Forestry and Land Scotland
Coilltearachd agus Fearann Alba

# West Region

## Morvern Forest Land Management Plan
## (comprising Lochaline North, Lochaline South & Barr)

Plan Reference No: ******

Plan Approval Date: ******

Plan Expiry Date: ******

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.

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Forestry and Land Scotland
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# FORESTRY AND LAND SCOTLAND
## Application for Land Management Plan Approvals in Scotland

Forestry and Land Scotland - Property

| | |
|---|---|
| Region: | West |
| Woodland or property name: | Morvern Forest. |
| Nearest town, village or locality: | Lochaline |
| OS Grid reference of Main Access Point: | NM 690 473 |
| Local Authority district/unitary Authority: | Highland |
| | |

| *Areas for Approval* | *Conifer Ha* | *Broadleaf* | *Open Space* | *Other Land* | *Peatland Restoration* |
|---|---|---|---|---|---|
| *Clear felling* | *581.82* | *15.12* | *147.76* | | |
| *Restocking (including legacy RS)* | *755.05* | *203.84* | *384.17* | | *244.47* |
| *Selective Fell (CCF)* | *103.00* | *23.92* | | | |
| *Natural Regeneration* | | *144.14* | *61.86* | | |
| *Thinning* | 367.67 | 27.41 | | | |

*Note: 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 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:** ……

**NEED TO INSERT NEW CONTENTS TABLE**

# 1 Regulatory Requirements

## 1.1 Summary of Proposals

Morvern Forest extends over an area of 5,847 ha and lies at the north-western end of the Morvern peninsula (see Map 1: Location and Viewpoints). The forest stretches from the shoreline to 410m above sea level and comprises three adjacent forestry blocks including Barr, Lochaline North & Lochaline South. The LMP covers the period from 2026 to 3036. The previous LMP expired in early 2024.

The three forests are similar in general character. The impact of the plant disease *Phytophthora ramorum* has been significant across all forests and extensive areas have been felled, in response Statutory Plant Health Notices (SPHN). This has led to an accelerated felling programme, not envisaged when the previous LMP was prepared.

**Barr** is the northerly most forest within the LMP area and lies adjacent to the extensive areas of Atlantic Oakwood that are located on neighbouring land along Loch Sunart. Many of these neighbouring oakwoods are former areas of intensely worked Oak coppice, the ecological value of which is recognised by the designations as both Site of Special Scientific Interest (Sunart SSSI) and a Special Area of Conservation (Morvern Woods SAC).

Within Barr, there are areas of existing mature native broadleaves (NBL) across the site, mainly associated with burns and gullies. Areas of planted and naturally regenerating NBL have also established well in many areas. The soils are often excellent for both timber production and rapid carbon capture and the site is well roaded. The area is secluded with a lower footfall than in the other forest blocks but falls within an Area of Great Landscape Value (AGLV) that encompasses Loch Sunart to the North. The Otter Path provides a route out to the North end of the forest and the “Strava” heatmap indicates that the Otter Path is used as an element of the coastal loop that links with Drimnin to the West on the Sound of Mull. An old Public Right of Way (PROW) also follows the Barr river and links to Bunavullin in the West. This path is only lightly used but in the past, it was an important communication link on the peninsula.

The tidal race at the entrance to Loch Teacuis, the shoreline woodland cover and the solitude make this area a perfect habitat for Otter. Pine marten are also abundant in the forest.

**Lochaline North** lies on the south-eastern side of the forest and is characterised by high ground, a sweeping line of steep cliffs and sheltered corries. The soils are variable, with a mix of fertile brown earths and areas of poorer peaty rankers that are unsuitable for productive forestry. The terrain provides a sheltered environment from the prevailing westerlies; however, severe gales can produce destructive vortices when the wind crosses the cliff line. The aspect and landform create a shaded site which reduces the growing season and consequently growth rates. The area is well roaded, with some areas of steep ground constraining harvesting and management options. The old Township at Loch Doire nan Mart is a Scheduled Monument and is served by a path linking it to a car park. The Township

area is lightly grazed by ponies under an agricultural grazing let. The cliff line supports a range of interesting flora and provides nesting sites for a wide range of iconic birds. The area has a high visual impact in places for travellers heading west into Lochaline on the A884.

**Lochaline South** is the largest forest block within the LMP and comprises extensive areas of productive Sitka spruce, a rainforest species from the Pacific Coast of North America that is ideally suited to the West Coast of Scotland. There are more limited areas of mature NBL and small PAWS areas associated with burns. Being close to Lochaline the forest is well used, mainly by locals. The number of circular paths is limited and some of these options have been blocked by windblow. Large areas have been felled under SPHNs. The area has a high landscape impact when viewed from Mull and boat traffic through the Sound of Mull, although the gently rolling terrain tends to reduce visibility and negative or positive impacts from coupe design. The NBL along the burns provides forest continuity in landscape terms and anchors the forest visually to the broadleaves running along the coastline.

The plan presents the wider vision and objectives for the forest. Section 2 details the proposals for felling, restocking and forest road / track formation for the first ten years (2026 to 2036) which require approvals.

## Objectives

1. Maintain production potential of the forest, optimising the flow of conifer sawlog timber and managing suitable areas for broadleaved wood production. Use the intrinsic features and scale of the forest to maintain a critical mass of highly productive timber production
2. Protect ASNW and restore high ecological potential PAWS areas to native woodland, to create landscape and ecological resilience. Strengthen native broadleaves in riparian zones and develop a network of native broadleaved woodland that will eventually extend through Morvern and strengthen the Atlantic oakwoods linked to the Sunart SSSI and SAC
3. Continue to fell larch to reduce the risk of P. ramorum spread, in line with the FLS Larch Strategy, through the development of a coherent harvesting programme that incorporates the previous and ongoing larch removal
4. Implement timely thinning and manage LISS/ CCF where feasible and compatible with required larch removal
5. Build resilience by improving diversity of tree species and age categories, increasing the proportion of alternative conifers, as well as native broadleaves. Expand the area of productive broadleaves by bringing more broadleaved areas into management and by establishing new productive broadleaved areas
6. Improve visual amenity and landscape impact of the woodland, with a particular focus on the views from Mull and the ferries sailing through the Sound of Mull, as well as from the approach along the A884 from the North
7. Work with neighbours and partners to reduce grazing / browsing pressure from deer and livestock, to protect planted and naturally regenerating trees and to maintain priority open ground habitats in favourable condition

8. Design and manage the forest to deliver sustainable carbon management (adaptation, reduction, capture) throughout the rotation, while balancing productivity with resilience; for example, via minimum intervention areas, the use of fast growing commercial species and the management of CCF on appropriate sites
9. Recognise the importance of public access and the involvement of the community on developing the future forest design and be open to exploring options that will realise community benefits
10. Continue to work with Saving Morvern's Rainforest project in support of its objectives, notably Rhododendron control and the management of the Atlantic oakwood designated features
11. Review areas of low Yield Class and wet soils and where peat may be present in discrete areas or in mozaics; restore large areas of deep peat where possible
12. Identify Private and Public water supplies and plan for the protection of water supply sources within the forest

## 1.2 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 |
|---|---|---|---|---|
| Area in ha | 375.29 | 369.41 | 484.07 | 365.15 |
| % of area (not including other land) | 7.88 | 7.80 | 10.17 | 7.70 |
| Volume (m3) | 202,553 | 190,543 | 284,814 | 185,625 |

The species composition over the first twenty years:

| Species Group | 2026 | | 2036 | | 2046 | |
|---|---|---|---|---|---|---|
| | Area (ha) | % | Area (ha) | % | Area (ha) | % |
| Mixed Broadleaves | 274.20 | 5.76 | 284.30 | 5.97 | 601.50 | 12.64 |
| Mixed Conifers | 570.60 | 11.99 | 699.60 | 14.70 | 729.20 | 15.32 |
| Integral Open ground | 1478.63 | 31.07 | 1247.33 | 26.21 | 1075.13 | 22.59 |
| Sitka Spruce | 2435.80 | 51.18 | 2528.0 | 53.12 | 2353.40 | 49.45 |
| **Forested Area Total**** | **4759.23** | | **4759.23** | | **4759.23** | |
| Open Hill | **1088.39** | | **1088.39** | | **1088.39** | |
| **LMP area Total** | **5847.62** | | **5847.62** | | **5847.62** | |

* Included unplanted land & streamsides, archaeology, deer glades, linear features, recreational areas & quarries
** % is of Forested area, not Total area

The age class composition over the first twenty years:

| Age Class | Current – 2025 | | 2035 | | 2045 | |
|---|---|---|---|---|---|---|
| | Area (ha) | % | Area (ha) | % | Area (ha) | % |
| 0 – 10 yrs | 568.3 | 17.37 | 850.70 | 24.26 | 937.10 | 25.47 |
| 11 – 20yrs | 560.3 | 17.12 | 415.10 | 11.84 | 850.30 | 23.11 |
| 21 – 40 yrs | 434.90 | 13.29 | 750.80 | 21.41 | 924.80 | 25.14 |
| 40 – 60yrs | 1181.7 | 36.11 | 536.80 | 15.31 | 285.40 | 7.76 |
| 60+ yrs | 527 | 16.11 | 953.70 | 27.19 | 681.50 | 18.52 |
| **Total** | 3272.20 | 100 | 3507.10 | 100 | 3679.10 | 100 |

**UKWAS Summary for year 50**

| Description | % of LMP Area[1] | Location of Data |
|---|---|---|
| Restock main conifer spp | 36.25 | Forester Restock Layer |
| Restock other conifers | 11.05 | Forester Restock Layer |
| Open Space[2] | 44.0 | Forester Restock Layer |
| Native broadleaves[3] | 13.25 | Forester Restock Layer |
| Management for biodiversity as primary objective (incl NR and MI area) | 12.17 | Forester Management Layer |
| LISS | 2.3 | Forester Management Layer |
| Natural Reserves | 0.2 | Forester Management Layer |

**Notes**

1. The % will total more than 100% as the species and management categories overlap.

## Planned Roading Operations

| Planned operations<br>10 year plan period |
|---|
| Road Construction Phase 1<br>75052 – LA130 road 300 m<br>71021 – LA24 road 552 m<br>69010 – LA30 road 810 m<br><br>Road Construction Phase 2<br>75051 – LA110 road 520 m<br>75109 (to access 75106) – LA10 road 700 m<br>71017 – LA24 road 808 m |

The roads to be constructed, as detailed on Map 7, will require local authority Prior Notification (PN) approval. This will be submitted prior to construction following EIA determination approval by Conservancy, as included in this plan.

The ATV tracks to be identified and constructed post-felling will also require local authority Prior Notification (PN) approval and will likewise be submitted to the local authority.

Any unexpired PN's and EIAs are listed in Appendix IX with Approval documents.

