



Forestry and  
Land Scotland  
Coilltearachd agus  
Fearann Alba



# Gleneelg Peninsula Land Management Plan 2024 - 2034

Plan Reference No: 030-517-440

Plan Approval Date: 05/08/2024

Plan Expiry Date: 04/08/2034

**Forestry and Land Scotland - North Region**  
Tower Road, Smithton, Inverness IV2 7NL

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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Property details	
Property Name	Glenelg Peninsula
Grid Reference ( <i>main forest entrance</i> )	NG 9219 1932
Nearest town	Glenelg
Local Authority	Highland Council

Applicant's details	
Title / Forename	Mr. Christopher
Surname	Marsh
Position	Planning Forester
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Postcode	IV2 7NL

Owner's Details (if different from Applicant)	
Name	n/a
Address	n/a

1. I apply for Land Management Plan approval for the property described above and in the enclosed Land Management Plan.
2. I apply for an opinion under the terms of the Forestry (Environmental Impact Assessment) (Scotland) Regulations 2017 for ~~afforestation~~ / deforestation / roads / ~~quarries~~ as detailed in my application.
3. I confirm that the scoping, carried out and documented in the Consultation Record attached, incorporated those stakeholders which Scottish Forestry agreed must be included. Where it has not been possible to resolve specific issues associated with the plan to the satisfaction of the consultees, this is highlighted in the Consultation Record.
4. I confirm that the proposals contained in this Plan comply with the UK Forestry Standard.
5. I undertake to obtain any permissions necessary for the implementation of the approved Plan.

Signed <i>Regional Manager</i>		Signed For <i>Conservator</i>	
FLS Region	North	SF Conservancy	Highland & Islands
Date	20 <sup>th</sup> Dec 2023	Date of Approval	05/08/2024
		Date Approval Ends	04/08/2034

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*(as separate documents)*

Map 1                      Location and viewpoints

Map 2                      Key Issues and Features

Map 3                      Analysis and Concept

Map 4a and 4b            Management - *includes Planned Roads*

Map 5                      Thinning

Map 6a and 6b            Future Habitats & Species – Restocking

Map 7a and 7b            Future Habitats & Species – Long term Composition

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# Objectives and summary

## 1.1 Plan overview and objectives

### 1.1.1 Location and context (see also **Map 1**)

Forestry and Land Scotland's 'Glenelg Peninsula' landholdings extend to roughly 2,678 hectares, occupying two discrete areas or forest blocks – Ardintoul/Bernera and Moyle/Ratagan/Leachachan - situated on the west coast of Scotland with shores onto the Kylerhea Narrows (with Skye beyond) to the west, Loch Alsh to the north and Loch Duich to the east.

A more detailed description of the Land Management Plan (LMP) area, its context, constituent habitats, flora and fauna is provided in **Appendix 1**.

### 1.1.2 The role of the Land Management Plan

A Land Management Plan (LMP) summarises the objectives of, and intended proposals for, management of a Forestry and Land Scotland landholding – presented along with underpinning rationale. It outlines forest and open ground management intentions for the next 20 years, with the first 10 years' plans described in detail, including any requirement for new or modified management infrastructure (e.g. quarries, roading, fencing etc.). The Land Management Plan document is used to:

- explain to stakeholders and communities how FLS intend to implement Scottish Government and FLS commitments;
- inform the timely scheduling of FLS' resources to deliver the Plan's programme of work;
- gain regulatory approval from Scottish Forestry as a 'long term forest plan'; and
- meet regulatory requirements for management planning documentation.

An LMP is reviewed after five years to ensure initial objectives are still appropriate in light of any change in conditions or management regulation. Management operations, both planned and completed, are also reviewed at this stage to ensure they remain pertinent to meeting stated objectives. There is also a review of the LMP's critical success factors (section 1.1.5).

To complement this overarching and strategic Plan, all consequent management operations are preceded by a more detailed and focused operational planning process. This is enshrined in FLS' Work Plan process which ensures relevant FLS teams (i.e. planners, delivery foresters/staff, visitor services, civil engineers and environment/conservation staff etc.) provide and share detailed information relevant to the delivery of a specific, planned operation. The Forest Works Manager is then able to deliver operations in light of the fullest contemporary information or else make changes, or employ mitigation measures informed by this wider context, to minimise the potential for negative impacts on the natural environment, its visitors, or other stated objectives of the LMP and its implementation.

This Plan revises and replaces the 2013 Glenelg Peninsula Forest Design Plan which was approved 1<sup>st</sup> March 2013 and had a conventional approval period of ten years – expiring 28<sup>th</sup> February 2023.

### 1.1.3 Long term vision

#### 10-year vision

A continuing programme of woodland restructuring across the afforested flanks of Loch Duich (i.e. the Ratagan and Leachachan forests) has cleared a further 87 ha of mature conifers from this area's steepest, most inaccessible terrain ensuring the lifeline public road and neighbouring settlements remain protected in an increasingly variable climate. The follow-on programme of restocking and managed native woodland regeneration across these slopes, started in 2020, is now becoming more conspicuous with new broad corridors of native woodland bounding permanent watercourses, public and forest roads and settlement hinterland. Interior views of the forest (gained from the bisecting public road and internal contoured forest roads) will improve with more naturally sympathetic, deciduous woodland bounding these access corridors although some current panoramic external views – afforded by recent and extensive mature plantation clearfell - will begin to disappear as new woodland re-establishes (and anchors soils) across these slopes.

Views towards this flank from external vantage points will begin to discern this re-vegetation process (i.e. re-established restocked and regenerated woodland) on the currently expansive and grassy clear-felled slopes. These vantage points are beginning to witness development of a forest composition better responding to landform and natural features i.e. sinuous riparian woodland following watercourses, naturalised treelines, broad belts of amenity and conservation woodland bounding residential properties and coastal margins, with smaller discrete productive woodland areas with less abrupt native/non-native woodland demarcation.

Similarly sequential clearfelling of maturing Sitka spruce plantation in Moyle forest is beginning to disrupt and broaden the visual (species and age) uniformity of this forest. New riparian habitat creation (largely by planting) is fragmenting the future forest for improving environmental value and – along with a broader palette of site- and climate-appropriate non-native tree species planted in restocked productive woodland areas – is introducing resilience through a wider complement of habitat types, extent with broader age and species variety in them.

Within the Ardintoul/Bernera block, the last ten years has clear-felled large swathes of non-native conifer plantation from (visible) glen floor and (less visible) upland plateau areas with follow-on drain blocking and furrow smoothing operations to initiate peatland restoration. The large clearfell coupes of the previous Plan period are now restocked and establishing but with productive woodland consolidated on practically manageable and accessible mid-contour slopes. The entire coastal woodland, from Glenelg's ferry slip in the west to Totaig's old ferry slip in the east, will have been cleared of (almost all) non-native productive woodland - reinstating and expanding this natural resource on the edge of marine-designated sea lochs Duich and Alsh as well as providing a more naturalised vista from long distance vantage points to the north (mainland Balmacara, Auchtertyre, Dornie and main A87 corridor) and Skye (FLS' wildlife hide, car park and picnic site, Kylerhea). Only two small and discrete stands of non-native spruce trees remain here as intended Natural Reserve ostensibly for raptor roosting/breeding opportunities and may already have seasonal occupancy by the regionally-expanding white-tailed eagle population.

The capacity of native wood- and heath-land habitat, and its component flora and fauna, to withstand the predicted increased variability and extremes in climatic conditions is improving due to the flourishing, expanding and increasingly integrated suite of native habitats. Programmes of routine 'cleaning' of non-native tree and invasive non-native shrub regeneration from areas of establishing native woodland are continuing as an important aspect of ongoing management to secure this ecological integrity and resilience.

The forest continues to be valued and enjoyed by locals and visitors alike with visitor experience improving over time as - where previously there was extensive clear-felled and fallowing ground - native woodland establishment and growth is beginning to soften the landscape and clothe it in vegetation more appropriate to the location and sympathetic to broader landscape character.

### 50-year vision

The composition of woodland across the Loch Duich flank is dominated by a broad, interconnected 'template' of native woodland within which smaller discrete areas of productive conifers is now coming to maturity once more for felling/timber export. Complex felling of non-natives across the very steep and rocky PAWS treeline zones above Ratagan - which left a legacy of sporadic and discontinuous non-native tree regeneration - has been the subject of many decades of non-native removal however this effort is reducing as the regenerating seedbed is exhausted and the amount of remnant seed-bearing non-natives is dwindling. Conversely, the more fertile Moyle forest will have a predominantly productive woodland template but interspersed and bisected by native woodland. This forest is now yielding timber from productive trees planted as part of the restocking programme proposed within this Plan. The creation of new riparian native woodland corridors, coupled with an increased incorporation of new productive, deciduous woodland into restocking prescriptions over the last five decades is resulting in a greater abundance and extent of insect, bird, amphibian and small mammal occupancy as well as a fuller suite of semi-natural flora and its constituent lower plant interest. The dappled shade and structural diversity of riparian vegetation is also controlling excessive peaks and troughs in stream water temperature that the more variable climate would otherwise create.

Restored peatland areas are flourishing, despite longer warmer and drier summers, on account of their scale, integrity and management to safeguard their water retention (i.e. drain blocking, control of peat haggling). The management effort required to control regeneration of non-native trees across these areas has reduced to infrequent and low level interventions as the non-native seedbed is exhausted. In all semi-natural woodland, and restoring ancient woodland previously occupied by non-native plantation, there are now few (if any) remaining seed-bearing non-natives trees, and the maturing native woodland is itself now a moderating influence against any future incursion of non-native tree and shrub species from external sources e.g. neighbouring, maturing productive non-native woodland.

All afforested areas sit naturally within the wider landscape with a full and healthy complement of locally characteristic, ecologically rich, self-perpetuating native wood- and heath land habitats. Threshold car parks, trails, interpretation and facilities continue to be maintained, offering visitors the opportunity to access, experience, understand and enjoy the unique setting and qualities of the peninsula.

### 1.1.4 Management objectives

The management of Scotland's National Forests and Lands by Forestry and Land Scotland (FLS) is guided by the FLS Corporate Plan (2019), the FLS National Spatial Overview (2016) and the Scottish Forestry Strategy (2019) in compliance with the UK Woodland Assurance Standard and UK Forestry Standard (see **Appendix 7 – Key policies and publications**). The specific objectives of this new Plan are derived from consideration of the Key Features, Issues and Challenges summarised and represented in **Map 2**, community and wider stakeholder feedback (see **Appendix 2 – Consultation Record**) and a review of historic management to date. This process of considering and defining management objectives is described in Section 3 – *Analysis and Concept* and represented in the respective **Maps 3a** and **3b**.

- **Consolidate future productive woodland onto the most suitable, practically managed terrain** – felling/restructuring focus on vulnerable slopes and plantations on ancient woodland sites.
- **Conserve, expand and connect native woodland habitat** – *focused on ancient semi-natural woodland remnant expansion, riparian corridor initiation and extension and phased PAWS restoration.*
- **Protect and improve water quality and associated riparian and loch-side habitat** – *an important contributory factor to maintaining favourable status of designated Lochs Duich and Alsh*
- **Increase the resilience of the landholding to withstand the anticipated impacts of climate change** – *including productive forests, semi-natural habitats, underlying soil/peat, terrain/slopes and waterbodies.*
- **Improve the scenic value of the landholding** - *to achieve a more sympathetic and integrated fit with broader landscape character.*
- **Support and maintain public access to the landholding.**

### 1.1.5 Critical success factors

- Deliver the programme of non-native felling  
*Monitored by adherence to felling schedule outlined in section 2.2. Assessed by comparison of tree species and habitat data at Plan outset with those datasets at mid-term review and full Plan revision in 2032.*
- Protect naturally regenerating and restocked native trees from levels of deer browsing likely to significantly (and adversely) impact successful regeneration and establishment of native woodland.  
*Routine monitoring of PAWS and regenerating fallow sites to assess browsing impacts and, by association, the effectiveness of - and any need to alter or redirect - requisite deer control effort.*
- Undertake restocking in a timely manner where anticipated natural regeneration of native trees is limited and where the competitive threat of non-native seedbed regeneration is high.  
*Monitored by adherence to restocking schedule outlined in section 2.5 and routine stocking density assessment of restocked and regenerating land.*
- Implement ‘cleaning’ interventions routinely to remove regenerating and establishing non-native trees in areas of establishing native woodland and restoring peatland.  
*Routine stocking density assessment undertaken across regenerating and establishing restocked areas will report on non-native tree recruitment, informing a prioritised cleaning programme.*
- Designated sites are maintained or improved.  
*Controls and mitigation are identified and recorded through rigorous Work Plan process - ensuring adherence to UKFS in operational delivery. Routine (third party) monitoring of designated sites and contiguous water bodies will highlight changes, and trends, in condition allowing consideration of potential causal link(s) between forest operations and observed change in environmental quality.*
- Engineering works are carefully planned and delivered to provide access infrastructure allowing felling, restocking, peatland and environment programmes including improvement of designated sites.  
*Proposed civil engineering and forestry works are defined and controlled through the Work Plan process and ultimately delivered through UKWAS- and UKFS-compliant FLS work practices.*
- Invasive non-native species (INNS) control measures are implemented frequently to minimise their presence, and capacity to spread, within the LMP area and into the wider landscape.  
*INNS presence monitored through routine PAWS survey and also reported through cyclical stocking density assessments on early regenerating, or establishing restocked, native woodland areas.*

## 1.2 Summary of planned operations

Table 1

Summary of operations over the Plan period	
Clear felling (gross)	446.2 ha
Thinning (potential area)	21.4 ha
Restocking (net)	421.3 ha
Afforestation	0 ha
Deforestation	75.0 ha
Forest roads (new)	3,660 m
Forestry quarries (extension)	0.3 ha

This Land Management Plan was produced in accordance with government, forestry industry standards and guidance as well as recent research outputs. A full list of current policies, standards and guidance used in the preparation and delivery of FLS Land Management Plans can be found in **Appendix 7**. The forest will be managed in compliance with the UK Woodland Assurance Standard (UKWAS) – the standard endorsed in the UK by the Forest Stewardship Council (FSC) and the Programme for the Endorsement of Forest Certification (PEFC). Forestry and Land Scotland is independently audited to ensure that they are delivering sustainable forest management to this Standard.

## 2 Management Proposals – regulatory requirements

### 2.1 Designated sites/areas

The Plan area forms part of, includes, or is covered by the following designations and significant features:-

Table 2

Designations and significant features		
Feature type	Present	Note
Site of Special Scientific Interest	No	
National Nature Reserve	No	
Special Protection Area (SPA)	No	<i>Adjacent:</i> Lochs Duich, Long and Alsh Marine Protected Area
Special Area of Conservation (SAC)	No	<i>Adjacent:</i> Lochs Duich, Long and Alsh Reefs SAC <i>Adjacent:</i> Inner Hebrides and the Minches SAC
World Heritage Site	No	
<b>Scheduled Ancient Monument (SAM)</b>	<b>Yes</b>	Caisteal Grugaig broch, Totaig
<b>National Scenic Area (NSA)</b>	<b>Yes (partial)</b>	<i>Kintail NSA. Landscape character types (LCTs) within the environs of the LMP area: <u>Rugged Coastal Hills</u> and <u>Rugged Massif</u> – and bounded by <u>Interlocking Sweeping Peaks</u> beyond the LMP’s south-eastern border.</i>
National Park	No	
<b>Deep peat (&gt;50 cm thickness)</b>	<b>Yes</b>	Significant areas of afforested peat with the potential for restoration/deforestation have been surveyed for peat depths. These areas are illustrated on <b>Map 9</b> and restoration proposals outlined in section 2.6 and <b>Appendix 6</b> .
Tree Preservation Order	No	
<b>Biosphere reserve</b>	<b>Yes</b>	Wester Ross
Local Landscape Area	No	Wild Land Area <i>Kinlochhourn-Knoydart-Morar</i> (106,504 ha) occupies ground outwith the LMP area: to the south and south-east of FLS’ Ratagan and Moyle forest blocks ( <i>see Map 10 for location/proximity to the LMP area</i> )
<b>Ancient woodland</b>	<b>Yes</b>	Nature Conservancy Council’s Inventories of Ancient, Long-established and Semi-natural woodlands includes the following ancient woodland sites in the LMP area (identified by OS Grid Square then <i>Site ID/Wood ID</i> ):- <b>NG82</b> – 7/1812 Allt Ghortein nan Meann; 2/1801 Coill’ a’ Ghurrabain; 12/1798 Creag Choinnich; 13/1800 Allt na Dalach; 14/1802 & 1804 Allt Easan Mhic Gorraidh; 16/1788, 1792, 1793, 1795 Ardintoul Wood; 22/1786 Coille na Totaig; 20/1789 Faire Donn; 25/1806 & 1803 and 26/1805 Leachachan; 27/1808 Allt na Muice. <b>NG91</b> - .24/2234 Allt Ratagain; 21/2230 & 22/2231 & 23/2232 Allt na h-Inghinn tributaries; 19/1731 Moyle/Glenmore River.
Acid sensitive catchment	No	
Drinking Water Protected Area (Surface)	No	

**Map 2** illustrates the location of all designated areas and significant features apart from Landscape Character Types (see **Map 10** – Landscape Context).

## 2.2 Proposed clear felling

Areas (coupes) proposed for clear felling within the period of the Plan are identified as either Phase 1 (to be carried out within the first five years of the Plan) or Phase 2 (in the second five years). These specific coupes are also identified on the Management maps (**Map 4a** and **4b**) which also display all areas of felling anticipated over the next twenty five years, colour-coded in five-yearly increments.

