Central Region

STRATH NAN LUB

Land Management Plan

Approval date:

Plan Reference No:

Plan Approval Date:

Plan Expiry Date:

CSM 6 Appendix 1b

FOREST ENTERPRISE - Application for Land Management Plan Approvals in Scotland

Forest Enterprise - Property

Region:	Central
Woodland or property name:	Strath nan Lub
Nearest town, village or locality:	Strachur
OS Grid reference:	NS061904
Local Authority district/unitary Authority:	Argyll and Bute Council

Areas for approval

	Conifer	Broadleaf
Clear felling	288.26ha	0ha
Selective felling	121.3ha	32.4ha
Restocking	214.61ha	28.64ha
New planting (complete appendix 4)		

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 Environmental Impact Assessment (Forestry) (Scotland) Regulations 1999 for roads, tracks and quarries as detailed in my application.

3. I confirm that the initial scoping of the plan was carried out with FLS staff on 17th January 2019.

4. I confirm that the proposals contained in this plan comply with the UK Forestry Standard.

5. I confirm that the scoping, carried out and documented in the Consultation Record attached, incorporated those stakeholders which the FLS agreed must be included.

6. I confirm that consultation and scoping has been carried out with all relevant stakeholders over the content of the of the land management plan. Consideration of all of the issues raised by stakeholders has been included in the process of plan preparation and the outcome recorded on the attached consultation record. I confirm that we have informed all stakeholders about the extent to which we have been able to address their concerns and, where it has not been possible to fully address their concerns, we have reminded them of the opportunity to make further comment during the public consultation process.

7. I undertake to obtain any permissions necessary for the implementation of the approved Plan.

Signed Cassy W Ginnes Signed……

Regional Manager Conservator

Region Central Conservancy……

Date 12th February 2020 **Date of Approval**……

Date approval ends ……..

Scottish Forestry
Coilltearachd na h-Alba

Environmental Impact Assessment
Screening Opinion Request Form

Please complete this form to find out if you need consent from Scottish Forestry, under the **Forestry (Environmental Impact Assessment) (Scotland) Regulations 2017**, to carry out your proposed forestry project. Please refer to Schedule 2 Selection Criteria for Screening Forestry Projects under Applying for an opinion. If you are not sure about what information to include on this form please contact your local Conservancy office.

Proposed Work

Please put a cross in the box to indicate the type of work you are proposing to carry out. Give the area in hectares and where appropriate the percentage of conifers and broadleaves

Proposed Work	select	Area in hectares	% Conifer	% Broad-leaves	Proposed work	select	Area in hectares
Afforestation	☐				Forest roads	☒	
Deforestation	☐				Forest quarry	☐	
Location of work		Strath nan Lub Land Management Plan					

Description of Forestry Project and Location

Provide details of the forestry project (size, design, use of natural resources such as soil, and the cumulative effect if relevant).
Please attach map(s) showing the boundary of the proposed work and other known details.

Please see section 3.0 of the Land Management Plan including relevant maps

Provide details on the existing land use and the environmental sensitivity of the area that is likely to be affected by the forestry project.

These are described in section 4.0 & 8.0 of the Land Management Plan

Description of Likely Significant Effects

Provide details on any likely significant effects that the project will have on the environment (resulting from the project itself or the use of natural resources) and the extent of the information available to assist you with this assessment.

There are no expected likely significant effects

Include details of any consultees or stakeholders that you have contacted in order to make this assessment. Please include any relevant correspondence you have received from them.

Mitigation of Likely Significant Effects

If you believe there are likely significant effects that the project will have on the environment, provide information on the opportunities you have taken to mitigate these effects.

Please see section 3.0 of the Land Management Plan.

Sensitive Areas	
Please indicate if any of the proposed forestry project is within a sensitive area. Choose the sensitive area from the drop down below and give the area of the proposal within it.	
Sensitive Area	Area
National Park (NP)	0
Select...	
Select...	
Select...	
Select...	

Property Details			
Property Name:	Strath nan Lub		
Business Reference Number:		Main Location Code:	
Grid Reference: (e.g. NH 234 567)	NS 061 904	Nearest town or locality:	Strachur
Local Authority:		Argyll & Bute	

Owner's Details				
Title:	Ms	Forename:	Shirley	
Surname:	Leek			
Organisation:	Forestry and Land Scotland	Position:	Planning and Environment Manager	
Primary Contact Number:	0131 370 5674	Alternative Contact Number:		
Email:	shirley.leek@forestryandland.gov.scot			
Address:	Forestry and Land Scotland, Aberfoyle Office			
Aberfoyle, Stirling				
Postcode:	FK8 3UX	Country:		
Is this the correspondence address?		Yes		

Agent's Details				
Title:		Forename:		
Surname:				
Organisation:		Position:		
Primary Contact Number:		Alternative Contact Number:		
Email:				
Address:				
Postcode:		Country:		
Is this the correspondence address?		Select...		

Office Use Only	
GLS Ref number:	

Contents

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Support documents: perspectives

Appendices:

I) Consultation record
II) Scoping record
III) Table of Operations

1.0 Summary

1.1 Introduction

The Strath-nan-Lub Management Plan area is located between the villages of Strachur and Ormidale on the Cowal Peninsula. It lies across the glens and ridges of Glendaruel and Strath nan Lub, with an elevation range from 30-586m AMSL and very little flat ground. The plan area is split in to 3 distinct management outcomes with 500ha under farming lease, a further 500ha containing the Cruach Mhor Windfarm and the remaining land mainly afforested with productive conifer woodland dominated by Sitka Spruce. Although not located within the Loch Lomond and Trossachs National Park, the eastern and northern plan boundaries do connect up to the park boundary. The surrounding area is a mixture of fields providing rough grazing, open hilltops and private forestry maintained for the purposes of timber production.

Timber production will remain an important element of the management plan objectives, site & climatic conditions limit species diversity but where sensible efforts will be made to provide a structural diversity.

1.2 Objectives

The Strath nan Lub Land Management Plan (LMP) draws on the key themes of the Scottish Forestry Strategy (SFS) (2019-29) and Forestry and Land Scotland's policy. The objectives of the new plan, which were developed following internal and external consultation, are summarised below and emphasise the key principals of maintaining the productive potential of the forest whilst delivering a range of other ecosystem services into the future.

- In the longer term establish rotation lengths that improve resilience by diversifying age structure whilst aiming to maximise economic potential.
- Continue to manage the forest for timber production, maximising potential by using Sitka spruce as the main species of choice.
- Actively target the removal of Larch trees within the plan area over the next 20 years, with at least 50% to be removed within the next 2 phases.
- Ensure the plan remains UKFS compliant by introducing a limited amount of diversity into productive areas where this does not significantly reduce volume production.
- Use habitat networks to further increase diversity and improve the visitor experience for user of the long distance recreation route.

- Afford adequate protection to private water supplies during operations. Forest and water guidelines will be followed during forest operations. At restocking, create adequate buffers along the routes of these facilities.
- An appropriate deer management programme will be established to protect vulnerable planted stock and allow natural regeneration where this is the favoured method of establishment.

1.3 Key proposals

Total Plan Area	2582 (ha)
Planned operations	
Felling	288.26(ha).; 117,894 (m^3)
Thinning	121.3 (ha); 6,065 (m^3) of conifer; 32.4 (ha); 1,620 (m3) of broadleaf.
Restock	214.61 (ha) of conifer; 28.64 (ha) of broadleaf.
New planting	0 (ha)
Roads and tracks	2050 length(m); 9850 tracks (m); 70 ramps (no.); upgrade 2990(m)
Public access	

1.4 Species diversity

Species group	**2020**	**2030**	**2040**
Sitka spruce	53.4%	52.1%	49.2%
Other conifers	8.6%	6.3%	4.7%
Native broadleaves	1.0%	1.3%	3.0%
Other broadleaves	3.7%*	3.7%*	3.7%*
Open space	33.3%	36.7%	39.4%

* These species are in the main assumed native as they do not consist of productive plantation, records do not reflect exact species makeup and therefore they are categorised as "other broadleaves".

1.5 Major issues

Issue	Description/mitigation
Issue 1	Several areas of currently inaccessible Larch located mostly in the northern part of the plan area. Forest roads are to be built and a plan to remove the mature Larch required should infection become relevant.
Issue 2	
Issue 3	
Issue 4	

1.6 Critical success factors

- The planned removal of the majority of Larch within the forest block over the next 20 years with the majority being targeted in the first 10 years, in order to minimise the risk of infection of P.Ramorum. At the time of writing, the current FLS Larch Strategy calls for 20% of Larch within the plan area to be felled by December 2023.

- The balanced removal of timber produce to market at a sustainable level over the plan period and beyond, providing a diverse age structure and secure regular timber income.

1.7 Standards and guidelines

This plan takes account of Scottish Government and Forestry and Land Scotland policy and strategy. It has been developed in accord with the latest UKFS Guidelines and is audited under the UK Woodland Assurance Standard. Forestry and Land Scotland Woodlands are certified as being sustainable by both FSC and PEFC.

1.8 Consultation

During the development of this plan we have consulted with stakeholders known to have an interest in this plan area. A list of stakeholders and their response can be found in Appendix I & II.