## 1.3 Activity Summary

| 1.3.1 Table of Clearfelling (Phase 1 & 2) | | | | | |
|---|---|---|---|---|---|
| **Coupe No.** | **Total Area (Ha)** | **Species** | **Open Land by Ha** | **Restock Year** | **Monitoring Comments** |
| P1 | | | | | |
| 75052 | 126.23 | 1972 LP, 1953/6 SS | 22.36 | 27/28 | |
| 75155 | 3.49 | 1952 SS | 0.8 | 27/28 | |
| 75001 | 0.63 | 1952 SS, 1952 JL` | 0.33 | 28/29 | |
| 75080 | 2.82 | 1952 JL, 1953 SS, 1952 BE, 1952 SYC, 1952 AH, 1952 OK | 0.14 | 28/29 | |
| 75073 | 13.2 | 1995 SS, 1995 HL, 1995 DF, 1967/ 1968/ 1971 SS, 1968 HL | 4.24 | 27/28 | |
| 75121 | 42.0 | 1967 JL | 6.79 | 28/29 | |
| 75141 | 0.58 | FTR larch | 0.06 | 28/29 | |
| 75142 | 0.39 | 1950 JL | 0.08 | 28/29 | |
| 75115 | 10.77 | 1953 NS, 1953/61 SS, 1953 JL | 0.67 | 28/29 | |
| 71055 | 2.02 | 1957/ 1967/ 1975 SS, | 0.02 | 28/29 | |
| 71058 | 14.62 | 1956/7 BE, 1956 MBLs, 1956/7 S, 1957/ 75/ 83/ 2010 2010, 1956/ 57/ 2010 EL, 1956 JL, 1957 DF, 1956 WH, 1956 AH, 1956 SYC | 2.36 | 27/28 | |
| 71040 | 23.16 | 1931/ 1984/ 1988 SS, 1931 LP, 1034/ 1987/ 1993/ 1995/ 2005 SS, 1992 MBLs, 1995 BI | 4.6 | 27/28 | |
| 71027 | 20.43 | 1934/ 1990/ 1995 EL | 6.91 | 27/28 | |
| 71021 | 18.61 | 1982/ 1987/ 1989 SS; 1982 BI | 4.99 | 28/29 | |
| 69066 | 3.1 | 1958 SS, 1958 JL | 1.69 | 28/29 | |

| 1.3.1 Table of Clearfelling (Phase 1 & 2) | | | | | |
|---|---|---|---|---|---|
| 69006 | 4.41 | 1963 SS | 1.11 | 28/29 | |
| 69010 | 49.39 | 1961/2 SS, 1962 EL, 1961 HL, 1962 BLs, 1950 BLs | 3.13 | 28/29 | |
| 69019 | 39.44 | 1961/2 SS, 1962 EL, 1950/1962 BLs | 11.61 | 28/29 | |
| P2 | | | | | |
| 75106 | 32.59 | 1954/1955/1998 SS, 1955 HL, 1998 JL, 1954 LP | 7.21 | 33/34 | |
| 75051 | 40.83 | 1978/1979/1988/1998 SS, 1978/79 LP, 1988 EL | 10.83 | 33/34 | |
| 75120 | 8.45 | 1952/1971 SS, 1952 JL, 1952 NS | 0.69 | 33/34 | |
| 75089 | 11.2 | SS 1988, JL 1988 | 2.34 | 33/34 | |
| 75054 | 30.34 | 1971 SS, 1971 LP | 5.43 | 34/35 | |
| 75056 | 48.95 | 1971/2 LP, 1971/2 SS | 15.01 | 34/35 | |
| 75064 | 25.13 | 1968/71 SS, 1968 JL | 1.23 | 33/34 | |
| 75145 | 26.1 | 1967 SS | 4.07 | 33/34 | |
| 75134 | 32.62 | 1938/1961/1980/1982/2002 SS, 2002 NF, 2002 SP, 1938/2002 NS, 1961/ 1995 HL, 1938/1961 JL, 1938/ 1950 LP, 1961 SYC, 2002 BI, 2002 DF, 2002 BLs | 7.31 | 33/34 | |
| 71017 | 61.62 | 1982/ 1984/ 1988 SS, 1981 JL, 1981 HL, 1940 / 1950 BLs | 18.33 | 33/34 | |
| 69002 | 53.95 | 1966 SS, 1966 JL, 1966 LP, 1966 HL | 5.34 | 33/34 | |

| 1.3.2 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** | | | | | | | | | | | |

| 1.3.3 Table of Thinning (Phase 1 & 2) and CCF / LISS | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Coupe No.** | **Total Area (Ha)** | **Species** | **Thin-able Area (Ha)** | **Prescription for Thinning** | **Final Thinned Area (Ha)** | **Final Vol/Ha Removed** | **Monitoring Comments** |
| 71054 | 42.22 | SS (67/75) SY (57) | 42.22 | Manage as irregular shelterwood. Maximum 2.5 – 3 ha areas felled at a time to encourage regeneration. | | | |
| 75138 | 52.18 | SS (76) | 52.18 | Manage as irregular shelterwood. Maximum 2.5 – 3 ha areas felled at a time to encourage regeneration. | | | |
| 75101 | 4.76 | SS (93) | 4.76 | Manage as irregular shelterwood. Fell small groups trees to create gaps for regeneration. | | | |
| 75093 | 14.29 | NBLS (2007) | 14.29 | OK, AH, WEM, NBLs. Manage as irregular shelterwood. Assess for thinning in 2027/28. Favour best stems, particularly of OK. Accept NR of suitable species, including AH. | | | |
| 75082 | 9.63 | BI, WEM, OK, AH, WCH (2008) | 9.63 | Manage as irregular shelterwood. Assess for thinning in 2028/29. Favour best stems, particularly of OK. Accept NR of suitable species, including AH. | | | |

| **1.3.3 Table of Thinning (Phase 1 & 2) and CCF / LISS** | | | | | | | |
|---|---|---|---|---|---|---|---|
| 75118 | 3.84 | DF, NS, SS, SP, HL (2007) | 3.84 | Manage as irregular shelterwood. Remove larch during thinning. Assess for thinning in 2026/27. | | | |
| 75108 | 24.68 | SS (2008) | 24.68 | Assess for thinning 2027/28 | | | |
| 75109 | 33.10 | SS, NC, MC (2008); SS 92015) | 33.10 | Assess for thinning in 2027/28 | | | |
| 75119 | 16.31 | NS, DF (2014) | 16.31 | Assess for thinning 2029/30 | | | |
| 75075 | 33.93 | SS & JL (2012) SS, NS, EL (2012) SS & NS (2015) | 33.93 | Assess for thinning 2030/31. Remove EL and JL at thinning | | | |
| 75085 | 143.12 | SS (2015) SS, DF, MBLs (2021) | 56.0 | Part of coupe. Assess for thinning 2032/33 | | | |
| 75086 | 16.85 | NS, SS, JL (2011) | 16.85 | Assess for thinning in 2030. Remove JL at thinning | | | |
| 75100 | 19.72 | SS, NS (2010) | 19.72 | Assess for thinning in 2030 | | | |
| 75143 | 32.71 | SS, JL, NS (2008) | 32.71 | Assess for thinning in 2028/29. Remove JL at thinning. | | | |
| 75063 | 24.0 | SS (2011) | 24.0 | Assess for thinning in 2029/30 | | | |
| 71013 | 8.82 | SS, EL (2013) | 8.82 | Assess for thinning in 2031/32. Remove EL at thinning. | | | |
| 71016 | 10.36 | SS (2013) | 2.04 | Assess for thinning in 2031/32 | | | |

| 1.3.4 Table of Total Felling for Approved Plan Period | | | | |
|---|---|---|---|---|
| **Method** | **Total Area (Ha)** | **Total Volume ($M^3$)** | **Open Land by Ha** | **Comments** |
| **Clearfell** | **744.70** | **393,096** | **147.76** | |
| **Thinning** | **395.08** | **26,553** | | |
| **CCF** | | | | |
| | | **419,649** | **Grand Total of Felled Timber Proposed for Plan Period** | |

| 1.3.5 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)** | **Fell Yr** | **Plntg Year** | **Restock Method & Density (Restock/Nat Regen/Alt Area/Coppice/ Open)** | **Monitoring Comments (Including any reason not to restock)** |
| Felled | | | | | | | | | | | | | |
| 75055 | 60.38 | 36.25 | | | | | 5.23 | | 18.93 | 21/22 | 26/27 | | |
| 75065 | 32.4 | 16.91 | | 1.49 | 3.73 | 2.24 | 0.88 | | 7.27 | 21/22 | 26/27 | | |
| 75127 | 12.41 | 10.58 | | | | | 1.18 | | 0.68 | 22/23 | 26/27 | | |
| 75126 | 8.96 | 8.01 | | | | | | | 0.95 | 22/23 | 26/27 | | |
| 75111 | 9.10 | | | | | | 5.42 | | 3.61 | 21/22 | 26/27 | | |
| 75071 | 19.15 | 5.39 | | 1.6 | 4.01 | 2.41 | 0.06 | | 5.69 | 22/23 | 26/27 | | |
| 75069 | 61.51 | 40.61 | | 3.0 | 7.51 | 4.5 | 2.02 | | 3.86 | 21/22 | 26/27 | | |
| 75091 | 15.67 | | | 0.37 | 8.97 | 0.55 | 2.87 | | 1.91 | 24/25 | 26/27 | | |