Table 3

Clearfell summary by phase and coupe number			
Phase	Coupe number	Fell year	Gross area (ha)
1	08027	2024/25	35.8
1	08002	2024/25	45.1
1	07104	2024/25	9.0
1	07013	2024/25	35.7
1	08004	2025/26	11.4
1	08001	2025/26	7.4
1	08008	2025/26	37.0
1	08016	2025/26	53.5
1	07020	2025/26	33.0
1	08019	2026/27	39.7
1	07820	2027/28	11.4
2	08005	2029/30	22.1
2	08007	2029/30	11.3
2	07169	2030/31	30.5
2	08018	2030/31	29.2
2	07361	2031/32	16.6
2	07015	2031/32	17.5
<b>Total</b>			<b>446.2</b>



Table 4

Clearfell by species												
Coupe Number	Fell Year	Net Area (ha) by main species (or Mixed Conifers, Mixed Broadleaves)										Coupe Total (net)
		DF	EL	HL	JL	LP	NS	SP	SS	MC	MB	
08027	2024/25								35.8			35.8
08002	2024/25				4.0	22.7			10.8			37.5
07104	2024/25			0.6	2.1		4.2		1.9			8.8
07013	2024/25								35.7			35.7
08004	2025/26			0.8		2.5			5.5			8.8
08001	2025/26					2.0			2.9			4.9
08008	2025/26					24.3			1.6			25.9
08016	2025/26			0.6		20.8			6.2			27.6
07020	2025/26			1.8	6.2		0.2		21.2			29.4
08019	2026/27					24.4			4.8			29.2
07820	2027/28				0.9		1.4	0.5	7.6			10.4
08005	2029/30					12			9.2			21.2
08007	2029/30								9.6			9.6
07169	2030/31		0.1		1.2				28.5			29.8
08018	2030/31			0.8	1.3	0.5			25.5	0.3		28.4
07361	2031/32				2.5				14			16.5
07015	2031/32	0.8				0.3			16			17.1
<b>Plan Area Total</b>		<b>0.8</b>	<b>0.1</b>	<b>4.6</b>	<b>18.2</b>	<b>109.5</b>	<b>5.8</b>	<b>0.5</b>	<b>236.8</b>	<b>0.3</b>	<b>0</b>	<b>376.6</b>

**NB:** Table 3 shows gross coupe areas (i.e. inclusive of integral areas of open ground). Table 4 shows the net area of individual tree species per coupe.

Table 5

Scale of proposed felling											
Total LMP Area			2,677.5 ha								
Felling	Phase 1	%	Phase 2	%	Phase 3	%	Phase 4	%	Long Term Retention		%
Net Area (ha)	254	9.5	122.6	4.6	171.6	6.4	28.4	1.1	4.9		0.2

**NB:** The area of proposed Long Term Retention felling is also included in the Phase 1 felling area total.

## 2.3 Proposed thinning

Thinning coupe 07903 is for selective ‘halo’ felling of neighbouring high density 20-30 year old Sitka spruce to conserve PAWS semi-natural remnants until final clearfelling (phase 5) allows full PAWS restoration to begin. Thinning coupe 08902 - on coastal slopes at Ardintoul – has some limited and scattered mid-1980’s non-native conifers (30% of gross coupe area) which now represent a seeding and regeneration risk in an area where native woodland regeneration is being encouraged and the Future Habitat objective is for native woodland restoration along this entire coastline. Some of this proposed fell-to-recycle work (by chainsaw operators) falls within the 50 m buffer zone of this abstraction point. As with all forest operations, Forestry and Water Scotland ‘Know the Rules’ best practice will be enforced to protect this supply including clearing all cut materials from within ten metres of the supply’s contributory watercourse (see **Appendix 1** for water supply location detail).

Thinning map (**Map 5**) and Table 6 also includes additional selective felling areas - prescribed in the vicinity of forest roads and threshold public areas - either to facilitate safe, effective forest management or to promote a safe, welcoming forest environment for visitors. Similarly, non-native trees within 15 metres of permanent watercourses may also be felled to promote the integrity of riparian woodland habitat.

Table 6

Coupe Number	Gross Area (ha)	Proposed Thin Year	Species	Prescription for Thinning	Monitoring Comments
07903	13.3	2028	SS	Halo thin by fell to recycle: non-native conifers ( <b>net: 3.5 ha</b> ) growing adjacent to native woodland remnants (veteran trees and/or associated semi-natural ground flora) in areas of PAWS within this coupe.	<i>Operations defined/controlled by Work Plan process. Start PAWS restoration monitoring.</i>
08902	8.1	2025	MC	Fell to recycle (FTR) of all conifers in mixed native woodland/non-native conifer sub-compartments (p87):- FTR net 0.5 ha (DF), 1.2 ha (NF), 0.8 ha (HL) to leave net 5.6 ha (NMB) in a coastal native woodland regeneration zone.	<i>Operations defined &amp; controlled by Work Plan process. See <b>Appendix 1</b> map of private water supply and catchment.</i>
n/a	n/a	n/a	MC/MB	<i>Forest road maintenance:</i> possible selective tree felling in the vicinity of forest roads (+/- 7.5 m from centre line) – to improve aesthetics, sightlines and maintain the safety of visitors and associated access infrastructure.	
n/a	n/a	n/a	MC/MB	<i>Riparian corridors:</i> possible fell to recycle of any non-native tree regeneration (> 10 cm dbh within +/- 15 m of main watercourses) as management is to promote and conserve the native woodland/open ground mosaic along permanent watercourses.	
<b>Total</b>	<b>21.4</b>				

## 2.4 Other tree felling in exceptional circumstances

FLS seek to map and identify all planned tree felling expected within the ten-year Plan period in advance through the LMP approval process. However, there may be circumstances requiring small-scale tree felling where it may not be possible, or impractical, to apply for and receive a separate felling permission due to risks or impacts incurred through delaying the felling.

Prior felling permission is therefore sought, for the approval period of the LMP, 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 de-stabilised or made unsafe by wind, physical damage, or impeded drainage. *\*Infrastructure includes forest roads, footpaths, access routes (vehicle, cycle, horse, walking), buildings, utilities and services, and drains.*

The maximum volume of felling in exceptional circumstances covered by this approval is 75 cubic metres per calendar year for the Land Management Plan area.

A record of any timber volume felled in this way will be maintained and will be reported to the forestry regulator at the five-year Land Management Plan review process.

N.B. Trees can, and may, be felled without permission if they are:

- of less than 10 cm diameter at breast height (1.3 m above ground level);
- pose an immediate danger to persons or property;
- are completely dead; or
- are part of authorised Planning Permission works or wayleave agreements.

## 2.5 Proposed restocking

Proposed restocking – by planting or natural regeneration - is presented in Table 7 and illustrated on Restock maps (**Maps 6a** and **6b**). A maximum post-clearfell following period of 5 years will be applied where necessary to reduce pine weevil impacts on restocked plants and avoid the need to apply pesticide chemicals to reduce these potential impacts. All mixed broadleaf restocking will be of native species only. If restocking by planting, or if natural regeneration fails to reach 1,600 stems per hectare in any management coupe, it will be beaten up (i.e. dead transplants replaced) to at least this plant density. Stocking density assessments are made by year 5 after felling in areas anticipating natural regeneration and a decision to undertake remedial action (i.e. actively restock or enrichment plant) to achieve threshold stocking densities taken by this time. Any required beat up of restocked sites will be completed to requisite plant densities by year 7.

Table 7

Restocking								
Phase†	Coupe Number	Fell Year	Net Area (ha)	Restock Year	Species	Method *	Min. stocking density (stems/ha)	Note
F1	07021 A	2018	15.1	2025	SS	R	2,500	(SS/OG 80/20) Productive timber objective: high density SS (manual screef ground prep) accommodating forest roads & NBL regen zone along Allt na h-Inghinn.
F1	07021 B, C, E & F	2018	8.6	2025	NMB	R	1,600	(NMB/OG 80/20) Conservation (riparian), amenity and slope protection objectives. Randomised manual screef planting of W11/17 spp: PBI, ROW, HAZ, CAR, SOK, BCH, HOL, GWL and SCI.
F1	07021 D	2018	2	2025	SS, DF	R	2,500	(SS/DF 50/50) Productive timber objective: high density intimate mixture notch planted (manual screef ground prep)
F1	07022 A	2019/20	20.6	2026	SS, MC	R	2,500	(SS/MC/NMB 50/40/10) Productive timber objective: high density(inverted mounding) cons: dominant SS matrix, MCs in blocks on freer draining slopes/loamier soil. Feather NMBs at public road margin. Accommodate riparian NBLs & quarry.
F1	07022 B	2019/20	1.3	2026	NMB	R	1,600	(NMB/OG 80/20) Riparian woodland by randomised manual screef/notch planting: alder, hazel, downy birch & a few goat willow & sessile oak.
F1	07371 A	2018	19.7	2024	SS, MC	R	2,500	(SS/MC 70/30) Productive timber objective: high density(inverted mounding) cons: dominant SS matrix, MCs in blocks on freer draining slopes. Accommodate two riparian NMB corridors (07371C).
F1	07371 B	2018	14.1	2024	SS/NMB	R	2,500	(SS/MC 70/40) Productive timber & protection slope NBLs: majority high density inverted mounding. Some steeper slopes (manual screef) upland birchwood NMBs: PBI, ROW, WLWs, HAZ.
F1	07371 C & D	2018	6.3	2024	NMB	R	1,600	(NMB/OG 80/20) Riparian woodland by randomised mounding and manual screef/notch planting: alder, hazel, downy birch & a few goat willow & sessile oak.
F1	07722 A	2020	20.3	2025	SS, DF	R	2,500	(SS/DF 50/50) Productive timber objective: high density intimate mixture (inverted mounding/notch planting). Some feathered density NMBs at eastern (OHPL) and western (riparian) margins.
F1	07722 B	2020	0.5	2025	NMB	R	2,500	(NMB/OG 80/20) Riparian woodland by randomised manual screef/notch planting: alder, hazel, downy birch & a few goat willow & sessile oak.
F1	08009 A	2016	3.8	2024	SP, NMB	R	2,500	(SP/NMB 80/20) Productive timber objective: fairly uniform high density SP (hinge mounded). NMBs on western & southern coupe boundaries: stream-, road- & quarry-sides at random, feathered densities.
F1	08021 A & B	2020 + 2022	13.8	2025	SS, MC	R	2,500	(SS/MC 60/40) Productive timber objective: uniform high density(hinge mounded) cons: dominant matrix: SS, MC spp planted in blocks on localised loamy/less peaty gleys and podzols. Retain 15 m NMB nat regen zone at PAWS ravine.
F1	08022 A & B	2022	50.6	2027	SS, MC	R	2,500	(SS/MC 60/40) Productive timber objective: uniform high density(hinge mounded) cons: dominant matrix: SS, MC spp planted in blocks on localised loamy/less peaty gleys and podzols. Retain 15 m NMB nat regen zone at PAWS ravine.
F1	08022 C	2022	2.2	2027	NMB	R	1,600	(NMB/OG 60/40) Riparian woodland by manual screef/notch planting: Alder & shrub willows dominant, some downy birch & goat willow.
F1	08026 A	2008	18.0	2025	NMB	R	1,600	Enrichment plant (hazel, holly, aspen & rowan) of 51.5 ha nat regen coupe where only 20% NMB regen achieved to date.
F2	08023 A & D	2023	42.5	2028	SS	R	2,500	(SS/OG 80/20) Productive timber objective: high density SS (hinge mound prep) accommodating forest road & Totaig-Ardintoul trail corridors. Observe (i.e. avoid) NMB nat regen zones on west and north bounding sub-compartments.
F2	08023 B	2023	10.3	2028	SS, MC	R	2,500	(SS/MC 60/40) Productive timber objective: uniform high density SS with blocks of MCs on free draining loams. Avoid gnd prep/restock of badger sett environs. Retain 15 m NMB nat regen zone on southern (riparian) edge.
F2	08023 C, E & F	2023	7.5	2028	NMB	NR	1,600	Anticipate NVC W4/11 (NMB/OG 60/40) – conservation objective: Eared and grey willows, alder & downy birch dominant. Rowan, hazel, holly scattered singletons.

Restocking								
2	08002 A	2024	34.7	2029	SS, MC	R	2,500	(SS/MC 80/20) Productive timber objective: uniform high density(hinge mounded) cons: dominant matrix: SS, MC spp planted in blocks on lower slopes (loamier/less peaty gleys and podzols).
2	08002 B & C	2024	4.9	2029	NMB	R	1,600	(NMB/OG 60/40) Riparian woodlands by manual screef/notch planting: Alder & shrub willows dominant, some downy birch & few goat willow.
2	08027 A & C	2024	16.3	2029	NMB	NR	1,600	Anticipate NVC W11/17 (NMB/OG 70/30) – conservation objective: Alder & downy birch dominant. Frequent rowan, hazel, holly, willows (incl goat), gean. Accommodates Totaig-Ardintoul trail. Could enrich with SOK later if absent.
2	08027 B	2024	10.5	2029	SS	R	2,500	(SS/OG 80/20) Productive timber objective: high density SS (hinge mound prep) accommodating forest road & Totaig-Ardintoul trail corridors. Observe (i.e. avoid) NMB nat regen zones on east and north bounding sub-compartments.
2	07104 A & B	2025	6.2	2030	NMB	R/NR	1,600	Conservation/slope protection objective. Anticipate some NVC W7 nat regen (sbcpt A) and manual randomised screefed notch planted NMBs (sbcpt B): PBI with some HAZ, ROW, and SOK.
2	08001 A	2025	5.9	2030	NMB, MC	R	2,500	(PBI/NMB/OG 60/20/20) Conservation objective: randomised hinge mounding on local summit – accommodating OG wayleave corridor of 132 kV overhead line. Intimate mixed NMBs: upland birchwood minor spp (ROW, HAZ, ASP, SOK).
2	08004 A	2025	6.8	2030	NMB	NR	1,600	Anticipate NVC W11/17 (NMB/OG 60/40) – conservation objective: Downy birch dominant. Frequent rowan, alder, willows (incl goat). Could enrich with SOK, XCH, HAZ, HOL. Accommodates 132 kV OHPL wayleave (i.e. OG).
2	07020 A & B	2026	24.6	2031	NMB	R	1,600	Conservation/slope protection objective: manual randomised screefed notch planted - NVC W11 (NMB/OG 70/30): Downy birch dominant. Rowan, hazel, shrub willows common. Some SOK, GWL & XCH.
2	08016 A	2026	10.7	2031	NMB	R	1,600	Partial restock NVC W4: (OG/NMB 80/20) as Peatland Edge Woodland (a peatland restoration site): Eared and grey willows dominant with some downy birch and alder.
2	07013 A & B	2026	30.7	2031	SS	R	2,500	(SS 100) Productive timber objective. Uniform high density hinge mounding for 100% SS restock.
2	07013 C & D	2026	4.9	2031	NMB	R	1,600	(NMB/OG 80/20) Riparian woodland by randomised manual screef/notch planting: alder, shrub willows, downy birch & goat willow.
2	08019 A	2027	4.3	2032	NMB	R	1,600	Partial restock NVC W4: (OG/NMB 80/20) as Peatland Edge Woodland (a peatland restoration site): Eared and grey willows dominant with some downy birch and alder.
2	08019 B	2027	3.6	2032	NMB	R	1,600	(NMB/OG 70/30) Conservation objective: randomised hinge mounding W11/17 species. Feathered density to stream- and forest road sides.
3	07820 A	2029	5.6	2033	NMB	R	1,600	(NMB/SP/OG 70/10/20) Conservation/slope protection/landscape objectives. Manual screef, notch plant randomised density. Downy birch dominant W18 character planned.
3	07820 B	2029	2.4	2033	NMB	NR	1,600	Anticipate NVC W11 (NMB/OG 70/30): Conservation/slope protection objective. NMBs: Downy birch dominant. Rowan, hazel, shrub willows random/infrequent throughout.
3	08005 A & B	2029	10.5	2034	NMB	NR	1,600	Anticipate NVC W4/11: (NMB/OG 60/40). Conservation objective, randomised mounding. PBI, CAR and shrub willows. Possible peatland restoration areas (project progressed at MTR once peat depths known under extensive windblow).
3	08005 D	2029	1.1	2034	NMB	R	1,600	Anticipate NVC W4/11: (NMB/OG 60/40). Conservation objective, randomised mounding. PBI, CAR and shrub willows.
3	07361 A	2030	11.2	2035	NMB	R	1,600	(NMB/OG 80/20) Conservation/slope protection objective. NVC W11/W7 species: PBI, ROW, HAZ, CAR, GWL, BCH intimate mixture by manual screefing/notch planting.
3	07361 B	2030	2.0	2035	NMB	NR	1,600	Anticipate NVC W7: (NMB/OG 80/20). Conservation/slope protection objective. NMBs: CAR and PBI common. HAZ, ROW, AH, EM and/or SOK may arrive in time.
3	08018 A	2030	18.3	2035	NMB	NR	1,600	Anticipate NVC W11/17: (NMB/OG 70/30): Downy birch dominant. Rowan, hazel, goat willow common. Possible elm, ash & oak individuals. Enrich with W17 spp later if not present.
3	07169 A	2030	26.6	2035	SS, MC	R	2,500	(SS/MC 70/30) Productive timber objective: uniform high density(hinge mounded) cons: dominant matrix: SS, MC spp planted in blocks on freer draining slopes. Some <10% NMBs (NVC W11) screef planted on public roadside boundary.
3	07169 C & D	2030	1.1	2035	NMB	R	1,600	(NMB/OG 60/40) Riparian woodland by randomised manual screef/notch planting: alder, shrub willows, downy birch & goat willow.