1.9 Contacts and further information

For further information on this or any other land management plan please contact:

Forestry and Land Scotland
Aberfoyle Office
Aberfoyle
FK8 3UX

tel. 0300 067 6600

2.0 SF regulatory requirements

2.1 Context and rationale for concept

Strath nan Lub consists of 2 distinct areas of mainly coniferous woodland, to the north are the forested slopes of the Eas Davain Glen adjoining on to Glenbranter forest at the highest point, in the south are the more diverse woodlands sitting on the slopes above the village of Glendaruel. This land management plan seeks to expand on the efforts of the previous plan to further improve crop and species restructuring and diversity.

2.2 Proposed felling in years 2020 – 2029

Phase	Area (ha)	Volume (m^3)
1	147.22	62,446
2	141.04	55,448
	288.26	**117,894**

Table 2.1 Summary of felling proposals

Map M3 shows the coupes for which approval is being sought for clearfelling during the plan period. These are set in the context of longer term management proposals in Map M2. The future habitats map (M4) should also be referred to.

2.3 Proposed thinning in years 2020 – 2029

Phase	Area (ha)	Volume (m^3)
1	44.75	2237.5
2	44.75	2237.5
	89.5	**4475**

Table 2.2 Summary of thinning proposals

Much of the plan area is unsuitable for thinning operations due to soil type, slope and exposure. Proposed thinning coupes are shown on map M6 and further detail found in section 5.1.2.

2.4 Proposed restocking in years 2020 – 2029

Phase	Species	Area (ha)
1 / 2	Conifer	214.61
1 / 2	Broadleaf	28.64
		243.25

Table 2.3 Summary of restocking proposals

Where production is the key objective conifers will be planted at densities of a minimum 2500 stems per hectare (sph) and broadleaves at a minimum of 1600. Target densities for native woodland regeneration will vary depending

on site objectives but are expected to be in the range 350 to 1600 sph where productivity is not the objective and environmental protection and diversity are.

Where establishment is to be through natural regeneration its presence will be assessed five years after felling. If regeneration is not at desired levels a decision will be taken on whether to allow more time for natural establishment of trees or whether to take a more pro-active approach; for example, ground preparation to create a suitable substrate for seedling establishment, or planting. Further evaluation will take place when the plan is reviewed at mid-term and ten years and future commitments to natural regeneration outlined in the mid-term review and plan revision.

Open areas will be allowed up to 20% tree cover. Sitka spruce regeneration will be kept within agreed tolerance limits on both open ground and in areas designated for broadleaved woodland. Small amounts of rhododendron are known to be present and appropriate measures to control this species will be put in place.

2.5 Access and roading in years 2020 – 2029

Phase	Species	Length (m)	Area (ha)
1 / 2	New roads	2050	6.1
1 / 2	Tracks	9450	2.1
		11,500	**8.2**

Table 2.4 Summary of roads and tracks

Proposed roads and tracks are shown on map M5 and more detail is to be found in section 3.0.

2.6 Departures from UKFS guidelines

The LMP seeks to follow the UKFS in all aspects.

The plan allows for some degree of adjacency with the proposed felling structure, this is due to some delayed felling from the previous plan causing a back log of coupes requiring removal to avoid uneconomic felling due to expanding windblow. The adjacency will be addressed by ensuring that where coupes are conflicting, phase 1 coupes will be felled early within phase and restocked following felling, phase 2 coupes will be felled late within phase and have a delayed replanting of 2 years, thereby affording the best opportunity to achieve a 2m separation in adjacent crop height at restock. Working in this way allows FLS to address issues of economic felling whilst beginning the restructuring which can be further improved at the next rotation.

2.7 Tolerance table

	Adjustment to felling coupe boundaries	Timing of restocking	Change to species (including boundaries)	Windthrow response	Changes to road lines
SF Approval not normally required	Up to 1ha or 10% of coupe - whichever is less	For productive species, up to 3 planting seasons after felling Up to 10 planting seasons for natural regeneration	Change within species group i.e. diverse conifers; broadleaves; Sitka spruce. Non-native conifers in native woodland areas and designated open space up to 400 stems/ha. <20% increase in area of Sitka spruce		
Approval by exchange of letters and map	1ha to 5ha or 20% of coupe - whichever is less	For productive species, 3 – 5 years after felling	>20% increase in area of Sitka spruce	<5ha as a single unit	Additional felling of trees not agreed in plan Departures of >60m in either direction from centre line of road
Approval by formal plan amendment	> 5ha or 10% of coupe	For productive species, over 5 planting seasons after felling	Change from specified native species Change between species groups	>20ha as a single unit	As above, depending on sensitivity

3.0 EIA screening determination for forestry projects

3.1 Proposed deforestation

There are no deforestation proposals.

3.2 Proposed afforestation

There are no afforestation proposals.

3.3 Proposed forest roads, tracks and other facilities

This is a request for an EIA determination for works covering construction of, tracks, ramps and other facilities in Strath nan Lub LMP area. The request covers proposals for the full ten year period of the plan which will offer some flexibility with the work programme without the necessity of having to re-submit a determination. Any work to be carried out in the second half of the plan period will be preceded by a new EIA determination request.

Approximately 9450m of forwarder and ATV tracks will be required to access harvesting sites and to facilitate harvesting, silvicultural and deer management operations. In addition up to 70 ramps will be required to allow harvester/forwarder access into coupes that are to be felled during the design plan period.

ATV tracks will be constructed in line with the principles described in the SNH guidance on Constructed Tracks in the Scottish Uplands. Construction will also conform to the Forests and Water Guidelines (Fifth Edition). During construction ground disturbance will be kept to a minimum. ATV tracks will not be treated as permanent features; once operations are complete tracks will be allowed to grass over and the running surface and side batters will be left in a condition that will promote vegetation regeneration. Tracks will be constructed with a top-side drain and will have regular drainage cut-offs to prevent erosion of the trackside drain. No water from the trackside drains will discharge directly into any watercourse.

Indicative positions of the tracks are shown on the roads and tracks map and final positions will be within ± 100m of these. The actual line will be planned to minimise landscape impact and ground disturbance, reflecting existing topography, avoiding steep gradients where possible and avoiding sensitive habitats. ATV tracks will be approximately 2m wide and the nominal area amounts to 1.9ha. A maximum of 650m of forwarder track will need to be constructed to gain access to first phase coupes; the exact distance will not be known until construction begins. Width will be approximately 3m and the nominal area up to about 0.2ha. Forwarder tracks will not be treated as permanent features and will be removed once they are no longer required.

Ramps will be approximately 3m wide and up to about 15m long. The total nominal area is approximately 0.3ha. They will not be treated as permanent features and will be removed following operations. The final number and location of the ramps will be determined at the time of operations but we believe one ramp per 100m of road/coupe interface will be sufficient.

Please refer to map 5 and section 3.5

3.4 Proposed quarries

The quarry at Glendaruel plays an important part in supplying quality stone to the surrounding FLS forest areas, there are no plans to establish any new quarries at this time.

3.5 Screening opinion request summary

Coupe	Length (m)	Area (ha.)	Purpose	Landscape	Water quality	Archaeology	Biodiversity	Access	Recreation	Material
06001	1190	0.6	access for harvesting machinery and timber lorries	no major impact	standard protection measures	no known issues	no significant issues	from forest road	n/a	nearest FES quarry
06007	295	0.06	deer management	no major impact	standard protection measures	no known issues	no significant issues	from forest road	n/a	to be found on site
06010/ 06011	1190	0.24	crop establishment and deer management	no major impact	standard protection measures	no known issues	no significant issues	from forest road	n/a	to be found on site
06020	660	0.14	crop establishment and deer management	no major impact	standard protection measures	no known issues	no significant issues	from forest road	n/a	to be found on site
06032	725	0.15	crop establishment and deer management	no major impact	standard protection measures	no known issues	no significant issues	from forest road	n/a	to be found on site
06038	450	0.09	crop establishment and deer management	Partially visible from West Glendaruel Rd	standard protection measures	no known issues	no significant issues	from forest road	n/a	to be found on site
06039	720	0.15	crop establishment and deer management	no major impact	standard protection measures	no known issues	no significant issues	from forest road	n/a	to be found on site
06042	465	0.24	access for harvesting machinery and timber lorries	no major impact	standard protection measures	no known issues	no significant issues	from forest road	n/a	nearest FES quarry
06042	227	0.07	access for harvesting machinery	no major impact	standard protection measures	no known issues	no significant issues	from forest road	n/a	nearest FES quarry

06048	375	0.13	access for harvesting machinery	Partially visible from West Glendaruel Rd	standard protection measures	no known issues	no significant issues	from forest road	n/a	nearest FES quarry
06048	1310	0.26	crop establishment and deer management	Partially visible from West Glendaruel Rd	standard protection measures	no known issues	no significant issues	from forest road	n/a	to be found on site
06060	465	0.09	crop establishment and deer management	no major impact	standard protection measures	no known issues	no significant issues	from forest road	n/a	to be found on site
06061	1750	0.35	crop establishment and deer management	Partially visible from West Glendaruel Rd	standard protection measures	no known issues	no significant issues	from forest road	n/a	to be found on site
06062	1406	0.28	crop establishment and deer management	Partially visible from West Glendaruel Rd	standard protection measures	no known issues	no significant issues	from forest road	n/a	to be found on site
06071	390	0.20	access for harvesting machinery and timber lorries	Partially visible from West Glendaruel Rd	standard protection measures	no known issues	no significant issues	from forest road	n/a	nearest FES quarry

Table 3.5 description of tracks and roads required

4.0 Land management plan

4.1 Introduction

This plan is a resubmission of a plan developed by Forest Enterprise Scotland (now Forestry and Land Scotland) in 2004. The plan area is located on the Cowal Peninsula approximately 8 miles south of Strachur. The total plan area (2583ha) is split in to a mixture of open ground managed for grazing (c.20%) and Cruach Mhor windfarm (c.20%) as well as high production forestry and environmental conservation (c.60%). Original planting dates back to the late 1940's and 1950's of which approx. 137ha remain. Of the c.1550ha of forested ground 53.4% is Sitka Spruce covering a range of ages, the remaining ground is made up of a mixture of conifer (8.6%), broadleaf (3.7%) and open space (34.3%).

