Forestry and Land Scotland
Coilltearachd agus Fearann Alba

Central Region

Glen Finart

Land Management Plan

Approval date:
Plan reference number:
Plan approval date:
Plan expiry date:

FOREST AND LAND SCOTLAND - Application for Land Management Plan Approvals in Scotland

Forest and Land Scotland - Property

Feature	**Name**
Region:	Central
Woodland or property name:	Glen Finart
Nearest town, village or locality:	Ardentinny
OS Grid reference:	NS 176886
Local Authority district/unitary Authority:	LLTNP

Areas for approval

	Conifer	**Broadleaf**
Clear felling	448	
Selective felling (including thinning)	470	435
Restocking	260	163
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. An opinion under the terms of the Forestry (Environmental Impact Assessment) (Scotland) Regulations 2017 for roads, tracks and quarries, as indicated in this plan, will be sought at a future date.
3. I confirm that the initial scoping of the plan was carried out with FLS staff on 9th October 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 SF 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 ..... Regional Director .....

Region Central

Date 23 February 2021

Signed .....

Conservator

Conservancy .....

Date of Approval .....

Date approval ends .....

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1.0 Summary

1.1 Introduction

The Glen Finart Land Management Plan area lies on the western shore of Long Long centred on Ardentinny, the largest settlement. It extends from Loch Goil in the north to Gairletter Point, in the south, occupying much of the hill ground between Lochs Long and Eck. The area is connected to the main road network by narrow minor roads which head northwest to the A815 and south to the A880 and, again, on to the A815. Ardentinny is a popular tourist destination and the whole plan area is within the Loch Lomond and The Trossachs National Park. Non-native and native woodland cover extends from the loch shore up to an elevation of around 350m, including much of Glen Finart and Gairletter Glen. At higher elevations there is open hill ground which is treated as permanent open space, small areas of agricultural land and wayleaves bring the total area of permanent open space to about 790ha making up about 30% of the 2603ha total area. An additional 405ha (15.5% of the plan area) of open ground is considered to be integral with the woodland, and is not treated as being permanent. The remaining 1405ha or so of ground is actual woodland making about 54% of the plan area. These figures, with projections to 2031 and 2041 are summarised in Table 1.1. Of the actual woodland area (excluding integral open space) 68% is Sitka spruce, 12% other conifers (including Scots pine) and the remainder is broadleaved woodland (the majority of which is native woodland). These figures are summarised in Section 1.4. About 20% of the woodland is under 20 years of age, about 40% between 20 and 40 years of age and just over 20% is greater than 60 years.

	2021	**2031**	**2041**
woodland	54.1	52.0	51.8
intimate open space	15.5	17.6	17.8
permanent open space	30.3	30.3	30.3
total plan area	100.0	100.0	100.0

Table 1.1 Distribution of woodland and open space

The revised plan seeks to continue the restructuring process, started in the previous submission, aiming to increase both species and age diversity. Timber production will remain a significant objective but efforts will be made to lessen the impact of monoculture spruce plantation on habitats and landscape. In particular protection will continue to be afforded to the Craighoyle SSSI and restoration of ancient woodland sites will see considerable increase in native species in the coming decades. Given the ongoing concern with Ramorum disease in larch a programme of progressive removal of this species will be implemented. Significant recreation interest will be maintained. An effective deer management programme will be necessary to protect sensitive species.

1.2 Objectives

- Progress the restructuring process started in the previous plan aiming to diversify both species and age diversity. Include coupes already incorporated into the Regional felling programme.
- Incorporate stands with significant proportions of larch into first and second phase felling coupes in line with FLS policy to remove at least 50% of larch from this area by 2023.
- At restocking seek an appropriate balance between maximising production and diversification of species. Use alternative species to Sitka spruce where objectives warrant and site conditions are favourable.
- Review status of stands designated as Continuous Cover Forestry (CCF), and incorporate these into the clearfell fell programme if CCF management is no longer considered feasible or does not meet site objectives.
- Fell the majority of mature stands in Knap. Restock with an appropriate balance of commercially viable species (including Sitka spruce) and native woodland.
- Protect and enhance existing native woodland, including Craighoyle SSSI; restore ancient woodland sites when non-native species are clearfelled.
- Manage the area around Ardentinny in a manner that protects nearby housing and facilities during all operations. Consider retention of some mature stands, where feasible, and, at restocking, take into account opportunities to improve landscape and recreation interest.
- Continue to manage, and where necessary improve, the existing recreation facilities centred on Ardentinny Beach.
- Maintain, and establish where appropriate, the forest habitat network; outline management approaches to be adopted within it.
- Where feasible seek to improve habitats for a range of bird and mammal species including golden eagle, black grouse and red squirrel.
- Establish and maintain a deer control programme that allows successful establishment of vulnerable species.

1.3 Key proposals

Total Plan Area	**2603 (ha)**
Planned operations	**Detail**
Felling	448ha.; 164425m^3
Thinning	905ha; 12670m^3
Restock	260ha of conifer; 163ha of broadleaf.
New planting	0ha
Roads and tracks	26303m track; 47000m road upgrade/maintenance
Public access	

1.4 Species diversity

Species group	2021	2031	2041
Sitka spruce	52.8%	44.2%	38.6%
Other conifers	8.4%	8.1%	9.1%
Scots pine	1.2%	1.1%	1.1%
Broadleaves	15.4%	21.3%	25.6%
Open space	22.2%	25.3%	25.6%

NB figures exclude open hill ground

1.5 Major issues

Issue	Description/mitigation
Issue 1	Threat from Ramorum disease impacting management of non-larch trees. Incorporate larch into a felling programme that meets FLS objective of removing 50% of that species before the end of 2023.
Issue 2	Extensive areas of plantation on ancient woodland sites. Establish extent of priority ancient woodland and outline a sustainable restoration plan that can be sustained into the future.
Issue 3	Poor road access, particularly in the north. Find cost effective, long lasting, solutions to improve road system and provide access into isolated coupes.

1.6 Critical success factors

The following are critical to the success of the plan:

1. Timely construction of new, or upgrading of, existing roads, and roads/tracks to access approved felling coupes.
2. Availability of contractor base capable of working in challenging situations.
3. Adequate deer control measures for protection of broadleaved species and soft conifers.

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. Forest and Land Scotland Woodlands are certified as being sustainable by both FSC and PEFC. Proposals for removing larch are based on Forestry and Land Scotland's 'Strategy for Managing Larch', July 2019.

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.

1.9 Contacts and further information

For further information on this or any other land management plan please contact:
Forest and Land Scotland

Central Region (Aberfoyle Office)

Aberfoyle
FK8 3UX
tel. 0131 370 5674

2.0 Scottish Forestry regulatory requirements

2.1 Context and rationale for concept

Glen Finart forest is situated amidst dramatic coastal scenery on the west side of Loch Long. It is surrounded on two sides by narrow, fjord like sea lochs and there is only limited access from Glen Croe and Lochgoilhead The woodlands have been dominated by commercial spruce plantations but there are also significant areas of existing ancient semi natural woodland, including Craighoyle SSSI. Re-structuring of relatively even aged forests has been ongoing for some time though there have been some delays in recent years. This plan progresses the restructuring process and takes into account key landscape and environmental issues whilst maintaining a large element of productive forestry. The potential impact of the spread of Ramorum disease in larch has greatly influenced the felling programme.

2.2 Proposed felling in years 2021 – 2031

Phase	Area (ha)	Volume (m^3)
1	208	62232
2	240	102193
	448	164425

Table 2.1 Summary of felling proposals (net area)

Map M4 shows the coupes for which approval is being sought for clearfelling and Map M12 those areas which might be thinned during the plan period. The former are set in the context of longer term management proposals in Map M3. The future habitats map (M5) should also be referred to.

2.3 Proposed thinning in years 2021 – 2031

Phase	Area (ha)	Volume (m^3)
1	455	6370
2	450	6300
		12670

Table 2.2 Summary of thinning proposals

Indicative thinning areas are shown on map M12. Most of the work relates to clearing habitat of undesirable species, road maintenance and visitor zone management. Further details can be found in section 5.1.2.

2.4 Proposed restocking in years 2021 – 2031

Phase	Species	Area (ha)
1/2	Conifer	260
1/2	Broadleaf	163
		423

Table 2.3 Summary of restocking proposals

Restocking proposals are shown on map M5 and further details found in section 5.2. The overall objective has been to maintain a high level of production whilst introducing greater diversity and restoring large areas of plantation on ancient woodland sites.