Restocking								
3	08007 A	2031	7.9	2036	NMB	NR	1,600	Anticipate NVC W11 (NMB/OG 70/30): Downy birch dominant. Rowan, hazel, shrub willows common. Possible SOK, GWL, XCH but could enrich later.
3	07015 A	2032	12.7	2037	SS	R	2,500	(SS 100) Productive timber objective. Uniform high density inverted mounding for 100% SS restock. Roadside and riparian corridor with manual screefed randomised NMBs (NVC W11: PBI, WLWs, ROW, HAZ)
3	07015 B	2032	3.2	2037	NMB	NR	1,600	Anticipate NVC W11 (NMB/OG 70/30): Conservation/slope protection objective. NMBs: Downy birch dominant. Rowan, hazel, shrub willows random/infrequent throughout.
Total			421.3 ha	Phase 1 + 2	† recently felled awaiting restock (F) / Phase 1 (1) / Phase 2 (2);* replant (R) / natural regeneration (NR)			

## 2.6 Proposed peatland restoration/deforestation

Three significant areas of afforested ground have been identified for peatland restoration. **Appendix 6** presents the site analysis and decision-making process undertaken regarding each area following FC’s Practice Guide 104 *Deciding future management options for afforested dep peatland* (2015). A map submitted with the EIA determination request (**Appendix 4**), in respect of the implied deforestation, also illustrates and labels all three areas. Initial desk-based analysis of surveyed soils identified the location and extent of current and typical bog ‘soil’ classifications e.g. areas containing abundant *Calluna*, *Sphagnum*, *Eriophorum*, *Juncus* and *Phragmites* bogs. These were cross-checked against forest inventory data, to evaluate tree yields/growth performance across these areas, which produced a sub-set of potential restoration sites. These were subsequently visited to examine local terrain (ground truth extent and condition of remnant bog plant communities, consider slope and artificial drainage pattern for restoration potential and methodology) and to undertake peat depth survey. These observations and data were used to arrive at the three proposed restoration areas – scheduled as Phase 1 clearfell coupes 08008, 08016 and 08019 - to initiate the process (see Tables 3 and 4, section 2.2). Two of the three proposed sites are ultimately expected to support a minimum 20% native woodland component (Peatland Edge Woodland – NVC W4: shrub willow and downy birch-dominant) on account of terrain undulations (some limited ridges, discrete mounds and hillocks) where peat is limited in depth and function and trees/shrubs can exploit local, marginally favourable, mineralised peaty soils.

FLS also undertake a Prior Notification process with the Highland Council in regard to any peatland restoration proposals and endeavour to adhere to any resultant conditions imposed in the consented works.

## 2.7 Summary of species diversity and age structure

The following charts and tables show how proposed management is intending to achieve a more diverse tree species composition and age-class structure - as recommended in the UK Forestry Standard. The current tree species composition of the LMP area is illustrated on **Maps 8a** and **8b** and the long term future woodland composition in **Maps 6a** and **6b**. Table 8 below details the area occupied by the main forest tree species (and some grouped tree species) in current woodland, along with the percentage of *the whole LMP area* this represents. Accompanying pie charts similarly illustrate tree species’ composition over time - but as a percentage of *the total woodland area not the LMP area*.

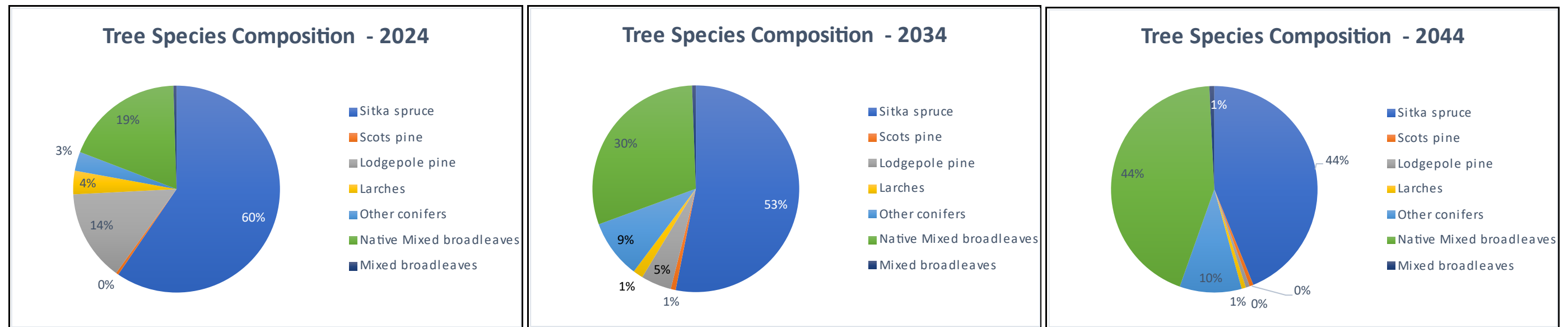
Land Use Compositional Change

Table 8

Area by species/groups						
Species	Area in 2024 (ha)	% of LMP Area (2024)	Area in 2034 (ha)	% of LMP Area (2034)	Area in 2044 (ha)	% of LMP Area (2044)
Sitka spruce	643	24.0	531	19.8	547	20.4
Lodgepole pine	154	5.8	48	1.8	8	0.3
Scots pine	4	0.15	8	0.3	8	0.3
Larch	40	1.5	16	0.6	8	0.3
Other conifers	32	1.2	92	3.4	121	4.5
Native & other broadleaves	207	7.7	306	11.4	557	20.8
Fallow	320	12.0	442	16.5	141	5.3
Open ground	1,274	47.5	1,231	46.0	1,284	48.0
Other (built/heritage/quarries/water/leased)	4	0.15	4	0.15	4	0.15
<b>Total</b>	<b>2,678</b>	<b>100</b>	<b>2,678</b>	<b>100</b>	<b>2,678</b>	<b>100</b>

Tree Species Compositional Change

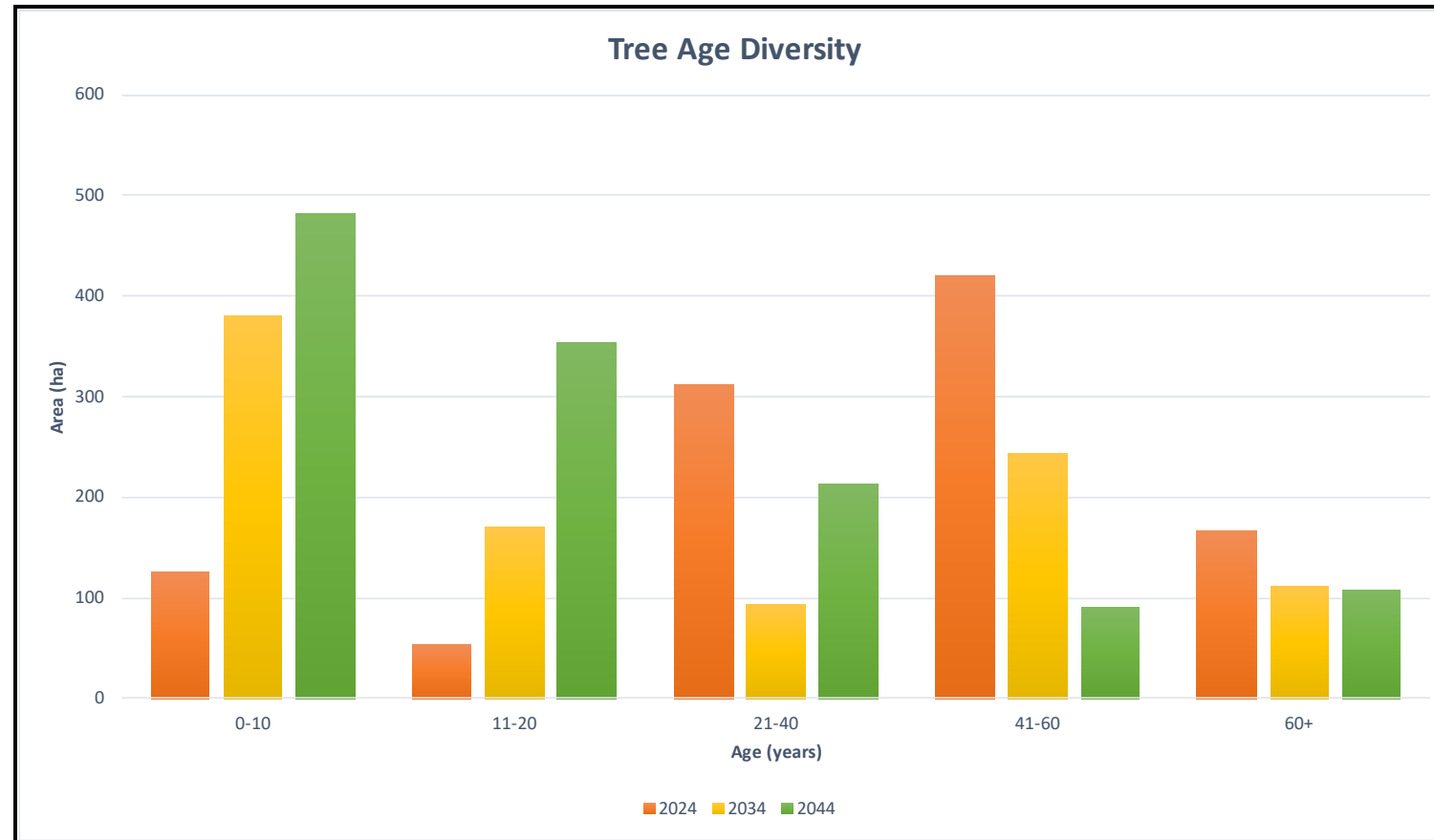
The pie charts show individual or grouped tree species as a percentage of the total afforested area.



Woodland Age Class Change

Table 9

Plan area by Age						
Age Class (years)	Current		Year 10		Year 20	
	Area (ha)	%	Area (ha)	%	Area (ha)	%
0 – 10	126	12	381	37	482	39
11 – 20	54	5	170	17	354	28
21 – 40	312	29	95	9	213	17
41 – 60	421	39	243	24	90	7
60+	167	15	112	11	109	9
<b>Total</b>	<b>1,080</b>	<b>100</b>	<b>1,001</b>	<b>100</b>	<b>1,248</b>	<b>100</b>



## 2.8 Proposed roading operations, quarries and timber transport

There are two new sections of forest road construction proposed within the first five years of the Plan. In the second five years, there is one permanent and three temporary roading proposals. These are outlined in Table 10 (below) and depicted on the Management maps (**Maps 4a** and **4b**). The Phase 1 road construction proposals are also included in the Environmental Impact Assessment (EIA) Scoping Opinion Request (SOR) form (**Appendix 4**). The outcome of EIA determination provides just a five-year approval period, so another EIA determination request for second phase proposals will be submitted at this Plan’s mid-term review (Year 5). FLS also undertake a Prior Notification process with the Highland Council in advance of all proposed road construction. Within the National Scenic Area, prior notification ordinarily results in a request for a formal planning permission application, the conditions of which would be adhered to. All new road construction proposals – and any within-Plan road renovation works - will be carried out using stone sourced from existing in-forest quarries at Glen Bernera (NG 8169 2197) and Moyle forest (NG 8955 1953).

FLS propose to extend Moyle forest quarry by 0.3 ha from its current 0.68 ha footprint. This quarry has been used continuously throughout the last Plan period to renovate all forest roads within the Ratagan and Leachachan forests in advance of extensive clearfelling there. The quarry is now identified by FLS civil engineers as the LMP area’s designated Long Term extractive site. The general steepness of afforested terrain in this forest block means there are 28 km of internal forest road to maintain. The felling schedule for the next twenty years will see many roads supporting concerted periods of intensive use with associated wear and tear.

Glenelg Peninsula LMP area is bisected by public road C1223 (Sheil Bridge–Glenelg–Corran) and is classified as an Agreed route by Highland Timber Transport Group between Shiel Bridge and Barnhill (Glenelg/Bernera junction). As such it can be used for timber haulage without restriction as regulated by the Road Traffic Act (1988). Two of three lesser tributary roads linking to the C1223, may be proposed for timber haulage at different times dependent on the location of approved tree felling. These roads all have Consultation route status (**Map 2** illustrates the roads/classifications) and requires FLS to engage with the local authority in advance of planned work to determine permissible terms under which timber may be hauled (e.g. stipulation of vehicle specification, frequency of lorry movements, exclusion periods and cumulative tonnage limits).

Table 10

Forest road upgrades, re-alignments, new roads and new quarrying				
Phase	Name / Number	Length (m)	Year	Operation
1	Ardintoul East Spur Extension	310 m	2024/25	<ul style="list-style-type: none"> <li>This roadline extension is currently approved under a Felling Permission (FPA-10417 – expiring 19/5/24) and requires re-approval within a new LMP. It is a conventional Category 1 forest road (load bearing capacity: 44 tonnes) intended to extend vehicle access to productive timber forests east of Ardintoul. As with the existing permission, all construction will be implemented in accordance with FCS Practice Note “Managing forests for White-tailed eagles” (2011).</li> </ul>
1	Glen Bernera West spur	1,730 m	2024/25	<ul style="list-style-type: none"> <li>Construction of a nominal 3.4 metre width Category 1 specification unbound stone carriageway with associated side drains and culverts to provide permanent vehicular access to the productive timber forest on the western flank of Glen Bernera. This road will also serve as the initial section of a longer Phase 2 temporary road construction extending northwards along Druim na Leitir (see below).</li> </ul>
1	Moyle Quarry Extension	0.3 ha	2024/25	<ul style="list-style-type: none"> <li>Extension of Moyle quarry (maps and further specification in <b>Appendix 4</b>). This is currently the sole aggregate extractive site for all roads in Moyle, Ratagan and Leachachan forests and identified as the block’s sole Long Term Resource by FLS civil engineers.</li> </ul>
2	Upper winch stance, Sgùrr a’ Bhraonain (temporary)	90 m	2029	<ul style="list-style-type: none"> <li>Construction of temporary armoured harvester/forwarder track to extend existing vehicle access to a prominent winch vantage point overlooking the upper margins of proposed Phase 2 clearfell coupe 07820 (Sgùrr a’ Bhraonain).</li> </ul>
2	Lower winch stance, Sgùrr a’ Bhraonain (temporary)	130 m	2029	<ul style="list-style-type: none"> <li>Construction of temporary armoured harvester/forwarder track to extend existing vehicle access to a prominent winch vantage point overlooking the lower extent of proposed Phase 2 clearfell coupe 07820 (Sgùrr a’ Bhraonain).</li> </ul>
2	Druim na Leitir extension (temporary)	750 m	2030	<ul style="list-style-type: none"> <li>Temporary constructed forest road to allow harvesting and timber recovery access to the coastal slopes above the Kylerhea Narrows (objective: complete removal of productive non-native conifers and follow-on native woodland re-establishment). This road to be constructed on a geo-textile mat over peaty ground to avoid unnecessary peat excavation and interruption of subterranean water flow and also enabling easy de-construction i.e. materials uplifted and removed upon completion of timber extraction phase.</li> </ul>
2	Doire nam Muc spur	480 m	2031	<ul style="list-style-type: none"> <li>Construction of a nominal 3.4 metre width Category 1 specification unbound stone carriageway with associated side drains and culverts - to provide permanent vehicular access to the productive timber forest on the west-facing slopes above Ardintoul.</li> </ul>

## 2.9 Meeting UK Forestry Standard (UKFS) requirements

In revising the Glenelg Peninsula Land Management Plan FLS has sought to comply with all requirements and, where possible, the good practice guidance of the UKFS delivering the aims and objectives of the national strategies and corporate policies that derive from this (see **Appendix 7**).



## 2.10 Environmental Impact Assessment (EIA)

Operations proposed in the first five years of the Plan period and requiring an EIA determination are shown in the table below. The SOR Form associated with the EIA determination process is presented as **Appendix 4**.

Table 11

EIA projects in the plan area		
Type of project	Yes / No	Note
Afforestation	No	
Deforestation	Yes	<i>Peatland restoration as outlined in section 2.6 and rationale presented in <b>Appendix 6</b></i>
Forest roads	Yes	<i>As outlined in section 2.8: Table 10</i>
Forestry quarries	Yes	<i>0.3 ha quarry extension proposal – as outlined in section 2.8: Table 10.</i>

## 2.11 Summary of additional regulations

Should any new, future management proposals fall outwith the scope of Scottish Forestry approvals, the correct regulatory procedures will be followed to gain relevant permission(s). For the proposals presented within this Plan, this is limited to the Prior Notification planning process (undertaken with the Highland Council) in regard to peatland restoration, forestry-specific road works and establishing agreeable timber haulage terms (see section 2.8). The Prior Notification process can result in the local authority stipulating that a formal Planning Permission application is required for the work. This is the default expectation of civil engineering works within the National Scenic Area.

## 2.12 Tolerance table

Working tolerances agreed with Scottish Forestry are shown in **Appendix 3**.

# 3 Analysis and Concept

## 3.1 Introduction

The land management planning process reviews the objectives of the previous Forest Plan and analyses management delivered towards those objectives over that Plan period (section 3.2). This allows the production of an initial Key Issues and Features map (**Map 2**) which is consulted upon by FLS staff (internal scoping) and with local residents, community organisations and other key stakeholders (external scoping). The record of internal and external stakeholder consultation is presented in **Appendix 2**.

Different management options for achieving this new Plan’s objectives have subsequently been considered against the constraints and opportunities identified through the review and scoping exercises. The preferred approach/management proposed to achieve these objectives is then analysed and summarised in section 3.4 and on an Analysis and Concept map (**Map 3**).

## 3.2 Analysis of previous Plan

Table 12 summarises the main Concepts and derived Objectives in the last Glenelg Peninsula Forest Design Plan (2013-2023) and reviews progress to date with implementation and what this experience initially suggests for the evolution of the new Land Management Plan.