The majority of the block is managed under a clearfell strategy with only small pockets of conifer and the remnant ASNW managed under long term retention (c.153ha). Some of the lower slopes of Glendaruel are suitable to continuous cover management and thinning, however the majority of areas are exposed / highly exposed to wind and located on poor soils with high levels of moisture making them unsuitable for thinning.

Across the whole forest area, wind damage is not a significant factor but with some felling work planned in the last LMP having been delayed, pockets are beginning to appear in the older and more exposed crop. Restructuring the woodland area is a key objective of this plan in order to catch up with prior efforts to diversify the age structure and improve the long term sustainability of the forest over the next 4 phases.

4.2 Setting and context

Strath nan Lub plan area (figure 4.2) is located mainly on former hill ground and some areas of PAWS in the Glendaruel area. The majority of the water shed from the plan area flows in to the River Ruel, either by direct flow from the minor watercourses of the Glendaruel forest or one of the tributaries which flow in to the Ruel. The shape of the plan area means that most views of the forested area are internal with only Glendaruel, Strondavon and the outer edges of An Carr being visible to most public users, there are also few peaks locally climbed which would overlook the plan area. Landscape design is therefore a less important issue for the plan as the plan area has limited prominence on the local landscape.

To the north of the plan area is Glenbranter and to the south are woodlands formerly part of the plan area when written in 2004, though now in private ownership. Connectivity therefore to the north and south means that the plan area forms part of a wider forest area at hill top level.

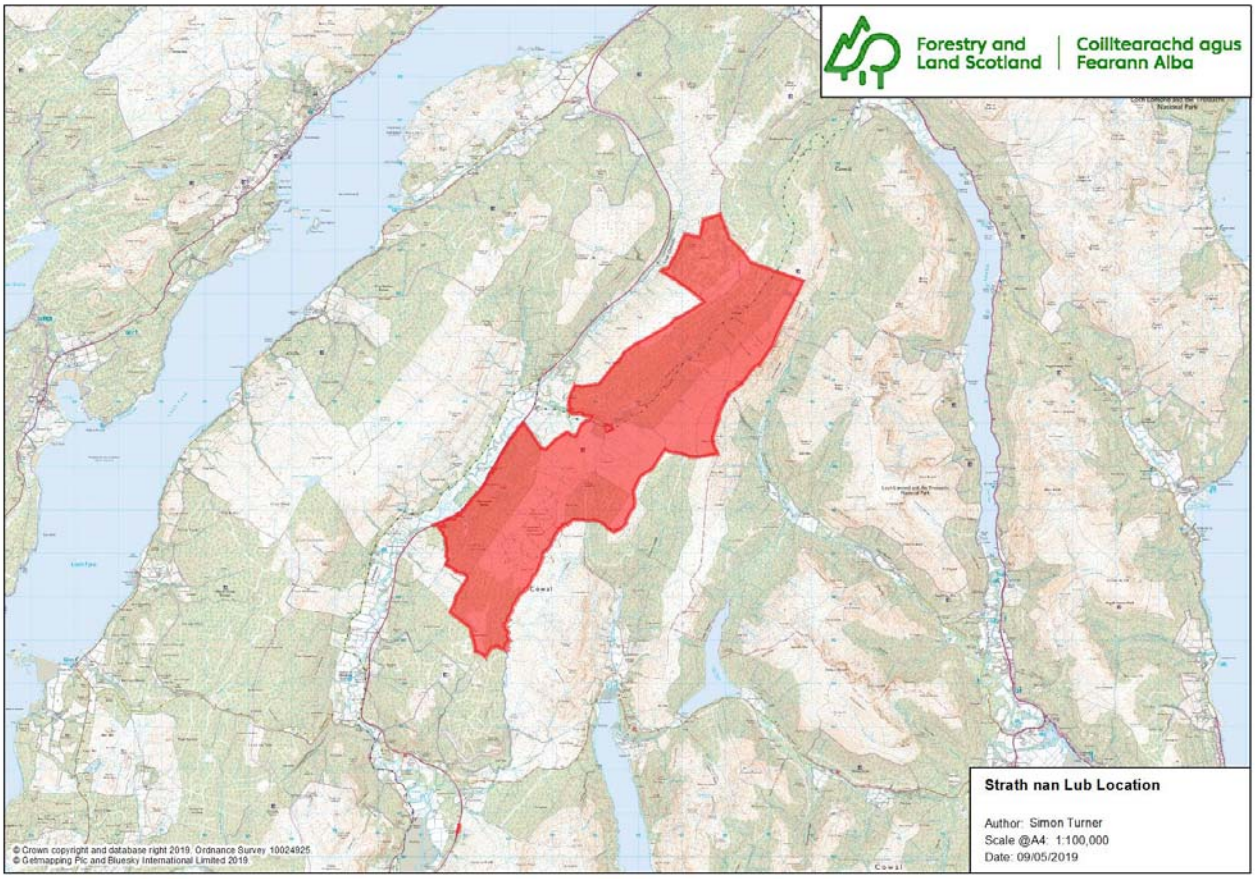

Figure 4.2 Strath nan Lub: Location

4.3 Issues

Factors that have been taken into account in developing the LMP proposals are summarised in the analysis and context (map M1) these include:

- Steep slopes which are potentially unstable, though not necessarily threatening key infrastructure.
- The ongoing requirement for screening of the Cruach Mhor windfarm.
- Cool, wet climatic conditions and large areas of wet acidic soil.
- Known black grouse leks nearby.
- Management of water catchment to reduce the risk of flooding to local property.

4.4 Key challenges and liabilities

Significant challenges are:

- The reduction in the area for commercial spruce forest through implementation of the PAWS policy.
- Removal of Larch species from some remote areas currently inaccessible to harvesting machinery.
- Developing a sensible management structure to ensure the economical removal of timber whilst reducing the risk of wind throw.
- Producing a restock proposal that allows an increase in diversity whilst allowing for the difficulties in protection against mammalian browsing.

4.5 Concept

The Analysis and Concept (map M1) summarises how the important issues will be addressed, including:

- Identification and restoration of PAWS and extending the area of native woodland around these.
- Assessing slope instability and adopting management options suitable for these situations.
- Protection of all third party infrastructure.
- Taking into account site conditions when selecting species for restocking.
- Protecting designated sites and seeking opportunities to enhance/extend similar habitats.
- Extend similar protection to priority species on FLS ground.
- Protect landscape value of the area.

4.6 Management objectives

Plan objectives are to be found in section 1.2. Broad objectives are illustrated in the management zones (map M2) though it should be stressed that there will be overlap between zones.

5.0 Management plan proposals

5.1 Management

Management will be guided by the key objectives of the plan. The main management technique will be clearfelling and re-planting.

5.1.1 Clearfelling

Details of the proposed management structure can be found on Map M3. The structure aims to address delayed felling and reduced age diversity whilst maintaining stability and overall tree cover.

Table 5.1 indicates net felling area and volume figures for the plan area for the first two phases. These values are approximate and coupes will be surveyed to provide more precise figures prior to felling.

Phase	Area (ha)	Volume (m^3)
1	147.22	62,446
2	141.04	55,448
	288.26	**117,894**

Table 5.1 Proposed felling

Management will be guided by the key objectives of the plan. Broad objectives are illustrated in the management zones map though it should be stressed that there will be overlap between zones. The main management technique will be clearfelling and re-planting.

Coupes for which approval to fell is being sought are shown in the management map. All harvesting operations will be carried out in accordance with the UK Forestry Standard Guidelines, and Forests and Water Guidelines (5th edition). Prior to operations any known heritage features will be marked to ensure protection during the operation. Public access will be managed so as to reduce disruption without compromising safety.

The proposed felling sequence is a balance between achieving optimum economic return and timber quality, minimising risk of wind damage and retention of some of the older trees in the medium term. Models recently developed by Forest Research and FLS suggest optimum cost recovery and timber quality is achieved when trees are between 40 and 50 years old. The timing and spatial distribution of felling coupes fall within the parameters set out in the UK Forest Standard to minimise risk of flooding and deterioration of water quality. Retention of some stands for a longer period will aid restructuring, improving future resilience and achieving a better age class balance. Established native woodland in the FHN will be managed as long term retentions or minimum intervention. Some of these will form important components in a natural flood reduction strategy. In the former there may be some productive potential but in the latter operations will be restricted to those which benefit the environment.