| **1.3.5 Table of Restocking – including incomplete RS from previous plan** | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 75070 | 29.41 | 9.43 | | 3.0 | 5.8 | 3.92 | 0.68 | | 6.57 | 22/23 | 26/27 | | |
| 75099 | 16.98 | 13.34 | | | | 1.48 | | | 2.17 | 23/24 | 26/27 | | |
| 75132 | 7.62 | | | | | | 5.42 | | 2.24 | 22/23 | 26/27 | | |
| 75133 | 33.01 | 48.77 | | 1.3 | 3.25 | 1.95 | | | 19.76 | 24/25 | 26/27 | | |
| 75128 | 0.75 | 0.75 | | | | | | | | 21/22 | 26/27 | | |
| 71049 | 8.54 | 4.28 | | | 1.07 | | | | 3.19 | 24/25 | 26/27 | | |
| 71047 | 19.12 | 10.18 | | 0.55 | 4.21 | 0.55 | | | 3.63 | 24/25 | 26/27 | | |
| 71550 | 29.75 | 0.87 | | 0.18 | 14.34 | 0.97 | 0.18 | | 13.21 | 23/24 | 26/27 | | |
| 71043 | 3.82 | | | 0.66 | 1.97 | 0.66 | 0.05 | | 0.48 | 24/25 | 26/27 | | |
| 71033 | 15.77 | 2.25 | | | | | 0.25 | | 13.30 | 22/23 | 26/27 | | |
| 71031 | 2.75 | 2.20 | | | | | 0.24 | | 0.31 | 24/25 | 26/27 | | |
| 71050 | 1.67 | 1.22 | | | | | 0.14 | | 0.31 | 24/25 | 26/27 | | |
| 69034 | 32.30 | 19.43 | | 0.48 | 1.45 | 0.48 | 2.15 | | 8.28 | 22/23 | 26/27 | | |
| 69007 | 42.81 | | | | | | 26.14 | | 16.67 | 21/22 | 26/27 | | |
| 69015 | 67.03 | 28.32 | | 2.53 | 7.6 | 2.53 | 18.39 | | 7.68 | 24/25 | 26/27 | | |
| 69018 | 24.83 | | | | | | 19.47 | | 5.37 | 21/22 | 26/27 | | |
| 69024 | 4.46 | | | | | | 2.82 | | 1.64 | 20/21 | 26/27 | | |
| P1 | | | | | | | | | | | | | |
| 75052 | 126.23 | 70.77 | | | | | 2.66 | | 52.81 | 25/26 | 27/28 | | |
| 75155 | 3.49 | 1.7 | | | | | 0.19 | | 1.6 | 25/26 | 27/28 | | |
| 75001 | 0.63 | | | | | | | | 0.63 | 26/27 | 28/29 | | |
| 75080 | 2.82 | | | | | | 1.63 | | 1.19 | 26/27 | 28/29 | | |
| 75073 | 13.2 | | | | 8.18 | 1.75 | | | 1.38 | 25/26 | 27/28 | | |
| 75121 | 42.0 | 25.4 | | | | | | | 16.6 | 26/27 | 28/29 | | |
| 75141 | 0.58 | | | | | | | | 0.58 | 26/27 | 28/29 | | |
| 75142 | 0.39 | | | | | | | | 0.39 | 26/27 | 28/29 | | |
| 75115 | 10.77 | 3.19 | | | 7.54 | | | | 0.04 | 26/27 | 28/29 | | |

| **1.3.5 Table of Restocking – including incomplete RS from previous plan** | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 71055 | 2.02 | | | | | 0.84 | 0.54 | | 0.64 | 26/27 | 28/29 | | |
| 71058 | 14.62 | | | 0.07 | 7.34 | 3.0 | 7.49 | | 6.02 | 25/26 | 27/28 | | |
| 71040 | 23.16 | | | 2.90 | 8.71 | 2.90 | 0.43 | | 6.28 | 25/26 | 27/28 | | |
| 71027 | 20.43 | 3.93 | | | | | 8.85 | | 6.49 | 25/26 | 27/28 | | |
| 71021 | 18.61 | 13.5 | | | | | 1.5 | | 3.61 | 26/27 | 28/29 | | |
| 69066 | 3.1 | | | | | | 0.19 | | 2.91 | 26/27 | 28/29 | | |
| 69006 | 4.41 | | | | 1.04 | | 2.26 | | 1.11 | 26/27 | 28/29 | | |
| 69010 | 49.39 | | | | | | 28.6 | | 20.79 | 26/27 | 28/29 | | |
| 69019 | 39.44 | | | | | | 22.67 | | 8.63 | 26/27 | 28/29 | | |
| P2 | | | | | | | | | | | | | |
| 75106 | 32.59 | 4.38 | | 12.05 | 6.83 | 6.73 | 1.38 | | 4.43 | 31/32 | 33/34 | | |
| 75051 | 40.83 | 32.08 | | | | | | | 8.74 | 31/32 | 33/34 | | |
| 75120 | 8.45 | 7.7 | | | | | 0.29 | | 0.20 | 31/32 | 33/34 | | |
| 75089 | 11.2 | | | 3.94 | | 5.44 | 1.15 | | 0.76 | 31/32 | 33/34 | | |
| 75054 | 30.34 | 9.6 | | | 10.36 | | 1.69 | | 6.45 | 32/33 | 34/35 | | |
| 75056 | 48.95 | 22.66 | | | | | 2.5 | | 23.8 | 32/33 | 34/35 | | |
| 75064 | 25.13 | 20.4 | | | | | | | 4.3 | 31/32 | 33/34 | | |
| 75145 | 26.1 | 18.86 | | | 3.08 | | | | 4.02 | 31/32 | 33/34 | | |
| 75134 | 32.62 | | | 4.69 | | 12.27 | | | 3.81 | 31/32 | 33/34 | | |
| 71017 | 61.62 | 10.57 | | 13.82 | 2.27 | 0.76 | 14.45 | | 29.89 | 31/32 | 33/34 | | |
| 69002 | 53.95 | | | 8.62 | 15.08 | | 11.78 | | 18.36 | 31/32 | 33/34 | | |

| 1.3.6 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** |
| N/A | | | | | | | | | | | | |

| 1.3.7 Table of Civil Engineering | | | | |
|---|---|---|---|---|
| **Proposed Activity (Road/Quarry)** | **OS Grid Reference** | **Forest/Coupe** | **Description (Length/Area/Construction)** | **Monitoring Comments** |
| LA110 road | NM 6123 4838 | 75051 (was 75335) | 520 m to coupe 75051. A further 700 m road will be required to access coupes later in the cycle – beyond LMP period. | |
| LA130 Tom Mor phase 3 PR road | NM 6248 4899 | 75052 (was 75631) | 300 m through 75052 to access commercial woodland on adjacent Killundie Estate. | |
| LA10 road | NM 6117 4740 | 75109 | 700 m through 75109 to access 75106 | |
| LA24 road | NM 6740 5064 | 71021 | 1360 m road through 71021, also 71002 and 71003, to access 71017. 552 m through 71021 to be constructed in P1. 808 | |

| 1.3.7 Table of Civil Engineering | | | | |
|---|---|---|---|---|
| | | | m to access 71017 to be constructed in P2. | |
| LA30 road West Barr | NM 6134 5584 | 69010 | 810 m road through 69010, also goes through 69016 (P3) and 69060 (minimum intervention) | |

| 1.3.8 Table of Other Projects | | | | |
|---|---|---|---|---|
| **Proposed Activity** | **OS Grid Reference** | **Forest/Coupe** | **Description (Length/Area/Construction)** | **Monitoring Comments** |
| Peat restoration | NM 6287 4936 | 75052 (was 75217) | Creag Bhan Ard. 28.89 ha forest to bog restoration. To be peat probed once existing crop (1972 LP is harvested). | |
| Peat restoration | NM 6476 4995 | 75130 (was 758010 | Teanga Shamairidh. Hag restoration on 50.09 ha open ground. | |
| Peat restoration | NM 6581 5014 | 71060 (was 71536) | Aoineadh Beag, Hag restoration on 164.68 ha open ground. | |
| Scrub and regeneration removal - Barr | | 69056 (part) 69040, 69019 (part) 69018, 69030 (part) 69023, 69017, 69014, 69026, | Removal of scrub and small diameter non-native regeneration from native woodland and other | |

| 1.3.8 Table of Other Projects | | | | |
|---|---|---|---|---|
| | | 69010, 69007, 69031, 69024, 69044, 69063, 69060, 69001 (part) | priority habitat. Chainsaw/ manual. | |
| Rhododendron control - Barr | | 69001 (part) 69021, 69040 | Rhododendron removal – chemical control | |
| Scrub and regeneration removal - Lochaline | | 75111, 75049 (part) 75114, 75110, 75116 (part) 75124 | Removal of scrub and small diameter non-native regeneration from native woodland and other priority habitat across 44.12 ha. Chainsaw/ manual. | |
| Rhododendron control - Fiunary | | 75080, 75119, 75081, 75049 (part) 75126, 75289 | Rhododendron removal – chemical control – scattered sites across 15.45 ha | |
| Savary old tree nursery | | 75144 | Clearance of INNS by flail across 2.58 ha | |

## 1.4 EIA Screening Determination

# 1.5 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 on the FLS website:

Planning our land management | Forestry and Land Scotland

## 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 destabilised 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 75 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** |
| | | | | |

## 1.6 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 Summary in Section 1 provides a description of the existing land holding, and the attached maps (M1 to M3 and M8 to M18) describe the LMP area in more detail. Further information on the existing physical characteristics and background to the site that have informed this LMP can be found in Appendices I & II.

Morvern forest extends over an area of 5,847 ha and lies at the north western end of the Morvern peninsula. The forest stretches from the shoreline to 410m above sea level. The area comprises three adjacent forestry management areas including Barr, Lochaline North & Lochaline South.

The main drivers for forestry management across the LMP are currently:

- Phytophthora ramorum, with numerous local outbreaks driving an accelerated felling programme to remove Larch and associated crop
- Maintaining a critical mass of productive forestry to sequester carbon and provide economic benefits locally and nationally, and maintaining a sustainable timber supply to market
- Restoration of PAWS areas in Barr and enhancing broadleaved linkages with the emphasis on riparian zones
- Achieve a sustainable deer population that allows successful establishment and growth of young conifer and broadleaved trees

## 2.2 Plan Objectives

1. Maintain production potential of the forest, optimising the flow of conifer sawlog timber and managing suitable areas for broadleaved wood production. Use the intrinsic features and scale of the forest to maintain a critical mass of highly productive timber production
2. Protect ASNW and restore high ecological potential PAWS areas to native woodland , to create landscape and ecological resilience. Strengthen native broadleaves in riparian zones and develop a network of native broadleaved woodland that will eventually extend through Morvern and strengthen the Atlantic oakwoods linked to the Sunart SSSI and SAC
3. Continue to fell larch to reduce the risk of P. ramorum spread, in line with the FLS Larch Strategy, through the development of a coherent harvesting programme that incorporates the previous and ongoing larch removal
4. Implement timely thinning and manage LISS/ CCF where feasible and compatible with required larch removal

5. Build resilience by improving diversity of tree species and age categories, increasing the proportion of alternative conifers, as well as native broadleaves. Expand the area of productive broadleaves by bringing more broadleaved areas into management and by establishing new productive broadleaved areas
6. Improve visual amenity and landscape impact of the woodland, with a particular focus on the views from Mull and the ferries sailing through the Sound of Mull, as well as from the approach along the A884 from the North
7. Work with neighbours and partners to reduce grazing / browsing pressure from deer and livestock, to protect planted and naturally regenerating trees and to maintain priority open ground habitats in favourable condition
8. Design and manage the forest to deliver sustainable carbon management (adaptation, reduction, capture) throughout the rotation, while balancing productivity with resilience, for example, via minimum intervention areas; the use of fast growing commercial species and the management of CCF on appropriate sites
9. Recognise the importance of public access and the involvement of the community on developing the future forest design and be open to exploring options that will realise community benefits
10. Continue to work with Saving Morvern's Rainforest project in support of its objectives, notably Rhododendron control and the management of the Atlantic oakwood designated features
11. Review areas of low Yield Class and wet soils and where peat may be present in discrete areas or in mozaics; restore large areas of deep peat
12. Identify Private and Public water supplies and plan for the protection of water supply sources within the forest

## Key Issues and Challenges

The Key Issues are shown in Maps M2 a, b and c.