Table 12

Review of delivery against Objectives of expired Plan			
Concept	Plan Objectives	Progress to date	Proposed action (in this Plan)
Maximise use of plantable ground for timber production.	Establish both productive and native woodland. Timber production is a high priority	No new productive woodland creation (although none specified). The scale and extent of productive conifer restocking has been reduced on very steep slopes due to safety risk to planting squads and to avoid future complexities of management. Hot planting of steep slopes - where mechanical ground preparation is not possible - was interrupted by Covid lockdowns resulting in slopes becoming grassy and more difficult and costly to restock/beat up and manage through establishment. One approved clearfell coupe at Bernera not started on account of no vehicle access as anticipated collaborative working with utilities provider over new mutually beneficial road options was delayed. One approved clearfell coupe at Ardintoul not started on account of limited completion of road construction required for this multiple coupe felling objective – constrained by seasonal sea eagle nest occupancy (reducing available construction time). One approved felling coupe at Leachachan not completed on account of (as yet untried) long distance skyline winching needed to extract timber.	<i>Re-examine and rationalise the proposed extent of productive timber crops within LMP area in light of complexity of restocking, managing and harvesting operations. N.B. increasing concern over potential slope instability and future climate impacts also support a more consolidated productive woodland area.</i>
Protection of Marine SAC.	Discuss with SNH ways of contributing to the designated qualifying interests condition to ensure they are in favourable conditions.	SAC maintained in Favourable condition over Plan period so no apparent negative causal link between forest management and SAC condition.	<i>Continue to adhere to all UKFS Forests and Water guidance in all forestry operations including road construction.</i>
PAWS / native woodland restoration.	Restoration of Native Woodland on PAWS and enhancement of other native woodlands within the forests.	<u>Ardintoul/Bernera block</u> : extensive clearfell in Ardintoul Wood and Bernera basin (non-native conifers) adjacent to PAWS (coastal remnants and ravines). Now following but with minimum 30 m NMB regeneration zones specified (i.e. +/-15 m width for riparian woodland expansion). <u>Ratagan Forest</u> : Clearfell of accessible part of most southerly PAWS and NMB hot planted restocking to favour native woodland re-establishment over non-native seedbed regeneration. A complex but successful cable crane operation (i.e. proof of concept).	<i>Ardintoul/Bernera: observe PAWS natural regeneration zones during adjacent productive forest restocking. Schedule clearfell of remaining remote non-native conifer coupes on coastal slopes above Kylerhea Narrows to secure extensive, continuous native woodland zone above the entire lochs Duich and Alsh shorelines.</i>
UKBAP priority open habitats protection.	Protect heath, blanket bogs, limestone pavement/base rich rock outcrops and wetlands i.e. fen and swamp.	Open ground vegetation benefitting from LMP-wide deer control strategy and a resident population density that enables native woodland regeneration but also no deterioration in structure and extent of these open ground features.	<i>Undertake pro-active peatland restoration where historic afforestation has compromised peatland function. Continue deer control objectives which will conserve open ground component species.</i>

Review of delivery against Objectives of expired Plan			
Conservation of Wade's road and bridges.	Protect known features	Harvesting at one coupe adjacent to a military road bridge was clear-felled with novel long distance, diagonal cable crane whole-tree harvesting methodology on slopes upstream of historic bridge with no harvesting debris allowed to accumulate within this catchment: a satisfactory Proof of Concept.	<i>Continue to employ cable crane winch methods and whole tree harvesting to draw all timber/brush arisings away from historic structures (or subsequent movement of residual biomass into watercourses that may dam or damage bridges).</i>
National Scenic Area (NSA).	Avoid landscape and visual impacts from forestry operations within the area of Kintail National Scenic Area also taking into account the views to the NSA from points out with this FDP.	Original felling concept was several smaller felling coupe shapes on NSA's steep slopes to minimise perceived negative visual impact from external vantage points. A felling amendment was approved to increase coupes to much larger scale (practical constraints of winch working very steep slopes) which were subsequently felled (now partially restocked). Larger coupe sizes are more conspicuous however their scale and shape has avoided complex small coupe felling with likely ensuing windthrow on difficult-to-manage slopes potentially leading to scrappy, fragmented appearance persisting for a longer period. Large felled coupes allowing forest restocking/restructuring to begin sooner than originally planned (including new and expanded coastal and riparian woodland).	<i>Continue to adopt a large coupe scale approach to remaining non-native conifer clearfelling on steep slopes – a more viable, safer and practical way of operating and hastening the productive-to-protective woodland transition and increased slope stability and resilience.</i>
Landscapes from A87 tourist route and tourist areas.	Design forest edge and felling coupes to follow land form where harvesting methods allow.	Perception and aesthetic sensitivity of external vantage points (i.e. A87) equates with NSA character concerns (above)	<i>See above</i>
Use by local people and visitors – recreational access.	Maintain access via Rights of Way and Core Paths	All core paths maintained open through forest operations. Extensive renovation of forest road network to facilitate large scale clearfell operations has increased the opportunity and the incentive for public access/enjoyment. The Totaig-Ardintoul path has been difficult to maintain (no formal trail formation in wettest/boggiest section of route) with stakeholder feedback endorsing this issue including difficulties in route finding (lack of way markers).	<i>Recreation and access planning falls out with the scope of the LMP but the LMP's scoping exercise revealed extent of concern over trail condition (see Appendix 2 – Consultation Record) and was fed back to FLS Visitor Services for further consideration/remediation.</i>
Steep slopes, some landslip risk.	Use Long Term Retentions and Cable Crane extraction on clearfell sites.	Cable crane used extensively on steep slopes including some innovative and ambitious diagonal, long distance cable runs. FDP-prescribed Long term Retentions included many areas of mature large stature conifers on slopes now surveyed to reveal instability concerns. New FLS guidance during last Plan period has provided recommendations for productive-to-protective forest restructuring of these slopes.	<i>Continue to plan felling coupes within the safe and practical limitations imposed by very steep, potentially unstable slopes in the vicinity of lifeline public road and historic structures (Wade's road bridges). Re-consider the suitability of long term retention of mature conifers on the most potentially instable slopes.</i>
Improve water and habitat quality.	Improve the condition of watercourses on site by protecting existing and establishing appropriate riparian woodland corridors.	Forests and Water Guidelines enforced in all operations within the Plan period. All restocking within the last Plan period has provided at least a 15 m native riparian woodland buffer along permanent watercourses (i.e. nominally 7.5 m width each side of the watercourse).	<i>Continue to stipulate and enforce Forests and Water guidelines in all proposed forest operations. Design new riparian native woodland buffers for all permanent watercourses.</i>
Deer control.	Maintain deer numbers to a level which allows natural regeneration and survival of planted trees.	Some large scale evidence of unimpeded natural regeneration of native woodland (i.e. tolerable browsing impact). PAWS monitoring and some remote restock areas surveyed as heavily browsed (i.e. localised browsing pressure).	<i>Continue overarching deer control for benefit of the landholding as a whole. Target some cull effort in areas where sensitivity to browsing impact is most detrimental i.e. restocked or regenerating native woodland areas and PAWS. Use of more palatable conifers in future restock may also require focussed control effort.</i>

### 3.3 Analysis of opportunities and constraints

The following table identifies the opportunities and constraints relative to each stated Plan objective (section 1.1.4). It therefore summarises the issues considered to inform the concept and ultimately the practical management activities and critical success factors (section 1.1.5). **Map 3** represents a summary of this analysis process.

Table 13

Concept Analysis			
Objective	Opportunities	Constraints	Concept
<b>Productive Woodland</b> <i>(Future Consolidation)</i>	<ul style="list-style-type: none"> <li>Short term removal of maturing (shallow rooting) non-native conifers from steep slopes yields good timber volumes and allows timely restructuring for slope stability resilience.</li> <li>Soils and micro-climate of Moyle and Ardintoul forests are well suited to coniferous timber production - particularly Sitka spruce.</li> <li>Extensive internal roading network for timber crop management, deer control and (often complex) harvesting and timber export operations.</li> </ul>	<ul style="list-style-type: none"> <li>Few internal windfirm edges in mature forests - limits resilience of remaining forest to withstand windthrow in a 'small coupes' felling design.</li> <li>Growing conditions (soils and micro-climate) are sub-optimal for alternative conifer species and marginal-to-inappropriate for productive broadleaved species.</li> <li>Standing forest contains disease-susceptible larch trees and areas of <i>Dothistroma</i>-blighted pine: a future risk for inoculum spread to other stands.</li> </ul>	<ul style="list-style-type: none"> <li><i>Re-design felling coupe shapes and sequencing to ensure reliable interior windfirm edges and within practical limits of cable crane / whole tree harvesting methodology.</i></li> <li><i>Schedule all areas with maturing conifers on slopes with moderate to high instability classification for removal within Plan period.</i></li> <li><i>Re-establish vulnerable slopes with long term retention 'protection forest' (low to medium stature native broadleaves: W4/11).</i></li> <li><i>Where local soils indicate better fertility and drainage, consider alternative conifers and trial broadleaved species to gain better understanding of future options/limitations for novel species and so increase species diversity/resilience.</i></li> </ul>
<b>Native Woodland</b> <i>(Conservation &amp; Expansion)</i>	<ul style="list-style-type: none"> <li>Some fallowing areas showing good native tree recruitment validating natural regeneration (with deer control) as a viable native woodland expansion 'tool'.</li> <li>Good (species variety and extent) native tree/shrub seed resource in the vicinity of most coniferous forests (roads, streams, rides, adjacent native woodland remnants)</li> <li>Extensive internal road and trails network offer good vantage points for deer monitoring and control on majority of open/fallowing ground.</li> <li>Clearfell areas create (short term) open areas to aid effective deer monitoring and control.</li> </ul>	<ul style="list-style-type: none"> <li>Reliance on natural regeneration for native woodland expansion favours pioneer species (willows, alder, birch) over large, or infrequent, seed-bearing species (hazel, oak).</li> <li>Clear felled, fallowing sites can be colonised by invasive non-native species (e.g. <i>Rhododendron</i>) and seedbed conifer regeneration.</li> <li>Some remote areas where native woodland restoration is prescribed have poor access for deer control at present.</li> <li>Despite population monitoring indicating acceptable estate-wide deer density, some PAWS and remote native woodland restocked areas have been heavily browsed.</li> </ul>	<ul style="list-style-type: none"> <li><i>Consider enrichment of native woodland regeneration sites with site- and soil-appropriate under-represented tree species.</i></li> <li><i>Routine survey of regenerating woodland and young restocking will monitor INNS presence and extent to inform control measures.</i></li> <li><i>Monitor deer population and site utilisation to inform and focus control effort in anticipation of subsequent years with reduced cull opportunities (e.g. significant thicket/pole stage forest).</i></li> <li><i>Focus deer control on most vulnerable habitats: naturally regenerating and restocked native broadleaved areas and PAWS.</i></li> <li><i>Maintain perimeter fencing to assist in reducing the amount of imported grazing pressure.</i></li> <li><i>Continue to engage with local Deer Management Group and neighbouring estates to identify shared concerns and mutually beneficial or collaborative actions/management.</i></li> </ul>
<b>Water Quality</b> <i>(Protection &amp; Improvement)</i>	<ul style="list-style-type: none"> <li>Woodland regeneration on currently fallowing ground will increase rainfall interception and ground percolation, reducing surface water run-off and smoothing peaks/troughs of watercourse flow.</li> <li>Increasing extent and widths of riparian native woodland enhances ecological condition and function and will in turn benefit downstream designated lochs and Glenmore river.</li> <li>Adherence to UKFS Forests and Water guidance ensures potential negative impacts on water quality from forest/civils operations is satisfactorily mitigated.</li> </ul>	<ul style="list-style-type: none"> <li>Extensive windthrow of large stature trees on steep slopes disturbs underlying soils and can lead to increased sediment load in watercourses.</li> <li>Some ground preparation techniques can create unnecessary disruption of soils (e.g. ploughing, trench mounding) and may lead to increased sediment load in watercourses.</li> <li>Increasing periods of drought and higher peak summer temperatures increases water temperatures in streams and drains with potential negative impacts on dependant flora/fauna (e.g. reduced water</li> </ul>	<ul style="list-style-type: none"> <li><i>Site condition monitoring of designated sea lochs provides impartial and indirect assessment of possible negative impacts of forest management on tributary watercourses.</i></li> <li><i>Establish restock sites with a view to minimising ground disturbance for restocking (hinge mounding or screefing not ploughing or trench mounding).</i></li> <li><i>Initiate extensive riparian watercourse planting in Moyle forest at felling/restocking. Leave min +/- 15 m regeneration zones around watercourses with sufficient seed-bearing native woodland.</i></li> <li><i>Manage restructured native woodland as Minimum Intervention to promote natural ecological inter-dependencies/cycles, maximise water regulation and soil formation processes.</i></li> </ul>

Concept Analysis			
		volumes & flow, higher ambient water temperatures and reduced dissolved oxygen).	<ul style="list-style-type: none"> <li>Protect integrity of all watercourses and water bodies during management operations and into long term by applying measures outlined in UKFS Forests and Water guidance.</li> </ul>
<b>Resilience in Changing Climate</b> <i>(terrain/water/habitats)</i>	<ul style="list-style-type: none"> <li>Increased genetic diversity and wider species and age composition through phased restock and regeneration of native woodland will increase habitat resilience to impacts of future climate change.</li> <li>Peatland restoration (conifer clearance and drain/furrow blocking) will reinstate water table and peatland functionality making the habitat more resilient to increasing drought periods.</li> <li>Restructuring non-native conifer woodland to lower stature native woodland in areas of slope instability concern will increase resilience to increased storm events and rainfall.</li> <li>Bridges, culverts and drains associated with roading currently fit for purpose of conserving water quality and (for permanent watercourses) avoiding flow obstruction.</li> </ul>	<ul style="list-style-type: none"> <li>Incremental and small-scale felling of mature, even aged plantation can increase windthrow on adjacent stands.</li> <li>Retention of woodland areas with larch is a potential disease risk (<i>Phytophthora ramorum</i>).</li> <li>Planting tree species that are not suited to the site/location increases their susceptibility to disease or pest mortality and then act as a reservoir for further spread.</li> </ul>	<ul style="list-style-type: none"> <li>Design coupes to encompass entire contiguous stands and/or schedule felling over a relatively contracted timescale to minimise the potential for windthrow.</li> <li>Actively plan to pre-emptively fell larch trees and/or develop access in anticipation of infection/felling obligation.</li> <li>Continue to routinely monitor built infrastructure for ability to tolerate changing climate (rainfall accommodation by drains, culverts etc) and resilience to storm events (tree safety inspections).</li> </ul>
<b>Scenic Value</b> <i>(improve)</i>	<ul style="list-style-type: none"> <li>Ability to use software to visually test future felling and restructuring proposals for anticipated landscape impact.</li> <li>Current maturation of 2nd rotation conifers on conspicuous (landscape designated) slopes, and as seen from external &amp; bisecting public roads, is a timely opportunity to restructure with timber benefits also.</li> </ul>	<ul style="list-style-type: none"> <li>Reliance on natural regeneration in restructuring gives less control in future forest design and can take longer to re-vegetate (i.e. clothe) following terrain.</li> <li>Clearfelling of woodland has a negative impact on local aesthetic and negatively affects designated landscape quality (until satisfactorily restocked).</li> <li>Tree health issues may require (legally enforceable) felling to remove pathogens with no consideration for potential landscape impact.</li> </ul>	<ul style="list-style-type: none"> <li>Control tree regeneration on Managed Open Ground where integrity is being compromised and visual character adversely affected.</li> <li>Accept compromise to landscape character over short to medium term as long term ambition will restore landscape-appropriate vegetation (type and composition).</li> <li>Ensure timber harvesting contracts stipulate removal of all extraneous non-natives from coupe margins to avoid long term visual incongruity.</li> </ul>
<b>Public Access</b> <i>(support &amp; maintain)</i>	<ul style="list-style-type: none"> <li>Already a popular site with locals for habitual walking, forest roads offer year-round ease of use/access and (currently) extensive uninterrupted external views.</li> <li>Local running club organises popular annual 'Dirty 30' hill running event utilising forest roads &amp; trails.</li> <li>Trails and their interconnection with long distance routes has local tourism appeal and thus rural economic benefit.</li> </ul>	<ul style="list-style-type: none"> <li>Some species, habitats and heritage features are vulnerable to human disturbance.</li> <li>Misuse of site - especially fire raising and littering - can have significant impacts on wildlife and habitats.</li> <li>Very steep slopes and precipitous ravines constrains (easy) trail development for more circular walks or inter-connected forest road networks.</li> <li>Sections of Ardintoul-Totaig trail are in poor condition with inadequate waymarking.</li> </ul>	<ul style="list-style-type: none"> <li>Maintain access to the forests to Scottish Outdoor Access Code.</li> <li>Consult (council Access Officer) and provide diversions of core paths during any forest operations.</li> <li>Develop on- and off-site interpretation to inform and encourage positive behaviour towards wildlife/natural habitat and heritage.</li> <li>Ensure frequency of site inspection is proportionate to instances of misuse/anti-social behaviour.</li> <li>Post-current active harvesting, FLS Visitor Services to consider trail renovation measures (&amp; possible re-routeing) on Totaig-Ardintoul trail - within known and sensitive environmental constraints.</li> </ul>

# 4 Management proposals and prescriptions

## 4.1 Silviculture/forest management proposals

### 4.1.1 Clear felling

Coupes for clear felling during the Plan period are detailed below and indicated on Management maps (**Maps 4a** and **4b**).

#### **Coupe 08027** (*Ardintoul Mega - Phase 3*) – 35.8 ha.

This 100% Sitka spruce coupe (planted 1962) was originally one of five similar, contiguous coupes - west of Ardintoul and Allt na Dalach. Approved for clear felling in the last Plan this coupe was not reached/started within the Plan period. Since Plan expiry (28/2/23), two supplementary Felling Permissions were sought and approved (FPA-10353 and 10417) to allow felling work to continue within a twelve month period and whilst a new LMP was prepared. The coupe includes 4.4 hectares of PAWS and consequently semi-natural features within this area will be identified and operation methodology stipulated to conserve these through the work planning system. The coupe is bounded to the north by ancient semi-natural broadleaved woodland on very steep coastal slopes above Loch Duich SAC, where winch working is required to access and extract felled timber uphill to the internal forest road for uplift/export haulage. During the last Plan period, a new 2.5 km forest road spur was constructed into and through the approved coupes (approved by Plan amendment in December 2020, and approval extended in 12-month Felling Permission FPA-10417). The final 310 m of this new road has still to be constructed to facilitate harvesting and future forest management access and therefore requires FLS to seek approval and EIA determination once again (Appendix 4).

