins straight into the B8005 to the north of Glen Loy. This is also an agreed route at this point.

FLS will liaise with Highland Council Roads Department prior to any haulage along consultation routes.

# 3.2 Establishment

(See Maps 6 a - c for Future Habitats and Species)

## Restocking

Timber production is one of the primary objectives of these woodlands and this is reflected in the species choice of conifers, while recognising secondary objectives. Commercial conifers, mainly Sitka spruce and

Scots pine, which are well-suited to the site will provide the mainstay of future restocking activities, but there is room for some diversification on current composition. It is proposed those areas that are relatively easy to access will remain predominantly productive while the more remote sites and the interfaces with the open hill will be moved towards a less intensively manage native woodland.

There are opportunities for other conifers such as Douglas fir and Western Red Cedar. However, sites suitable for these species are largely occupied by Ancient Woodland or PAWS and are likely to move back toward native species.

A range of broadleaves are also suitable for some of these sites including oak, ash and aspen and more widely birch, willow, hazel and alder. Natural vegetation types will be encouraged on those sites that are not retained for commercial purposes.

The establishment and management of productive broadleaves will be considered in coupe 53124 (P1) and possibly (eventually) in parts of 53166 (P5) and 53133 (P8) which are on the more sheltered lower slopes on better soils.

Where possible, natural regeneration of native species will restock felled coupes in PAWS along the riparian zones but some planting of local provenance native species will be required where there are no seed sources and where productive broadleaves are an objective. Species choices will be informed by existing native woodland in the local area.

All restocking prescriptions and specifications will be tailored to meet the objectives of management. Where productive conifers are planted these will be stocked with an aim of achieving 2500 stems per hectare at year five, except for some limited areas underlain with glacial features in the SSSI area at Mucomir, where a wider spacing will be used to improve visibility of the key features. These areas are indicated in map M9. Where native species are planted, the target stocking density at year five will normally be 1600 stems per hectare, unless open canopied broadleaved woodland is planned, such as in riparian zones and upper margins. Species choice in areas that are not to be restocked with the same species as the previous crop will be guided according to the local knowledge and experience, informed by Scottish Forestry's Ecological Site Classification (ESC) Decision Support System.

As a general principle, areas will be restocked 2-3 years after felling depending on the point of the year in which they are felled. Restock sites will be assessed and a decision made on cultivation depending on site conditions. FLS policy is to adopt the minimum ground preparation required to establish the crop successfully, following FLS best practice and standard operating procedures.

Ground preparation operations will be undertaken in accordance with the Forest & Water: UK Forestry Standard Guidelines (2011) and will be assessed at an early stage in recognition of their potential to impinge on adjacent ecologically sensitive areas. Where restocking is carried out adjacent to roads and rides, the plantation edges will be varied to respond to internal landscape features. As this is an operational response, the details of this will be carried out at the operational site planning level.

The Future Forest and Restocking maps (M6 a-c) identify where restocking activities will be undertaken through the duration of the LMP period and indicates the proposed species choice. In some instances, post-harvesting site inspections and subsequent restocking planning may suggest planting of an alternative species if more favourable site conditions are identified. The Tolerances table (see section

1.5) outlines the amendments for which formal Scottish Forestry approval will be required and those that do not require formal approval.
Restock compartments will be monitored and maintained throughout the establishment phase, with losses being replaced to maintain the stocking density. Monitoring methods and techniques to be followed are outlined in the FLS Operating Guidance Booklet 4 – Plant Density.

Seed zone 105 will be used for all native trees. Should this seed zone be unavailable, SF will be consulted prior to planting and agreement sought to using any adjacent seed zones or any other seed being used, where it meets the requirements of SF guidance note "Seed Sources for Planting Native Trees and Shrubs in Scotland Guidance note".

Various legacy coupes have not been established under the previous plan for a variety of reasons. These areas have been identified, assessed and included in the restocking programme, and will be monitored as the plan progresses.