Large numbers of SPHNs issued in response to outbreaks of P. ramorum on Larch, which resulted in significant acceleration of, and changes to, the harvesting programme. This impacted the forest structure and has created logistical pressures for harvesting and restocking.

Restoration of Plantation on Ancient Woodland Sites (PAWS) to native Woodland was an objective under previous plans and this approach will be continued under this Land Management Plan (LMP). Wider forest restructuring also includes expansion of NBLs in suitable areas and along riparian corridors, creating biodiversity networks.

The presence of Private Water Supplies, which must be identified and protected during forestry operations and through forest design.

Forest cover and forestry operations may also impact freshwater and marine ecosystems. Measures to buffer and enhance the riparian environment for ecological reasons also benefit water quality and the resilience of water supplies.

The areas suitable for Continuous Cover Forestry (CCF) which benefit species and structural diversity, are limited due to risk of wind damage or poor access.

Herbivore grazing and pressure causing damage to young trees and limiting establishment of restock, also affecting diversity of important habitats. Sufficient access to achieve effective deer management is an issue. A priority remains to maintain the strategic deer fence and to control deer within the blocks but internal fencing may need to be considered, to facilitate the establishment of a wide range of tree species and greater floral diversity.

Maintaining public access throughout the accelerated felling and restocking required due to SPHNs and accommodating community aspirations where this is compatible with management of a commercial forest.

Minimising landscape impacts within a landscape already affected by the accelerated felling programme, where by necessity, landscape considerations were secondary to legal requirements and best disease management guidance. The options for future management and coupe design are constrained by this current forest structure and the need to work to windfirm edges. This limits the opportunities for landscaping.

Biodiversity - the forest is home to a wide range of iconic and protected species including Schedule 1 raptors. There are a wide range of designated conservation sites mainly along the margins of the forest.

Diversifying conifer species with limitations on suitable soils and other site conditions, while maintaining a critical mass of productive forest with a sustained and steady rate of annual production.

## 2.3 Analysis and concept

| Objective | Opportunity | Constraint | Concept |
|---|---|---|---|
| Protect ASNW and restore high ecological potential PAWS areas to native woodland; strengthen native broadleaves in riparian zones and develop a network of native broadleaved woodland that will eventually extend through Morvern and strengthen the Atlantic oakwoods linked to Sunart SSSI and SAC | Previous work on restructuring and expansion of NBL provides a basis for a further expansion. The good road network in Barr facilitates establishment, monitoring and deer control. Potential for productive Broadleaves to deliver multiple benefits and make use of the existing investment in roading infrastructure. A critical mass of broadleaved woodland can create a more resilient ecosystem with more scope for woodland specialists as well as edge and margin species. | The primary focus for PAWS restoration is in Barr which is also one of the most productive areas for timber. NBL restoration is dependent on good deer control across the forest and targeted areas of deer fencing. NBL rates of carbon capture are lower than faster growing conifers. While good NBL linkages and a large broadleaved area can enhance resilience, higher connectivity can allow pests, diseases and invasive species to spread more rapidly. | Restore areas of PAWS in Barr with additional areas of NBL established by both natural regeneration and planting. Consider productive broadleaves on suitable sites with good access and where planting is proposed. Retain areas of productive conifers in Barr outwith the native woodland restoration area. Extend riparian NBL buffers to enhance the water environment/water quality and to create wider landscape scale NBL linkages. |
| Continue to fell larch to reduce the risk of P. ramorum spread, in line with the FLS Larch Strategy, through the development of a coherent | Large scale felling facilitates restructuring and the creation of new windfirm edges for the following coupes. Where riparian zones are to be enhanced at restructuring then this can proceed at a landscape scale in places rather than on a more piecemeal basis. The future vulnerability of the forest to *P.ramorum* is reduced by the active | The large scale of the felling associated with past and present SPHN obligations create challenges for creating a diverse coupe structure and age class. Larch is an easy to establish productive species that has a high landscape value and is resistant | Restructure large coupes to enhance future diversity and landscape and to facilitate the creation of future coupe boundaries sympathetic to landform. Use a range of species and silvicultural management approaches to enable the age class on these large areas to be diversified as the stands |

| Objective | Opportunity | Constraint | Concept |
|---|---|---|---|
| harvesting programme that incorporates the previous and ongoing larch removal | felling programme together with the risk of high inoculum loads infecting other species such as Oak. | to deer pressure. There are no substitute species with this range of positive attributes. | mature. Look to replace Larch with other species that may create landscape diversity and have productive potential such as Norway spruce/Aspen mixes or pure Aspen and Silver birch stands. |
| Maintain production potential of the forest, optimising the flow of conifer sawlog timber and managing suitable areas for broadleaved wood production | The forest is well roaded and most areas have soils and slopes which facilitate harvesting and active management. The climate and soils across the site are generally ideal for Sitka spruce. Diversify the productive conifer element to include other conifer species on targeted sites appropriate to these species. | Some areas are unsuitable for timber production, but these areas where planted are unlikely to be harvestable except on very long rotations. | Maintain a good productive area with a future coupe structure that will provide coupe sizes that enable economic working with good road frontage.<br>Some areas of Lodgepole pine have been planted on ground that is capable of good Sitka spruce timber production. Restock these areas with Sitka spruce and increase the area of diverse conifers on the lower slopes where conditions allow.<br>Areas of peat rankers have been planted in the past in the corrie of the Township which are not suitable for timber production and are difficult to manage due to very uneven growth rates and patchy stocking. These areas could be restored to an open ground and NBL matrix without a loss of productive potential. |

| Objective | Opportunity | Constraint | Concept |
|---|---|---|---|
| Build resilience by improving diversity of tree species and age categories; increasing the proportion of alternative conifers, as well as Native broadleaves. | The large scale of recent SPHN associated felling increases the rate of restructuring but conversely narrows the age class. This reduction in age class variation created by this situation can be mitigated in the long term by using species with varying optimal felling ages/growth rates and different silvicultural systems. Areas close to Lochaline village are suitable for productive broadleaves and can contribute to the aesthetics of the village. | Species choice is constrained in places due to soils and exposure. Economic output and carbon capture can be reduced overall by the wider use of slower growing species with less valuable timber. | Target diverse species at appropriate sites which deliver multiple benefits. Work on the principle of the right tree in the right place to reduce the chance of trees failing to establish or forming stands that contain a high percentage of stressed trees. Stressed trees en-masse can create a disease risk as stressed trees are much more susceptible to disease. |
| Recognise the importance of public access and the involvement of the community In developing the future forest design and be open to exploring options that will realise community benefits | The LMP process provides an opportunity for liaison with the community on long term forest management.<br>The forest is well placed to provide raw material to local wood using businesses. | The range of management options open to the LMP may be constrained by past management and silvicultural practicalities. Funding for recreational infrastructure may not be available in terms of both initial works and maintenance. Small scale timber sales can be associated with higher admin costs and lower returns. | Where possible, open up areas and path routes that are important to the community when coupes are harvested. Consider providing circular path routes on restock areas by linking discreet road systems via ranger tracks, where there is a business need for them. Continue dialogue with the community on potential woodland crofts. Liaise with the community on opportunities to source external funding, to provide additional benefits; provide timber to local businesses. |
| Improve visual amenity and landscape impact of | Enhancing riparian zones to expand NBL cover will create a woodland structure that has intrinsic landscape value, which | To an extent, over much of Lochaline, coupe size, shape and phasing are constrained by the | Widen and enhance the NBL riparian buffers. Schedule felling and restocking to create varying age |

| Objective | Opportunity | Constraint | Concept |
|---|---|---|---|
| the woodland, with a particular focus on the views from Mull and the ferries sailing through the Sound of Mull. | follows landform more closely. Create windfirm coupe boundaries that are sympathetic to landform. Large scale coupes are appropriate on the upper slopes with coupe size scaling down at lower altitudes. | additional felling that has been required in response to SPHNs. The loss of Larch as a restocking species has a negative impact on landscape diversity as most of the remaining evergreen conifer species are indistinguishable from distance to the casual observer. Establishment of NBLs is dependent on successful deer management and reduction in browsing pressure. | classes and broaden the range of species restocked where site conditions allow, to diversify forest structure at an appropriate scale. Work towards creating large scale coupes/features on the upper slopes, with some scaling down of coupe size on lower slopes. Strengthen NBL linkages to adjacent woodland, to provide landscape continuity and to anchor the forest visually with the wider landscape. |
| Work with neighbours and partners to reduce grazing/browsing pressure from deer and livestock, to protect planted and naturally regenerating trees and to maintain priority open ground habitats in favourable condition. | The forest has a functional deer fence along the march. Deer control has been very effective in areas and has allowed softer conifers and broadleaves to become established in many places. The areas with higher deer numbers are correlated with poor access and these areas have been identified and can be ameliorated by clearfelling and enhanced access for control and extraction.<br>Some internal deer fencing in Barr could restrict deer movement in the wider forest area and enhance control opportunities. There may be scope for collaborative working on fencing and deer control if new | Deer fencing is expensive and has high maintenance costs at higher elevations. Sections of fence need repair or replacing. Access for control and extraction is constrained in places. A diverse forest structure will inevitably create areas of transitory dense crops where control is very difficult. | Maintain the march deer fence. Work with neighbours on options to share fencing costs. Improve access for stalking and extraction during the restocking process particularly in Barr. |

| Objective | Opportunity | Constraint | Concept |
|---|---|---|---|
| | woodland creation is taken forward on neighbouring land. | | |
| Implement timely thinning and manage LISS/ CCF where feasible and compatible with required larch removal | The forest is ideally suited to the production of high volumes of quality Sitka spruce timber. CCF may be possible in more sheltered areas with better soils and there is some potential for productive broadleaves. There are areas of NBL and Norway spruce with potential for Long Term Retentions or non-intervention areas. Increasing diversity often increases forest resilience. | The areas suitable for CCF are limited across the forest. Increasing diversity may lead to a reduction in overall carbon capture and economic output where slower growing alternative species to Sitka spruce are grown. | Target CCF and non-intervention areas at sites that can deliver these objectives. Consider the potential for implementing CCF in crops on appropriate sites early in the rotation. Identify areas suitable for productive broadleaves. Establish areas of productive Sitka spruce using improved stock, a minimal fallow period and good management practice to ensure rapid establishment and fast growth rates. |
| Continue to work with Saving Morvern's Rainforest project in support of its objectives, notably Rhododendron control and the management of the Atlantic oakwood designated features | Previous work on Rhododendron control in the forest has contributed towards successful management in the wider landscape. Restoration of PAWS and management of the existing ASNW at Barr, together with strengthening NBLs in riparian zones will help create linkages with neighbouring native woodland and designated features. | Herbivore browsing, presence of INNS and regeneration of competitive commercial species such as Sitka into felled areas and establishing native woodland create challenges for PAWS restoration and expansion of riparian woodland. | Liaise with neighbouring landowners to co-ordinate deer management and control of INNS. Remove regenerating non-native species from PAWS restoration areas and key riparian zones. |
| Design and manage the forest to deliver sustainable carbon | Optimise growth rates by selecting the most appropriate tree for the site. | Limited sites suitable for alternative conifer species that are necessary to increase | Select the right tree for the site, seeking to optimise growth rates and productivity while protecting and |