5.1.2 Thinning

This first indication of suitable stands was based on the following criteria:

- Planting year 1998 to 2008
- Slope ≤30%

- DAMS score (exposure) ≤14
- Soil type (from maps)
- Accessibility

Assessment of thinning opportunity within the plan area show few suitable options, soil type and exposure being the main constraints to effective thinning for improved stability. Given this the application for approved thinning relates to areas surrounding areas of public access. The intention within these areas is to be able to selectively thin standing trees to a range of benefits –

- water management
- light management
- facility enhancement
- improved visual aspects for health and safety

The areas selected are shown on map M6, these are buffered around publicly accessed areas with the intention that no more than 50% of the standing crop would be removed. Additionally an allowance has been made for the thinning of non-native species to be undertaken within the PAWS/ASNW area on the slopes of Glendaruel, thinning in this area is most likely to be thinning to recycle and is targeted at maintaining the habitat.

5.1.3 Potential for Continuous Cover Forestry

Although site conditions exist that would favour the use of CCF techniques no coupes have been identified that would justify using them at present. In the future the best opportunities for CCF will be found in the native woodland zone.

5.2 Future habitats and species

The management zones map (map M2) indicates broad aspiration for future habitats which are shown in more detail in the future habitats map (map M4). Further information is found in Appendix III.

Table 5.2 summarises the establishment proposals for the plan area for the two phases.

	Broadleaves	**Conifer**	**Open**	**Totals**
Phase 1	13.91	60.99	46.58	121.48
Phase 2	14.73	153.62	50.27	218.62
Totals	**28.64**	**214.61**	**96.85**	

Table 5.2 Proposed establishment

Climate and site conditions restrict the use of species for commercial production to lower elevations and even here wet acidic ground does not favour many alternatives to Sitka spruce. The latter will remain the species of choice over much of the plan area but opportunities will be sought for using other species. The favoured candidate is Scots Pine and native broadleaves which have already established well on some sites. Where large areas of pure Sitka spruce are indicated these will be broken up along riparian zones and by not planting very poor ground. It is not possible to show this in detail until sites can be assessed following clearfelling. Where feasible the use of broadleaved species will also be used to add visual and species diversity.

In general the existing commercial treeline will be unaltered when the ground is restocked. On the upper western edge of the Strath nan Lub glen, where forest meets open hill and hagged peat, the tree line will be lowered when replanting in recognition of the wider peatland habitat in this area.

5.3 Management of open land

Strath nan Lub has a large proportion of open land amounting to just over 1500ha of the larger plan area, though it remains in the ownership of Forestry and Land Scotland approx. 1000ha of that is under private management lease; 490ha are grazed by a local farmer and the remaining 500ha are under the management of Scottish Power Renewables for the purposes of Cruach Mhor Windfarm.

The grazing lease is a long term agreement valid until 2199 and there are no plans to alter that land use.

Scottish Power Renewables first secured the lease to build Cruach Mhor Windfarm in 2003, this was on a 25 year agreement and is due to expire in 2028; within the lifetime of this plan. At this time no discussions have been held in regard of an extension to the agreement, there is an expectation that it will be extended however should this not be the position there will be a period of dismantling and land restoration in line with the original planning consent which will take us to the next review of this plan in 2029. As part of the original planning consent an area equivalent to 200ha has been set aside for habitat management, this is approved through the Town and Country Planning Act and not subject to approval within this plan.

The remaining area of open space within the plan area constitutes a mixture of managed and successional open ground. Coupe 06000 sits on the ridges either side of the Eas Davain basin and is managed on the western ridge above 360-400m to protect eroded peatland and on the eastern ridge above 460m as acid grassland leading up on to sub alpine open hilltop. These areas are not suitable for forestry due to a mixture of exposure and soil conditions but benefit a range of open habitat. Natural regeneration is at very low levels in these areas, however where non-natives encroach in to

the habitat, these will be felled to waste before reaching 10cm dbh. Other areas of open habitat within the plan area are generally successional open habitat along streamsides; it is expected that these will periodically be cleared of non-native regen however all species will be tolerated outwith that.

5.4 Visitor zones and access

Visitor usage of the plan area can be described as low, there is only one formal route through the forest; the Loch Lomond and Cowal Way (LLCW). Of the 92km trail the plan area carries a 7.7km stretch running from Garvie farm at Glendaruel up to saddle with the Glenbranter Forest block where it descends down to Strachur . For the majority of that route the walk is through mature and maturing coniferous forest, which in some parts creates a tunnelled effect. Due to the infrastructure within Strath nan Lub there are no alternative or diversionary routes, any diversion would require walkers to travel the shorter but more dangerous route along the A886 between Glendaruel and Strachur. As part of the ambition of this plan there is a desire to soften the edges of coupes along the route and find ways to open up viewpoints whilst maintaining a productive forest resource, this will be achieved by moving the productive treeline up to 10m away from the road edge and planting soft species along coupe boundaries.

The route of the LLCW also boundaries the Forest Habitat Network (FHN) that bridges the ground between the forest road and the Eas Devain river. As part of the FHN management non-native conifers will be removed and replaced with Scots Pine and native broadleaves which gives parity to the aspirations of the visitor zone management desire to reduce tunnelling and open up viewpoints.

Informal use of the forest is also undertaken by users at Glendaruel, though no formal network or facilities are in place. The majority of users are dog walkers from the local area who use the lower road network and a combination of wild trails. All areas of the plan are open to users under the terms of the Scottish Outdoor Access Code.

There are 4 access points to the plan area as shown on the Roads and Access map (Map M5), only 3 of these are used for main forest duties, the entrance past Garvie farm is intended only for light vehicles.

5.5 Deer management

Deer Management in the LMP area incorporates the 2 deer management plans of Strath nan Lub (1287ha) and Glendaruel (1270ha). Current deer control is undertaken by Forestry and Land Scotland with support from a contractor resource. The species present in the area are a combination of Red and Roe populations with an estimated density of 18-20 per km2, though at times populations may be much higher with a significant ingress

from neighbouring property. At this time both 'out of season' and 'night shooting' licences for deer control are in place.

The plan area is stock fenced so deer transition is relatively easy, there are no plans to establish a large scale perimeter deer fence. Soft species planting are relatively low in number throughout the plan area but where they exist, these have been established with the assistance of deer proof fencing around the individual coupes to support the wider deer control. Due to the topography, the implementation of deer proof fencing to supplement deer control is likely to continue for soft species conifer and PAWS restoration.

Part of deer management will include the creation and maintenance of deer glades. Size and location of these will be determined during operational planning.

5.6 Other proposals

Road maintenance will proceed as and when necessary during the plan period. This might include removal of roadside vegetation including occasional trees in excess of 10cm dbh. Similarly management associated with wayleaves and other facilities may include removal of some larger individuals or groups of trees. The volumes involved will not amount to more than 40m^3 per annum.

Throughout the Glendaruel area there some strong signs of ASNW with veteran trees to offer potential for natural regeneration in the right conditions, these are mainly confined to riparian zones and the lower slopes closest to the road. Areas of PAWS identified on the FLS ASNW layer will be restored by means of planting and natural regeneration in the course of normal felling and restock operations using suitable native species.

5.7 Restructuring

5.7.1 Summary

The felling proposals continue the process of restructuring the forest developed in previous plans. The aim of restructuring is to gradually convert a largely even aged, single species woodland into one with a more balanced age structure and a more diverse species range. It is believed that a more diverse forest will be more resilient to both disease and damage from extreme climatic events. Creating a coupe structure where adjacent coupes are not felled and restocked within five to fifteen years of each other is a standard method of achieving diversity. So called "adjacency" issues have been avoided as far as possible, the method for dealing with these is

described in Section 2.6 of this plan. The retention of several stands beyond the age of 60 years will afford improved age structure and resilience in the medium to long term. Permanent woodland and a mix of open ground and natural regeneration along riparian zones both within and outside the FHN will further improve resilience.

5.7.2 Species diversity

Table 5.3 and Figure 5.1 indicate the change in relative species composition between 2020 and 2050. There is a reduction in the amount of Sitka spruce relative to other species over the 30 year period, but it remains the dominant species. There is also a relatively large reduction in the amount of other conifers especially Norway spruce. The amount of larch is reduced as a response to the threat of P.Ramorum disease and the current Larch Strategy. Diversity is maintained due to the significant increase in native broadleaves and Scots Pine.