Potential adjacency issues could arise, particularly in the eastern part of Glen Loy. This will be addressed by delaying harvesting until adjacent crops are a minimum 2m height and established satisfactorily to required standards.

There is adequate ATV access to most parts of the forest. Tracks within coupes will be decided on post-felling.

## Woodland Creation

The small (2.05 ha) agricultural field in coupe 53119 will be planted with 100% Douglas fir.

## Natural Regeneration

Permanent native woodland habitats have been identified for expansion and/or establishment following felling operations. Typically, these areas will include open space as well as native broadleaved woodland and Scots pine. An assessment will be made post-felling to confirm the viability of regeneration, but areas that tend to be within 75m of a viable seed source (usually of at least two different species) may been identified as suitable for natural regeneration. This is dependent on browsing pressure being reduced to ensure the successful regeneration of trees which is addressed in the Deer Management Plan. If natural regeneration is not feasible, then planting of local provenance trees will be as per previous statement.

Compartments being restocked through natural regeneration will be monitored and maintained throughout the establishment phase. Monitoring of natural regeneration will be undertaken via Stocking Density/Herbivore Impact Assessments. The monitoring for regeneration will run concurrently with any stated Fallow periods to avoid an additional 3-5 years period in advance of monitoring.

Minimum stocking densities will be 2500 per ha for conifer and 1600 per ha for broadleaves, apart from PAWS, riparian zones and woodland edges where open canopied broadleaved woodland is desired. The aim will be to achieve 50% canopy cover in riparian zones, to create optimum conditions for freshwater habitat. Should these densities not be met by year 5, a beat-up operation will be carried out to achieve the required stocking density and species or, if a further period of regeneration monitoring is proposed beyond year 5 then Scottish Forestry will be notified.

On an annual basis, Scottish Forestry will be notified of regeneration coupes that are at year 5 and the outcome or proposed future management (i.e. achieved objective/further monitoring required due to evidence of extensive regeneration/insufficient regeneration present and planting required). This report will utilise an extract of the annual regeneration monitoring programme.

## PAWS restoration

There are significant areas of Ancient Woodland, which comprise the woodlands at Coillie Phuitcheacain and the Erracht Oakwoods. Coille Phuitcheacain is also registered as part of the Caledonian pinewood Inventory, a part of which is designated as a SSSI. Collectively, these form the core of the biodiversity importance at Glen Loy. Some work has been carried out at both sites in the past to improve connectivity and remove Invasive and Non-Native Species (INNS).

There is 179.8 ha of PAWS in Glen Loy, of which, 166.4 ha is high ecological potential, for which FLS has a policy to restore to native woodland. Work will continue to restore PAWS areas of high ecological value to native woodland; Sitka spruce will be removed from 38.7 ha PAWS during the Plan period. The long term aim is to connect the two ASNW sites physically and create an ecologically functioning native woodland area. This will be carried out gradually over time through a series of thinning and clearfell operations.
Where clearfelling is taking place, natural regeneration will be the preferred method of establishing successor woodland. This will be monitored as above.

Gairlochy contains fragments of Ancient Woodland. These are largely focused on the gullies and burns and are fragmented across the site. In these areas, non-native conifers will be felled in due course and allowed to regenerate with native species.

Mucomir comprises first and second rotation conifer and contains no Ancient Woodland.

## Riparian Management

The River Loy is a major feature of Glen Loy and forms a part of the River Lochy catchment. It is fed by numerous streams that gather on both sides of the glen. Therefore, the nature of the surrounding woodland can have a major impact on the nature and character of water entering the River Lochy.

Over time, the aim is to create riparian broadleaved woodland on larger watercourses to achieve overall 50% canopy cover that creates dappled shade to benefit freshwater habitat. An open buffer will be maintained along smaller watercourses, where successional development of native broadleaves will be allowed.

Where clear-felling and thinning operations allow, there will be a presumption in favour of allowing natural regeneration of native trees to colonize the riparian corridor.