Where production is the key objective conifers will be planted at densities of approximately 2700 stems per hectare (sph) and broadleaves in the region of 3500 sph. Restocking will be within two years of felling unless Hylobius Management Support System indicates a longer fallow period is necessary. In the latter case planting will be carried out within five years.

Where production is not the key objective target densities for planting, or natural regeneration, of native and non-native species, will vary depending on site objectives. On the majority of sites an overall density of at least 1600sph will be achieved; in transitional areas, such as upper treelines, lower densities, of between 500 and 1100sph, will be accepted, dependent on overall site objectives. Natural regeneration sites will be assessed five to eight years after felling. If it seems unlikely regeneration will become established by year 10, the site will be planted to achieve the desired stocking level at year 10.

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. Large 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 2021 – 2031

Phase	Type	Length (m)	Area (ha)
1/2	New roads	n/a	n/a
1/2	Tracks/ramps	26303	5.6

Table 2.4 Summary of roads and tracks

Proposed roads and tracks are shown on map M7. A screening opinion request these will be sought at a later date.

2.6 UKFS

There are no departures from UKFS guidelines.

Several adjacent coupes will be felled within the plan period in Knap, in the north, and close to Ardentinny. Primarily the felling pattern is designed to progress larch clearance, in accordance with SF and FLS policy. There are additional benefits in clearing windblow and ageing stands prone to windblow, putting the woodlands on a more secure sustainable footing. Any potential issues with adjacency will be avoided by planting first phase coupes immediately after felling and delaying second phase coupes till later in that period.

In general many of the first phase coupes that contain larch to be felled to reduce the risk of disease are younger than the adjacent phase 2 coupes.

Coupe 09032 will be felled as early as possible in the first phase (no later than 2024) to remove the larch that is scattered throughout it, which otherwise would be difficult to fell in the event of disease. The narrowly adjacent coupe 09035 suffered major windblow several years ago but removal will be delayed until late in phase 2. In addition the latter will be restocked with native broadleaves adding greater diversity to habitat and landscape in the future. Although 09035 may appear to be left relatively isolated in the landscape it is not seen from the key viewpoint of Ardentinny Beach and distance softens the impact when viewed from the eastern shore of Loch Long. Coupe 09034 will be planted early in the plan period and this too will help mitigate any negative landscape effect.

Although coupe 09042 might also appear to be isolated following the felling of the surrounding trees it is largely hidden from prominent viewpoints. It can be only partially seen from the public road descending into Glen Finart from the north west and is mostly hidden from the glen floor. Also, there is a proposed eight to nine year gap between felling coupes 09044 and 09041. The former will be restocked within two years of felling and the succeeding trees will help lessen any visual incongruity. Much of coupe 09041 will be restocked with native broadleaves, again in line with our policy on restoration of ancient woodland sites

Coupes 09036 and 09039 are being treated as the same coupe, they are mapped separately only for historical administrative reasons.

Coupe 09102, in the Knap area, is an eclectic mix of larch and Sitka spruce planted in 2004, windblown trees and small areas of more mature stands of Sitka spruce. As well as removing the larch, felling the coupe allows for early restoration of ancient woodland sites. Landscape impact is minimised as there are few places on the opposite shore of Loch Long from which the Knap area can be clearly seen. However the terrain at this northern end of the plan area helps mask the extent of felling when seen from locations at which a view is obtained.

2.7 Tolerance table

	Adjustment to felling period	Adjustment to felling coupe boundaries	Timing of restocking	Change to restocking species	Changes to road lines	Designed open ground	Windblow clearance
SF Approval not normally required	Felling date can be moved within 5 year period where separation or other constraints are met	Up to 10% of coupe area (up to a maximum of 1ha)	Up to 2 planting seasons after felling	Change within species group e.g. evergreen conifers or broadleaves		Increase by up to 5% of coupe area	
Approval by exchange of letters and map	First phase felling delayed into second or later period. Second phase felling brought forward into first phase	Up to 15% of coupe area	Between 2 and 5 planting seasons after felling subject to the wider forest and habitat structure not being significantly compromised		Additional felling of trees not agreed in plan Departures of more than 60m in either direction from centre of roadline	Increase by up to 10% Any reduction in open ground within coupe area	Up to 5ha
Approval by formal plan amendment including maps	Felling date of third or later phase brought forward into first or second phase	More than 15% of coupe area	More than 5 planting seasons after felling subject to the wider forest and habitat structure not being significantly compromised	Change from specified native species Change between species groups	As above, depending on sensitivity	More than 10% of coupe area Colonisation of open areas agreed as critical	More than 5ha

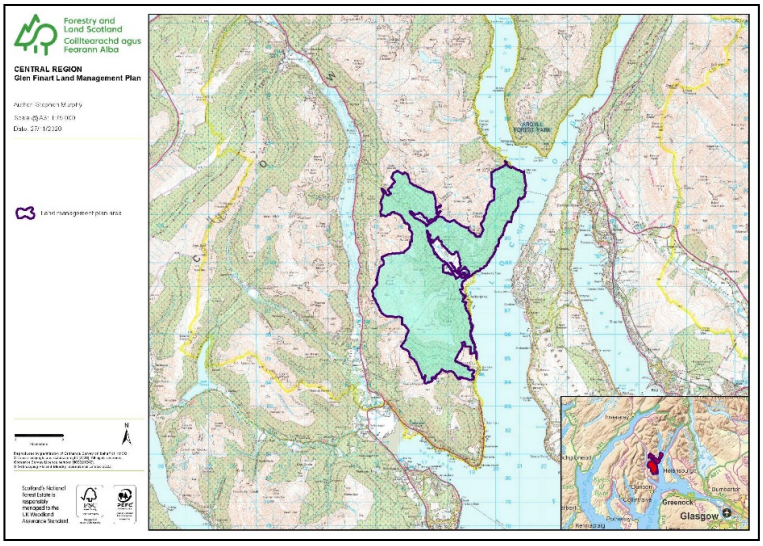
3.0 Land management plan

3.1 Introduction

This is a re-submission of a plan first developed by Forest Enterprise Scotland (now Forestry and Land Scotland) in 2006. This plan describes proposals to continue the work of re-structuring described in the previous work but sets it in the context of revised aspirations and policy. A summary of the plan proposals is found in section 1, whilst sections 2 deals with Scottish Forestry regulatory requirements. This section covers the context, key issues and the broad proposals of the plan. Section 4 provides greater detail on management proposals summarised in previous sections. Section 6 summarises broad management prescriptions whilst background information is found in section 7. Several appendices deal with the consultation process and provide a summary of management proposals in tabular form.

3.2 Setting and context

The Glen Finart Land Management Plan area (see location map below) lies on the western shore of Long Long centred on Ardentinny, the largest settlement. It extends from Loch Goil, in the north to Gairletter Point, in the south, occupying much of the hill ground between Lochs Long and Eck. The area is connected to the main road network by narrow minor roads which head northwest to the A815 and south to the A880 and, again, on to the A815. Ardentinny is a popular tourist destination and the whole plan area is within the Loch Lomond and The Trossachs National Park. Non-native and native woodland cover extends from the loch shore up to an elevation of around 350m, including much of Glen Finart and Gairletter Glen. At higher elevations there is open hill ground, making up about 45% of the 2603ha total area. Of the woodland area 68% is Sitka spruce, 12% other conifers (including Scots pine) and the remainder is broadleaved woodland (the majority of which is native woodland), see Map M13. About 20% of the woodland is under 20 years of age, about 40% between 20 and 40 years of age and just over 20% is greater than 60 years, see Map M14.