#### **Coupe 08002** (*Benera West flank*) – 45.1 ha.

This 1971-planted coupe (Lodgepole pine/Sitka spruce/Japanese larch: 61/29/11%) is on the moderately steep east-facing flank of Glen Bernera. The coupe was approved for clearfelling in the previous Plan but not started/completed due to access constraints (impractical timber stacking on existing road verges and no interior road access) and associated, unforeseen delays in defining (and seeking approval for) a new forest road through the coupe to satisfy both future forest management and access to both old and (proposed) new overhead powerline infrastructure within the coupe. Subsequent agreement with the utilities developer has determined a new forest road proposal (see section 2.8) - allowing access to electricity transmission infrastructure into the future and enabling timber harvesting/export from the coupe and restocking. This new spur road also forms the initial permanent section of a future temporary roadline extension (see '*Druim na Leitir extension*' in section 2.8 and Table 10) designed to gain operational access to the non-native afforested coupes on the furthest north-western coastal slopes above Kylerhea Narrows. NOTE: at the time of Plan revision, there is a live Planning Permission application proposing a complete replacement of the overhead powerline traversing this coupe. If approved, this will not affect felling proposals however the restock design will require adjustment: allowing restocking of the current (managed open ground) wayleave corridor and leaving unplanted/restocked an equivalent area for the new wayleave corridor (i.e. no net afforestation or deforestation).

#### **Coupe 07169** (*Moyle Gate*) – 30.5 ha.

This coupe contains non-native conifers planted in 1940, 1950, 1967/8 and 1976 (net 28.5 ha Sitka spruce, 1.3 ha larch species). Much of the coupe can be worked by conventional harvester/forwarder shortwood system but there are some localised steep slopes requiring winch working. Traffic control measures will be required to harvest the coupe's lowest slopes as they bound the public Mam Ratagan/Glenelg road. Three small, isolated stands of p68 SS (total 0.88 ha) are situated to the north-east of the main coupe on open moorland. Due to their limited stature and extent, these stands will be motor-manually felled to recycle as they are located too remotely for vehicle access and timber recovery without potential negative impact on intervening soft wet heath/mire vegetation on the plateau and with little brash material likely to arise - from conventional harvester-based felling/processing - to satisfactorily support machines and protect underlying peaty soils.

#### **Coupe 08004** (*Glenelg Ferry Flank*) – 11.4 ha.

Mid-1970's-planted Lodgepole pine and Sitka spruce plantation (total net: 8 ha) with a small component (0.8 ha) hybrid larch on steep coastal slopes above Kylerhea Narrows. These coastal slopes are prescribed for native woodland restructuring along its entire flank. The proximity and abundance of native woodland in the vicinity of this coupe should achieve good recruitment of naturally regenerating native broadleaved tree and shrub species here. NOTE: As with coupe 08002 (above), a planning application is currently under consideration by Scottish Ministers to replace the existing 132 kV overhead powerline – running just north of this coupe - with a new line/wayleave corridor proposed to run parallel and just south of the existing corridor. If approved this will require a new unplanted wayleave corridor to be maintained as open ground but the existing wayleave can be afforested - resulting in no net gain/loss in forest cover.

#### **Coupe 08001** (*Benera Hilltop*) – 7.4 ha.

These comparatively small and fragmented stands of p72 and p88 Lodgepole pine and Sitka spruce (total net: 4.9 ha) were part of a much larger coupe approved for phase 1 clearfelling in the last Plan but ultimately omitted from felling after contractual issues with the standing sale merchant. This local hilltop area is prescribed for native woodland restructuring – to be achieved here by restocking with upland birchwood representative tree species. NOTE: as with coupe 08004 and 08002, a proposed new 132 kV overhead line will traverse this coupe just south (and parallel) to the existing wayleave corridor. As a consequence the restocking design will require an area of managed open ground maintained for the new wayleave corridor but with restocking of the equivalent area of redundant wayleave once existing line infrastructure has been removed.

**Coupe 07104** (*Leachachan Road End*) – 9.0 ha.

Of this net 8.8 ha 1958-planted coupe (SS/NS/JL/HL: 22/48/24/7%), 5.5 ha was prescribed as Long Term Retention in the previous Plan in order to contribute and function as a component of long-established non-native woodland habitat within the Plan area. A slope stability survey (2013) determined the underlying terrain as a High slope stability risk and a subsequent developing FCS strategy on managing instable slopes (2015) recommends the restructuring of tall, shallow rooting plantation to mixed, lower density native woodland in such risk zones i.e. from a productive to protection forest structure in order to reduce risk of future landslip. Additionally over the last Plan period, FLS' approach to responding to continued spread of notifiable fungal disease *Phytophthora ramorum* has resulted in a national pre-emptive strategy to systematically remove all larch species from areas of the national forest estate where the disease is considered likely to spread in future years. This strategy presents a new, previously-unforeseen forest objective for this new Plan (see also section 4.1.9) and this coupe shape intentionally includes fell-to-recycle of an adjacent 0.6 ha stand of immature Hybrid Larch. The coupe's steep slopes and ravine-side forests will require mainly winch working to fell and recover timber to the internal forest road for processing and subsequent uplift/export haulage. The majority of this coupe will be restocked with a range of upland birchwood species but also with some Atlantic oakwood species (W17 – i.e. holly, hazel, goat willow, cherry, sessile oak). The surrounding landscape has extensive alder-dominant native woodlands and alder is a proven successful regenerative species which is anticipated to enrich – possibly dominate in some areas – the establishing native woodland here through natural regeneration.

**Coupe 07013** (*Allt Lionachan*) – 35.7 ha.

This high yielding (yield class 24) 100% Sitka spruce coupe was planted in 1983/84 as a second rotation productive timber crop. Tree density and growth performance mean felling boundaries have been determined by existing plantation 'green edge' i.e. reliable windfirm edges provided by bounding contoured forest roads and (on NW boundary) an 11 kV overhead powerline wayleave corridor. 10% of this coupe's boundary (280 m of total 2,800 m coupe perimeter) adjoins a 2021 clearfell coupe (20.9 ha) currently following and scheduled for 2025/6 productive conifer restocking. This new felling consequently presents an adjacency issue here i.e. the new felling proposals effectively doubling the total extent of transient felled ground here prior to any new forest structure returning. This is recognized as less than ideal, however, the medium term ambition of reducing the extent of uniform aged and well-grown timber crops across large parts of Moyle forest requires initiation of a pattern of sequenced coupe felling to give far greater age diversity across the forest into the next rotation. Initiating this programme by felling a central coupe (mature and incrementally windblown) in this highly productive and maturing forest has meant that inevitably a neighbouring coupe of similar crop maturity would require felling relatively quickly afterwards (the last Plan's felling sequence anticipated this also). Choice of neighbouring coupe 07013 as the next clearfell coupe gives the smallest adjacency concern (other neighbouring coupes have considerably longer shared boundaries with the 2021-felled coupe). Coupe 07013 is also separated to a certain extent by a 40 m overhead powerline wayleave corridor that also contains extensive eared willow-dominant riparian native woodland (i.e. lessens the visual impact of the combined following coupes) as well as allowing further planned expansion of this riparian woodland into coupe 07013 as a component of restocking (see also **Maps 4b** and **5b**).

**Coupe 08008** (*Bernera Plateau Pt 1*) – 37.0 ha.

This upland plateau of 1973/4-planted Lodgepole pine and Sitka spruce (net 24.3 and 1.6 ha respectively) is the subject of a proposed peatland restoration within this Plan and described more fully in **Appendix 6** and in the EIA determination request (**Appendix 4**) on account of the implied deforestation this entails.

**Coupe 08016** (*Ardintoul Glen*) – 53.5 ha.

This late 1970's-planted coupe (LP/SS/HL/OG/Burnt: 39/12/1/28/20 %) is proposed for peatland restoration after clearfell and timber crop removal (i.e. re-wetting of terrain by drain blocking and furrow smoothing) with some follow-on Peatland Edge Woodland habitat anticipated. 8.1 ha of the Lodgepole pine was found (at 2018 survey) to be infected with *Dothistroma* needle blight (score: 3 on 0 - 4 scale – the highest score in the LMP area) and consequently removing this crop will reduce the threat of further localised spread. The rationale behind the peatland restoration proposal is outlined in **Appendix 6** and the deforestation envisaged discussed in **Appendix 4** (EIA Scoping Opinion Request form).

**Coupe 08019** (*Ardintoul West Flank*) – 39.7 ha.

As with coupe 08016 above, this late 1970's coupe is similarly proposed for clearfell and timber recovery prior to follow-on peatland restoration re-wetting operations and eventual Peatland Edge Woodland establishment by natural regeneration. This is described more fully in **Appendix 6** (restoration rationale) and **Appendix 4** (deforestation implications).

**Coupe 07020** (*Green Braes Switchbacks*) – 33.0 ha.

Steeply sloping coupe situated directly uphill of single track 'lifeline' public road to Glenelg/Arnisdale - planted with second rotation productive timber crops in mid- to late 1980's (Spruce/Larch/NMB/OG: 65/24/8/3 %) and assessed as a High hazard category and Moderate to High slope stability risk in 2013 geotechnical slope stability survey. The importance of these findings was reinforced by a localised landslip/debris flow occurring along one of the coupe's integral watercourses during the last Plan period which temporarily closed the public road whilst culverts were cleared, superficial deposits removed from the road and the gully re-evaluated for likelihood of subsequent slippage. Further geotechnical assessment will precede felling to consider temporary deployment of catch fencing along/above the public road for the duration of harvesting whilst most of the coupe will be worked by whole tree harvesting and winch working to collect, process and forward timber up to and along the internal forest roads. Timber stacking and uplift for haulage will be constrained to the immediate vicinity of the forest road entrance with only harvesting operational vehicles using and traversing the series of internal roads. As with coupe 07104 (above), follow-on habitat for this entire coupe is long term retention native woodland ("protection forest": upland birchwood character) to be achieved by restocking.

**Coupe 08005** (*Bernera Plateau Part 2*) – 22.1 ha.

This phase 2 clearfell coupe was initially afforested in 1973 (LP/SS/OG: 54/42/4 %) but trees have grown slowly and with poor form. Extensive windthrow of the spruce component first occurred in storm events in 2005 but has been increasing incrementally since then. The coupe lies adjacent to phase 1 peatland restoration coupe 08008 (above) and may itself have contiguous areas of deep peat forming part of the plateau's overall hydrological unit however windthrow has restricted access for more comprehensive peat depth survey at LMP revision. In consequence future habitat prescription is designed to be in keeping with native woodland restructuring envisaged for adjacent coastal slopes to the immediate west (see Phase 2 coupe 08018 described below) and therefore prescribed as low density NVC W4

native woodland (downy birch/grey and eared willow-dominant restocking) on '9b' soils (tussocky *Molinia* bog peaty soils). Access for felling and timber recovery is reliant on temporary forest road construction (see "Druim na Leitir extension" in Table 10, section 2.8). FLS intend to undertake further peat depth survey through the windthrown crop areas during phase 1 of the Plan and these findings will inform any new peatland restoration proposals that may be proposed (and deforestation approval applied for) at this Plan's mid-term review.

**Coupe 07820** (*Mam Ratagan Bluff*) – 11.4 ha.

This complex coupe comprises mainly 1920s/'30s-established non-native spruce and larch crops on steep slopes below Bealach Ratagan and directly above the Shiel Bridge-Glenelg public road. The steepness of these slopes – including a central afforested promontory with precipitous ravines on either side - and proximity and importance of the lifeline, singletrack public road limit FLS' ability to safely harvest this coupe directly up or down the slope using a conventional winch working methodology without the need for extensive periods of road closure . Using experience gained recently using a 400+ m horizontal crane/winch assembly to clearfell a nearby ravine coupe (2020), a similar long-distance winch system is envisaged to bring all motor manually felled trees to one of two new temporary winch stances, constructed from an existing forest spur road south of the coupe specifically for this operation (winch stance detail in Table 10, section 2.8). Two central ravines within the coupe are PAWS as is a third gully on the coupe's south-eastern boundary. Consequently the future habitat prescription is for restoration of the PAWS areas and expansion/interconnection by native tree natural regeneration on ground between the separate ravines. The overall coupe shape includes 3.8 ha of p94 Sitka spruce/Scots pine planting which will be felled to recycle in order to provide necessary ground clearance for winch lines to operate with their underslung harvested whole trees. The fell to recycle zone will then form part of the anticipated native woodland regeneration zone connecting two of the PAWS ravines.

**Coupe 08018** (*Coastal Slopes*) – 29.2 ha.

Felling and timber export access to the five discrete areas that constitute coupe 08018 will be provided by a temporary forest road constructed early in phase 2 of Plan period (see "Druim na Leitir extension" in Table 10, section 2.8). The coupe consists of some 1966-, but mainly 1974-planted, non-native conifer plantation (SS/Larches/MC/OG: 86/7/3/3 %) which has suffered extensive and continuing windthrow damage since 2005. Future habitat prescription is long term native woodland established by natural regeneration from the extensive mosaic of remnant native woodland in gullies and coastal margins. This is expected to establish windblown pioneer species and woodland of an upland birchwood character. Underlying soils in some areas of this coupe are (comparatively more fertile and free draining) brown earths and later enrichment planting with Atlantic oakwood species (sessile oak, hazel, holly) could create new W17 woodland - bolstering the extent of this regionally important habitat type (Kinloch and Balmacara oakwoods being local SSSI-designated exemplars).

**Coupe 07361** (*A' Mhuc Slopes*) – 16.6 ha.

This 1958/60-planted coupe is a uniform Sitka spruce second rotation plantation with a narrow band of Japanese larch 'framing' along both its upper and lower margins. One third of the coupe lies below the forest road on gully-side slopes classified as High slope instability hazard and risk in the 2013 geotechnical survey (and Low to Moderate hazard and risk for slopes above the road). In keeping with all productive forests situated on this steeply sloping flank of Leachachan forest, the future habitat prescription is for native woodland restructuring for long term retention as both protection forest (for slope stability) and conservation benefits (i.e. upland birchwood natural regeneration – with common alder, downy birch and shrub willow species being early and dominant pioneer species). As with coupe 07104, regeneration would be enrichment planted with some upland oakwood species on areas with underlying brown earths where slope stability is unlikely to be compromised by growth of larger stature broadleaved species.

**Coupe 08007** (*Camas nan Gall*) – 11.3 ha.

This remote coupe is the final remaining area of non-native conifer afforestation above Camus nan Gall bay (83% p67 Sitka spruce, 10% intruded native broadleaves and open ground: 7%) – all neighbouring plantation felled and the timber taken out by sea from the bay in the late 2000's. Access for harvesting is still restricted to the sea (i.e. landing craft) and likewise for timber export (mobile ramp/pier system). Due to the relatively small size of this coupe and the significant overheads of mobilisation and timber recovery, FLS envisage harvesting this coupe in conjunction with similar sea-only accessible coupes along the Skye side of (nearby) Kylerhea Narrows (FLS' Kinloch Hills landholding). Future habitat is prescribed as native mixed broadleaves established by natural regeneration on account of the proximity and extent of seed-bearing native woodland remnants in and around the coupe.

**Coupe 07015** (*Ratagan Hilltop*) – 17.5 ha.

Productive conifer crops planted in the 1920s, '40s, '80s and '90s occupy the predominantly steep slopes of a modest-but-conspicuous hillock directly above the Shiel Bridge-Glenelg public road (SS/LP/DF/OG: 91/2/5/2 %). The slope instability risk classification is Low to Moderate (and Hazard classification: Moderate to High) so clearfelling the large stature mature conifers will allow restructuring of coupe composition to include long term retention native woodland (upland birchwood character) on the steep slopes bounding the public road corridor – as protection forest - and also along the permanent watercourse tributary of Allt na h-Inghinn, and establishment of productive Sitka spruce plantation on the more accessible, easily managed mid-contour slopes.

### 4.1.2 Thinning

There are no areas of existing woodland being managed by conventional thinning regimes (see also **Appendix 1** – *Windthrow Risk* section for consideration of determining factors). One area of mid-rotation conifers with extensive PAWS remnants will have some halo thinning to conserve semi-natural features until coupe maturity and is identified and defined in section 2.3 and **Map 5**.

Additionally section 2.3 and **Map 5** identify areas of the forest where thinning is prescribed to improve amenity and safety in publicly accessible areas (e.g. thresholds, car parks, picnic areas, forest roads, trail networks) and/or the ecological integrity of woodland (PAWS and riparian corridors). Due to the limited scale and extent of interventions proposed, this will typically be implemented by motor-manual methods (i.e. by pedestrian chainsaw operators).



A rolling programme of ‘cleaning’ – cutting of regenerating non-native saplings - is envisaged in areas where native woodland is being established either by natural regeneration or restocking after clearfelling. Removal of young non-native trees, at upto thicket stage of development, will be undertaken by motor-manual methods with cut material broken up and left *in situ* to rot down. All such trees typically have less than 10 cm stem diameter at breast height – the threshold above which formal felling approval is required. Similarly, clearance of small and young regenerating trees on, and within the immediate vicinity of, heritage features - to conserve structures and maintain a site’s heritage context - is considered a cleaning rather than thinning operation.

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

There are very limited opportunities for Low Impact Silvicultural Systems in the Glenelg Peninsula. High rainfall and exposure coupled with rapid growth rates in shallower-rooting conifers suitable for timber production increase potential for windblow. Much of the productive forest area in the most sheltered areas (i.e. Ratagan face) require harvesting with cable crane and makes thinning un-economic.

### 4.1.4 Long term retentions, Minimum Interventions and Natural Reserves

Refer to **Maps 4a** and **4b**.

In accordance with FLS Natural Reserves guidance, areas designated as **Natural Reserve** are existing, mainly semi-natural wooded areas where conservation of biodiversity is the primary objective and where there is an expectation that no (or minimal) intervention management is required in perpetuity to achieve this objective. Within Natural Reserves, natural processes will predominate and intervention is only envisaged to conserve these processes. The continuity (and longevity) of habitat afforded within Natural Reserves conserves and promotes recovery of sedentary species and so function as refugia of permanent habitat from which more mobile species can expand into adjacent managed forests over time. Deer management and non-native tree/shrub removal (*Rhododendron ponticum* and isolated remnant, and self-seeded, conifers) are the only pro-active management foreseen in these areas. Six discrete areas of semi-natural woodland are defined as Natural Reserve (total 57.8 ha).