| Objective | Opportunity | Constraint | Concept |
|---|---|---|---|
| management (adaptation, reduction, capture) throughout the rotation, while balancing productivity with resilience. | Establish high growth commercially productive species where possible. | resilience. Need to buffer ASNW and PAWS areas. Accelerated harvesting programme limits choices in felling and restocking over the next decade. | enhancing designated sites and priority habitats. Ensure that coupe design and felling / restocking schedules are sympathetic to landform and landscape amenity. |
| Review areas of low YC and wet soils and where peat may be present in discrete areas or in mozaics; restore large areas of deep peat. | Large areas of deep peat suitable for restoration but access is limited. Alternatively, develop peatland edge broadleaved woodland. | Access issues limit opportunities for full restoration although some action such as blocking drains is possible. Small areas of peat in mosaic with other soil types are likely to be vulnerable to tree regeneration from surrounding coupes. | Identified areas of deep peat where YC is low will be left open or developed with open canopy native broadleaves to create woodland edge habitat. |
| Identify Private and Public water supplies and plan for the protection of water supply sources within the forest | A significant number of PWS abstract from within the forest or draw from a catchment within the forest. Sources can be protected with suitable buffers and catchment managed through appropriate scale of coupe size and design; by protecting watercourses with buffers and through sensitive restocking. | Large number of supplies may constrain coupe size and phases. Buffer areas for PWS and riparian zones reduce areas available for commercial production. | Protect PWS sources with minimum 50m buffer. Protect large watercourses (>2m) with 20m buffers and smaller watercourses with 10m buffers. Follow UKFS Forest and Water guidelines; SEPA best practice and Confor guidance. Design coupe shapes and size and schedule felling phases to minimise impacts on watercourses and catchments. |

Maps M2 a, b & c and M3 show the design concept in a spatial context.

# 3 LMP Proposals

## 3.1 Management

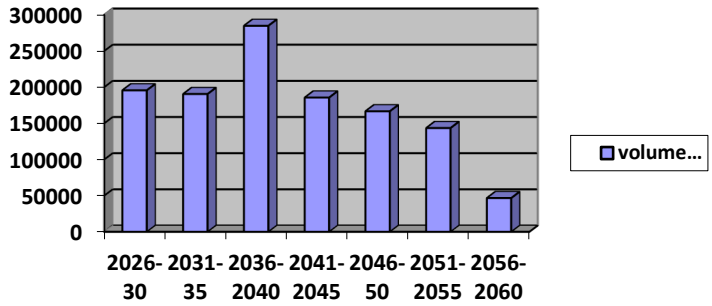
(See Maps M4 a - d and M5 for Management Proposals)
The LMP area has been extensively restructured by the SPHN felling and this both limits the options, and provides a framework for, future management decisions.

### Clear Felling

The exposed nature of much of the forest means that clear felling is the only feasible management option over much of the forest in terms of producing timber. Over most of the forest, Continuous Cover Forestry CCF is not an option.

Coupes will be designed to work with the landform as much as possible, and scale will vary with larger coupes on the upper slopes scaling to smaller coupes on the lower slopes. The large scale felling required by sequential SPHNs has made this approach problematic in places, however restructuring offers scope for building in future coupe boundaries based on these scale principles that could be adopted in the future.

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




The presumption is that no felling will take place until the neighbouring restock areas have reached 2 m.

Most of the felling will be by mechanised harvesting using brash mats with log bridges across watercourses where required. Skylining will be used on steep slopes where required.

All harvesting operations will comply with Forest and Water Guidelines, SEPA guidance and Confor advice and guidance. Pre-operational checks will be undertake by the FLS Environment team or an appropriate Environmental Clerk of Works. Operational teams will be responsible for identifying areas for machine maintenance, fuel storage, welfare and timber stacking. Appropriate buffers will be maintained around watercourses (10m for watercourses < 2m width

and 20m for watercourses > 2m) and PWS (50m); drainage direct into watercourses will be avoided and silt traps will be used where required.

## Thinning

Map M5 shows the proposed thinning areas over the next ten years.

Thinning encompasses silvicultural thinning; management of Continuous Cover Forestry (CCF); tree management in recreational areas, on roadsides and along the march boundaries; selective felling of non-native trees in native woodland and riparian areas; and respacing/removal of undesirable regeneration.

Opportunities for silvicultural thinning and CCF are limited due to exposure – there are some areas with high DAMS scores – and relatively poor soils across the three blocks.

As per Clear Fell, all felling operations (i.e. thinning, selective felling, LISS) will comply with UKFS Forest and Water guidelines; SEPA and Confor guidance 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.

## Continuous Cover Forestry (CCF)/ Low Impact Silvicultural Systems

LISS areas have been designated for thinning, together with wider areas where crop features, soils, slope, access and drainage indicate that thinning has potential. The decision to thin these areas should be taken after a full site evaluation to consider wind blow risk on a microsite basis and to ensure that operations are economically and silviculturally desirable. Where soil conditions are variable or slope is a constraint then a matrix of thinned and unthinned areas is appropriate provided thinned areas can form viable connections to facilitate operations.

## Silvicultural Thinning

Silvicultural thinning is undertaken to achieve a silvicultural objective. This may involve the management of Continuous Cover Forestry (CCF) areas or thinning of clearfell crops to improve stem quality. There is usually a significant and measurable output in terms of both timber volume and economic output. The location of these areas is determined by site access, slope, soil conditions, exposure and crop characteristics. The areas shown for this type of thinning are aspirational and implementation will depend on market conditions.

## Selective felling

Selective felling is focused on the removal of essentially problem trees that are impacting adversely on site infrastructure, recreation areas, ecologically sensitive open ground, and native woodland areas. For example, non-native conifer regeneration may be removed from along watercourses and trees felled around veteran broadleaves to protect them. Thinning can also be used to create an attractive environment to the trails and car park and open up view -points. There is usually no measurable

volume removed and felling may target small, scattered and individual trees, to achieve the thinning objective. The scale of the operations make representation of these areas on maps difficult. In general, the approach would be to remove minimum numbers of trees to achieve the objective of removing the adverse impacts arising from cover within these targeted areas.

## Natural Reserves (NR)

Natural Reserve areas comprise areas of semi-natural Native Broadleaves and small stands of mature, self-thinning Norway spruce. These areas are non-intervention areas with the potential to maintain high value wildlife habitats without management intervention. Public safety, removal of INNS and disease issues may require intervention, but the presumption is against general management intervention.

## Long Term Retentions (LTR)

Long Term Retentions are areas managed on a long rotation. Age, crop characteristics, marketability and access can all determine whether an area of forest is designated as LTR. Stands with a high biodiversity value, such as mature Norway spruce, are also classified as LTR, to provide biodiversity benefits and structural diversity. The selection of sites as LTR is usually based on the assumption of a final clear felling and usually the option of using CCF is precluded for a range of reasons including crop characteristics and site conditions.

## Minimum Intervention

The ASNW areas and most of the other native woodland areas are managed as minimum intervention. Active management in these areas will be limited but removal of non-native regeneration and INNS may be required. This will normally be limited to small diameter material but any areas likely to require removal of larger trees are identified in the thinning maps.

## Resilience

### Restructuring:

See Maps M6 a, b & c.

The LMP proposals build on the past UKFS compliant restructuring programme with the aim of creating a multi-purpose forest, as far as is possible. The aim is to meet as wide a range of objectives as possible to meet UKFS and UKWAS standards, as a minimum. This includes enhancing landscape and biodiversity; realising production and community / recreational opportunities; protecting and improving heritage; restoring habitats and increasing resilience. However, the key focus in the LMP is the continued production of a sustainable supply of softwood timber to market, with an important area of PAWS restoration in Barr.

The accelerated felling required to remove Larch areas under SPHNs had an impact on felling phases and age class distribution, however improvements to species and structural diversity remain an objective, where feasible in the current rotation.

The focus on Larch felling may mean that in the short term the area of diverse conifers may decrease, but over time this will be corrected as restocking with alternative conifers is achieved, where site conditions are suitable. Timber production and carbon sequestration are important objectives and as a result, retaining good areas of productive conifers is desirable.

ESC indicates that the range of species suitable for the site declines with altitude and exposure, with Sitka spruce being the only viable timber species across much of the upper parts of the forest.

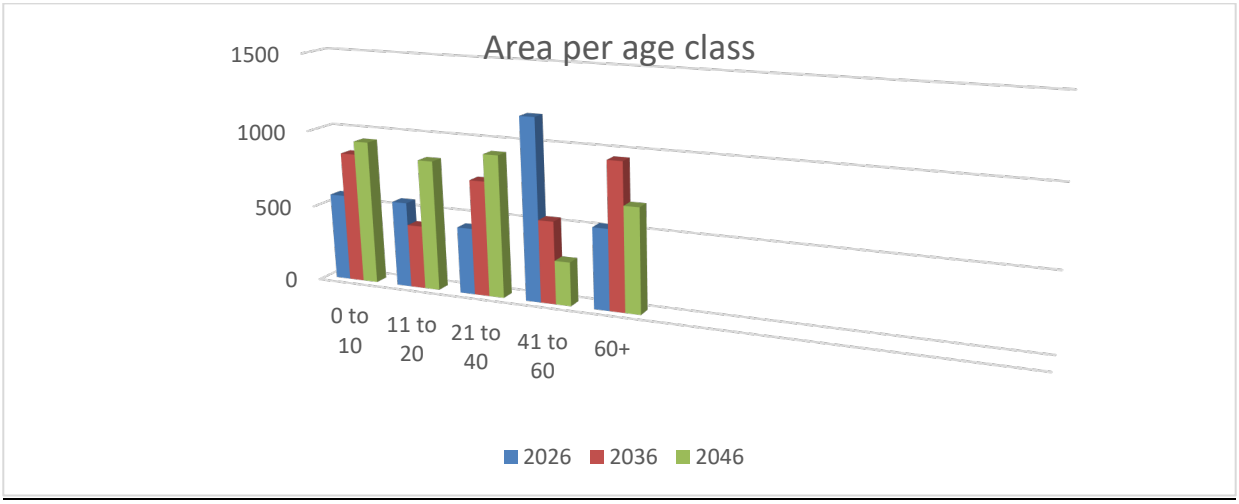
The more sheltered glens, with a good aspect on the lower slopes along riparian zones, often have richer soils due to these climatic factors but also due to the better historical growth of vegetation in these areas which has played a role in improving the soil.

Various other factors have been considered in addition to ESC data, including:

- Current actual growth rates.
- Economic value & physical volume production.
- Landscape.
- Ecology and linkages.