3.3 Analysis and important issues

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

- Extensive areas of existing and plantation on ancient semi-natural woodland, including Craighoyle SSSI. FLS is committed to maintaining or restoring the majority of such sites.
- Extensive area of larch, often isolated within spruce stands, at general risk of Ramorum disease. Plan area falls within a zone within which FLS aim to remove 50% of larch before the end of 2023.
- Relatively poor forest road condition throughout much of the plan area. Stands in the north particularly difficult to access.
- Some relatively large areas of even aged non-native conifer at or near the optimum age for clearfelling.
- Very steep slopes, frequently rocky, bouldery and difficult to access. Some potential for erosion and instability.
- Warm moist climatic conditions rapidly becoming cool and wet with elevation. Combined with acidic moist to wet soils commercial planting is restricted to below about 300m to 400m and softer species to below 200m to 250m elevation.
- Loch Goil is a Marine Protected area and salmonids spawn on burns within the plan area.
- Known black grouse leks nearby and several species of bird of prey range over the area.
- Significant amounts of Rhododendron ponticum.
- Access to main transport routes is along narrow single track road and/or through built up areas.
- Ardentinny Beach is a popular tourist destination and there are several popular walking routes in the plan area.
- Landscape value from key viewpoints.

3.4 Key challenges and liabilities

Significant challenges are:

- The reduction in the area of commercial spruce forest through implementation of the PAWS policy and removal of difficult sites from the productive area.
- Significant areas of PAWS restoration requiring rapid establishment of native woodland and removal of non-native natural regeneration.
- Extensive PAWS restoration and establishment of softer conifers require successful deer control.
- Extensive areas of very steep, difficult to access, ground which require to be restocked with native woodland.
- Removal of larch in line with FLS policy.
- Significant road improvement requirements.
- Rhododendron control.

3.5 Concept

- The Analysis and Concept (map M1) summarises how the important issues will be addressed, including:
- Identification and restoration of PAWS, seeking opportunities to extend the area of native woodland around these. Create a buffer around Craighoyle SSSI.
- Establish a coupe system that incorporates the majority of larch stands into first phase felling.
- Establish a road maintenance programme which allows access to first and second phase coupes.
- Re-structure even aged areas based on topography and site conditions, minimising risk of windblow.
- Use appropriate harvesting techniques on steep ground and assess stability prior to operations, particularly if there is any risk to property, infrastructure or riparian habitat..
- Assessing slope instability and adopting management options suitable for these situations, including protection of third party infrastructure and environmentally sensitive sites.
- Taking into account site conditions when selecting species for restocking and providing adequate protection for vulnerable species.
- Continue to expand the forest habitat network and improve conditions for priority species.
- Seek to maintain and enhance landscape value of the area, especially where seen from key viewpoints and tourist destinations.

3.6 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.

4.0 Management plan proposals

4.1 Management

Management will be guided by the key objectives of the plan. The main management technique will be clearfelling and re-planting of commercial woodland; where there is adequate seed source natural regeneration will be preferred when establishment of native woodland is the objective. A summary of operations is to be found in Appendix III.

4.1.1 Clearfelling

Map M4 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 M3.

Table 4.1 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. A breakdown of species to be felled is to be found in summary of operations in Appendix III.

Phase	Area (ha)	Volume (m^3)
1	208	62232
2	240	102193
	448	164425

Table 4.1 Proposed felling

The proposed felling sequence is a balance between achieving optimum economic return and other key objectives, in particular improving forest structure and resilience and early removal of larch. In general the felling sequence is similar to that proposed in the previous plan, lending a certain amount of continuity. Most stands will be between 45 and 55 years of age when felled and all are within 10 years of optimum felling age. The timing and spatial distribution of felling coupes fall within the parameters set out in the UK Forest Standard to mitigate 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. Several coupes present operational difficulties and more detailed planning will take place before these are harvested.

First phase coupes are concentrated in the northern part of the block, particularly in the Knap area. Substantial road upgrades will be required to access Knap and these will be carried out early in the plan period. Taken individually the pattern at Knap suggests that there is an issue with adjacency; however, taken as a whole, concentrating operations here into a narrow time frame will remove the risk of continued windblow and is an important part of the larch removal programme. Resilience will be improved at restocking with the physical separation of commercial stands and the opportunity for restoration of native woodland areas. Elsewhere in the block first phase coupes are designed to remove the majority of larch in an effort to mitigate against the spread of Phytopthora ramorum in this species.

Second phase coupes are found mainly to the west and south of the Glen Finart Burn. The aim is to maintain timber production and to progress the restructuring of the forest by felling some very difficult coupes which have been delayed and, elsewhere, breaking up some areas, previously designated as continuous cover forestry where this management technique is no longer seen as being feasible in the long term. Coupe shape and size is largely determined by natural features and attempts to minimise the risk of windblow in adjacent stands. Coupe 09041 contains a small area of larch and, if possible, will be retained to at least third phase to minimise the landscape impact of felling at a similar time to coupes 09036 and 09039.

All harvesting operations will be carried out in accordance with the UK Forestry Standard Guidelines, and Forests and Water Guidelines (5th edition). The presence of DWPAs and private water supplies, and their sources, will be described and mapped on a constraints map and

specific protection measures will be described during operational work planning. The necessity of avoiding contamination of DWPAs and maintaining water quality in burns and rivers will be observed during operations. On steep ground above potentially vulnerable property, a risk assessment will be carried out prior to operations and best practice will be observed, to minimise risk of debris flows and rock falls. Prior to operations any known heritage features will be marked to ensure protection during the operation. Where necessary public access will be managed so as to reduce disruption without compromising safety. Potential impacts on infrastructure will be taken into account during operational planning and the relevant stakeholders contacted prior to operations.

4.1.2 Thinning

A relatively large area is shown on Map M12 as having potential for thinning. This can be split into conventional first thinning, light thinning of more mature stands and 'cleaning' of areas managed for habitat reasons. Only a limited amount will be extracted as forest produce and this is indicated on the haulage map, M11.

There is limited potential for first thinning of stands planted around 2010 and the following criteria have been used to assess suitability:

- Planting year around 2010
- Slope ≤30%
- DAMS score (exposure) ≤14
- Soil type (from maps)
- Accessibility

A more detailed assessment of the stands will be made at the operational planning phase and a final decision whether to proceed with the work will be made at that point. First thinning will be to marginal thinning intensity, dependent on survey data. Racks will be cut at appropriate spacing and matrix trees taken to achieve the recommended thinning intensity. Volume from first thinning is likely to be in the order of $50m^3ha\text{-}1$.

Some mature conifer stands in the area around Ardentinny have been thinned in the past and it will be beneficial to carry out additional light thinning during the plan period. The objective will be to retain older stands and maintain species and age diversity; this will benefit both landscape and recreation. Care will be needed to maintain stand stability and work will include promoting individual trees and existing natural regeneration and creating better conditions for the latter where there is none. If this work is successful it might create opportunities for conversion to continuous cover forestry in the future, bringing additional environmental benefits. Light thinning of native broadleaves might also be carried out in the areas indicated. The nature of this work will depend on site priorities, the main objective being to promote and improve habitats. The volume of timber from this work will be substantially less than marginal thinning intensity amounting to perhaps no more than $10m^3ha\text{-}1$ over the plan period.

The definition of thinning used here includes cleaning substantial areas being managed for habitat, including riparian areas, native woodland restoration sites and open ground. There will be some sites where spruce regeneration is acceptable and initial cleaning will help develop a productive stand. Although the majority of this work will be removal of undesirable species before they become too large there will inevitably be some growth with diameters in excess of 10cm. In addition, the majority of the road network and important recreation zones will also require management which might involve removal of some trees with a diameter greater than 10cm. In these areas, single trees or small groups of trees will be removed when necessary to protect facilities, infrastructure and trails, to enhance the setting of features, or to maintain existing views. Also, in these zones, woodland might be thinned, or trees re-spaced, for reasons other than safety, (including to increase visibility to ensure that sites are welcoming and feel safe) and where it is necessary to enhance the experience of the forest setting, through the development of large trees, or preferential removal of trees to favour a particular species. The map also shows areas where larch is known to occur at very low densities as individuals or small scattered groups. Larch will be removed from these areas and, if necessary small numbers of other species if this is required for operational or safety reasons. All these areas are indicated in Map M12. Volumes from all these works are likely to be relatively insignificant, in the order of $1m^3ha\text{-}1$ to $10m^3ha\text{-}1$ over the plan period.

It is possible that there is more low density larch throughout the plan area and permission is sought to remove these and any necessary closely associated trees; the total volume of unmapped very low density larch and closely associated species is not likely to exceed $1m^3ha\text{-}1$ to $2m^3ha\text{-}1$ over the lifetime of the plan.