Natural regeneration of native woodland along the riparian corridors will help to alleviate flood risk by reducing the speed of run-off. There is the potential for natural regeneration of conifer species within the riparian corridor. Ideally this would all be removed but practically up to 15% conifer regeneration will be accepted in the corridor before intervention to remove it.

### Deadwood

The ecological potential for deadwood is generally found within the LMP forested area. A proportion of woodland will be managed to provide deadwood habitat where it provides the greatest environmental benefit. The highest ecological potential for deadwood is found in the established woodland within PAWS and riparian areas and within Long Term Retentions and Minimum Intervention areas. Areas of lower potential for deadwood will be found in the higher, more exposed areas of conifer crop.

Deadwood habitats provide a valuable addition to biodiversity, and provision will be made to allow both standing and fallen deadwood habitats in roughly equal proportions. Into the future, it is anticipated that deadwood will be created naturally within the long term retentions of broadleaves through natural processes. This is particularly the case in Phuiteachain and the Erracht Oakwoods. Some deadwood will be retained on harvesting sites, particularly where this can be focused on riparian corridors and gullies where dappled shade can be maintained and the risks from standing deadwood is low.

## 3.3 Open Ground

Integral open ground within the forest area delivers a significant part of the forest's ecological value. Within the LMP area this is largely focused around two different habitat types; deep peats and wetlands, specifically at Mucomir and the upper fringes of woodlands found in Glen Loy and Gairlochy.

Mucomir is an area comprising areas of brown earth soils surrounded by deep peat. Planting in the 1960s on open ground, the first rotation of conifers was variable due to localized impeded drainage on some sites. In the last iteration of the LMP some areas were felled and incorporated as part of the open space, particularly around the wetlands and open water close the county road. There is still a

significant amount of deep peat in this area. As restructuring takes place throughout Mucomir, some of these stands on deep peat will not be replaced but will instead revert to peatland edge broadleaved woodland. A small area (5.19 ha) of scenario A type soils will be left open to revert to peat bog habitat. Minimal disturbance to the peat surface will help protect designated features, landform and drainage. Commercial crop will be restocked on Scenario B type deep peat, where acceptable Yield Class is anticipated .

At Gairlochy and Glen Loy there is little deep peat, being largely centred around glen sides. However, when these plantations were initially established linear boundaries were created, typical of the period. As the forest has matured this has resulted in a high visual contrast along a linear boundary creating an unnatural structure in the landscape. Over a twenty years period attempts have been made to soften this boundary by withdrawing trees from the upper margins and redesigning coupe edges. This has worked to a degree and will continue as a design features throughout the coming decades.

## 3.4 Deer Management

(see Appendix VI, Deer Management Plan)

## 3.5 Visitor Zones and Public Access

There are formal access facilities in the form of a car park at Strone on the B8004 road between Banavie and Gairlochy. This provides a basic level of access to the forest. There are smaller, less formal car parking facilities at various points providing extensive access on foot, horse and bike via the forest road and ride network.

The site is popular with Mountain bikers. FLS liaises with Lochaber Trail Association and West Highland Wheelers, to facilitate the development of safe off- road mountain bike routes.

There are several popular recreational routes through the three forests. The Great Glen Way runs through Gairlochy. There is hill access to Druim Fada via Allt Coire an Lightuim; a circular hill route from Glen Loy up to Beinn Bhan and a through-route from Glen Loy to Fassfern, which is a recorded Right of Way (HL53). General Wade's Road runs through part of Mucomir. There are also some candidate core paths. Existing paths will be kept free from obstruction as far as is possible and where appropriate, any new ATV tracks will be designed to create circular routes, where this aligns with business need. Access to routes will be preserved during operations where possible and appropriate signage will be provided. Where possible, any new fences will include self-closing gates and appropriate measures to protect priority species.

The forest road network provides cyclists and walkers with opportunities to enjoy and explore the wider area offering spectacular views as you climb the hillside. This informal access is managed under the Scottish Outdoor Access Code (SOAC).