The impact of tree diseases has guided species choice. *Phytophthora ramorum* in Larch; Dothistroma needle blight (DNB) & Ash Dieback have all had an impact on species choice and crop management across the UK. Within the LMP area Larch and Ash would have played a key role in both landscape and production, but these species are currently unavailable as restocking options. This situation should be reviewed at intervals considering prevailing guidance.

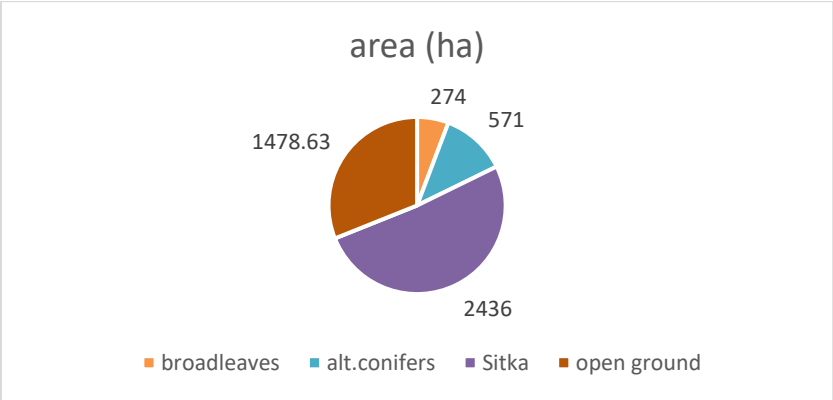
Changes in age structure:



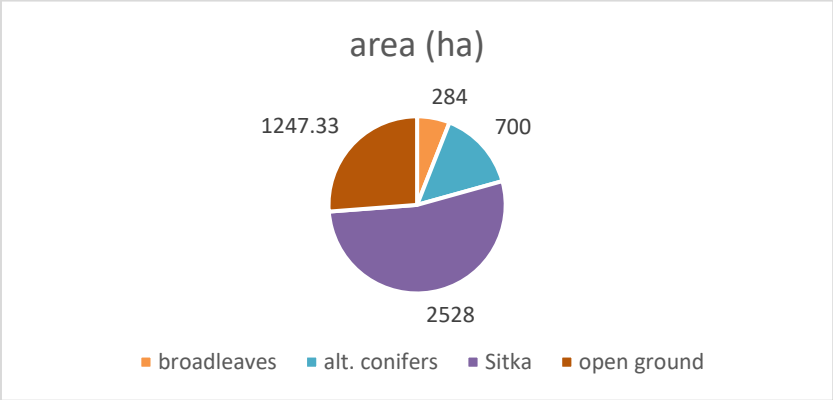

Currently, there is a predominance of trees in the 41 to 60 year age group. Gradually, this will even out over time as mature coupes are felled. The proportion of younger trees in the forest will increase over the next twenty years, enhanced by the accelerated felling and restocking necessitated by the SPHNs for phytophthora on Larch. This will in part be balanced by the retention of older stands where feasible but there will be an imbalance in age categories that can't be addressed effectively until the next rotation.

The species composition over the next twenty years will also change, with modest increases in the proportion of broadleaves and alternative conifers present, as follows:

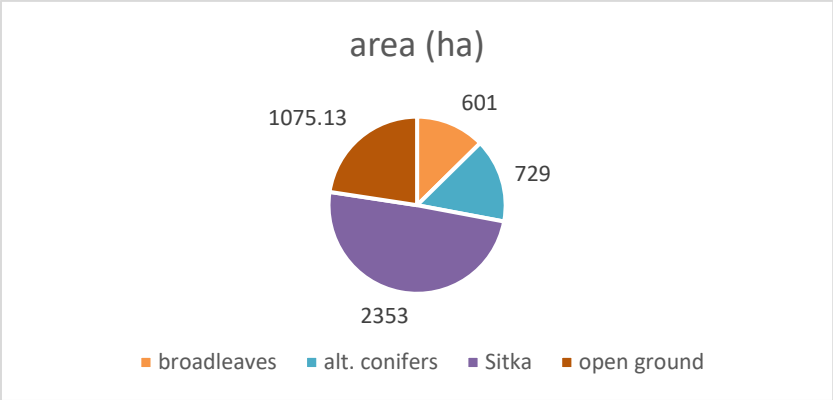
2026




2036




2046




The area of Sitka has reduced slightly, matched by an increase in broadleaves and alternative conifers. A total of 37.57 ha larch will be felled during the 10 year Plan period, with any remaining larch being

removed in subsequent years if not before. Larch will no longer be planted but for several years, the species may continue to be found as a component in natural regeneration.

Sites suitable for productive broadleaves are limited due to soil type, exposure, access and steep slopes. However, potential sites will be considered, including coupe 75093 (14.29 ha) broadleaves planted in 2007, to be managed as irregular shelterwood. Also, 69018 (24.83 ha of which 6.5 ha might support productive broadleaves) which has been felled and is awaiting restock. Other coupes (e.g. 71017 and 69050) may be considered when they are felled and restocked later in the rotation.

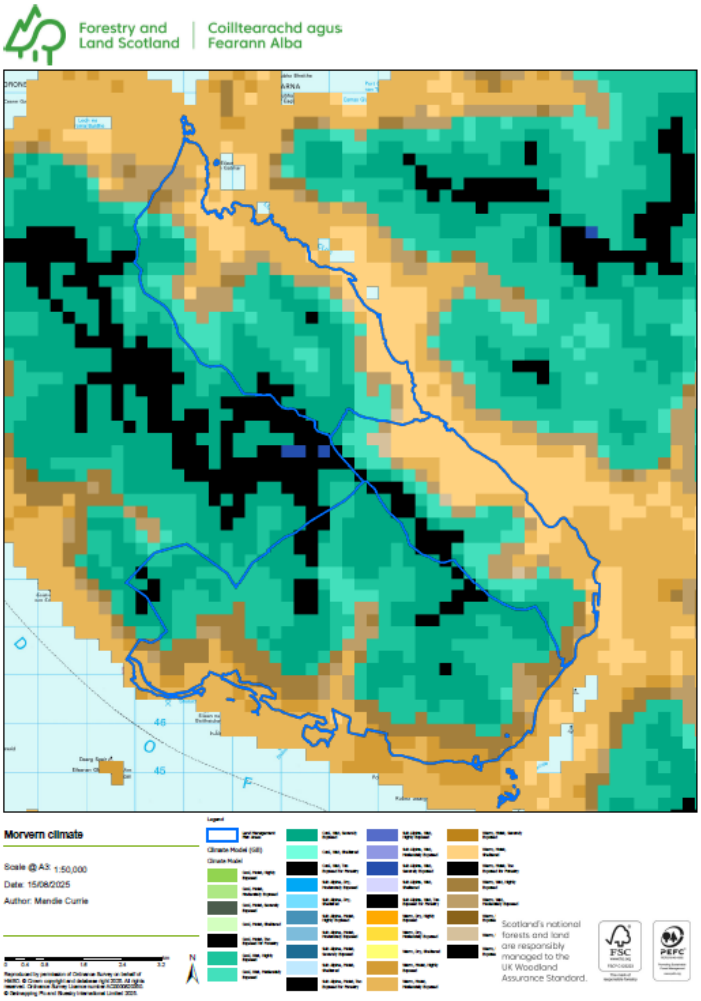
### Climate change:

Climate change models suggest that the general trend will be towards a 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. Predicting rainfall patterns in coastal areas is subject to a high level of complexity and increasing temperatures may increase rainfall.

DAMS scores range between 12 to 13 on the lower margins close to the lochs, with the NW part of the forest being most sheltered, increasing to between 21 and 24 on the high ground. Much of the forest ranges between 18 and 20. Felling coupes need to take account of windblow risk, as exposed coupes will be vulnerable to winds that funnel down through the glens and the turbulence created by the wind passing over the mountain tops and ridges.

Climate types within the current forested area mostly range from cool, moist or wet, moderately exposed to highly or severely exposed. Exceptions are the SW facing lower slopes in Lochaline, which are warm, moist or wet and moderately to highly exposed and the warm, moist sheltered slopes in the NE part of the forest close to Loch Teacuis. Areas that are too exposed for forestry are limited to the hill tops.

Climate types in Morvern:




## Tree diseases and pests

A rise in the type and scale of  tree diseases and pests impacts 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 under the current control regime. In practice, Larch has a good capacity for natural regeneration and will persist as a forest element despite control policy.  An accelerated programme to remove the existing stands of larch is underway and it is no longer being planted, which impacts landscape, ecology and tree species diversity.

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 resistance and Scots pine can only be planted away from the Caledonian pinewood inventory sites. The impacts of DNB appear to be declining based on site observations.

Ash Dieback is showing signs of having reduced pathogenicity, or alternatively trees are developing resistance to the annual attacks. The selection of resistant Ash trees could be anticipated to be rapid in tree generational terms due to the high genetic variability within Ash and its capacity to seed prolifically. Pre-emptive felling of Ash is not being undertaken in the hope of being able to identify resistant trees which would 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 LMP proposals aim to limit this risk through improved species and age diversity; the expansion of native broadleaved woodland at Barr and along riparian zones; and through the maintenance of open rides. The improvement in the forest road and track network will also provide a barrier for fires and enable access to areas should a fire occur. Retained open ground intended as fire breaks requires active vegetation management if they are to function as firebreaks. With canopy fires being a rarity in the UK, open ground retentions of unmanaged vegetation offer more scope for fires to spread and build in severity unless vegetation and fire load is actively managed and reduced.

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. Ongoing removal of larch, which has been affected significantly by Phytophthora, will minimise potential fuel load from dying and underperforming stands of conifer species.

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.

This LMP has considered the UK Forestry Standard Section: 6.2 – Forests and Climate Change with regards to mitigation and adaptation to improve forest resilience, including risks from wildfire. The LMP review process also considered the "FCPG Building wildfire resilience into forest management planning" best practice document.

## Flood risk

While the LMP occupies a large area, most of the catchments are small with a limited number of vulnerable downstream features.

SEPA flood maps indicate a moderate risk along the Abhainn Shalachain and the Savary river, although the risk is in the immediate riparian zone only and is unlikely to affect properties or roads adjacent to the forest. There is a small risk from surface water flow but again, this is restricted to the immediate riparian zones.

Blocking of culverts and wash outs of roads and culverts during periods of very high rainfall have occurred across the forest previously and were not impacted by silvilcultural operations. Prevention of these instances will be achieved through road/culvert design, and maintenance. The large felling associated with P.ramorum SPHNs could increase the annual flows in some burns, but the impacts on very high rainfall events is likely to be limited. Any road wash outs of the internal road network appear to bear this out as they have occurred downstream of areas of mature standing crop.

UKFS Forest and Water Guidelines, SEPA guidance and Confor guides will be followed always. Mitigations to protect watercourses include maintaining buffer zones along watercourses; ensuring that drains do not empty directly into watercourses and avoiding harvesting during periods of extremely wet weather, where possible.