4.1.3 Potential for Continuous Cover Forestry

Although site conditions exist that would favour the use of Continuous Cover Forestry (CCF) techniques, no commercial stands have been identified that would justify using them at present. If it is possible to continue thinning of both conifer and broadleaf retentions, as described in section 4.1.2, then there may be opportunities for conversion to CCF in the future. The best opportunities will be found on drier, sheltered sites with good road access. Most of the existing native woodland area has been designated as CCF. The most likely management system will be single tree selection for conservation, rather than commercial, benefit.

4.1.4 Timber haulage

Access and egress for timber haulage, with approximate volumes by phase, are shown on Map M11. The volume of timber to be moved and the approximate number of lorry loads, over the ten year period, is shown in table 4.2.

Phase	To Northwest	To northwest	To south	To south
	Volume (m^3)	Approx. lorry loads	Volume (m^3)	Approx. lorry loads
1	12711	360	49521	1400
2	25479	720	76714	2171
Total	38190	1080	126235	3571

Table 4.2 Timber haulage

Timber will be taken either northwest towards Loch Eck and the A815 or south, through Kilmun, and onto the same trunk road from there. The public roads in the vicinity of the forest are narrow and winding and designated 'consultation routes'; the Local Authority and Community Councils will be informed of proposed timber movement prior to it taking place. Whenever possible timber leaving the forest and going northwest to Loch Eck will be carried along the forest haul road in Glen Finart.

4.2 Future habitats and species

The management zones map (map M2) indicates the broad aspiration for future habitats which are shown in more detail in the future habitats map (map M5). Further information is found in Appendix III.

Table 4.3 summarises the establishment proposals for the plan area during the first two phases.

Phase	Species	Area (ha)
1/2	Conifer	260
1/2	Broadleaf	163
Total		423

Table 4.3 Proposed establishment

A significant proportion of the woodland area is on ancient woodland sites. Where these are currently occupied by exotic commercial species they will be restored to native woodland following clearfelling. Where possible a buffer will be established around these sites and native species will be preferred in the forest habitat network. The native woodlands will be a mix of oak, birch and Scots pine, though other native species will also be encouraged. Where there are adequate seed sources natural regeneration will be the preferred establishment option. Elsewhere, or where natural regeneration is not developing quickly enough, planting will take place. Crucial to the success of native woodland establishment is effective deer control. Reducing the number of deer per hectare from current levels to less than 10 will be a key priority; fencing might be required to protect some sites.

In the natural reserve at the northern tip of the plan area the woodlands will be allowed to develop without interference other than for conservation reasons (e.g. rhododendron clearance

or removal of non-native conifer). Over the long term there should be an improvement in the natural habitat.

In principal, climatic conditions favour a wide range of species that could be used for commercial planting, though exposure becomes an increasingly limiting factor above about 250m. In practice site conditions – a combination of wet, acid or steep and rocky ground – mean that Sitka spruce will remain the species of choice in most situations. Where large areas of pure Sitka spruce are indicated, on the future habitats map, 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. On some sites, nurse species, such as lodgepole pine might be used to improve establishment of spruce. The use of extensive stands of Sitka spruce will help maintain a barrier to the potential spread of grey squirrels into Cowal.

On sites lying between the ancient woodland areas and Sitka dominated ground opportunities will be sought to use alternative species, concentrating on sites with better soil conditions, especially where this will maintain or improve landscape diversity. The use of species other than Sitka will also help improve age diversity in the future due to the different rotation lengths associated with these. Typical species will include Norway spruce, Douglas fir and western red cedar. Scots pine will be considered on any drier acidic sites. 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 modified when the ground is restocked. This is for both commercial and landscape reasons, taking out unsuitable ground and breaking up unsightly straight edges. Mixed natural regeneration will be allowed to establish in these areas. This is likely to be of variable density and age and will add to visual diversity. There will be no significant loss of woodland area. The detailed pattern if these changes is not shown on the future habitats map.

4.3 Management of open land

Open land ranges from high elevation hillsides and plateaus to riparian and bare steep slopes at all elevations. It includes roadline wayleaves and other open space around buildings, for example.

The open hill ground is covered by a long term grazing let and this will remain in place. In the future there may be opportunities to improve priority open habitats by reducing grazing pressure and restoring areas of deep peat. The latter is already an objective in coupe 09066. Some areas may be suitable for a variety of upland and montane woodland types and this might be investigated in the future. However, there are, currently, no proposals to carry out any establishment work during the next ten years. In places there is encroachment of Sitka spruce at the forest/hill ground interface. Some sites e.g. around designated sites and priority open habitat, will be assessed during the lifetime of the plan and action taken to keep non-native regeneration within acceptable tolerances.

A large proportion of the road network will be upgraded or have substantial maintenance work carried out during the plan period, including drain maintenance and removal of natural regeneration where it interferes with the integrity and use of the road. Wayleaves will also be kept open and managed in accordance with terms agreed with the relevant utility companies.

Much of the open space within woodland areas will be considered transient and is not mapped. Buffer areas around riparian zones will not be restocked with commercial conifer, as per guidelines, but an open woodland habitat will be allowed to develop. Particular attention will be paid to providing adequate buffers around private water supplies and their sources as detailed in Forest and Water Guidelines table 6.7.2. In this case non-native species will be kept to within tolerable limits.

4.4 Visitor zones and access

The main visitor facilities, including the lease area used by Quadmania, are shown on the recreation map, M9. Ardentinny, and in particular Ardentinny Beach is an important destination point in the wider Argyll Forest Park. The status of the car park at the beach and associated trails is currently being reviewed and plans to improve the visitor experience will be implemented in the near future. The aim will be to maintain and create a more pleasant and diverse network of woodland walks and cycle trails, including the long distance trail to Carrick. Work will include ditching and road improvements throughout the visitor zones, other trails and the car park, shown on Map M9 . Some small trees may be removed during the plan period but volumes will be small and are incorporated into the overall thinning figures. More detailed specifications will be developed prior to any work being carried out and any necessary permissions not covered by this submission will be applied for. Forestry and Land Scotland will work closely with local communities to improve and develop recreation facilities in the plan area.

4.5 Deer management

The LMP area is part of a much larger deer management unit (DMU) which includes East Loch Eck and parts of Lochgoilhead LMP area. The key objective of deer control within the DMU is to reduce leader browsing on restocking and natural regeneration to less than 10%. Accurate figures for deer population densities will become available early in 2021. These will be used to determine the best method of protecting more vulnerable tree species, setting cull targets and constructing deer fences as appropriate. Deer control will be carried out by FLS wildlife rangers and contract staff.

Part of deer management will include the creation and maintenance of deer glades and rides and tracks to give adequate access to both restock sites and open hill ground. More detailed planning will take place over the course of the plan period and any necessary permissions sought prior to work commencing.

4.6 Other proposals

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

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

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

(Infrastructure includes forest roads, footpaths, access routes for vehicles, pedestrians and animals, buildings, utilities and services, and drains.)

The maximum volume of felling in exceptional circumstances covered by this approval is 40m^3 within the LMP area per calendar year.

A record of the volume felled in this way will be maintained and will be considered during the five year Land Management Plan review.

Detailed proposals for major road upgrades and tracks will be developed when requirements are better understood. Any necessary permissions will be sought prior to work commencing.

4.7 Restructuring

4.7.1 Summary

The felling proposals progress the process of restructuring the forest developed in previous plans. The aim of restructuring is to gradually convert the commercial woodland into one with a more balanced age structure and a more diverse species range. It is believed that a more diverse forest encourages greater resilience 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, exceptions have been described in Section 5.1. The retention of several stands beyond the age of 60 years will afford improved age structure and resilience in the medium to long term. Retention and expansion of native broadleaved woodland will help maintain diversity and further improve resilience.

4.7.2 Species diversity

Table 4.4 indicates the change in relative species composition between 2021 and 2041. There is a reduction in the amount of Sitka spruce relative to other species over the 20 year period, but it remains the dominant species. There is a large increase in the percentage of native woodland reflecting the amount of clearfell of non-native species on ancient woodland sites is felled. The modest increase in conifers other than Sitka spruce could be increased in future years as a better understanding of the impacts of climate change is developed and deer numbers are reduced. The amount of larch is reduced as a response to the threat of Ramorum disease and may have to be totally removed before 2041 if the latter continues to spread. Diversity is maintained due to the significant increase in native broadleaves.