The classification **Minimum Intervention** includes all areas of Natural Reserve but also areas of land/woodland to be similarly managed for environmental benefit, but with minimal frequency or intensity of intervention, for a prescribed period of time i.e. not necessarily in perpetuity. This is primarily ground within establishing native woodland restock or natural regeneration where routine cleaning of non-native regeneration is anticipated during establishment phase and in riparian native woodlands where adjacent non-native conifers have only recently been removed and seedbed regeneration is still anticipated and will require cleaning.

**Long-term retentions** have been chosen where it is considered desirable to retain existing forest stands beyond economic maturity primarily for environmental benefit but where there is no long term imperative to retain these stands once their objective has been fulfilled. Within the Glenelg Peninsula LMP area, this classification has been applied in three discrete areas: two stands (total 4.5 ha) of 1950/60’s-planted Sitka spruce in an isolated coastal area where the potential for future raptor nesting is recognised in these large stature trees and one stand of severely windblown 1950’s Sitka spruce located on terrain deemed to unsafe to access, fell and clear (a steep mobile scree slope with large fallen, leaning and hung up trees under tension) and so retained in recognition of the relatively undisturbed habitat niches that the stand now offers for deadwood specialist fauna, flora, lower plants and other wildlife requiring minimal disturbance to thrive/reproduce (i.e. pine marten, badgers, otters).

### 4.1.5 Restocking by planting

Refer to **Maps 6a** and **6b**.

Restocking by planting is considered where productive non-native conifers are to be grown for timber in a subsequent rotation and in felled coupes prescribed for native woodland establishment with insufficient quantity or variety of native, seed-bearing, trees in the vicinity to expect satisfactory levels of natural regeneration. Restocking will be to achieve minimum stem density of 2,500 per hectare (productive conifers) and 1,600 per hectare (native woodland for conservation). Native species transplants - with local (Z105) provenance native tree species or nearest adjacent zone if unavailable – is undertaken within five years following to allow *Hylobius* populations to peak and decline so transplants can be planted and established without pesticide application. Ground preparation in advance of restocking is by excavator-based hinge mounding to achieve requisite densities of planting spots (see Table 7, section 2.5) and in accordance with techniques stipulated in published Scottish Forestry guidance “*Cultivation of Upland Woodland Creation Sites – Applicants Guide (2021)*”. On steep slopes where there are either slope instability concerns or mounding machines cannot access, “hot” planting is undertaken i.e. restocking in the winter following felling and with ground preparation limited to manual screefing of planting spots and notch planting.

### 4.1.6 Natural regeneration

Areas of felled woodland and riparian corridors where natural regeneration is considered the most effective, low input method of establishing native woodland are illustrated on **Maps 6a** and **6b**. Regeneration is generally anticipated without preliminary ground preparation. Much of currently following ground prescribed for natural regeneration is on peaty surface water gley soils with comparatively low fertility. Consequently establishment (to greater than 2 m growth) is taking upto 15 years to achieve. Where tree regeneration and recruitment is ultimately unsuccessful, or too limited to achieve at least 1,600 stems per hectare, scarification may be undertaken to create more conducive regeneration conditions for local native tree seed recruitment. Alternatively restocking may be undertaken with native tree transplants if regeneration evidence is deemed too patchy or insufficient to result in characteristic woodland distribution or composition or the pioneer woodland can be enriched with other site-appropriate species unlikely to arrive naturally for a considerable time (e.g. sessile oak, hazel and holly).

### 4.1.7 Woodland creation

There is no new woodland creation proposed.

### 4.1.8 Restoration of peatland

FLS utilises a decision making protocol for consideration of potential peatland restoration sites: *FC Practice Guide 104 – Deciding future management options for afforested deep peatland (2015)*. Three areas are proposed for restoration within this Plan period (see section 2.6 and **Map 9a**). The underpinning rationale for their choice is outlined in **Appendix 6** and the deforestation that the restoration creates is considered in the EIA Scoping Opinion Request (**Appendix 4**) which also includes an annotated map showing the location of the sites in the context of future habitat composition.

### 4.1.9 Forest tree health

FLS endeavour to take responsible measures to combat threats to tree health. There are several pests and diseases of national significance that are currently pertinent to the Glenelg LMP area:

*Phytophthora pluvialis* - identified by Scottish Forestry in several roadside Western hemlock trees in Moyle forest during last Plan period (2021). A Statutory Plant Health Notice (SPHN) was served in December 2021 instructing removal of specific, marked trees as well as removal of (potentially vulnerable) regenerating hemlock and Lodgepole pine trees in the vicinity. The conditions of this Notice were discharged during 2022 (within SPHN-defined timescales). Forest Research maintain a national watching brief for new occurrences of this disease.

*Dothistroma* Needle Blight (DNB) in pine trees is monitored by a three-yearly-cycle of aerial condition survey in line with FLS' DNB Strategy (2017) with identified infected trees/stands subsequently visited (i.e. "ground truthed") and scored for severity of infection and – in conjunction with assessment of other pine that may be at risk in the vicinity – to inform decision making as to any requirement or prioritisation of felling. The national management strategy is to slow down the spread of DNB, reduce inoculum levels in infected coupes to reduce the risk of hybridisation of disease genotypes, and minimise the economic loss incurred through infection by prioritising felling of infected sites with low mortality and a marketable value. **Appendix 1** includes a map showing the current infected stands of Lodgepole pine in the Plan area. 145.9 ha of lodgepole pine has been identified with DNB infection within the LMP area (scoring either 2.5 or 3). 116.5 ha (or 80%) is scheduled for clearfelling within this LMP – 99.4 ha for peatland restoration and 17.1 ha for Sitka spruce restocking (timber production). This leaves 29.4 ha of DNB-infected forest (in one coupe) proposed for clearfelling in Phase 3 (2033-2037).

*Phytophthora ramorum* is a fungus—like pathogen that infects larch species causing needle death, shoot dieback, bleeding cankers and ultimately tree death and is therefore a major health and economic threat in UK forestry. Highest At Risk areas are along the UK's western seaboard (generally amenable - mild, moist - climatic conditions) and the disease is notifiable by SPHN stipulating an earliest-possible felling obligation (with buffer zone) to reduce further spread of the disease. In response to the incremental (north and westward) spread of this disease from early infection areas, FLS has adopted a strategy of pre-emptive felling to control disease spread. Glenelg Peninsula LMP area currently has 40 ha of larch species and this Plan's felling proposals intend removal of 24 ha (60% reduction) over the next ten years. A further 8 ha (20% reduction from 2023 extent) is scheduled for felling over the following ten years – leaving 8 ha by 2043. All larch stands chosen for retention beyond the end of this Plan period are in easily accessible locations (should SPHN felling be required) and are currently young crops (post-2000 restocking) that FLS hope may reach a marketable timber value by the time of felling.

Chalara Dieback in Ash (*Hymenoscyphus fraxineus*) has been established in the Skye and Lochalsh area for several years and can cause the gradual decline and possible death of ash trees. FLS' response to the spread and impact of this disease is to only fell infected trees if they pose a safety threat to the public and forest users (i.e. pre-emptive felling where dieback is compromising structural integrity near public places/spaces i.e. road- and trail- side trees). No ash trees will be planted in native broadleaf restocking as there is a ban on the movement of ash trees and seed within the UK at this time.

Large pine weevil (*Hylobius abietis*) is an insect pest affecting many species of young trees, including native broadleaves, but is especially destructive of pine and spruce seedlings and transplants. Weevil populations can build to high levels over several years after clearfelling of coniferous woodland (especially pine) and can consequently hinder the successful establishment of restocked and regenerating sites. Chemically treating transplants and young trees can kill weevils attempting to feed on vulnerable stems however the natural population dynamics of this pest sees a gradual but reliable decline in weevil numbers if felled ground is fallowed for more than three years and – by year five – weevil populations and their impact on untreated restocking is tolerable.

*Heterobasidion annosum* or butt rot is a significant fungal risk to many timber-producing conifer species in the UK. The fungus can proliferate on fresh-cut stumps and favours warm, free-draining soils to spread and potentially infect follow-on conifer crops. Most afforested soils within this LMP are perpetually wet (at least moist) and with a peaty component not conducive to infection and spread. Only the lowest slopes of Moyle forest and native woodland areas in Ardintoul forest have sufficiently free draining and loamy soils to potentially support *H. annosum* infection and spread. Application of a urea solution onto fresh cut stumps is prescribed to reduce infection rates in at risk areas for conifer restocking and will consequently be stipulated in harvesting methodology for phase 1 clearfell coupe 07007 (see **Map 4b** and section 4.1.1) as productive conifers are planned in restocking there.

## 4.2 Deer and herbivore management

FLS recognise that deer are capable of causing significant damage to forests and woodlands, mainly through browsing and bark stripping, and can also adversely affect biodiversity of both woodland and open ground habitats through over-grazing of ground flora and the suppression of regeneration and characteristic structure. They are however a natural component of wood- and heathland ecosystems and can provide recreational sporting opportunities and venison - whilst the presence of deer can enhance the experience of visitors in the outdoor environment. The challenge of wild deer management is therefore to balance environmental, economic and deer welfare objectives on FLS land with the objectives of private landowners for forestry, agriculture, sporting and other forms of land use beyond FLS' boundaries.

Appendix 8 presents a Deer Management Plan for the Land Management Plan area (including consideration of other herbivores).

## 4.3 Roads, quarries operations and timber haulage

Glenelg Peninsula LMP area is bisected by the public road C1223 (Sheil Bridge – Glenelg - Corran) which is classified as an Agreed route by the Highland Timber Transport Group between Shiel Bridge and Barnhill (the Glenelg/Bernera road junction). As such it can be used for timber haulage without restriction but as regulated by the Road Traffic Act 1988. Two lesser 'tributary' roads – linking to the C1223 - may also be proposed for timber haulage depending on the location of approved tree felling (the Barnhill-Glenelg Ferry road C1224; and the Ratagan-Totaig road). These roads have Consultation route status (**Map 3** and **Maps 4a** and **4b** illustrate these different roads/classifications) and require FLS to engage with the local authority in advance of any planned haulage to determine permissible haulage terms (e.g. vehicle/tyre specification, frequency of lorry movements, exclusion periods and cumulative daily tonnage limits).

Public road C1223 is the sole terrestrial vehicle route into the communities of Glenelg and Arnisdale from the rest of mainland Scotland. It is consequently regarded as a Lifeline route by the local authority. Upon the request of the local authority, FLS maintain an arterial forest road within Moyle forest as a contingency public traffic thoroughfare in the event of a landslip or severe weather temporarily closing the higher, exposed public road.

## 4.4 Management of habitats and biodiversity

The UKFS guidance is to manage a minimum of 15% of any forest management unit with conservation and the enhancement of biodiversity as a major objective. The figure for this Plan is currently 51% (1,375 ha) - and will rise to 66% (1,762 ha) by 2033 upon completion of this Plan's felling and restocking/regeneration proposals. This includes all areas designated as Natural Reserve, Long Term Retention, Minimum Intervention, Managed Open as well as all felled, currently following, ground destined for native woodland establishment by natural regeneration.

### 4.4.1 Designated sites

There are no areas of environmentally designated land/habitat within the LMP area and consequently no requirement for a Designated Sites Plan or Habitat Regulations Appraisal. However, the Ardintoul/Bernera block bounds the Lochs Duich, Long and Alsh Reefs SPA and Inner Hebrides and the Minches SAC. Both sites are designated for marine features that may be impacted by any adverse condition of tributary watercourses and adherence to *Forests and Water UKFS guidelines (2017)* in all forestry operations will ensure no diffuse pollution enters watercourses that flow into these designated areas. Marine-based harvesting and timber extraction proposals for Camus nan Gall coupe 08007 (section 4.1.1) will require preliminary discussion with Nature Scot and the Planning Authority with a Habitats Regulations Appraisal of the agreed working methodology.

### 4.4.2 Native woodland

FLS seeks to protect, enhance and expand all existing areas of native woodland within the LMP area. Control of herbivore browsing impacts on young and regenerating trees is seen as a critical management measure to protect existing native woodland and enhance the condition of component trees and associated constituent shrub and plant species. Similarly, control of browsing is also fundamental to the successful establishment by natural regeneration of native woodland on clear-felled, following ground. Non-native natural regeneration (mostly Sitka spruce and Lodgepole pine) is common on most following areas after clear felling of non-native conifers and the timely cleaning of this regeneration by at least by pole stage development is planned.

### 4.4.3 Ancient woodland / Plantation on Ancient Woodland sites (PAWs)

It is FLS policy to restore a minimum of 85% of all sites classified as Plantations on Ancient Woodland Sites (PAWS) to native woodland. This is in addition to the protection and enhancement of existing ancient and semi-natural woodland remnants. Within the Glenelg Peninsula LMP area, there are approximately 65.7 hectares of PAWS (illustrated on **Map 5**) with all proposed for non-native tree removal - to initiate full restoration - within the next four phases (i.e. 20 years) of conventional felling. The table below also outlines the threat level to PAWS areas based on the most recent survey information (September 2022) and corresponding Ancient Woodland Inventory information (AWI Map Origin ASNO1860).

Table 14

Forest Area	Ancient Woodland ID	PAWS Site ID	Area (ha)	Ecological Potential	Current Status/Threat Level	Action Proposed
Coill' a' Ghurrabain	1801	n/a	6.8	-	-	
Allt Ghortein nan Meann	-	n/a	3.4	Medium	Secure	
Allt an Dalach	13/1800, 1802 & 1804	No number	10.4	Medium	-	<i>PAWS and adjacent non-native cons felled 2020-'23. Non-native tree regen to be removed as part of rolling programme.</i>
Ardintoul Wood	16/1793, 1795	564	15.0	High	Secure	<i>PAWS and adjacent non-natives largely felled in 2022, rest in next LMP (08027). Evidence of higher deer presence in this of coastal woodland. Focussed deer control post clearfell required to allow native woodland regen and expansion.</i>
Ardintoul Wood	16/1792, 1788	364, 44545	14.3	Medium	Secure	<i>LMP proposes removal of remaining adjacent non-native conifers (coupe 08027) which will reduce regeneration threat. Some Sitka regen throughout however much terrain is sheer cliff/very steep slopes so not safely accessible. Focussed deer control post clearfell is looking to allow native woodland regeneration and expansion.</i>
Ardintoul/Totaig plateau	17/1791	n/a	4.6	-		
Faire Donn	20/1789	n/a	5.2			
Coille na Totaig (part)	22/1786	6655	4.9	High	Secure	<i>The occasional Sitka spruce (from legacy seedbed regeneration) to be removed asap.</i>
Leachachan	25/1803 & 1806, 26/1805, 27/1808	No number	9.2		Threatened	<i>Not started. Halo thinning of PAWS remnants proposed (07903, section 2.3). Larch is a component of Long Established Woodland of Plantation Origin (LEPO) but not to be replaced due to future disease threat (section 4.1.9).</i>
Coille Saraig (part)	29/1811 LEPO	n/a	8.1	-	-	<i>LMP proposes phase 1 clearfell on non-natives (coupe 07104) and part regen/part restock with site appropriate NBLs.</i>
Ratagan	25/2229 LEPO	n/a	4.1	-	-	<i>Clearfell 2018 of Sitka spruce plantation, veteran beech retained and regenerating with some non-native conifer and native broadleaved trees (part) and partial restock with Sitka spruce.</i>
Sgurr a Bhraonain/Allt Ratagan	21/2230, 2231, 2232; 24/2234	38880	12.8	Medium	Threatened	<i>Removal of non-native trees in/around these remnants began in last LMP (Allt Ratagan), more proposed in this Plan (coupe 07820). Some non-native regen on sheer/inaccessible cliffs being tolerated as low ecological threat.</i>

Most PAWS will be restored using natural regeneration of existing native species after felling. A key principle of the restructuring programme is continuous control of browsing pressure to allow sufficient natural regeneration to establish coupled with timely cleaning of non-native trees arising from the legacy seed bed. In the Ratagan/Leachachan PAWS, *Rhododendron ponticum* is present (or nearby) at low, pioneering levels but with considerable potential to colonise following clear-felled ground. There has been little requirement to control this species in recent decades as the extent and continuity of dense conifer forest offered little opportunity for the shrub to spread successfully. With extensive felling undertaken in the last Plan period, conditions now suit this prolific invasive species. Buddleia, cotoneaster and other garden shrub escapees from neighbouring residential areas will also be monitored and managed during routine cleaning (of mainly seedbed non-native conifer regeneration) in areas of regenerating or restocked native woodland adjacent to settlements.

PAWS surveys are conducted on a regular (five-yearly) basis – in the case of Glenelg Peninsula PAWS this was most recently in 2022 - and management priorities can change to reflect new survey findings.

#### 4.4.4 Protected and priority habitats and species

All forest management operations are subject to formal Work Planning process initiated prior to work commencement. This includes walkover checks for wildlife (presence or activity), important natural habitat and terrain features. Details are recorded in the Work Plan document alongside control and/or mitigation measures prescribed to avoid potential for disturbance or deterioration. Opportunities to further protect vulnerable species or enhance habitats may also be proposed through Work Plan input and subsequently incorporated into contracted operations or in conditions appended to standing sales. Additionally FLS will comply with FC operational guidance with respect to European Protected Species, otters, white-tailed eagle and other birds (individual Guidance Notes listed in Appendix 7). This guidance includes the need for prior consultation with Nature Scot with regard to potential disturbance of Schedule 1 bird species and compliance with any consequent licensing requirement.

The following table lists notable habitats and species recorded within the Plan area and associated management actions prescribed to conserve these.