## 3.6 Heritage Features

There are several Monuments listed on the Highland Council Historic Environment Record and the Canmore archaeological dataset. These are:

Glen Loy
Post Medieval Farmstead at Phuiteachain https://canmore.org.uk/site/358530/puiteachan
Barre Township https://canmore.org.uk/site/140087/barre
Erracht House Cairn https://canmore.org.uk/site/277439/erracht-house-cairn

Mucomir
Site Name Glen Spean, Torr An Eas http://canmore.org.uk/site/287053
Allt Riabhach Burn Culvert http://canmore.org.uk/site/147174
Fort William - Fort Augustus - Inverness Military Road http://canmore.org.uk/site/73821

Map M10 presents the heritage features present in the forest.

These sites will be managed in accordance with the FLS Archaeology and the Historic Environment Guidance Note. The sites will be protected during operations in line with the UKFS. Prior to operations, the FLS Environment team or an appropriate Environmental Clerk of Works will ground truth the heritage features and mark the protective buffers on the ground. Mitigation measures will be input into the FLS work plan system and will form part of the pre-commencement agreements and operational plans. In any case, the LMP restocking proposals (open space) are sympathetic to both the features and their immediate environs.

In general, the LMP heritage features can be described in terms of importance, as per the FLS guidance, with the following associated protective buffers:

- National importance / Designated Historic Assets – 20m protective buffer
- Regional importance – 10m protective buffer
- Local importance / Heritage features – 5m protective buffer
- Other – no protective buffer with no action necessary.

If new sites are found these will be mapped, recorded and protected from operations. Further advice will obtained from the FLS Archaeologist if required.

West Region's Regional Historical Asset Management Plan works to ensure the historic assets' stable condition or to slow their gradual decay. The heritage features in the LMP do not feature within this plan.

## 3.7 Habitats & Species

(See Map M9 Conservation)

### Designations

The Coille Phuiteachain SSSI is one of the most structurally intact native pinewoods in Lochaber, which supports a nationally important beetle fauna. Relevant operations requiring consent include tree felling or removal of any plan or plant remains; construction or removal of fences or walls; and changes in game management and hunting practices.

The Kinlochhourn - Knoydart – Morar Wild Land area lies to the NW of Glen Loy and touches on the margins of the LMP area here.

The eastern part of Mucomir lies within the Parallel Roads of Lochaber SSSI. The known features that lie within Mucomir will be protected during operations and at restocking, through creation of open space around key features or by reducing tree density through thinning or restocking around the features. These areas are limited and are shown in Map M9. Any additional features found during operations will be recorded on FLS GIS and protected, as appropriate.

### Priority native woodland habitats

Outwith the SSSI pinewood, the key areas of Ancient Semi-Natural Woodland (ASNW) lie in the Erracht oakwoods and in riparian zones. Much of the Erracht oakwood area is PAWS, which will be restored during the Plan period.

All native woodland habitats are impacted to a greater or lesser degree by herbivores and INNS. The aim is to manage deer to sustainable levels associated with native woodland and sensitive open habitats; this should have a positive impact on the priority native woodland habitats.

With consideration to restricted resources, management of the Non-Native regeneration (NNR) and Invasive Non-Native Species (INNS) will be prioritized as follows:

- Priority 1:
- SSSI woodland & CPI core areas and associated regeneration zone
- ASNW (including the protective buffer)

- Priority 2:
- Establishing & established PAWS restoration sites
- Natural Reserves, where these are native woodland

- Priority 3:
- Semi-natural woodland out with PAWS
- Riparian areas within PAWS designations out with the restored areas.

- Priority 4:
- Riparian areas out with PAWS

As with the priority wooded areas deer, NNR and INNS are the greatest threats to these habitats. Areas that are regenerating with NNR and INNS will be identified by the FLS Environment team as well as the contract Habitat Surveys. This will identify a programme of removal operations.