Species	**2021**	**2031**	**2041**
Sitka spruce	67.9	59.2	51.9
Native broadleaves	19.9	28.7	34.3
Scots pine	1.5	1.4	1.5
Larch	1.8	0.7	0.5
Other conifer	8.9	10.0	11.8
	100.0	100.0	100.0

Table 4.4 Change in species diversity over time as a percentage of woodland area (these figures exclude integral open space)

4.7.3 Age structure

Table 4.5 shows the change in relative age structure between 2021 and 2041. Early in the plan period younger age classes are very poorly represented. This is reversed in the early 2030s as approved coupes are restocked. Older age classes become dominated by native woodland as non-native conifer which have grown well beyond normal rotation age are finally removed. These figures indicate that it will take some time to achieve a balanced age structure.

Age Class	**2021**	**2031**	**2041**
0-10	7.6	33.8	26.2
11-20	11.8	4.5	31.5
21-30	21.1	13.5	7.1
31-40	21.1	13.4	7.1
41-50	8.1	10.8	8.6
51-60	8.0	10.7	8.5
60+	22.3	13.3	11.0
	100.0	100.0	100.0

Table 4.5 Age structure in Glen Finart (percent of forested area)

5.0 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.
- Availability of contractor base capable of working in challenging situations.
- Adequate deer control measures for protection of broadleaved species and soft conifers.

6.0 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. Several coupes on steep ground present severe difficulties and detailed workplans will be drawn up prior to work commencing. Age of clearfelling will generally be in the range 40 to 60 years.

Some younger stands will be assessed for thinning during the plan period to determine the feasibility of doing the work and the most suitable methodology. Thinning will normally be carried out at, or below, the level of marginal thinning intensity (i.e. removing no more than 70% of the maximum MAI, or YC, per year). Higher intensities (no more than 140 % of maximum MAI, or YC, per year) may be applied where thinning has been delayed, larger tree sizes are being sought or as part of a LISS prescription. In all cases work plans will define the detailed thinning prescription before work is carried out and operations will be monitored by checking pre and post thinning basal areas for the key crop components. A rack system will be established with racks at appropriate intervals, any outstanding volume being taken from the matrix. The potential to continue thinning into the future will be assessed on a stand by stand basis. A more selective approach to thinning some mature stands will be considered.

Restocking for productive purposes will be by planting following any necessary site preparation. The latter will include brash management, 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.

There is a large seed source for native species and natural regeneration will be the preferred option for establishment of native woodland. The success of this will be monitored and supplementary planting used if necessary.

7.0 Background information

7.1 Previous plan

7.1.1 History

This is the third plan for the Glen Finart block the last one having been produced in 2006. The block was initially acquired by the then Forestry Commission in the 1920s and the earliest planting took place towards the end of that decade and the early 1930s. Although Sitka spruce was the most frequently planted species a number of others were planted, particularly around Ardentinny and some older stands of these species remain. Another wave of planting took place during the 1970` at least some of which would have been second rotation. The intention was to establish a productive forest and the previous plan examined ways in which a range of other objectives could be achieved without compromising production. This plan takes into account the aspirations of the previous plan and builds on these in light of changing policy and new circumstances. Table 7.2 gives a similar projection from 2021 to 2041 based on the proposals set out in this revised plan.

7.1.2 Analysis of previous plan

The broad aims of the previous plan were:

- To diversify age structure whilst maintaining timber production.
- Where possible diversify species structure.
- Enhance or restore ancient woodland sites.
- Provide other conservation and social benefits including improvement of access and landscape.

Several approved coupes were not felled during the plan period and this has led to delays in restocking and therefore restructuring. Those that were felled have been restocked in accordance with plan proposals. There have also been impacts on achieving conservation and landscape objectives that are being re-assessed in the current submission. The previous plan also included extensive areas designated as continuous cover forestry for environmental and social benefits. Table 7.1 gives figures for species distribution in 2004 and an approximate projection for 2044.

Species group	2004 ha	2004 %	2044 ha	2044%
Spruce	1088.3	59.5	657.9	37.9
Larch	64.0	3.5	161.4	9.3
Mixed conifer	40.2	2.2	66.0	3.8
Pines	38.4	2.1	66.0	3.8
Native woodland	208.5	11.4	340.2	19.6
Integral open space	389.6	21.3	444.4	25.6
	1829.1	100	1735.9	100

Table 7.1 Change in species composition as envisaged in previous plan (these figures exclude open hill land)

7.1.3 Continuity with previous plan

The broad objectives of the previous plan are relevant to the new land management plan, though there is a slight change in emphasis with regards to some of these. Table 7.2 gives current species distribution (including integral open space) and approximate projections for 2031 and 2041. It can be seen that the estimates for the early 2040s are broadly similar.

Species group	2021 ha	2021 %	2031 ha	2031 %	2041 ha	2041 %
Sitka spruce	956.7	52.8	802.3	44.2	700.2	38.6
Larch	25.5	1.4	8.9	0.5	6.4	0.4
Norway spruce	57.9	3.2	41.2	2.3	36.5	2.0
Mixed conifer	68.1	3.8	95.9	5.3	122.2	6.7
Pines	21	1.2	19.4	1.1	19.7	1.1
Native woodland	279.5	15.5	387.0	21.3	463.9	25.6
Integral open	404.7	22.3	458.7	25.3	464.4	25.6
	1813.4	100	1813.4	100	1813.3	100

Table 7.2 Change in species composition envisaged in this plan

Sustainable timber production remains a key objective and the plan seeks to maximise the productive potential of the area without compromising other objectives. In addition, due to climatic and site conditions it is recognised that opportunities to use species other than Sitka spruce might be limited. Larch can no longer be used to provide landscape interest. The area mapped as PAWS has been re-examined and there will be a continued restoration of these sites as non-native species are felled, adding to diversity. The area of CCF has also been reviewed and in the short to medium term it has been concluded that this designation should be replaced by a mix of clearfell, long term retention and minimum intervention management, determined by site objectives. Diversification will also be achieved by continuing to increase the amount of native species in FHNs. The felling programme will follow guidelines to minimise risk to water quality and minimise risk of instability on steep ground. The landscape remains a key element in forest design. The zones map (map M2) illustrates the relative importance of the main objectives throughout the area, though there is a degree of overlap.

7.2 Physical site factors

7.2.1 Geology, soils and landform

Glen Finart LMP area lies along the western shore of Loch Long between Gairletter Point and Loch Goil. From loch shore the land rises steeply to a series of minor peaks running south to undulating plateaux reaching elevations in excess of 650m. Glen Finart and Gairletter Glens penetrate into the plateaux. Everywhere slopes are steep, frequently in excess of 40%, and often bouldery with frequent rock outcrops. The slopes are incised by steep fast flowing streams, only a few of which open out into wider glens.

The plan area is to the north of the Highland Boundary Fault and the solid geology is dominated by fine grained metamorphosed sedimentary rocks with low base status. Because of the steep slopes there is little or no cover with more recent glacial material, this generally being confined to the upper parts of the wider glens. This material might be prone to instability in places. There are small areas of marine deposits around the coastal fringe.

Detailed soil survey is restricted to the northern part of the plan area, in Glen Finart and Knap; the remainder of the area is covered by national mapping at a much smaller scale. Indications are that brown earths occur on steeper slopes, at lower elevations, but that peaty gleys dominate at higher elevations. Iron pan soils occupy intermediate ground and there are small areas of flushed and unflushed peat on a range of slope types. Rocky and bouldery ground with shallow soil occurs on steep ground at all elevations.

7.2.2 Water

The area is drained by many steep fast flowing burns which run either directly into Loch Long or the larger Glenfinart and Stronchullin Burns. The smaller burns are frequently incised into any underlying softer material and bedrock. SEPA flood risk maps indicate that there is a risk of flooding within short distances of burns where their gradient is not very steep but these are not extensive. There will be some potential for erosion and resulting sedimentation downstream. There are several private water supplies in the block and a small area above Ardentinny and some of the open hill are drinking water protected areas (Map M8). The latter is not at risk from forestry activity within the Glen Finart block. There are several small hydro schemes in the plan area.

7.2.3 Climate

Using the measures of warmth and wetness defined in the Ecological Site Classification (ESC, see Forestry Commission Bulletin 124) the Glen Finart LMP area is categorised as warm and moist between sea level and about 200m elevation. Above that level climate becomes increasingly cold and wet, the highest elevations being considered sub-alpine. Average annual rainfall at nearby Lochgoilhead is in the region of 1650mm, about 60% of which falls between October and March, however there is significant rainfall throughout the year. The coastal fringe is considered

sheltered, but exposure increases rapidly with elevation, becoming severely exposed on open hillsides above 400m.