## 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.

The forest is well roaded and contains several quarries. Further road extensions will be required in future, as the harvesting programme extends into unroaded areas. Some of the quarries have been worked out and a new quarry of circa 0.7 ha has been opened up at Savary - ( GRN: NM 644 465).

A new road is planned to reach coupe 69010 in Barr, extending to a length of 810m from the existing forest road (1735) and running through part of coupes 69060 and 69016. Other roads are planned, to reach harvesting coupes in Lochaline North and South. In total, 3.69 km new roads will be constructed during the LMP period (See Map 7).

The road network represents a long term investment in infrastructure that - in conjunction with the productive potential of the site - gives a comparative economic advantage for timber production that benefits the local and national economy. A good road network also reduces the potential for harvesting operations to adversely affect soil structure and water quality.

There is also scope for ranger tracks to create path linkages between the road networks where there is a business need, with the added benefit of creating more interesting informal circular walks. The need for any new tracks will be assessed post-harvesting.

Morvern lies within Highland Timber Transport Group area. The A884 and B849 are consultation routes, which are used to access markets in the Fort William area and beyond. Liaison with the Local Authority will be required prior to harvesting and haulage. The pier facility at Lochaline can facilitate shipping by sea to a wide range of potential markets, although this is not currently operational and is unlikely to be so until at least the latter part of 2026.

The woodland above Loch Doire nam Mart on Ardtornish Estate utilises the FLS forest road network to avoid using the unsuitable minor public road. A road extension is proposed to access landlocked commercial woodland lying on Killundie Estate to the North. See Map 7.

## 3.2 Establishment

(See Maps M6 a, b, c & d for Future Habitats and Species and Restocking in P1 & 2)

### Restocking

The LMP proposals build on the past UKFS compliant restructuring programme with the aim of creating a more diverse forest, which provides a range of benefits in addition to the main objective of sustainable timber supply.

The accelerated felling required to remove Larch areas under SPHNs had an impact on felling phases and hence on the restocking programme. However the restructuring objectives remain, to improve species diversity by increasing the proportion of alternative conifers, where site conditions are suitable; also, to strengthen the native broadleaved complement in riparian zones and through PAWS restoration.

Coupes will be restocked within five years of clearfell; normally a two – three year fallow is used. Conifers will be restocked to a minimum density of 2500 per ha net plantable area. Broadleaves will be established mainly through natural regeneration, with enhancement planting where necessary, to achieve a minimum stocking density of 1600 per ha over a 5 to 10 year period, and 1800 per ha if planted. Density will depend on woodland type. Riparian zones and upper margins will require native broadleaves at much wider spacings to achieve suitable conditions for freshwater and woodland edge habitats. Restock coupes will be monitored and maintained throughout the establishment phase, with losses being replaced to maintain the stocking density.

Seed zone 106 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".

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. 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) outline the amendments for which formal Scottish Forestry approval will be required and those that do not require formal approval.

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. Ground preparation operations will be undertaken in accordance with the Forest & Water: UK Forestry Standard Guidelines (2011) and Standard Operating Procedures 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.

All restocking operations will adhere to the following best practice:

- Forest Research decision tools:
  - ESC – to confirm desirable species suitability for a given site ensuring resilience in current climate conditions and in the worst case climate scenario in 2080.
  - FDT – using the FDT principles to diversify species and mixtures, stand structure and implement slope stability resilience
- UK Forestry Standard, in particular, biodiversity, general forestry practice, historic landscape, landscape, soils and water
- SEPA GBRs
- Guidance on Pollution Control and Management of Surface Water Run-off for Specific Forestry Activities
- FCPG25 – Managing forest operations to protect the water environment
- Confor – Guidance on Responsibilities for Environmental Protection in Forestry
- Forestry and Water Scotland – Protecting Private Water Supplies During Forestry Activities
- FC Bulletin 119 Cultivation of Soils for Forestry and FR TDJR193 – Field Guide to Soil Cultivation
- FR Hylobius Management Support System (MSS) decision tool
- FCIN038- The assessment of site characteristics as part of a management strategy to reduce damage by Hylobius
- FCPG-017 – Managing and controlling invasive rhododendron
- FCPG015 – Reducing pesticide use in forestry
- FCTG – Forest Fencing
- FLS Environment mitigation measures will be based on the following best practice:
  - FLS Practice Guide – Archaeology and the Historic Environment
  - FCS Guidance Note 31 – Forests and Wildlife Protection
  - FCS Guidance Note 32 – Forest Operations and Birds in Scottish Forests
  - Species Licensing – Guidance Notes for Application for a license for European Protected Species
  - NatureScot Guidance – Disturbance Distances in Selected Scottish Bird Species
- FCPN104 – Managing Woodland Access and Forestry Operations
- Relevant FISA safety guides will be followed, including: 103, 104, 202, 701-703, 802-806 and FISA Guidance on Managing Health and Safety in Forestry.

There are number of legacy coupes that have not been established under the previous plan due to a variety of reasons. These areas have been identified, assessed and included in the restocking programme, and will be monitored as the plan progresses.

Restocked coupes will be monitored and maintained throughout the establishment phase, with losses being replaced to maintain the stocking density. Beating up will be carried out to a minimum stocking density of 1,600 stems/ha for native species (unless open canopied woodland is planned, for example in riparian zones and upper margins/ woodland edge) and 2,500 stems/ha for commercial species by Year 5.

## Natural Regeneration

See Mapa M4 a - c.

The main target areas for natural regeneration are within the PAWS areas and the Continuous Cover Forestry (CCF) or Low Impact Silvicultural areas (LISS) as well as riparian zones. Natural regeneration also plays a role in expanding woodland across various areas of open ground and in the diversification of planted areas.

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.

Coupes being restocked through Natural Regeneration will be monitored and maintained throughout the establishment phase. Minimum stocking densities will be 2500 per ha for conifer and 1600 per ha for broadleaves (apart from riparian zones, upper margins and semi-natural native woodland areas where wider spacings are desired). 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. The monitoring for regeneration will run concurrently with any stated Fallow periods to avoid an additional 3-5 years period in advance of monitoring. The aim will be to achieve 50% canopy cover in riparian zones, to create optimum conditions for freshwater habitat.

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

Most of the PAWS areas occur in Barr; restoration of these areas, including a buffer zone, is underway and will continue in this LMP. This area will be the main focus of native woodland restoration in the

Plan area, to achieve a robust woodland. Approximately 118 ha PAWS will be restored during the 10 year Plan period.

Natural regeneration is the preferred method of PAWS restoration. The removal of Sitka spruce regeneration within PAWS and other sensitive sites is recommended, although the timing of this operation needs to be considered. In areas with potential for productive broadleaves the removal of conifer regeneration could be undertaken during early commercial thinning operations or respacing thinnings.

## Riparian Management

In Lochaline South, other areas of semi-natural woodland occur in riparian areas flowing down to the Sound of Mull. Most of these areas support mature mixed native woodland, so the objective here is to protect and expand these areas with appropriate buffers of open ground, NBL and non-invasive conifers. Natural regeneration of native woodland along the riparian corridors will help to alleviate flood risk by reducing the speed of run-off.

Open ground buffers and native broadleaves are the design option favoured for all riparian zones. Where possible, native broadleaves will be encouraged in the larger riparian zones, with the aim of achieving 50% canopy cover to create the dappled shade conditions that benefit freshwater habitat.

Many areas of open ground have features that favour natural regeneration such as eroding slopes, seed sources and reduced grazing access. The sporadic natural regeneration in these areas can contribute to biodiversity, landscape and water quality. A low density of conifer regeneration mixed with broadleaved regeneration in riparian zones may be a net positive and up to 15% conifers will be tolerated, outwith ASNW and PAWS. Avoiding a dense canopy or dominance of Sitka spruce may require intervention.

## 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.

Deadwood is likely to develop naturally in many Natural Reserve or Long Term Retention areas and within retained broadleaves. Deadwood with high ecological potential is indicated in ASNW, PAWS areas and along riparian zones. There are areas with moderate ecological potential indicated along the eastern and southern margins of Lochaline South, mainly in areas of LISS, or where there are broadleaves or older trees.

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. Areas of deadwood in clearfelled areas will be created/sustained to meet the UKWAS and UKFS.

## 3.3 Open Land

Deep peat areas will be restored or developed as peatland edge habitat following clear felling. During the Plan period, areas of hagged peat will be restored across 215.58 ha of open ground in Lochaline (North and South). An area of forest to bog restoration will be undertaken across 28.89 ha in coupe 75052 (was 75217). See Maps M2 a and M9 a.

Natural regeneration will be used for native woodland expansion and peatland edge habitat where appropriate, with enhancement planting where necessary using minimal ground preparation. Invasive regeneration will be monitored and controlled where resources are available and where this regeneration threatens the long term ecological viability of the area.

Areas will be managed as open ground long term, for biodiversity, access, deer management and other operational reasons but other areas, such as riparian zones and upper margins, will be successional. In these areas, natural regeneration will be accepted and this will be managed where required.

Management via agricultural grazing is appropriate for the existing grazing areas, however the potential for wider application on the open ground at higher elevations is very limited.

Deer management is the main practical tool for managing the open hill areas and the internal open ground, and the correct balance between habitat degradation from overgrazing and the uncontrolled expansion of woodland cover on the open hill needs to be reached. Increasing deer numbers on the open hill would be associated with adverse impacts on NBL restoration within the PAWS areas.

The characteristics of the ground flora as well as browsing and seed predation, plays a key role in determining the extent and density of the regeneration.

The steep corries in Barr and North Lochaline support small areas of important open ground habitat (U17/H10d Species rich heath and tall herb ledges/gullies). These areas persist due to the limited grazing on steep inaccessible cliffs. A potential threat to these areas comes from natural regeneration of both conifers and broadleaves. Safe access for any remedial control is clearly difficult in these areas but monitoring of regeneration may be undertaken where possible.

Other open habitats to note include extensive areas of blanket bog; small areas of fen, marsh and swamp habitat; various oligotrophic or dystrophic lochs and extensive areas of upland heathland supporting various sub-communities. See Map 9b.

## 3.4 Deer Management

(see Appendix V, Deer Management Plan)

Active and effective deer management with a commitment of resources and infrastructure, and clear objectives and goals, are essential for this plan to achieve its objectives. Maintaining and renewing the boundary deer fence is a high cost but essential item that reduces overall costs across the LMP area.

## 3.5 Visitor Zones and Public Access

Most visitor access is via the network of forest roads and ranger tracks and is managed under the Scottish Outdoor Access Code (SOAC). There is a Right of Way and a small number of core paths, which will be kept open as far as is possible, through removal of nuisance trees and vegetation. See Map M8.

Gleananan – Bun A Mhuillin (traditional name Rathad na Phuist or The Post Track) has a section on FLS ground and is subject to windblow, which is cleared to keep the route passable on the section for which FLS is responsible.