Species	**2020**	**2030**	**2040**	**2050**
Sitka spruce	857.3	760.9	721.6	741.9
Norway spruce	27.3	19.8	2.2	0
Lodgepole pine	44.8	37.3	33.2	34.2
Larches	46.8	16.4	6.6	6.6
Scots pine	6.1	14.1	16.5	26.4
Other Pines	4.1	3.9	3.9	3.9
Other Conifer	1.2	0.6	0	0
Broadleaves	74.9	90.5	107	125.8

Table 5.7.2 Change in species diversity over time (ha)

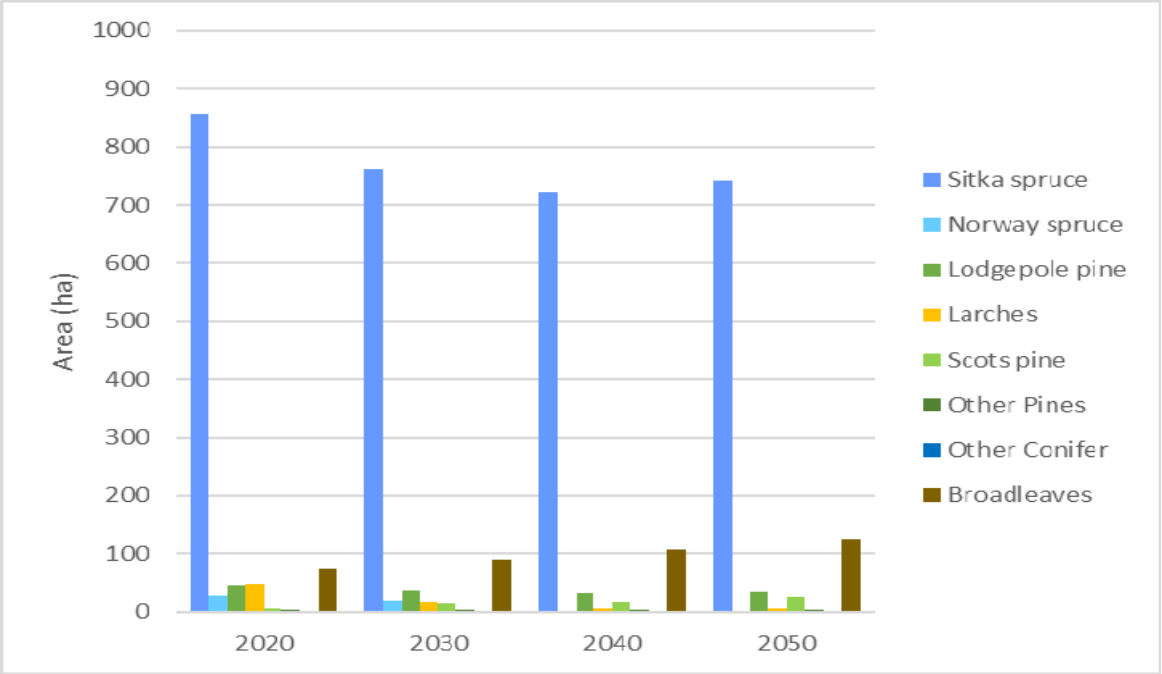

Figure 5.7.2 Change in species diversity over time (ha)

5.7.3 Age structure

Table 5.4 and Figure 5.2 show the change in relative age structure between 2020 and 2050. These figures indicate that it will take some time to achieve a balanced age structure. There is an early fall in older age classes which is due to reduced felling in the last plan period, offsetting this will take some time to achieve.

Age Class	2020	2030	2040	2050
0-10 yrs	40.3	179.7	202.6	221.6
11-20 yrs	145.4	39.9	179.7	202.6
21-40 yrs	446.6	307.8	164.3	219.0
41-60 yrs	243.9	216.2	291.8	159.5
60+ yrs	185.6	199.7	52.5	136.1

Table 5.7.3 Age structure in Strath nan Lub (ha)

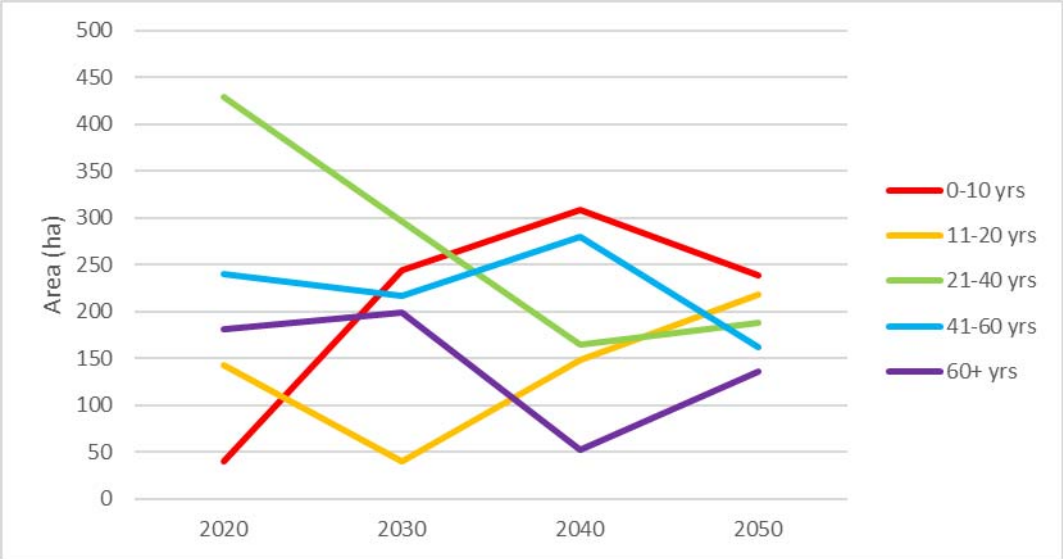

Figure 5.7.3 Age structure (ha)

6.0 Critical success factors

The following are critical to success of the plan:

- Timely construction of new, or upgrading of existing, roads, and roads/tracks to access approved felling coupes.
- Adequate deer control measures for protection of broadleaved species and soft conifers.

7.0 Management prescriptions

Clearfelling is the dominant management system that will be used. Coupe design takes into account topography, landscape and operational constraints and is intended to facilitate future restructuring. Age of clearfelling will generally be in the range 40 to 60 years.

Restocking for productive purposes will be by planting following any necessary site preparation. The latter will include brash management, necessary drainage and, in general, mounding to provide a sheltered, weed free planting site. On steep ground flat planting might be necessary. Fallow periods will be used to help mitigate weevil damage in line with aspirations to minimise use of chemical deterrents. Softer species may be protected by fencing from animal browsing.

Where suitable some areas will be left for natural regeneration, the success of which will be monitored. If these areas fail to regenerate by year 5, they will be programmed for restock by replanting in line with current regulation.

8.0 Background information

8.1 Previous plan

8.1.1 Analysis of previous plan

The broad overviews of the previous plan were-

- Maintain timber production
- Restructure the existing forest to increase age and species diversity across the plan area.
- Restore and expand ASNW to the lower slopes of Glendaruel
- Improve and extend the existing recreation network to offer greater opportunities for public use
- Extend and improve the current forest habitat network to take in up to 990ha across the plan area, replanting with native species

8.1.2 Continuity with revised plan

Much of the ambition of the previous plan were not realised due to a much reduced work programme and therefore restructuring. The reasons for the reduction are varied but have left Strath nan Lub lagging behind. With the changes in business direction and priority some of the plans proposed in 2004 have been scaled back within this plan in order to make the targets more achievable. The key targets are to maintain a sustainable level of production whilst restructuring, figure 5.2 shows that over the next 30 years

8.2 Physical site factors

8.2.1 Geology, soils and landform

The Land Management Plan area lies to the north of the Highland Boundary Fault and is underlain by older metamorphic rocks derived from sandstones and finer grained sedimentary rocks. These rocks are hard, break down only slowly and provide a relatively poor nutrient source. There is a limited amount of superficial deposits of glacial or fluvio-glacial origin, largely derived from the solid geology. The older rocks have a south west to north east alignment and this is crossed at right angles by narrow strips of fine grained basic igneous rocks associated with more recent volcanic activity centred on Mull. The latter add little to the parent material of the soils.

Peaty Surface-Water gleys dominate the plan area with blanket bog on the open and exposed areas. There are more fertile soils though these are mainly confined to Glendaruel where surface water gleys and brown earths

are the dominant feature. At the top of the An Carr plateau, in the very north of the plan area, there is c.25ha of shallow hagged eroded bog dividing the planted slopes of Strath nan Lub and the planting on the plateau area. In general soils are nutrient poor across the plan area, limiting species choice.

The landform of the plan area is that of steep glens and exposed ridges, within the plan area elevation rises from 20m AMSL at the base of Glendaruel thorugh to 600m AMSL at the summit of Meall Dubh. Acid grassland and deep heather cover most areas that remain unplanted. Though the glens are steep sided the plan area covers 2 substantial plateaus, one containing the Cruach Mhor windfarm and the other planted for productive forestry. On the steeper ground, especially along the Glendaruel face, there are numerous burns deeply scoured over time presenting prominent features where exposed.

8.2.2 Water

The majority (approx. 96%) of the plan area drains west in to the River Ruel via the tributaries of Eas Davain, Garvie Burn and Allt a Chaol Ghlinne, the remaining area drains east to the Tamhnich Burn which is a tributary of the Auchenbreck burn.

The Glendaruel flood plain is covered within the Clyde and Loch Lomond District as identified by SEPA. The study does not identify the glen as a potentially vulnerable area. SEPA however does identify the glen as at high risk of flooding from River Water and medium risk from flooding from surface water.

Glendaruel forest provides the private water supplies for several of the properties located at the bottom of the slope, these are detailed with signage at the relevant abstraction watercourses. Allowance for open space has been given in the replanting schedule to allow for reduced planting lines, in line with the current Forest and Water Guidelines.

8.2.3 Climate

Using the Ecological Site Classification (ESC) to provide climate data the Strath nan Lub LMP area is identified as cool and wet with most areas categorised as highly exposed with the highest areas (above 370m) rated as extremely exposed. The lower slopes of Glendaruel (below 200m) however are identified as warm and moist with at most moderate exposure, offering the best opportunities for species diversity.

The climate that covers the greater part of the plan area does significantly limit species choice and lead to a mainly Sitka Spruce dominance.