7.2.4 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 LMP area suggest an increase in accumulated temperature of over 50% by 2050, compared to baseline 1960 – 1990 data, and about 75% by 2080. Relative increase is even greater at higher elevations and all parts of the forest are predicted to be classed as warm as early as 2050. 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. However where exposure is currently a limiting factor it seems likely to remain so, and this potential for increased growth rate will be restricted to more sheltered parts of the forest.

7.3 Biodiversity and environmental designations

The commercial planting is dominated by Sitka spruce though there are older stands of other species including Norway spruce, Douglas fir and Scots pine. Outwith these areas there are a number of different woodland and open ground habitats. On the shores of Loch Long are narrow strips of semi-natural native woodland and more extensive areas at Knap and in Glen Finart itself where Craighoyle SSSI is to be found. Native woodland sites harbour important populations of lower plant species and ground flora. The high moorland above the tree line consists of a mosaic of open habitat including areas of blanket bog and upland heath.

A number of bird and mammal species utilise the forest. The area falls within a golden eagle territory and the influence zone of at least one black grouse lek is to be found in the north west. Both osprey and white tailed sea eagle are being seen more regularly and there are several sites suitable for nesting raven, peregrine and kestrel. A number of important mammal species are present including red squirrel, pine marten and badger and bats of various species will use the native oakwoods.

Craighoyle is designated as a SSSI and the Knap area is on the edge of Loch Goil which is part of a larger Marine Protected Area which includes the upper part of Loch Fyne.

Rhododendron ponticum is widespread and has a negative impact on natural habitats.

7.4 The existing forest

7.4.1 Species, age structure and yield class

The forested area is dominated by Sitka spruce, the earliest planting of which was in the late 1920s. The information in table 7.3 below includes open space but if the latter is excluded Sitka spruce makes up about 68% of the forested area. Native broadleaves, including extensive stands of oakwood, are the next most abundantgroup making up about 20% of the woodland. (Native woodland figures include a very small proportion of beech and sycamore amounting to about 2ha in total). Map M13 illustrates current species distribution. The woodlands are relatively old (Table 7.4, Map M14), with less than 20% of the woodland less than 20 years old. The remainder of the wooded area is spread fairly evenly across all age groups and, although some of this is ancient semi-natural woodland and conifer retention, indicates the need for restructuring. Productivity can be very good with yield classes in excess of $20m^3ha\text{-}1$ on sheltered sites with good soil conditions. At higher elevations a combination of lower temperatures, poorer soil conditions and increasing exposure reduce yield class to no more than $12m^3ha\text{-}1$. Across all sites yield class can change over a very short distance for example, where freely draining raised sites sit adjacent to flatter, poorly drained sites.

Species	Area ha	Area %
Sitka spruce	956.6	36.8
Larch	25.4	1.0
Scots pine	21.0	0.8
Native broadleaves	279.4	10.7
Norway spruce	57.9	2.2
Other conifers	68.6	2.6
Open	1194.5	45.9
	2603.4	100.0

Table 7.3 Species diversity, 2021 (gross plan area and including open hill land)

Age Class	Area ha	Area %
0-10	106.3	7.6
11-20	166.2	11.9
21-30	294.8	21.1
31-40	294.9	21.1
41-50	112.2	8.0
51-60	112.2	8.0
60+	311.1	22.3
	1397.7	100

Table 7.4 Age diversity, 2020 (figures are for woodland area only)

7.4.2 Access

There are a good number of access points into the forest block and there is an extensive road network. However this seemingly favourable position is offset by the age and layout of the network on which there are poor surfaces, steep gradients and difficult corners not always suitable to modern timber traffic. An extensive programme of road maintenance was started in Gairletter Glen several years ago and will be continued during this plan period. In addition to the quality of the internal road network all the access points are onto narrow and winding unclassified roads and timber haulage will need to be carefully managed.

7.5 Landscape and land use

7.5.1 Visibility, landscape character and value

The plan area falls within the “Steep Ridges and Hills” Landscape Character Type as described by Scottish Natural Heritage. Glen Finart, and the lower part of Gairletter Glen, have been put in the “Straths and Glens” category. The key characteristic, of the former, is that of steep sided hills rising dramatically from narrow sea lochs and glens to prominent summits. The hills are often seen in conjunction with the higher “Highland Summits” that lie to the north, for which they are a sort of precursor, and with the sea lochs result in a Fjord-like seascape. In general settlement is largely absent and there is a sense of remoteness. Both Glen Finart and Gairletter Glen match the key features of the “Straths and Glens” category, being deep, broadly u-shaped and with relatively wide flat, valley floors. Side slopes remain steep and, in the case of Glen Finart the upper part also steepens dramatically. The Glens penetrate into the upland areas and can offer long and distant views along them.

The eastern slopes of the block are visible from the east shore of Loch Long between Cove and Ardpeaton, themselves relatively remote areas with an important but small number of visitors. From this side of the Loch it is possible to look straight into and to the upper parts of the glens. There are also views down the whole length of Glen Finart from the west where the public road reaches its highest point. From there, there is a dramatic and winding journey down to Ardentinny with ever changing perspectives. From both the village and the beach there are close and spectacular views of the steep ridges where Glen Finart opens into Loch Long.

7.5.2 Neighbouring land use

The main settlement is the village of Ardentinny, at the mouth of Glen Finart. This is an important tourist destination and the beach is popular with day visitors. There is a caravan park catering for longer stays. The wider area is dominated by commercial forestry, mostly managed by Forestry and Land Scotland, thought there are private estates to the north and west. The lower parts of Glen Finart and Gairletter Glen are still farmed and here there are areas of improved grassland. Both cattle and sheep are raised and the upland areas are used for extensive summer grazing.

7.5.3 Utilities

As well as several smaller above and below ground power lines, there is a major line which takes power to Dunoon, running from Knap the whole length of the plan area. This line is clearly visible where it crosses the lower parts of Glen Finart. There are also several small hydro schemes in Glen Finart and on the Schoolhouse Burn above Ardentinny. There is a single radio antenna to the south of Ardentinny. These facilities are shown on the Utilities Map, M8.

7.6 Social factors

7.6.1 Recreation

Ardentinny, and its beach, are key destinations in Argyll, providing the only salt water beach in the Loch Lomond and the Trossachs National Park. There is a FLS car park at the beach which provides limited facilities. There are other formal and informal parking areas in several other spots. From these there are numerous trails and those promoted and managed by FLS are shown on the Recreation Map, M9. Several shorter trails are complimented by a long distant route heading north to Carrick and Loch Goil. FLS are working with East Cowal Heritage Outdoors (ECHO) who are seeking to establish a number of heritage trails in the wider area. The local bowling club lease land from FLS, the community manage a wildlife hide and there is also a walled garden close to the beach car park. A venture offering off road quad bike tours uses the forest road system and part of the hill ground in Gairletter Glen. Ardentinny Outdoor Centre also use the woodlands for their outdoor activities.

7.6.2 Community

The plan area falls within three Community Council boundaries and these take a keen interest in the management of the forest. All have been consulted during plan development and key issues and concerns have been addressed.

7.6.3 Heritage

A number of heritage features have been identified and these are shown on the conservation and heritage map, M6. Most are remnants of shielings or occasional buildings indicative of past last use and settlement. More recent features include remaining military infrastructure associated with activity during the Second World War. Features at Knap, identified in a Historical Land Use Assessment exercise, have scant if any evidence of their existence on the ground.