Core paths to Aoinidh Mhor (Inniemore Township) (Lochaline North) the Savary circuit, Achabeg circuit and the Aline Park circuit (Lochaline South) will be kept open.

The Barr- Doire Linn route (Eilean na Eildean trail) is no longer officially promoted and is managed as informal / SOAC access. The route will be kept open as far as resources allow but visitor numbers along this route are low.

The small visitor zone around the township at Allt an Aoinidh Mhor will be maintained; livestock grazing will help to retain a shorter grass sward. Single trees or small groups of trees will be removed when necessary to protect facilities, infrastructure and trails; to enhance the setting of features; or to maintain existing views.

Where possible, path routes will be opened up when coupes are harvested. Where ATV tracks are required for business reasons and where feasible, these will be designed to facilitate circular routes through the forest.

Also, there are various third party access routes through the forest:

- Road access to the Hydro scheme on the Barr River
- Road access to the Hydro scheme on the Abhainn Shalachain
- Timber Transport Access to Killundine (from forest road at coupe 75052)

There is a grazing lease covering the Aoinidh Mhor township and ground at Savary (Savary and Aoinidh Mhor grazing).

An agreement for a silica sand mine is in place in the SE part of Lochaline South, which presents only limited features above ground (e.g. vents).

## 3.6 Heritage Features

There are various Archaeological features across the site shown on Map 10.

The most significant are the two Designated Assets (scheduled monuments): the Loch Doire nan Mart settlement (Aoinidh Mhor) and the standing stone at Beinn Bhan.

Loch Doire nan Mart, settlement 850m WSW of SE tip (Unimore) (SM7866):

The remains of a cleared settlement as a cluster of buildings, dykes and enclosures to either side of the Allt an Aoinidh Mhor burn. This is a group of at least 22 houses and outbuildings, four substantial kale yards as well as smaller enclosures, seven corn drying kilns and a possible mill. The buildings are arranged in groups of two or three on either side of the burn which carries the name of the settlement. One of the former occupants of the settlement, Mary of Aoinidh Mhor, left a detailed account of its clearance in 1824.

No planting will take place within the scheduled monument area and a 20m buffer will be maintained around the area to protect it from forestry operations. Tree regeneration will be removed from the area as required. The area is subject to a grazing lease for horses, which help to prevent encroachment of vegetation. Monitoring will be required, to check that horses are not causing damage to any upstanding features. Historic Environment Scotland will be consulted prior to any operations within the area.

Beinn Bhan, standing stone 980m WNW of summit (SM7796):
The monument is a standing stone, probably of prehistoric date relating to Neolithic or Bronze Age ritual activity. The standing stone is approximately 1.8m in height and 0.5 x 0.6m at the base, with a pointed top. It stands in a clearing in a conifer plantation (NM 65956 49224).

The site will be monitored regularly and cleared of any encroaching vegetation, including trees, bracken and woody growth. A buffer of 20m open ground will be maintained around the site to protect it from operational activity and vegetation.

An application for scheduled monument consent (SMC) will be needed for any works affecting the monuments, such as felling or thinning trees within the scheduled areas.

There are also various other building remains and foundations, including houses; sheiling huts; settlements; peat banks; cairns; walls and turf walls; enclosures; sheepfolds and pens; field systems; corn drying kilns; burial grounds; standing stones; cup marked stones; stone rings and several spot finds, including flint microliths and a flint arrowhead.

These sites will be managed in accordance with the Forests & the Historic Environment Guidelines and will be protected during operations in line with the UKFS. If new sites are found these will be mapped and recorded and protected from operations. Buffer zones will be maintained around key features. Detailed operational workplans will be drafted nearer the period of felling and will include a full range of mitigation measures to safeguard archaeological features. Environmental Clerks of Works will prepare mitigation measures and undertake onsite monitoring of key heritage sites during harvesting and restocking operations. Additionally, the restocking proposals (open space) are sympathetic to both the features and its immediate environs. Further advice will obtained from the FLS Archaeologist and liaison with HC Archaeology if required.

West Region's Regional Historical Asset Management Plan works to ensure the historic assets' stable condition or to slow their gradual decay and details the following:
"All scrub vegetation and regenerating trees within the relevant area will be cut off at ground level using appropriate hand or power tools and removed. Bracken encroachment shall be controlled within

appropriate areas as necessary through strimming, bashing and / or chemical spraying, as appropriate. Any tree felling, harvesting or thinning work within the relevant area (and including a buffer zone of 20m around it) will be planned and organised to avoid any damage to the historic asset in the course of felling and timber extraction. Scheduled Monument Clearance will be necessary in advance of any forestry works, conservation management, consolidation or repair and development that may cause damage or disturbance within the scheduled area. No replanting will take place within the scheduled area (nor usually within a buffer zone of 20m around it)."

## 3.7 Habitats & Species

### Priority Habitat/Priority Species

See Map 10: Conservation

There are areas of the forest that are known habitat for bats, otters and raptors which are covered by the European Protected Species regulations. Prior to any harvesting operations, an appropriate Environmental Clerk of Works will undertake a pre-commencement survey in the coupe to check for the presence of any protected species and will provide monitoring during operations where required. The relevant FCS guidance notes: Wildlife and Forest. Operations 31- 35d will be adhered to if protected species are found to be present.

There are a wide range of designated conservation sites adjacent to the forest. The designations include:

- Sunart SAC
- Sunart SSSI
- Morvern Woods SAC
- Drimnin to Killundine Woods SSSI

While the area of any designated sites within the LMP area are small, the impacts on the SAC in Loch Teacuis (part of the Sunart SAC) and on freshwater habitats could potentially be high. Relevant coastal or marine habitats that could be affected include mudflats and sandflats exposed at low tide, and other intertidal sediments; sub-tidal sediments; reefs; types of annual and perennial vegetation; and salt meadows. Protected marine species found in Sunart SAC include otter, Harbour seal, Harbour porpoise and salmon. Threats and pressures from forest plantation management and use; forest plantation on open ground and road building are listed as medium level in the SAC citation. Key impacts could arise potentially from acidic run-off; siltation of watercourses during harvesting or road construction and pollution incidents, for example fuel spillages. UK Forest and Water guidelines and SEPA guidance will be followed always. In addition, the surrounding woodland SSSIs may be impacted indirectly by operations within the LMP area, such as the ongoing Rhododendron control measures.

## 3.8 Invasive Species

Rhododendron is present sporadically on site. Significant work has been undertaken previously to remove Rhododendron at Barr and a landscape scale control programme is being undertaken via the RSPB. Ongoing monitoring of INNS will be required.

## 3.9 Water Supplies & Water Quality

See Map 11 a.

### Public Water Supplies

There is a Public Water Supply catchment (a Drinking Water Protected Area) on the Allt Achadh Forsa river, covering more than 662 ha in the eastern part of Lochaline. Factors including clear fell area and timing of felling will influence the level of potential risk that pertains. There is a short section of Scottish Water (SW) pipeline running through the eastern part of Lochaline South. UK Forestry Standards, Forests and Water Guidelines and Confor guidance will be followed always.

FLS will contact SW prior to commencement of operations. 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

### Private Water Supplies

Private water supplies (PWS) 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. Abstraction points for eight PWS have been identified within the forest and ground-truthed by FLS operational teams.

All known supplies within FLS land or on neighbouring ground drawing from catchments within the forest are mapped (see Maps M11 b – d). Various PWS that abstract water from outside the forest,

draw from catchments within the forest. Water catchments have been identified and mapped for use at an operational level where best practice Forestry and Water Guidance will be followed rigorously.

A minimum 50 m buffer will be maintained around the drinking water sources in the forest. 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 water supplies and any new supplies, or new data on existing supplies, will be added to the FLS database as it arises.

See Appendix VI Private Water Supplies Checks.

## Water bodies

Catchments for the Savary River & Abhainn Shalachain drain the forest to the Sound of Mull with smaller burns draining the eastern end of the forest. To the North the Barr River flows into Loch Teacuis, and several burns drain into Loch Doire nam Mart & Loch Arienas, and ultimately into the River Aline.

Given the extent of the forested catchment, forestry operations and management can have a direct impact on water quality. The rivers affected by the LMP forest area are all at good ecological status except for the Savary River which is at moderate status. Past plantings have been too close to the water course but appropriate buffers will be created at restocking (20m for watercourses $\geq$ 2m wide and 10m for those smaller watercourses. The pH status of the river is classed as good.

The Barr River, the Savary River and Abhainn Shalachain will hold stocks of brown trout and possibly small numbers of migratory salmonids; the River Aline is a significant Salmon & Sea trout fishery. The feeder burns for the associated loch system are significant spawning areas for migratory salmonids and the resident Brown trout. Schedule 1 and 5 species are found in the area; NatureScot will be consulted prior to any operations in the vicinity of these species or their habitat.

In addition to several smaller burns, the Barr River drains directly into Loch Teacuis which is part of the Sunart SAC & SSSI. Silt from these river systems may have impacts on the marine ecosystem in the sea loch.

UK Forest and Water guidelines will be followed always. SEPA guidance and Confor advice and guidance will also be considered. Watercourses will be protected with buffers; drains will not be discharged direct to watercourses and silt traps will be used were required. Operations will avoid extreme wet weather where possible.

The landscape scale native woodland restoration in Barr, and the creation of more open ground/broadleaves along spawning burns will be beneficial. Normal forest restructuring in line with UKFS guidelines would be expected to improve the condition of the Savary River.

When felling and restocking are carried out, the Forest and Water Guidelines (2011, fifth edition) will be strictly adhered to. Timber extraction will normally avoid crossing burns or main drains, but, where necessary, each crossing point will be piped or bridged. Branches will be kept out of watercourses and trees will generally be felled away from the watercourses. When restocking, planting will normally be kept back from the watercourses, although broadleaves may be planted or regenerated to provide dappled shade and retain forest humidity.

All felling and restocking will comply with the Controlled Activities Regulations (CAR) 2011 General Binding Rules with respect to appropriate buffer strips between new planting and the watercourses and waterbodies.

## 3.10 Critical Success Factors

- Deer control - successful establishment of young trees; PAWS restoration and development of a diverse woodland and open ground habitat depend on deer control sufficient to maintain a sustainable deer population. This is also important for management of adjacent designated sites and for the expansion of Scotland's rainforest
- Water Quality and Water Supplies - while the management of water supplies during harvesting operations in line with guidance is very effective at reducing adverse impacts, the longer term resilience of water supplies and the riparian environment is greatly enhanced by restructuring to buffer the water course with permanent open ground or NBL managed as non-intervention areas
- Maintenance of a structured harvesting programme in the face of potential ongoing SPHNs for P. ramorum, which would impact on adjacency issues, successful restocking and a continuous sustainable supply of timber
- Timely construction of roads and tracks to facilitate the harvesting and forest management programmes