8.2.4 Future climate

Predicting the impact of future climate change presents one of the biggest challenges in forest planning. Analysis carried out by Forest Research indicates an overall increase in average temperatures with warmer summers and milder winters. There will be regional variation in the future rainfall pattern and distribution, with a predicted decrease in summer rainfall in the east but a predicted increase in the west of the country. This will lead to more frequent drought in the east but a reduction in moisture deficit in the west.

There is less confidence in predicting changes in other climatic parameters such as windiness and extreme winter cold or summer heat. However, there is a general belief that the number of frost days will decrease and that the incidence and severity of extreme events (e.g. gales and heavy rain) will increase.

Data for the Strath nan Lub area suggest an increase in accumulated temperature of almost 50% by 2050, compared to baseline 1960 – 1990 data, and about 60% by 2080. Relative increase is even greater at higher elevations and all parts of the forest are predicted to be classed as warm. Annual rainfall is predicted to remain more or less the same, a decrease in summer rainfall being compensated by a similar increase in winter. Despite the decrease in summer rainfall moisture deficit is predicted to also decrease. The impact of these changes on soil properties is uncertain. Potentially there could be an increase in growth rate in all tree species and a wider range of species may become suitable. Where exposure is a limiting factor, at present, it seems likely to remain so.

8.3 Biodiversity and environmental designations

Environmental and Heritage designations relevant to the plan can be found on Map 7.

The plan area contains approx. 90ha of Ancient Semi Natural Woodland (ASNW) and 34.9ha of 'Other Roy' woodland. Currently the majority of the ASNW is in its native condition, those areas of ASNW currently planted with conifer will be re-established with native broadleaf species following scheduled clearfell, in line with FLS policy. Above the tree line within the plan area there are a range of different habitats to be found, to the north west on the plateau of An Carr there are noted peats hags (eroded) and varying depths of peat. In the north eastern section of the plan area, above

the tree line are acid grasslands below the summit of Meall Dubh which drop right down to the floor of the glen where unplanted with productive conifers. Then to the south, within the windfarm area, we have raised bog and some significantly dep peats, covered in thick heather.

There are several rare species that use the land resource contained within the plan area, due to some sensitivities these cannot be described within this plan however FLS is committed to monitoring for all protected species and conserving habitat. In advance of any work likely to cause disturbance to these species, assessment will be undertaken by FLS staff and measures put in place or where required licences obtained to allow effect management of the plan area. Where suitable and relevant, measures will be undertaken to improve habitat quality in preservation, protection and enlargement in line with the current relevant professional guidance.

There are no biological designations within the plan area, away from the national estate on the western side of the Ruel glen is the 'Glendaruel Woods and Crags' SSSI, in 2002 this was declared as 'unfavourable declining'. The current condition of SSSI is unknown however it is mirrored by the ASNW along the lowest slope of Glendaruel face, opportunities will be sought to restore and enhance any area of PAWS on the national estate, in line with current FLS policy.

8.4 The existing forest

8.4.1 Species, age structure and yield class

Brief description of species structure, age classes and yield classes.

Relate to tables below

Species	Area ha	Area %
Sitka spruce	827.8	53.4%
Norway spruce	26.8	1.7%
Lodgepole pine	43.8	2.8%
Larches	44.9	2.9%
Scots pine	12.5	0.8%
Other Pines	4.1	0.3%
Other Conifer	1.2	0.1%
Broadleaves	57.5	3.7%
Open Space	517.3	34.3%
	1550	100.0%

Table 8.4.1 Species diversity, Strath nan Lub, 2019

Age Class	Area ha	Area %
0-10	39.9	3.9
11-20	142.6	13.8
21-40	428.9	41.5
41-60	240.5	23.3
60+	180.8	17.5
	1032.7	100

Table 8.4.2 Age diversity, Strath nan Lub, 2019

8.4.2 Access

The 2 forested halves of the plan area are separated by a 500ha section of leased rough grazing farmland, a stone road connects the 2 halves and is maintained by Forestry and Land Scotland however this does not serve as connectivity for forest operations only light vehicles. The Strath nan Lub forest to the north of the plan area is operationally accessed from a single road coming across from the Glenbranter LMP which is directly accessed from the A815 from Cairndow to Dunoon. The Glendaruel forest area to the south of the plan area is operationally accessed locally from the A886 running from Strachur to Colintraive. There are 2 access points from the public road, the most northerly of which is also used for access to the Cruach Mhor Windfarm and was previously widened to allow the turbines to be brought in. There is an additional permitted access on to the plan area through Garvie Farm though this is for light vehicles only.

Refer to map M5 for details of Forest roads, access points and quarries.

8.5 Landscape and land use

8.5.1 Visibility, landscape character and value

Strath nan Lub offers limited appearance from an external landscape, much of the area is contained within the steep side of the Strath nan Lub Glen. The Cruach Mhor windfarm which sits on some of the highest ground within the plan area is noted for its lack of impact on the landscape due to its placement on the terrain and few climbed ridges which would have an overlooking viewpoint.

There are 3 areas that have an external impact on the landscape; Glendaruel, Strondavon and the western edge of An Carr. Glendaruel plays the most significant part in the external landscape though even this is relatively limited and is best viewed from the West Glendaruel Road which is a very quiet C class road providing a route for the Loch Lomond and Cowal Way as well as several local properties, the main route of traffic along the

Glen will only view the woodland edge whilst driving along the A886. Strondavon is set back from the road side and offers a wider appearance on the landscape, this has been considered within the plan but with significant volumes of Larch and few windfirm boundaries options for sympathetic felling are limited. The A886 brings a direct view of the western edge of An Carr, the main body of the are being hidden on the plateau.

Scottish Natural Heritage classifies the Strath nan Lub area as being within Landscape Character type 34 '*Steep Ridges and Mountains*'. The key characteristics relevant to Strath nan Lub are –

- Dramatic mountain ridges with steep, plummeting slopes and numerous rocky outcrops.
- Ribbon lochs and meandering rivers on narrow floodplains form dramatic contrast to surrounding slopes.
- Extensive conifer forests on lower slopes and open moorland, with bare rock faces on upper slopes and summits.
- Scattered birch woodland alongside burns and on upper slopes and oak woodland on sheltered lower slopes.

The southernmost tip of the plan area lays within a designated Local Landscape Area (LLA) described as being in the 'Bute and South Cowal Area of Panoramic Quality', a locally important area designated to protect against damaging development that would diminish their 'very high scenic value'.

Cowal and Bute Council adopted Local Plan has no detail about the characteristics of APQs other than these APQs are important for:

- their physical landforms,
- scenic value, and
- the environmental assets that they represent.

The impact of operations have been considered as part of this plan and visualisations of the impacts can be found in the supporting documents.

8.4.2 Neighbouring land use

Surrounding the plan area the land use is a typical mixture of rough grazing for sheep and cattle intermixed with productive private forestry based around Sitka Spruce. The bottom of the glen at Glendaruel is rough grazing and a flood plain. There are some high ridges surrounding the plan area however they do not offer much for the hill walking community and are generally wild open hill tops of which only some are actively grazed by sheep. The community within Glendaruel is sporadic and offers only small

groups or individual residential properties, the village does not have a tight residential centre.

The glen of Strath na Lub is almost entirely owned and managed by FLS, there are no properties within the glen and the land use is that of forestry , open hill (partially grazed) and a windfarm.

8.5 Social factors

8.5.1 Recreation

There is only one formal recreational facility within the LMP area; the Loch Lomond and Cowal Way uses a 4.7 mile stretch of forest road running from Glenbranter to Glendaruel, of which 3.2 miles is contained within the forested area. The formal facilities are the forest road network and a non-vehicular access gate located on the boundary between the forest and leased farmland. The Loch Lomond and Cowal Way have expressed a desire to extend their usage of the road network within the plan area, at this time there has been no formal application to do so and it has therefore not be included within the plan. There are no proposals to add dedicated paths to the plan area.

A degree of informal recreational usage of the Glendaruel forested area is present, there are no formal facilities and no official parking to support this usage and the majority is occasional dog walkers using the road network and informal desire lines through mature stands.

8.5.2 Community

The community has no formal involvement in Strath nan Lub forest area. Locally the community operates the Colglen Community Council and the Colintraive and Glendaruel Development Trust both of which are relatively active. The Development Trust plays an active role in supporting the Loch Lomond and Cowal Way which features as the main recreational element within the LMP.

8.5.3 Heritage

There are 13 known heritage sites within the plan area as described in Table 8.5.3 and shown on Map M7. None of the sites are designated though 6 are described as being of Regional Significance.

Historic Scotland and Argyll and Bute Council have been consulted as part of the stakeholder consultation process. Felling coupes, access roads and fence lines will be surveyed prior to any work being undertaken to ensure that historic environment features can be marked and avoided during

operations. Historic environment features, including drystane dykes, coming to light during forests operations will be surveyed, recorded, mapped and monitored for inclusion in future versions of the Land Management Plan and to adhere compliance with UKFS.

There are no known heritage features recorded within the management coupes detailed to be worked during the first 2 phases of this plan.