Appendix I: Consultation record

Consultee	Date contacted	Date response received	Issue raised	FLS Response
Scottish Forestry	28.08.20		n/a	SF asked to review stakeholder list and raise any particular issues that ought to be taken into account in the plan.
Loch Lomond and The Trossachs National Park	28.08.20	22.09.20	Concerns regarding spread of Sitka spruce natural regeneration above treeline and onto open hill. Consider management options including planting native broadleaves to act as a buffer to commercial plantation. Proposals to retain older stands of Sitka spruce should be considered in light of potential unwanted seed source and landscape setting. Suggests using chemical control techniques for removal of larch where this is can be done safely and the impact on landscape is not negative (natural ecosystems frequently include standing deadwood). Be aware of, and take into account new planting on adjacent Invernoaden and Carrick Estates. Ensure there is an effective buffer around the Craighoyle SSSI. Consider timing of felling of coupes to north-east of White Bay. Rapid felling of stands at Knap of concern if to be largely replaced by Sitka spruce. Less of an issue if broadleaved woodland is to be a major component in the future.	Spread of Sitka spruce will be considered during plan development and proposals to control this made where it conflicts with other priorities such as open ground management. As above, consideration will be given to management of retained Sitka spruce. Safe removal of larch is a key element in the plan proposals. A range of options will be considered. New planting is recognised and appropriate management will take this into account. Appropriate buffers will be established around the SSSI. Timing will take account aspiration to remove larch whilst avoiding adjacency issues. A range of possible options will be considered at Knap. Restocking will be a mix of native and non-native woodland.

Consultee	Date contacted	Date response received	Issue raised	FLS Response
			The plan should maintain the current access provision and explore opportunities to enhance this with the NPA access team. Management of rhododendron is essential, especially given the level of native broadleaves in the restocking proposals. Consider options for softening landscape impact of major powerlines.	FLS will continue to promote formal and informal access and are willing to discuss other opportunities with stakeholders. The plan will indicate proposals for rhododendron control. Restocking options that help soften landscape impacts will be introduced.
Nature Scot (previously SNH)	28.08.20	01.09.20	Noted that management plan for Craighoyle expired in March 2020 and asked if a new plan is to be included in the LMP. Factors contributing to the unfavourable status of the SSSI, specifically spread of Rhododendron ponticum and high deer browsing levels must be addressed (collaboratively with neighbouring land owners) both in the SSSI and wider plan area. In addition spread of Sitka spruce into SSSI must be addressed, including establishment of a reasonable buffer between the SSSI and commercial conifer plantations. Note presence of two golden eagle territories, other endangered raptors and black grouse. Recommend liaison with RSPB/Raptor study group regarding measures to enhance habitat for these species. Suggest referral to golden eagle range reports. Note that red squirrels are common in the plan area which itself is within the Cowal squirrel stronghold. Measures to safeguard and enhance habitat for this species should be incorporated into the plan.	A new plan is under preparation and will be referred to in the LMP. The plan will outline operations to manage Rhododendron and deer numbers. FLS endeavour to work with neighbouring land owners when dealing with these issues. Sitka will also be controlled within the SSSI and a buffer established at restocking between it and commercial conifer plantations. FLS will take into account presence of raptors and black grouse when preparing the plan. Conservation advisory staff are well acquainted with habitat requirements and work closely with interest groups. The presence of red squirrels and existence of the squirrel stronghold is acknowledged. FLS will seek to improve habitat for this species.

Consultee	Date contacted	Date response received	Issue raised	FLS Response
Scottish Water	28.08.20	25.09.20	LMP area falls within a Drinking Water Protected Area (DWPA). Water quality and quantity must be protected and any incidents that could affect Scottish Water (SW) be reported without delay. Location within DWPA should be noted on future documentation. There are no known SW Assets within the plan area; but this should be confirmed and account should be taken of 'Guidance on Forestry Activities near SW Assets' if any become known. Refer to SW list of precautions. Site specific risk and mitigation measures will require to be assessed and implemented. Protection measures should be submitted to Highway Authorities and Utilities Committee (HAUC) for review and works should not proceed prior to written acceptance by SW. Proposals should follow UKFS and Forest and Water Guidelines and are required to comply with Sewers for Scotland and Water for Scotland 4th Ed (2019).	Protection measures will be implemented when operating within DWPA; incidents will be reported. Location of DWPA will be indicated in LMP and future documentation such as operational work plans. Risks and mitigation will be assessed and implemented in consultation with SW around known SW assets and within DWPA. Work will not commence before written acceptance from SW. Guidelines will be followed.
SEPA	28.08.20	25.09.20	There are concerns regarding sediment quality in the Finart catchment affecting salmonids which may be partly forestry related (steep topography and drainage). Adherence to UKFS should offer protection but in addition it is recommended that a drainage improvement strategy is emphasised in the plan, this to include road networks. Consultation with Argyll District Salmon Fisheries Board also recommended.	Concerns regarding water quality will be noted in the plan. UKFS guidelines will be followed. Attention will be paid to water management during operations and road maintenance. Fisheries Board consulted in scoping exercise.

Consultee	Date contacted	Date response received	Issue raised	FLS Response
			Suggest buffers along the riparian corridor are strictly adhered to. When upgrading existing or constructing new tracks it is recommended that water crossings are designed to convey the 1 in 200 year flow plus an allowance for freeboard. Various regulatory requirements listed. Detailed scoping requirements listed under the headings of General issues, Adverse effects on water environment, Carbon balance and impacts on peat, Impacts on wetlands and use of waste on site.	Buffers will form part of the Forest Habitat network (FHN). Appropriate guidelines will be followed during road/track maintenance and construction. Operations will adhere to regulations. Plan will cover most if not all of issues raised and will state that proposals will comply with UKFS and the requirements of the Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended) (CAR).
Ardentinny Community Council	28.08.20	01.09.20	Request to be more involved in plan development. Raised questions regarding slope stability following felling behind houses located on the beach; measures being considered to mitigate risks of landslides; restocking proposals in this area. Will there be a policy of returning lower slopes to native woodland. How will the tree felling affect the footpaths and squirrel hide in the area.	FLS will seek ways to involve CC in plan development. Email re this sent on 16.09.20. Slope stability will be considered during plan development and any actions required before, during and after operations will be outlined in the plan. FLS aim to restock ground within two years of felling. FLS policy is to reinstate native woodland on ancient woodland sites and expand these were possible. There are large areas of ancient semi-natural woodland in the plan area to which this policy will be applied. Some paths may be temporarily closed during operations but will be re-instated following these. The squirrel hide will be protected if possible.
Kilmun Community Council	28.08.20	09.09.20	Protection and enhancement for priority and endangered species (e.g. red squirrel) should be essential and not just a consideration. At harvesting and restocking all consideration should be made not to provide a movement route for the Arrochar based grey squirrel.	FLS provide protection for all priority species and measures are outlined in the plan. FLS work with partners to maintain effective barriers to exclude grey squirrels from the Cowal Red Squirrel Stronghold.

Consultee	Date contacted	Date response received	Issue raised	FLS Response
			Broadleaved/native woodland requires management. Request that a separate plan is drawn up for this, pointing out that this has been discussed with the CC who have never received any clarification or confirmation of what native species are, or are intended to be, used now or in the future. Recreation routes should be enhanced providing more circular, linked and signposted walks and cycle routes. Timber extraction routes should be discussed with communities and the single track road structure should be enhanced at least with the minimum of more and larger passing places to accommodate the timber lorries. Community Councils need to be informed prior to movement of timber.	FLS manage all woodlands to UKFS standards and are certified under UKWAS. The plan outlines measures to manage native woodlands. FLS will continue provide a wide range of formal and informal access opportunities. Timber extraction routes are agreed between the forestry sector and the highways authorities. Routes and approximate tonnage will be indicated in the plan. Local authorities and community councils will be informed of timber movements.
Lochgoilhead Community Council	28.08.20	02.10.20	No issues raised	
RNAD Coulport	28.08.20	21.09.20	No issues raised	
Ardentinny Outdoor Centre	28.08.20	01.09.20	No issues raised	
Carrick Castle Estate	28.08.20	01.09.20	No issues raised	
Quadmania	28.08.20	01.09.20	Asked for more details but no issues raised	PDF maps provided
Mountaineering Scotland	28.08.20	29.09.20	Interests lie with access through forest blocks to open high ground and management impacts on landscape – welcome proposals to diversify forest structure. Preference for deer to be managed through culling rather than fencing.	Interest noted and access and landscape impacts will be included in the proposals. The plan will describe the preferred approach to deer management.