There are significant areas of PAWS of high ecological potential, most of which lies close to the Erracht oakwood and along riparian zones. FLS have a clear commitment to protect, enhance and expand the existing native woodland and to restore the PAWS areas of high ecological potential to native woodland. This will necessitate removal of any non-native regeneration and a reduction in browsing pressure, which will be achieved through an enhanced cull, as outlined in the Deer Management Plan (Appendix VI).

Watercourses will require protection during forestry operations. As already described, riparian habitat will be improved either through creation of open buffers at restocking or through development of open canopy native broadleaved riparian woodland, where feasible (see section 3.9 Water).

## Open Habitats

Areas with deep peats will be gradually felled as they become mature; where low Yield Classes are expected, these will be restored to open habitats or peatland edge habitat (maps M6 a-b). No earthworks or reprofiling will take place within the SSSI area, so paleoenvironmental features, landform and drainage will not be affected.

## Species

A schedule 1 species site lies to the West of Glen Loy.

The SSSI site supports a variety of nationally scarce beetle species, including Saperda scalaris, Xylita laevigata, Dendrophagus crenatus, Diacanthous undulates, Hylecoetus dermestoides and Quedius xanthopus.

Hydroscypha spp (fungi) and Calillaria Usneicola (nationally rare lichen) have been recorded in the northern part of Glen Loy.

Other species noted in the forest include pine marten, badger, goosander, black grouse, chequered skipper butterfly and pearl bordered fritillary. There is a butterfly transect in Glen Loy (coupes 53120, 53095 and 53091).
There have been sightings of schedule 1 raptors and red squirrels in Gairlochy.

Mucomir contains a significant population Lesser Twayblade. There is evidence of barn owls and badger setts have been recorded. Parallel Roads of Lochaber features are present in the eastern part of the forest.

The FLS Environment team will maintain responsibility for survey and monitoring of protected species.

## 3.8 Invasive Species

Rhododendron ponticum is widespread and scattered in forested and open areas. Gunnera is recorded in Gairlochy. Following their identification, a plan for their initial removal will be prepared - priority will be given to PAWS areas and riparian zones - with follow-up treatment where required. Any further areas identified will be mapped as reports are received by FLS.

## 3.9 Water Supplies

The River Loy runs through much of Glen Loy forest. The overall condition of the river in 2020 was poor, due to presence of abandoned weirs that present barriers to fish migration. However, water quality is good and physical condition and freedom from invasive species are rated as high. Several watercourses run through the forest and drain into the river.

Watercourses will be protected by buffers (minimum 20 m for watercourses width 2 m and above; 10 m for < 2 m width). Riparian broadleaved woodland will be developed on larger watercourses where possible, following the guidance outlined in the Riverwoods Initiative. Further mitigation measures will include avoidance of drains directly into watercourses; deployment of silt traps where required; adopting low risk ground preparation techniques that are appropriate to the site conditions, and avoiding operations during prolonged periods of heavy rain, where feasible. Work Plans and other operational plans will make provision for suitable storage of fuel and materials and will identify suitable locations for refuelling, which will be outwith the catchment area affected. Prior to commencement, the Forestry Works Manager will prepare a Diffuse Pollution Plan, which will identify all sensitive features, waterbodies and high risk areas on site. Forest and Water Guidelines, SEPA guidance and Confor guidance will be followed always.

## Public Water Supplies

A catchment for a Scottish Water abstraction covers the whole of Gairlochy and Mucomir forests and an area in the north-eastern part of Glen Loy forest. This catchment is designated as a Drinking Water Protected Area (DWPA) under Article 7 of the Water Framework Directive, as the River Lochy supplies raw water via a series of boreholes to Camisky Wellfield Water Treatment Works (WTW).

Scottish Water (SW) have advised that forestry operations in Glen Loy will not pose a particular risk to the boreholes at Camisky, as surface runoff from the forest enters the River Loy, which meets the River Lochy downstream of the boreholes. However, the Gairlochy and Mucomir forests drain into the River Lochy within 3km upstream of the Camisky boreholes. Management here could pose a potential risk to public water supplies, as a proportion of river water is thought to be drawn into the well field from abstraction activities. Coupe sizes are minimized where feasible and harvesting will be avoided during periods of extreme wet weather as much as possible.