Table 15

Notable EPS and Scottish Biodiversity Strategy Species Priorities and Actions supported by this LMP		
Species	Objective	Actions
Black grouse	Species not currently present but with potential to arrive. Survey, monitor, protect.	<i>New fences and existing fences will be marked if and when appropriate to prevent bird strikes. Counts would be conducted to monitor status when/if the species is found to be present. Meanwhile the LMP's ambition to create more native woodland – with natural regeneration a key mechanism for expansion – will create more and more suitable habitat for potential black grouse occupancy.</i>
Raptors	Species present in LMP. Survey, monitor, protect.	<i>Existing sites will be monitored and protected. Retention and creation of mature forest will retain suitable nesting habitat for a range of species. Buffer zones and timing restrictions will be issued to ensure no disturbance from forest operations.</i>
Pine Marten	Species present in LMP. Survey and protect.	<i>Integrate protection of the species during forestry operations if necessary by protection of den and trees/stumps in which they breed. Retain ancient trees with holes.</i>
Otter	Species present in LMP. Survey and protect.	<i>Integrate protection of holts during woodland management where necessary. Manage riparian margins to provide wetland vegetation as sheltered habitats.</i>
Juniper	Species present in LMP. Survey and protect.	<i>Identify and protect existing plants. Restoration of native woodlands and expansion of montane woodlands will provide opportunities for expansion of this species.</i>
Bats	Survey, Monitor for species. Protect.	<i>Integrate protection of breeding/roost sites and of the species during woodland management where necessary. Generally protect ancient trees which have potential for bat roosts.</i>
Badger	Present in this LMP. Record, protect.	<i>Monitor setts. Pre-survey and protect throughout forest operations. Work only under license within 20 m of sett.</i>
Pearl bordered Fritillary	Survey, Monitor for species. Protect.	<i>Maintain conditions appropriate for this species by managing bracken and tree cover to provide optimum conditions. Create areas suitable for new colonisation through PAWS restoration and management.</i>
Slender-striped Rufous	Survey, Monitor for species. Protect.	<i>Instigate monitoring protocol. Avoid damage to flush habitats which support the food plant of the larvae (Meadow Buttercup).</i>
Water Vole	Present in this LMP. Record, protect.	<i>Undertake surveys. As a result of coupe check surveys or other recordings during site visits, integrate protection as part of forest operations. Existing habitat will be protected.</i>
Notable Scottish Biodiversity Strategy habitat priorities supported by this LMP		
Habitat	Objective	Actions
Blanket bog	Survey and record to identify location and protect/restore.	<i>Do not plant trees on deep peat, on active peat bogs or on areas of peat bog which can be restored as active. Undertake peat bog restoration where appropriate through removal of non-native trees, drain blocking to retain water within the site.</i>
Upland Heathland (wet and dry heaths)	Survey and record to identify location/extent and protect.	<i>Remove non-native trees from key representative wet and dry heath. Do not plant on those key areas representative of wet and dry heath. Deer control will reduce browsing pressure to improve the ground vegetation layer.</i>
Hazel, birch, ash, elm woodland type	Protect and enhance through deer management and non-native removal.	<i>Restoration through PAWS management (see below) and native woodland management.</i>
Limestone Outcrops	Survey and record to identify location/extent and protect.	<i>Protect.</i>

Notable non-native species present within the Plan area with the potential to expand and negatively impact native habitats are listed in the following table:-

Table 16

Non-native Invasive Species within this LMP		
Species	Objective	Actions
<i>Rhododendron ponticum</i> (Ratagan/Leachachan)	Remove from area.	Aim for complete removal on FLS land.
<i>Buddleia</i> (Ratagan/Leachachan))	Remove from area.	Aim for complete removal on FLS land.

#### 4.4.5 Open ground

The majority of open ground habitat within the Plan area is a mosaic of wet and dry heath, mire and localised bog interspersed with bare rock outcrops located toward the upper margins of the landholding. FLS has a duty to protect these priority habitats and ensure their condition does not deteriorate. For the 10-year duration of this Plan, deer control undertaken primarily to reduce herbivore impacts on regenerating native woodland will also benefit the biota of heath habitats – allowing development in dwarf shrub stature and condition as well as component (often browsed) understorey plant/lower plants – without sufficient time elapsing for these dwarf shrubs to become rank/senescent or to begin to shade out constituent species dependent on the heath’s typically modest stature and open character to thrive. There is scattered but increasing levels of non-native tree regeneration present above the afforested tree-line and on the heath plateau above Ratagan forest. This will be removed from these areas before their presence and extent is considered a threat to the overall integrity of the open ground habitat types and prior to these trees reaching prolific coning/seeding age.

#### 4.4.6 Dead wood

Dead wood - of varying size, origin (branch, root, trunk etc), species and stage of decay - is a vital component of a healthy, fully functioning forest ecology as well as contributing to, and positively influencing, nutrient recycling and carbon storage. FLS use deadwood management practice guides (see **Appendix 7**) in forestry work planning to identify opportunities for retaining or creating deadwood during management operations to at least meet minimum UKFS guidelines of 20 m<sup>3</sup> ha<sup>-1</sup>. Deadwood retention may not be of uniform volumes across all areas of the forest but instead favouring retention/creation in areas with greatest ecological potential such as in, or adjacent to, existing native woodland or Natural Reserve (see section 4.1.4) and in areas where native woodland has previously been recorded/identified (e.g. PAWS – see section 4.4.3). Areas of Natural Reserve also offer some of the best opportunities for the development and long term retention of mature, large dimension standing and fallen deadwood - only being processed or removed where it presents a significant risk to the public or other forest users.

#### 4.4.7 Soils

There will be minimal soil disturbance and machine movement on these habitually wet sites to reduce the risk of compaction or damage to the soil structure. Brash mats (or alternative flotation measures) will be used to protect sensitive soils where repetitive machine passes are planned (e.g. forwarder routes). Felling residues will usually be left on site to allow nutrient recycling, with consideration for the practicalities of restocking. Where restocking is prescribed (see **Maps 6a** and **6b**) ground preparation will be by creation of discrete mounds as opposed to trench mounding or ploughing as these sites are already sufficiently well drained or sloping to limit periods of extensive waterlogging of establishing trees. The distribution of soil types across the LMP area is illustrated in **Maps 9a** and **9b**. This LMP’s proposal to prioritise restructuring (from production to protection forest type) of afforested slopes most vulnerable to landslip is an additional pro-active soil conservation measure.

#### 4.4.8 Deep peats

Whenever trees are felled there is a presumption, supported by legislation, in favour of restocking. However, for woodland on deep peats, consideration of net carbon loss/gain and wider environmental implications of future management is more important than for other sites. For this reason, FLS can propose applications for felling without conventional restocking on peatland sites that are less suitable for second rotation forestry and there is a clear benefit foreseen through restoration. FC Practice Guide 104 *Deciding future management options for afforested deep peatland* (2015) provides an assessment method designed to identify the most appropriate future management option for afforested peatland that is not already classed as having a presumption to restore (e.g. designated sites or where there is adjacent designated terrain where peatland is a qualifying habitat).

There are three areas proposed for peatland restoration – see section 2.6 and **Appendix 6** for decision making analysis and **Appendix 4** for the EIA determination request relating to associated deforestation.

#### 4.4.9 Freshwater habitat

The Water Framework Directive (2000/60/EC) sets out the provision for the protection of water as both a resource and an ecosystem. This was adopted in Scotland through the Water Environment and Water Services (Scotland) Act 2003. In Scotland the delivery of the objectives within this legislation is delegated to the Scottish Environment Protection Agency (SEPA). The objective of this legislation is to deliver good water status through the implementation of river basin management plans. FLS Land Management Plans have a role to play in meeting the objectives of the Water Framework Directive by ensuring any proposed forestry activities do not cause deterioration and, where appropriate, deliver improvements to the water environment. For example, any new proposed planting, forest restructuring and felling should not lead to any deterioration of any water bodies in or adjacent to the LMP area. All planting, felling and long term forest planning must comply with the Forests and Water UKFS Guidelines (4<sup>th</sup> edition, 2017) and The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (CAR) with respect to appropriate buffer strips between planting/restocking and water bodies.

FLS will consult with SEPA prior to commencing engineering works in, or in the vicinity of, inland surface waters to determine the levels of control and/or mitigation required. Site-specific mitigation for engineering works is not a matter for this Plan; however Forestry Civil Engineering will adhere to all planning protocols that apply at the time of project implementation.

Surface water drains will not discharge directly into the water environment. FLS will remediate legacy drains of this type to avoid siltation problems during and after forestry operations by using tree roots and other natural methods to install anti siltation devices during harvesting operations and addressing the drains permanently during subsequent ground preparation operations. When natural means are not available, plastic dams or semi-permeable netting might be used temporarily. When operations are finished these will be removed for re-use.

Where opportunities exist to deliver environmental improvement by the alteration or removal of inappropriately designed or redundant structures - for instance upgrading of a culvert to allow fish passage or removal of a redundant weir - this will be undertaken in consultation with the relevant stakeholders and we will register the operation on the SEPA website. Opportunities for morphological and ecological improvements may also be considered.

Three permanent watercourses within the LMP area are used for private water supply abstraction and these are described and considered in section 4.8 'Water' and **Appendix 1** (Background Information – Hydrology).

#### 4.4.10 Control of invasive species

Non-native invasive species identified within the LMP area include *Rhododendron ponticum* and *Buddleia* species. Both species have been the subject of control efforts during the last Plan period. This has utilised glyphosate as a foliar spray on small plants and (for large *Rhododendron* bushes) cutting/dismantling and stem treatment of cut stumps with glyphosate. FLS continue to monitor the presence and expansion of these species instigating further control measures when their spread – or novel opportunity to spread (i.e. onto newly clear-felled and fallowing sites) – is considered a significant threat. This control is in line with the Wildlife and Countryside Act 1981 (as amended by the Wildlife and Natural Environment (Scotland) Act 2012) and its corresponding Code of Practice for non-native species.

### 4.5 Management of historic sites

FLS' key priorities for archaeology and the historic environment are to undertake conservation management, condition monitoring and archaeological recording of significant historic assets; and where possible, to seek opportunities to work in partnership with others to help to deliver *Our Place in Time: the historic environment strategy for Scotland* (2014) and *Scotland's Archaeology Strategy* (2015). Significant archaeological sites are protected and managed following the *Forests and Historic Environment UKFS Guidelines* (FC, 2017) and FLS policy document *Scotland's Woodlands and the Historic Environment* (FCS, 2008).

There is one scheduled historic site within the Plan area: the well preserved broch at Caisteal Grugaig (SAM No. 1664, displayed on **Map 2**). Monitoring the condition of scheduled sites is undertaken by Historic Environment Scotland (HES) on a five to ten yearly cycle depending on the nature, and any trend in condition, of the monument. HES are a statutory consultee in the preparation of Land Management Plans and responded to this Plan's consultation with the following management recommendations which will be adhered to during the delivery of the Plan's management operations: *"It is important that Caisteal Grugaig broch is retained within a setting that allows for an understanding of its oversight over the confluence of the lochs. In practical terms this would entail keeping views between the broch and the lochs open, maintaining an area of designed open ground around the broch, and ensuring that an unplanted downslope buffer of greater than the UKFS minimum of 20 m when doing any restocking in the area. It is also important to note that most works to a scheduled monument require scheduled monument consent (SMC), which is issued by Historic Environment Scotland. Whilst the broch sits within a clearing, the scheduled area extends beyond the visible upstanding remains of the broch, and therefore forestry operations should be cognisant of this. Any thinning or felling works within the scheduled area would likely require SMC. All harvester and extraction routes should also avoid the scheduled area."* (see **Appendix 2** Consultation Record for full transcript). During the last Plan period, HES field officers assessed the site (2016) and, whilst noting the site was in similar condition to their previous report, some corrective actions were recommended to better preserve the site (bracken cover reduction, removal of fallen and adjacent mature trees and some filling of masonry voids with pinning of facing stones). This work was undertaken during the last Plan period after preparation of a SMC-approved Method Statement defining conservation measures prior to delivery.

**Appendix 1** provides a summary of all unscheduled heritage features within the LMP area and its associated data held in the Historic Environment Record. This heritage relates mainly to previous settlement associated with historic agricultural land use. With regard to all heritage features, in advance of any proposed forest management operations, the Work Plan process necessitates a pre-operational walkover survey – supplementing desk-based analysis of historic environment datasets (FLS' GIS data and local authority Historic Environment Record) - in order to identify all recorded features as well as any newly identified ones within the proposed work plan area. Features are then suitably and clearly marked on the ground, and on contract and operational maps, and appropriate control measures stipulated in work plans to protect against potential collateral damage through the delivery phase. Similarly on clear-felled and fallowing ground where tree restocking or natural regeneration of trees is envisaged, work plan prescriptions will exempt recorded historic environment features from ground disturbing operations, re-planting and/or tolerance of tree regeneration in compliance with Forestry Commission's *Forests and Historic Environment - UKFS Guidelines* (Third Edition, 2017).

### 4.6 Landscape

An understanding of the landscape character and visibility is important to ensure the managed forest integrates with its surroundings and complements the area's scenery. This section gives an overview of landscape character and recommends how forest design and management can assist in integrating it with the surrounding landscape character.

The Glenelg LMP area comprises a highly visible set of forests in one of the most scenic and visited areas of the Highlands. The surroundings include iconic mountain peaks, lochs and a prominent castle. Ratagan Forest - on the southern shore of Loch Duich - is located within the Kintail National Scenic Area. Consequently landscape character, and the anticipated impact of forest management proposals, is given a very high priority in this plan.

### 4.6.1 Kintail National Scenic Area

National Scenic Areas (NSAs) identify Scotland's finest scenery and are so designated to ensure protection from inappropriate development. The special qualities of the Kintail NSA are listed here along with italicised notes where these qualities relate specifically to land within the Glenelg LMP area.

- Drama epitomising the West Highland scene comprising magnificent mountain scenery of stately peaks sweeping up steeply from loch and glen. The glens, glacially formed, cut through the mountains and Loch Duich deep and narrow sea loch leads far inland- steep hills and mountains appearing to rise almost directly from the water. (*Relevant to Ratagan block above Loch Duich's southern shore*).
- Renowned mountain ranges composed of identifiable well known peaks. The most distinctive peaks most readily identifiable. (*The Five Sisters of Kintail are best appreciated from the slopes of hills around Loch Duich including a significant viewpoint on the pass Bealach Ratagan above FLS' Ratagan forest*).
- Human settlement and activity circumscribed and dwarfed by towering hills, a rich heritage of historic sites.
- An inland coast - Loch Duich reaches far inland, ringed by houses and crofts and forestry. (*The LMP area extends along the southern shore of Loch Duich with Ratagan forest covering the slopes above within the NSA*).
- A natural theatrical stage- the forest is highly visible from across Loch Duich, the opposite side of the glen and from the mountains. (*Directly relevant to FLS' Ratagan forest block*).

### 4.6.2 Landscape Character

Landscape character varies across the Plan area but is essentially covered by two Landscape Character Types (LCTs):- *Rugged Coastal Hills* (Skye and Lochalsh LCT 363) and *Rugged Massif* (Skye and Lochalsh LCT 365). On its most south-easterly boundary, the Plan area adjoins the *Interlocking Sweeping Peaks* LCT (Skye and Lochalsh LCT 369). The inherent characteristics of each LCT are given in **Appendix 1** and the location/extent of each LCT relative to the Plan area is illustrated on **Map 10** – Landscape Context. Additionally, the Kintail National Scenic Area (NSA) incorporates all FLS land occupying the seaward, north-east facing, land above Loch Duich (illustrated on both **Maps 2** and **10**).

### 4.6.3 Landscape Influences and Design Principles

In line with UKFS' forest design principles, landscape character has informed the land management planning process. In order to successfully complement inherent landscape character, and the special qualities of the NSA in particular, forest design and management need to respond to the underlying landform as well as the overall scale of the landscape within which it sits. A sympathetic approach to landscape integration is made all the more important on account of the pronounced visibility of the LMP area which is rated High to Extreme situated as it is adjacent (and conspicuous from) popular local/tourist route A87, the Fort William/Inverness-Skye road.

The qualities and incongruities of each discrete forest area within the LMP are considered separately below - as each has its own unique landscape context.

#### Ratagan/Leachachan/Letterfearn:

- Highly visible area located on the steep, south western side slopes of hills rising up from Loch Duich. This terrain appears particularly prominent when viewed from across loch from the popular tourist route A87 to Skye and from settlements and accommodation along it including Shiel Bridge, Kintail Lodge Hotel, Morvich Causeway and Inverinate. (Vantage Point 1 on **Map 1** and in **Appendix 5** Visualisations is situated at shoreline car park of the Kintail Lodge Hotel)
- Two lifeline public roads / tourist routes traverse this area: the main Shiel Bridge-Glenelg/Kylerhea ferry road which passes through the forest climbing up to Bealach Ratagan, and the "dead end" coastal single track road connecting the remote settlements of Totaig, Letterfearn, Leachachan and Ratagan to the main road. An interior forest landscape of maturing non-native coniferous trees dominates the foreground of the Mam Ratagan road but ultimately affords spectacular panoramic views from above the treeline towards the iconic Five Sisters ridge and Kintail. The coastal single track road is fringed predominantly by semi-natural broadleaved woodland on its 'inland' side and with little shoreline woodland interrupting views outward from the road across the open loch.
- This very steep and expansive woodland/open ground is a permanent backdrop to residents of Ratagan, Leachachan and Letterfearn.
- Intermittent views from unclassified road to Keppoch.
- Open views from promoted viewpoint at Wester Keppoch from which the forest is highly visible to the fore with the spectacular mountain ranges beyond. (Vantage Point 2 on **Map 1** and in **Appendix 5** Visualisations).