Name	Feature Description	Grid Reference	Importance
Strath na lub	Shieling hut(s) (possible)	NS062903	Uncategorised
Glendaruel, an cruchan	Dyke	NS042887	Uncategorised
An socach	Bloomery	NS052878	Uncategorised
Cill an nathois'	Burial ground, farmstead	NS019877	Regional importance
Duiletter	Farmstead, sheepfold	NS022878	Regional importance
Cruach mhor	Stone	NS015869	Uncategorised
Glendaruel, 'tobar a' phiobain'	Spring	NS020878	Uncategorised
Tom chouchra	Head dyke, township (possible)	NS027885	Regional importance
An socach	Shieling hut (possible)	NS050885	Regional importance
Glendaruel, garvie	Bank (earthwork)(s), sheepfold(s), structure(s)	NS051891	Regional importance
Glendaruel, srath nan lub	Bank (earthwork)(s), hollow(s), rig and furrow, shieling hut(s), structure(s)	NS054900	Uncategorised
Tom a' chromain	Farmstead	NS072914	Regional importance

Table 8.5.3 Heritage sites within the plan area

Appendix I: Consultation record

Consultee	Date Sent	Response Received	Issue Raised	Regional response
Scottish Forestry	03/06/2019	None		No response received
Argyll & Bute Council	03/06/2019	None		No response received
CONFOR	03/06/2019	None		No response received
RSPB	03/06/2019	None		No response received
Scottish Water	03/06/2019	1/7/2019	Drinking Water Protected Areas A review of our records indicates that the proposed activity site boundary falls partly within a drinking water catchment where a Scottish Water abstraction is located. Scottish Water abstractions are designated as Drinking Water Protected Areas (DWPA) under Article 7 of the Water Framework Directive. Loch Eck supplies Loch Eck Water Treatment Works (WTW) and it is essential that water quality and water quantity in the area are protected. Scottish Water Assets A review of our records indicates that there are no Scottish Water assets (including water supply and sewer pipes, water and waste water treatment works, reservoirs, etc.) in the area. This should be confirmed however through obtaining plans from our Asset Plan Providers, listed in the SW list of precautions for assets, which can be found on the activities within our catchments page of our website at **www.scottishwater.co.uk/slm**. In the event that asset conflicts are identified then early contact should be made with the Scottish Water Asset Impact Team (AIT) at **service.relocation@scottishwater.co.uk**.	All forest operations undertaken by Forestry and Land Scotland are done so adhering to the Forest and Water Guidelines (version 5) best practice. Operations that are undertaken near water sources are carefully planned so as to minimise the risk of pollution incident. It appears that only the very uppermost of the planned operational area could potentially drain toward Loch Eck with the majority flowing to through the River Ruel, therefore any risk to the Loch Eck water supplied should be very low should mitigation measures fail.
Scottish Power	05/06/2019	6/6/2019	A telephone call was received to discuss the scope of the request and understanding as to why the Cruach Mhor HAP was included in the scope of the question. Up to date Maps and HAP plan were supplied by email.	No action required
SEPA	03/06/2019	25/6/2019	We have checked the most up-to-date River Basin Management Plan records (available from the Water Classification Hub) and can confirm that currently there are no water bodies within or adjacent to the plan area which are at “less than good” ecological status/potential as a result of forestry activities. The plan should highlight this fact, emphasising the importance of maintaining the good quality of the surrounding water environment.	Riparian zones will be improved at the point of restock with reduced planting up to watercourse edges as per the Forest and Water guidelines, additionally increased efforts will be made to establish resilient riparian zones with broadleaf buffer zones to further mitigate future issues with water quality management. Watercourse crossings where required will be removed post operational requirement.

			There may be opportunities to enhance the water environment through the upgrade of existing watercourse crossings, removal of redundant structures, wider riparian buffer zones or the disconnection of existing drains from watercourses. As the Plan progresses we would be keen to comment on the draft proposals as we can only provide generic advice at this early stage. As proposals progress we will be able to provide more useful site specific advice.	
SNH	03/06/2019	19/6/2019	The site is not within any sites designated for natural heritage reasons. Glendaruel Woods and Crags SSSI sits across the glen though there should be no adverse impacts arising from management of this site. Protected birds are known to use sections of the site including golden eagles, black grouse and hen harriers. Consultation should be also be undertaken with the RSPB and the Argyll Raptor Study Group who may have further information on bird usage of the site, in addition to Scottish Power Renewables. Management should not conflict with Scottish Power Renewables Cruach Mhor Habitat Management Plan. The provision of better hunting areas for eagles while maintaining important features for soaring and hunting such as crags and ridges should be incorporated with low-density native broadleaved planting on upper forest edges to contribute towards an increase in habitat suitable for eagle prey. Consideration should be given to extending the areas of open ground and softening the upper woodland edges by scalloping and/or re-spacing the trees to a lower density to provide increased foraging opportunities for hen harrier. We would recommend developing and extending riparian corridors with a view to increasing connectivity. Consideration to the control and removal of invasive plant species such as Rhododendron ponticum should be included in the LMP as these can impact on commercial tree growth as well as biodiversity. Ancient semi-natural woodland is present within the site. Ideally we would like to see the ASNW and the other areas of native woodland buffered by planting additional native broadleaves to increase the size of the woodland and reduce the likelihood of the introduction of non-native species. Class 1 peatland is located at the north end of the site and any encroachment of trees onto this bog habitat should be prevented. Further information on Scotland's carbon rich and peatland soils are available from the Scotland's Environment website: https://soils.environment.gov.scot/maps/thematic-	The location of Glendaruel Woods and Crags SSSI has been noted and in time the lower slopes of the plan area at Glendaruel should complement that, when current sites are restocked following clearfell. As part of this scoping exercise an opinion was sought from the RSPB but no response received. Scottish Power Renewables provide information regarding the flight patterns of Schedule 1 species in and around the windfarm area which has been analysed, though does not impact directly on the plan revision due to the Habitat Management Area, which is outside the scope of this plan. Where possible reduced planting lines will be incorporated in to the restock after felling, thought density flexibility is more difficult to achieve due to regulatory constraints. Woodland edges are more likely to be varied by the use of scalloping which allows Forestry and Land Scotland to meet regulatory requirements whilst changing the habitat. When restocking after clearfell planting lines will be reduced from riparian zones in line with the Forestry and Water Guidelines, the aim is to reduce risk to water courses during operations and improve the riparian habitat. Main watercourse riparian zones will be restocked using scalloped edges, a mixture of conifer and broadleaf species and open space; creating variety and diversity in the habitat area. The control of invasive species is monitored by our in-house environment team and periodically addressed with targeted removal projects. The peatland habitats are treated in the same way as those containing invasive species, where monitoring is undertaken and periodic-targeted removals are undertaken.

			maps/carbon-and-peatland-2016-map/ The Cowal Way runs through the site and consideration should be given as to whether any improvements can be made to help promote use of the outdoors e.g. by track enhancements or creation of native broadleaved woodlands which will attract greater wildlife diversity.	
SSE	03/06/2019	None		No response received
WoSAS	03/06/2019	26/6/2019	It's obviously the case that the management plan covers a large area of ground, and a number of archaeological features have been recorded from within its boundaries. The majority of these appear likely to be associated with past agricultural practises, and include an abandoned township and farmsteads, a number of shielings, enclosures, banks, field dykes, and areas of rig and furrow cultivation. A burial ground and holy well is also recorded, along with a bloomery. It is probable, however, that these features represent only a proportion of the total range of archaeological material present within the area covered by the management plan, as the distribution of recorded features appears to be at a lower density than in adjacent areas. This seems more likely to be a result of differential levels of previous survey carried out in these areas rather than reflecting a substantially different pattern of historic land-use, suggesting that there is likely to be a reasonably high potential for additional as-yet unrecorded archaeological features to be present within the area covered by the forest plan. Both recorded and previously-unrecorded material could be at risk as a result of forestry operations, though unrecorded sites could be at greater risk simply because their locations would not be known in advance of work taking place, meaning that they would be more likely to be subject to accidental damage. We would generally recommend that a walkover survey should be carried out in advance of large-scale operations, with the aim of identifying any material of this type that may be present.	Prior to any operations being undertaken, competent Forestry and Land Scotland staff will walk through the operational area to assess for any unknown constraints and to record the condition of known ones. Where features are found or known of, these will be discussed with the relevant contractor prior to commencement of any work and a plan agreed to mitigation the risk of damage. New features discovered during the operation will be reported to the Environment and Conservation Manager for monitoring and recording.
Mountaineering Council of Scotland	03/06/2019	28/6/2019	Access We note the presence of the Cowal Way through the site, and also the presence of Creag Tharsuinn, which is a Graham, on the eastern ridge and a recognised hillwalking destination. Access to this point is generally from Glenbranter or Garvie. We would wish to see access maintained on designated trails, local paths and informal access to and along the ridge with Creag Tharsuinn. We would welcome a level of deer management such that fences would be unneccesary, but if fencing is a requirement, then we would appreciate keeping any fences well back from the ridge walk, at least 10m from recreational routes. Pass gates in	The Cowal way is the only designated route through the plan area and open access and improved visitor experience is an objective of the plan revision. The issue of conifers in close proximity creating an enclosed effect is a known issue to recreation routes and facilities which we endeavour to revise at the point of restocking a felled area. In some cases it is not possible to remove the planting line too far from the road as this creates an operational constraint, by creating a variation of the planting line we will be able to meet both recreation and operational needs; the variation should also change the visitor experience. In some areas it will be a requirement to use temporary fencing to