UK Forestry Standards, UK Forests and Water Guidelines, SEPA guides and Confor guidance will be followed always. Guidance on Forestry Activities Near SW Assets will be considered.

Harvesting operations and any alterations to drainage in the commercial forest will be notified to Scottish Water ahead of any operations commencing on site at Gairlochy and Mucomir. FLS operates a Work Plan system, where all operations, risks and mitigations are identified, discussed and signed-off before work starts.

As a minimum, a range of standard measures will be put in place, which include:

- Avoiding drainage directly into watercourses
- Creating and maintaining buffers around watercourses
- Use of silt traps during harvesting or road/ track construction and maintenance, where required
- Identification of appropriate storage areas for fuel and chemicals. Ideally, this will be outside designated or sensitive catchments but where this is unavoidable, then no fuel/ chemicals to be stored within 50 m of surface watercourses, boreholes and springs
- Refuelling outside of designated or sensitive zones. If this cannot be avoided, then this should be avoided within a 50 m buffer around surface watercourses, boreholes and springs
- Use of spill kits and minimum use of chemicals
- Minimising soil disturbance
- Roads / track maintenance to minimise erosion, run-off and pollution

A Scottish Water pipeline runs within the LMP area, alongside the forest roads for much of its length, but Scottish Water have confirmed that the pipe running within the LMP area is redundant.

*See Map 11: Water and Water Supplies*

## Private Water Supplies

Private water supplies can be abstracted from a stream, spring, well or borehole, and usually consist of a series of pipes and tanks feeding one or more properties. All known supplies within FLS land are mapped and this information is checked and fed into all worksite planning well in advance of any operations, to ensure there is no detrimental impact on the water supply. Work site Managers also undertake coupe checks prior to commencement of operations, which include checks for PWS. In addition to the individual supplies, the water catchments feeding into these abstraction points have been identified and mapped for use at an operational level where best practice Forestry and Water Guidance will be followed rigorously.

Ten Private Water Supplies (PWS) are recorded within the LMP area or are potentially impacted by operations within the area. Two are in Glen Loy; seven in Gairlochy and one in Mucomir (see separate maps).

A minimum 50 m buffer will be maintained around the abstraction point for drinking water supplies in the forest and the supply in Mucomir on open ground / water will be buffered when restock is established in the surrounding coupes. Information on PWS will be fed into the FLS work plan process to ensure that worksite planning is undertaken well in advance of forestry operations. PWS owners will be contacted prior to commencement of operations. The water catchment associated with abstraction points will be mapped for use at an operational level. Forest and Water Guidelines and Confor industry best practice on protecting water supplies during forestry activities will always be followed.

Any works that may potentially affect these supplies will be discussed with the relevant properties and plans prepared to manage the site. FLS endeavours to protect all known water supplies and any new supplies that are granted, or new data on existing supplies, will be added to the FLS database as it arises.

*See Map 11: Water and Water Supplies.*

# 3.10 Critical Success Factors

- Bringing Puiteachan SSSI into favourable condition. This will be contingent on effective deer management, removal of INNS and securing the conditions for natural regeneration of site native species
- Effective deer control to manage populations to sustainable levels. All three blocks are small areas within large DMG areas or have neighbouring estates with sporting interests, so ongoing in-migration will be challenging
- The creation of an ecological network between Puiteachan and Erracht Oakwoods. This will require a combination of clearfelling and thinning of mature conifer stands
- The enhancement of the external landscape through remodelling of the upper margins of Glen Loy

- The restoration of areas of peat bog at Mucomir. This will be achieved through continuation of the felling programme
- The restocking or recruitment of natural regeneration on the backlog of felled coupes in Glen Loy and Gairlochy. Survey will be undertaken of these coupes to establish whether natural regeneration of desirable species is likely to occur, or whether active restocking is required.