#### Ardintoul/Glen Bernera & Kylerhea Narrows:

- The north-eastern end of Ardintoul Wood forms part of the forested slopes that rise up from Loch Duich in the backdrop to Eilean Donan castle (one of the most photographed and visited castles in Scotland) and neighbouring settlement Dornie.
- Highly visible above Loch Duich from the length of coastline between Ardelve and Balmacara. This includes the small settlements of Nostie and Avernish, both of which welcome holiday makers and promote local FLS trails. This stretch of the loch is popular also with sea kayakers.
- Slopes above Loch Duich are visible from popular roadside vantage points at Balmacara/Ratagan (Vantage Point 3 on **Map 1** and in **Appendix 5** Visualisations)
- In the west, slopes above Kylerhea Narrows are highly visible from the FLS wildlife viewing hide located across the water at NG 7875 2220 (Vantage Point 4 on **Map 1** and **Appendix 5** Visualisations).



- The forest is seen on the hillside to the north of Glen Bernera, visible from scattered properties, the public road to Kylesha/Glenelg ferry and the popular roadside beach and camping area.
- Interrupted views are seen from Glenelg village and in views from the coastal road for vehicles travelling north from Eilean reach.

#### Glen More/Moyle Forest:

- Forests either side of the public road below Bealach Ratagan are visually dominant for road users as they screen views out to the wider glen for much of the length of the forest.
- For road users heading east/uphill from Glenelg towards Mam Ratagan, the majority of the forest block is visible for a significant length of this road. The forest appears foreshortened due to the angle from which it is seen. The most easterly (distant) section of this forest is conspicuous as it rises to an artificial, afforested treeline on hill Bora Cnoc. (Vantage Point 5 on **Map 1** and in **Appendix 5** Visualisations)
- The western edge of Glen More forest is highly visible from neighbouring properties and the campsite on adjacent croft land at Cnoc Fhionn.

Specific management and design principles adopted to enhance the appearance of the LMP area include:

- The scale of felling coupes should relate to the immediate and wider landscape context e.g. large coupes appropriate adjoining expansive open heath, smaller coupes can accentuate the drama of the mountains or provide a naturalised complexity to lower slopes and settlement hinterland. Currently the large felled and fallowing area on slopes above Loch Duich draws the eye due to its large scale and uniform colour (fallowing, grassy vegetation) as do the linear and angular blocks of larch trees that frame the otherwise evergreen forests above Leachachan. *The new Plan advocates some large scale felling coupes on this face during Plan period, their scale determined to a large extent by the practical constraints of skyline winch working method required to harvest trees from these steep slopes. The removal of larch (a pre-emptive tree health measure – see section 4.1.9) and the Plan’s stated objective of clearing productive forest from slopes with a stability concern have been additional contributory factors in determining these coupe shapes and sizes.*
- The shape of felling and re-planting areas should relate – and be designed sympathetically with – adjacent hill summits, knolls and ridges to better integrate with surrounding terrain and appearing well balanced from afar. *Coupes shapes – particularly in Moyle forest - have been redesigned in sympathy with internal topography – as the most practical windfirm edges within this maturing conifer forest are forest road corridors influenced and constrained by landform i.e. contoured road sections.*
- The forest composition should be chosen to connect sympathetically with naturalised vegetation both above and below the forest - allowing the eye to sweep unhindered from summits down slopes to lochs and glen floors. This increases habitat/vegetation connectivity and minimise the appearance of incongruous geometric shapes and obvious straight lines within and at the margins of the forest. *This Plan continues efforts started during last Plan period to clear blanketing conifer woodland from the conspicuous slopes above Loch Duich – continuing the de-coniferisation of blanket afforested ancient wooded ravines (PAWS) to ultimately restore/reinstate native composition in naturalised treelines.*
- Natural regeneration of (non-native) conifer trees onto open heathland above the originally-planted forest is becoming more extensive and dense, appearing as an extension of the lower forest up the hill. This can create a future issue when the managed forest is felled from the lower slopes leaving scattered remnant conifers on the margins of the open hill trees - making them appear disconnected and out of place. When these remnant trees are sufficiently dense, or large areas of treeline woodland are left in situ above a felled area, they can appear as ‘eyebrows’ - taking upto 20 years to visually integrate once more with lower, restocked forest. If the natural regeneration of non-native conifers above the productive forests is dense, the upper margin of proposed felling coupes should be designed to incorporate the entire (expanded) woodland not simply the original planted area. *This is a difficult design principle to enforce in practice – constrained mainly by heightened safety concerns of felling large trees (by motor-manual methods) on very steep slopes. Whilst the extent of non-native tree regeneration on open heath areas above afforested slopes has increased over recent decades, the extent and density compromises visual integrity more than ecological integrity at this stage. Novel methods of tree control (i.e. chemically injecting/killing trees) in areas where felling carries unacceptable safety concerns will be considered during this Plan period as a few Phase 2 felling coupes situated along the natural treeline may exacerbate ‘eyebrows’ and dotted open ground conifers if left unchecked during these clearfell contracts.*
- In the Bernera/Ardintoul forest block above the Kylesha-Narrows, forest management shapes should continue to be integrated with surrounding landscape features such as existing coastal and riparian native woodland or the landform elements, avoiding geometric shapes where possible. *The current 132 kV overhead powerline that bisects the forest at one location is a largely parallel sided and uniform width corridor at odds with the natural terrain. Current ambitions of the utilities provider to replace this powerline with an entirely new line/wayleave corridor situated to the south and parallel to the old corridor is an opportunity to fell the current straight-sided productive conifer woodland here and establish native woodland with a more fragmented and scalloped edge along the wayleave corridor. Some additional Phase 2 clearfell coupes further north on these coastal slopes will – once felled - allow restructuring by regeneration and restocking of native woodland here to complete an entirely native woodland slope from the Glenelg ferry slipway to Totaig (approximately 9 km in length).*
- Increase the diversity (range of tree species and mixtures of species) following forest design principles to enhance the variation and variability of vegetation types on the afforested slopes of Loch Duich and other local peaks in particular. The coniferous plantation at Ardintoul already integrates well with neighbouring areas of native broadleaved woodland demonstrating what we should aim to achieve at Ratagan. *This Plan aims to consolidate all future productive woodland on accessible mid-slopes allowing native woodland and open ground vegetation to bound these coniferous forest areas along coastal and glen floor margins as well as more naturalised treelines.*
- Re-design restock areas to avoid unnatural shapes and sudden changes in direction (i.e. avoid simply in-filling the area previously felled). This is particularly important when restocking the felled Ratagan hillside. Landscape compromises made on this slope to enable felling require rectifying for the long term benefit of this area. *The (tree- and shrub-less) riparian corridors which cross this area*

are to be managed to promote development of permanent native riparian woodland structure around which future rotations of productive timber woodland can be grown and felled on ground adjacent to, and between, these established riparian woodland corridors. Their careful setting out, to appear natural, irregular in width and shape, is of high importance on this visible slope. Of particular importance is ensuring the public road at the bottom of the new planting area does not appear too dominant or unnatural i.e. where the (linear, horizontal) public road corridor meets (sinuous, vertical) riparian corridors, new tree planting should be undertaken to eliminate the 90-degree 'angle' between the road and the wooded streams.

- Additionally, ensure this riparian planting along parallel watercourses is asymmetric and irregular in shape to prevent them appearing as regular straight lines between blocks of conifers. *This design concept to be adopted in the Work Plan process that precedes the letting and delivery of restocking contracts.*

## 4.7 People

### 4.7.1 Neighbours and local community

The Consultation Record (**Appendix 2**) provides a list of known community organisations as well as local and other stakeholders notified – and subsequently engaged with - during LMP development. Two public consultation events were promoted and hosted at village halls within the two separate community council catchments covered by the LMP area. As a consequence of these, several individual households also made representations to FLS and were visited or corresponded with (at their discretion) directly over specific issues raised.

### 4.7.2 Public access

The Land Reform (Scotland) Act 2003 ensures statutory access rights to most of Scotland's outdoors if exercised responsibly and with respect for privacy, safety, livelihoods and the environment. Equally, land managers have a duty to manage their land and water responsibly in relation to these rights. In consequence, visitors are welcome to explore FLS land and are only asked to avoid established trails or forest roads when proposed forest management work increases the potential for accident or injury (e.g. from tree felling) that might result from uncontrolled public access during operational delivery. When forest operations are proposed in the vicinity of Core Paths and ScotWays Rights of Way (illustrated on **Map 2**), consultation with the local authority's Access Officer will discuss and agree any temporary diversion of the existing trail for the duration of the works. All forest operations are planned and implemented in adherence with FC Practice Note 'Managing public safety on harvesting sites' (2013).

FLS' Visitor Services staff undertake routine safety checks of trails and associated features (e.g. gates, signs, overhanging trees etc) and undertake maintenance work (vegetation control, drainage improvements) in response to observed deficiencies or reports from the public of unacceptable access conditions. Comments regarding poor drainage and way-finding on sections of Totaig-Ardintoul trail made during LMP scoping have been noted and an intention to rectify issues has been given by Visitor Services once active harvesting operations (and related, temporary trail diversions) have completed.

### 4.7.3 Renewables, utilities and other developments

The utilities infrastructure present within the Slattadale LMP area is detailed in **Appendix 1** - Background Information: *Utilities and other infrastructure*. These relate to communications masts (cellular phone network antennae) and their associated lease agreements define the extent of infrastructure and function (and hence any restrictions on tree growing for line-of-sight masts, undergrounded power supply cabling susceptible to vehicle over-running etc). Within the last Plan period, Glenelg and Arnisdale Community Development Trust asked for, and have successfully established, a new telecommunications mast to be sited on Glas Bheinn to provide strategic local coverage for a community broadband scheme.

There are no renewable energy schemes within the Plan area.

**Map 2** also illustrates the extent of overhead utility powerlines that traverse the landholding. These include the main 132 kV Fort Augustus-Skye line and several shorter sections/spurs of (interconnected) 33 kV overhead electricity line serving coastal settlements along Loch Duich shoreline and several disparate and remote houses in Moyle and Ardintoul forests. All forest management within the vicinity of overhead powerlines will comply with *FISA Safety Guide 804 – Electricity at Work: Forestry* with respect to prior notification and consultation with the Network Operator to agree any safe working methodology. Finally, the mains water pipeline serving the Loch Duich communities is undergrounded and runs parallel to the shoreline for 4 km and is partially accommodated within the LMP area.

### 4.7.4 Support for the rural economy

At a national level, FLS aims to support a sustainable rural economy by managing the national forests and land in a way that seeks to encourage sustainable business growth, development opportunities, jobs and investment. For the Glenelg Peninsula LMP area, support for the rural economy relates ostensibly to employment sustained directly with FLS and in the contracted forest management work (felling, restocking, surveying, fencing) as well as through the export and 'downstream' processing of timber from productive woodland. Indirectly, the provision of modest visitor facilities (car parking, a picnic site, forest road and trails with some site interpretation) provides an informal outdoor access 'resource' that many visitors are attracted to the area to use – potentially staying (and spending money) locally as a result.

Support (including consented event permission to use FLS trails) for the annual "Dirty 30" hill running weekend event - hosted by Lochalsh Running Club – is a significant regional sporting event that raises the profile and promotes the area for its rugged and accessible terrain in turn drawing additional visitors (and expenditure) to the area.

FLS endeavour to maintain a professional and considerate attitude towards approaches from local communities, utilities providers and other stakeholders looking to provide wider future social and economic benefit from the LMP area e.g. social housing, drinking water, telecommunications and power supply infrastructure, tourism initiatives etc.

## 4.8 Water

### 4.8.1 Drinking water

All private drinking water supply points located on FLS ground are recorded as a layer in FLS' Geographic Information System (and are indicated on **Map 2** and also detailed in **Appendix 1**). The presence of private water supplies is routinely considered during the preparation of specific forest management work plans and relevant neighbours are notified of proposed operations, and any intention for specific protection measures, to ensure proposed measures are mutually agreeable. Private water supply points, any associated supply pipes, will be clearly marked on all resultant contract maps and marked on the ground. All operations strive to go beyond compliance using best practice to fully protect any source area and must be afforded maximum protection from machinery damage, compaction and pollution from all forestry activities. In instances where forest operations have the potential to lead to temporary disturbance or interruption in supply, or is likely to impact the quality of supply, then a private water supply intake may be temporarily re-located to a location out with the sphere of influence of the operation - upon prior discussion and agreement with the relevant householder(s). Where private water supplies are in the vicinity of areas of frequent or high levels of public access, FLS will endeavour to manage vegetation to deter egress that may otherwise result in incidents of unsolicited littering or pollution of water supply intakes and their immediate catchment.

**Appendix 1** (*Hydrology* section) provides maps showing the location of the three supply abstraction points within the LMP area – with all located (including 50 m buffer zones) within native or mixed amenity woodland habitat managed as Minimum Intervention. Forest management operations anticipated within these areas within Plan period include motor-manual fell-to-recycle of a limited number of coniferous trees at Ardintoul and potentially some manual tree (enrichment) planting along the settlement hinterland at Ratagan. Water supply abstraction points and supply pipework (which follow the riparian corridors to at least the FLS landholding boundary) will be highlighted in pre-operational Work Planning and householders will be contacted to alert and involve them in operational planning.

### 4.8.2 Watercourse condition

FLS consider it vital that no operational planning or delivery leads to any deterioration of water bodies or water dependant habitats within the Land Management Plan area including tributaries and water bodies directly above or below the FLS landholding. Additionally all forestry operations will be undertaken to meet the requirements of the UKFS with respect to conservation of water quality. Practical operational guidance ensuring compliance is given – and adhered to - in Forestry Commission publications “*Forests & Water - UKFS Guidelines*” (Sixth Edition, 2019) and “*Managing Forest Operations to Protect the Water Environment*” (2017). As a designated marine habitat Lochs Duich and Alsh are sensitive and vulnerable to any instances of pollution, sedimentation or nutrient enrichment directly into, or derived from, contributory watercourses. Particular care will be taken in the planning and delivery of all road engineering and forestry works with potential to impact this waterbody and its tributaries to prevent any instances of diffuse pollution (i.e. sedimentation).

There are no waterbodies within the LMP area and three waterbodies adjacent to the Plan area which are routinely monitored by SEPA. Recent results are summarised in **Appendix 1** Background Information: *Hydrology* but none are currently in a less than Favourable condition.

### 4.8.3 Flooding

There are no specific flood prevention considerations within the plan area at this time (see **Appendix 1** – Background Information: *Hydrology (Flooding)*).

## 4.9 Fire

UKFS stipulates forests should be planned to enhance their resilience and mitigate the risks posed to their sustainability by the effects of climate change. Associated management should also enhance the potential of forests to protect society and the environment from these same effects. The potential risks from fire are a particularly important consideration in the context of climate change and landscape resilience as fire can not only result in uncontrolled release of carbon from the landholding, but may result in significant habitat and wildlife loss and fire has the potential to spread to adjacent land and property. Whilst it is not possible to prevent wildfires completely, wildfire resilience can be improved through good forest planning and management.

In the case of the Glenelg Peninsula LMP, wildfire resilience is considered best supported through:

- *reducing the likelihood of wildfire incidents* - through provision of precautionary signage at public thresholds, car parks and picnic areas where fire raising is likely or a proven concern;
- *reducing the potential extent of wildfire if it does occur* – through forest design – restoring peatland, planting and conserving larger riparian native woodland corridors (less volatile or permeable to wildfire spread) that bisect/sub-divide coniferous plantation into smaller areas.
- *reducing the potential severity of damage and impacts on people and the environment if fire does occur* – managing native or mixed, amenity woodland around settlements (less combustible and permeable habitat than uniform coniferous plantation) as well as having a year-round FLS staff Fire Duty rota system providing pro-active fire reporting, site access and fire monitoring support to Scottish Fire and Rescue Service (SFRS) - in the event of a fire - and instigating suppression activities at SFRS' discretion and direction.

Currently the risk of wildfire starting on land within the LMP area is low: levels of public access are fairly low and largely involving informal, short duration access for walking. There is little wild camping historically within the landholding. The two wildfires experienced within the LMP area in the last twenty years originated on neighbouring ground as a muirburn operations - spreading across dry (springtime) heathland into afforested and fallowing ground where they were suppressed. In such incidences FLS relies on neighbours following the Muirburn Code which includes a legal requirement to reduce the possibility of fire spreading by ensuring sufficient people and equipment are available to control the fire and giving notice in writing of any intention to muirburn to all landowners within 1 km at least seven days before burning.

The risk of wildfire potentially spreading on FLS land is also deemed to be comparatively low on account of the prevailing oceanic climate (mild, habitually moist/humid conditions, ground and habitats). There is however a well-established pattern and occurrence of high risk conditions in early springtime when periods of dry, bright and breezy weather can persist for weeks and accumulations of dead vegetation quickly become tinder dry at a time when new lush grass/bracken has yet to re-emerge to reduce overall combustibility. Climate change modelling predicts an increasing incidence in periods of dry weather not only likely in springtime but also with warmer summers and probability of increased dry periods. This will increase the capacity of the landholding's forests and open ground vegetation to burn if wildfire occurs. Native deciduous woodland is less volatile in both the dormant (leafless and wet) season and summer "full leaf" (leaves with high water content and low calorific value) and with a comparatively humid understorey. Accordingly – and for biodiversity gains too – this LMP prescribes establishing (or conserving/promoting) extensive networks of riparian deciduous woodland over the next twenty years which will in turn create greater resistance to potential wildfire spread. Section 2.7 presents data and pie chart representations of broadleaf/conifer composition over this time and shows a doubling in broadleaved forest (from 22 to 45% of forest area) and a corresponding drop (78 to 55%) in coniferous woodland.

Nevertheless this does not allow any degree of complacency as to monitoring and managing for fire risk as there is a corresponding trend over the same twenty year period for the forest age structure to move from (current) predominantly middle- to mature-aged woodland to (2043) a predominantly young and establishing woodland structure (see section 2.7 age class table/bar chart). Areas of fallowing and young restocked trees represent a greater risk of combustion on account of the higher amounts of accumulated ground vegetation amongst young trees - with a propensity to dry out comparatively quicker than a mature woodland understorey in warm, dry and breezy conditions - and consequently representing a greater, transient fire risk than from an established west coast forest stand.

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