			fences on current informal routes would be welcome. Landscape In the past forestry plantations often had hard green linear edges. We would wish to see a softening of the upper edges of plantations, and the inclusion of native broadleaf species along with open spaces to provide a diversity of habitat types for wildlife. Broadleaf trees flanking recreation routes would be beneficial for the visual amenity of the site and enjoyment of walkers.	establish soft conifers and broadleaves, these will be minimal and removed once the trees have established, no fence will obstruct access to the Cowal Way or the Creag Tharsuinn ridge.
Argyll Fisheries Trust	03/06/2019	None	See ADFSB, collective response received.	See below
Argyll District Salmon Fishery Board	03/06/2019	10/6/2019	Our main sphere of interest within the forestry area are the numerous tributary streams that flow into the River Ruel which both salmon and trout utilise for spawning and juvenile recruitment. The River Ruel has an active fishery but our monitoring and investigation work on the River suggest that the recruitment of fish is being impaired by fine sediment being eroded from river banks and entering from tributary streams. Given the potential for forestry and other land use to affect river habitat we would like to ensure that the following issues are given priority within the plan; • Minimising potential for fine sediment to enter watercourses directly from forestry activities and from the forest road and the plantation drainage network. Reduction of fine sediment will require identification and mitigation work on pathways of fine sediment into watercourses. • Ensuring regeneration of native trees in riparian habitats and establishment of appropriately sized buffer zones as identified in Forest and Water Guidelines. • We also highlight the importance of shading of streams given the increasing potential for higher water temperatures to affect coldwater fish as a result of climate change.	With the increase in abnormal weather events the Cowal area is experiencing increased peak flows through water channels, whilst Forestry and Land Scotland will do what is possible to mitigate issues with bank stability, natural erosion is likely to increase. All forestry operations are undertaken to best practice and the 'forest and water guidelines' which aim to slow the flow of water through manmade features and provide diffusion areas to catch sedimentary deposits. When restocking areas of harvested woodland, riparian zones will be improved with the reduction of planting tight up to the sides of watercourses and encouraging the natural regeneration of broadleaves. In some specific areas we aim to actively replant with broadleaves species, using a mixture of open space and lower density planting to create a mixture of light and shade and improve the riparian habitat.
Loch Lomond and Cowal Way Trust	03/06/2019	None		No response received
Colintraive and Glendaruel Development Tust	03/06/2019	None		No response received
COLGLEN Community Council	03/6/2019	None		No response received
Dunans Estate	03/06/2019	None		No response received

Garvie Farm	03/06/2019	None		No response received
Letter drop				No response received
Kilmodan Cottage	07/06/2019	None		No response received
Conchra House	07/06/2019	None		No response received
Conchra	07/06/2019	1/7/2019	A telephone call was received with concerns about the overhanging branches from mature conifers around the property and neighbouring, additionally concerns were raised about non-natives impacting on the Oak and other native species in the ASNW area.	The management prescription for the ASNW & PAWS is part of the plan and will include for the removal of non-natives to enhance the habitat. Where there are specific concerns/issues regarding overhanging branches these should be referred to the local delivery team, however where removal of a wider area of conifer is a viable option with multiple benefits to the plan area there is potential to bring forward areas to meet objectives.
Ar Tir	07/06/2019	None		No response received
Kilnaish Cottages (x6)	07/06/2019	None		No response received
Duiletter	07/06/2019	31/6/2019	An email was received with concerns were raised regarding the potential risks from flooding leading to damage or even destruction of the property and neighbouring ones, a collective email was sent by the owner of Duiletter.	Water management is a prime concern in any management plan, FLS works with SEPA and other agencies to understand and mitigate against flood risk. FLS additionally follow the latest best practice and guidelines in water management and planning procedures. There are no plans to remove make large scale removals exposing significant quantities of bare ground increasing the flood risk.

Appendix II. Scoping record

Strath nan Lub Land Management Plan

Record of scoping exercise carried out by email and post in June 2019

A number of stakeholders were contacted by email in June 2019 and the responses received are summarised in Appendix I.

An internal meeting was held on 19th February 2018 and a draft set of objectives drawn up. Further advice was taken from operational staff and final objectives reflect the aspirations of both internal and external stakeholders.

Design brief

The objectives of the new plan, which were developed following the internal and external consultation, are summarised below and emphasise the key principals of maintaining the productive potential of the forest whilst delivering a range of other ecosystem services into the future.

- The main objective of Strath nan Lub is productive conifer for use by the timber industry.
- In line with the current restock strategy, species suitability will be assessed against that of Sitka and where a species can achieve within 1 yield class of Sitka Spruce it will be considered for inclusion within the plan to assist in diversification. Where Sitka cannot theoretically achieve yield class 8 other species will be chosen in order to meet objectives, deforestation may be considered as an alternative where a viable timber crop cannot be obtained.
- The 4 Screening coupes currently in place for the windfarm at Glendaruel will be assessed for continued viability, to ensure final timber income is not adversely affected by the increasing presence of windblow.
- A specific 5 year action plan for the forest area directly above Strondavon will be developed; the aim of this is to balance the needs of the avian conservation and legal requirement with that of realisation of commercial income and legal requirements of tree health. The woodland in this area has been identified as in need of improved access to better aid preparation for potential infection with P.Ramorum.
- All options are to be examined to find a roading option to serve the lower slopes of An Carr overlooking the A886 within the lifetime of the plan, this is to maintain the best realistic outcome for landscape impact and also to realise future timber income.

- A rationalised Forest Habitat Network it to be identified and described in order to improve species diversity along the Garvie Burn, more minor tributaries are to be managed to Forest and Water Guidelines only.
- The area known as Na Lona Min below Cruach Mhor Windfarm is to be investigated for environmental planting, deforestation will be considered as a last alternative, afforestation is the desired outcome.
- The main plateau of An Carr is to be assessed by the environment team for potential to be converted from productive forestry (where it has failed to provide viability) to Peat Edge Woodland.
- The increasing windblow within Strath nan Lub is to be rationalised in to a workable coupe structure, targeting these areas for removal to realise maximum financial return.

NB: All forests managed by FLS are certified under the UK Woodland Assurance Scheme (UKWAS), which requires forests to be managed sustainably. The UKWAS is part of the Forest Stewardship Council (FSC) scheme, which allows timber sourced from certified forests to carry the FSC label.

Appendix iii: Programme of Work

Clearfell/Thin						
Coupe Ref	Operation Type	Species	Gross Area (ha)	Net Area (ha)	Fell Year	Volume (m3)
06082*	-	-	-	-	-	-
06038	fell	SS/NS/LP	12.74	12.4	2021	9458
06010	fell	SS	21.45	21.41	2022	8823
06011	fell	SS	36.56	35.99	2022	15722
06033	fell	SS/LP	4.71	2.7	2023	945
06060	fell	SS/LP	10.25	10.19	2023	5077
06027	fell	SS/HL	4.91	4.38	2024	861
06032	fell	SS/JL/HL	20.26	20.05	2024	4870
06034	fell	NS/SS/HL/JL	6.33	6.17	2024	2185
06061	fell	SS/JL/LP	22.61	21.33	2024	12069
06071	fell	SS/JL	2.35	2.24	2024	545
06094	fell	NS/JL/SS/SP	5.05	3.76	2024	1891
06020	fell	SS	21.69	18.45	2025	8191
06048	fell	SS/JL/EL/LP/WH	23.99	21.81	2025	11384
06157	fell	SS	4.03	2.7	2025	398
06001	fell	SS/JL	37.7	29.83	2027	7857
06039	fell	SS/LP	22.29	18.82	2029	10087
06068	fell	SS/LP/SP	31.34	28.05	2029	17531
		Totals	**288.26**	**260.28**		**117,894**

Restock										
Habitat	Propogation	Species 1	Area (ha)	Species 2	Area (ha)	Species 3	Area (ha)	Restock Year	Open Space (ha)	Gross Area (ha)
Forest	Planted	MB	9.1					2023	36.4	45.5
Forest	Planted	SS	8.89	MB	2.29			2023	1.56	12.74
Forest	Planted	SS	16.23	MB	1.57	SP	0.52	2024	3.65	21.45
Forest	Planted	SS	34.83	SP	0.52			2024	1.21	36.56
Forest	Planted	MB	0.95					2023	3.76	4.71
Forest	Planted	SS	10.25					2025	0	10.25
Forest	Planted	SS	4.91					2026	0	4.91
Forest	Planted	SS	18.24					2026	2.02	20.26
Forest	Planted	SS	6.33					2026	0	6.33
Forest	Planted	SS	20.86					2026	1.75	22.61
Forest	Planted	MB	0.91	SP	0.4			2026	1.04	2.35
Forest	Planted	SP	3.14	MB	1.53			2026	0.38	5.05
Forest	Planted	SS	19.52					2027	2.17	21.69
Forest	Planted	SS	9.45	MB	7.27	SP	5.82	2027	7.27	23.99
Forest	Planted	MB	1.21	SP	0.4			2027	2.42	4.03
Forest	Planted	LP	3.81	MB	3.81			2029	30.08	37.7
Forest	Planted	SS	22.29					2031	0	22.29
Forest	Planted	SS	28.2					2031	3.14	31.34
					Total planted area		**243.25**		**96.85**	**333.76**

* 06082 was felled under the previous plans and has failed to naturally regenerate, a planting programme will now be undertaken to re-establish forest cover to a minimum 20% MB