Consultee	Date contacted	Date response received	Issue raised	FLS Response
			If fences are used it may be helpful to provide a means of passing through these on informal routes to higher ground. Recreational access could be promoted if forest tracks could be extended to forest edge.	Where fencing is used impact on informal access will be taken into consideration. Access will be considered when planning forest tracks.
Ross MacArthur Contractors (Drynain Hydro)	16.09.20	08.10.20	Concerns regarding damage to hydro facilities either following natural events or forest operations, including provision of crossing points.	Following natural events FLS will aim to deal with problems as quickly as possible. Forest operations will be sensitive to hydro installation and appropriate mitigating measures put in place.
WoSAS	28.08.20	18.09.20	There are a number of known heritage features within the plan area and these should be afforded appropriate protection. It is likely that there are more features that have not been recorded and care should be taken to record, report and protect any new features that are found during forest operations.	Known and any new features will be afforded relevant protection.
CONFOR	28.08.20		No response received	
RSPB	28.08.20		No response received	
Butterfly Conservation	28.08.20		No response received	
Transport Scotland	28.08.20		No response received	
Raptor study group	28.08.20		No response received	
Scottish Wild Land Group	28.08.20		No response received	
Sustrans	28.08.20		No response received	
Argyll and Bute Council (Roads)	28.08.20		No response received	
SSE	28.08.20		No response received	
Scottish Power	28.08.20		No response received	

Consultee	Date contacted	Date response received	Issue raised	FLS Response
BSBI plant recorders	28.08.20		No response received	
Argyll District Salmon Fisheries Board	28.08.20		No response received	
ECHO	31.08.20		No response received	
Nathan Drover (Allt nan Crocan Hydro)	16.09.20		No response received	

Appendix II: Scoping record and design brief

Glen Finart Land Management Plan

Scoping was carried out by email and a number of stakeholders contacted between November and December 2019.

A summary of responses is given in Appendix I

An internal meeting was held on 9th Ocotber 2019 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 overleaf and emphasise the key principals of maintaining the productive potential of the forest whilst delivering a range of other ecosystem services into the future.
- Create a coupe structure that progresses the restructuring process started in the previous plan aiming to diversify both species and age diversity. Include coupes already incorporated into the Regional felling programme.
- Incorporate stands with significant proportions of larch into first phase felling coupes in line with FLS policy to remove 50% of larch from zone C by 2023.
- Remove the majority of accessible non-native conifer from the western part of the plan area within the plan period. Outline longer term management options for remaining stands. Re-establish ancient woodland and commercially non-viable sites with native woodland, avoiding isolation of commercially viable sites.
- Retain majority of the southern tip of the peninsula as natural reserve, but incorporate larch stands into felling coupes due to threat from Ramorum disease. Where feasible create a buffer zone around the reserve.
- At restocking seek to maximise production using Sitka spruce as the predominant species in a clearfell management system. Use alternative species to improve diversity and landscape, where site conditions are favourable.
- Restore PAWS indicated as 1a and 2a on the ancient woodland layer in line with Forestry and Land Scotland Policy.

- Establish a definitive forest habitat network and outline management approaches to be adopted within it.
- Where feasible seek to improve habitats for a range of bird and mammal species including golden eagle, black grouse and red squirrel.
- Seek to soften landscape impacts through careful coupe design, expansion of FHN, modification of upper treeline and judicious use of alternative species.
- Examine management options in the area around Coillessen taking into account recreation interest along trail networks and the Your Park areas.
- Establish and maintain a deer control programme that allows successful establishment of vulnerable species.

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. Glen Finart FDP will incorporate the various requirements of UKWAS within its proposals.

Appendix III: Summary of operations

Coupe	Fell Year	Phase	Gross Area	Felling Species	Felling Net Area	Establishment Species	P/NR	Year	Area ha
9003	2020	n/a	11.0	n/a	n/a	SS	P	2022	3.8
						MC	P	2022	3.2
						NW	NR	2025	2.4
						Open			1.6
9007	2020	n/a	10.6	n/a	n/a	SS	P	2022	4.1
						MC	P	2022	3.7
						NW	NR	2025	1.3
						Open			1.5
9027	2020	n/a	5.8	n/a	n/a	NW	NR	2025	4.6
						Open			1.2
9034	2020	n/a	45.3	n/a	n/a	SS	P	2022	23.8
						MC	P	2022	4.9
						NW	NR	2025	8.5
						Open			6.9
9121	2020	n/a	4.2	n/a	n/a	SS	P	2022	1.5
						MC	P	2022	1.1
						NW	NR	2025	0.7
						Open			0.9
9005	2031	2	7.0	SS	6.8	SS	P	2033	4.7
						NW	NR		1.2
						Open			1.1
9014	2031	2	9.8	SS	5.0	SS	P	2033	5.9
						NW	NR	2041	1.5
						SP	P	2033	0.3
						Open			2.1

Coupe	Fell Year	Phase	Gross Area	Felling Species	Felling Net Area	Establishment Species	P/NR	Year	Area ha
9117	2022	1	3.9	SS	0.1	SS	P	2024	3.3
				JL	1.5	NW	NR	2032	0.1
						Open			0.5
9004	2031	2	15.0	SS	12.1	SS	P	2033	12.9
				JL	0.4	NW	NR	2041	0.3
						Open			1.8
9022	2027	2	23.3	SS	18.8	SS	P	2029	15.3
				WH	1.5	MC	P	2029	4.0
						NW	NR	2047	1.3
						Open			2.7
9126	2023	1	8.4	SS	4.5	NW	P/NR	2025/33	6.6
				HL	0.4	Open			1.8
				WH	0.6				
9035	2031	2	10.7	na	9.0	NW	P/NR	2033/41	8.2
						Open			2.5
9032	2024	1	13.2	SS	12.6	SS	P	2026	6.4
				DF	0.4	MC	P	2028	4.2
						NW	NR	2046	1.2
						Open			1.4
9028	2023	1	1.8	SS	1.0	NW	P	2025	1.4
						Open			0.4
9036	2030	2	6.4	SS	3.9	MC	NR	2040	0.3
				MOP	0.4	NW	NR	2040	4.8
						Open			1.3
9039	2030	2	11.9	SS	1.7	MC	P	2032	6.8
				NS	3.7	NW	NR	2040	2.5
				MOP	0.3	Open			2.6

Coupe	Fell Year	Phase	Gross Area	Felling Species	Felling Net Area	Establishment Species	P/NR	Year	Area ha
9041	2031	2	23.6	SS	21.3	MC	P	2033	8.0
				DF	0.3	NW	P/NR	2041	10.6
						Open			5.0
9141	2022	1	6.5	SS	3.9	SS	P	2024	1.3
				JL	1.0	MC	P	2024	0.7
				DF	0.1	NW	P/NR	2032	3.2
						Open			1.3
9044	2022	1	28.5	SS	22.2	SS	P	2024	10.9
				NS	0.5	MC	P	2024	4.2
				SP	0.5	NW	P/NR	2032	8.6
				DF	0.6	Open			4.9
				MOP	1.8				
9050	2026	1	8.5	SS	8.3	SS	P	2028	3.3
				HL	0.2	MC	P	2028	3.0
						NW	NR	2046	1.2
						Open			1.1
9053	2022	1	10.1	SS	4.2	MC	P	2024	3.3
				HL/JL	1.2	NW	P/NR	2032	4.9
				MC	0.5	Open			1.9
				SP	0.5				
				WH	2.5				
9156	2022	1	6.3	SS	4.7	NW	P/NR	2024/32	4.8
				HL	0.7	Open			1.5
				WH	0.9				
9060	2031	2	47.3	SS	41.9	SS	P	2033	31.4
						NW	P/NR	2033/41	9.2
						Open			6.7

Coupe	Fell Year	Phase	Gross Area	Felling Species	Felling Net Area	Establishment Species	P/NR	Year	Area ha
9067	2024	1	11.2	SS	10.4	SS	P	2026	10.2
				LP	0.4	Open			1.1
9172	2023	1	3.1	SS	0.1	SS	P	2025	2.5
				HL	2.4	NW	NR	2043	0.2
						Open			0.5
9164	2023	1	2.2	SS	1.4	MC	P	2025	1.6
				JL	0.6	NW	NR	2033	0.4
						Open			0.2
9069	2031	2	12.2	SS	10.7	SS	P	2033	4.4
						MC	P	2033	4.2
						NW	NR	2041	2.1
						Open			1.6
9071	2022	1	14.0	SS	3.6	MC	P	2024	3.1
				HL/JL	6.9	NW	P/NR	2032	8.3
				NS	0.9	Open			2.6
				WH	0.1				
9075	2023	1	24.2	SS	15.7	SS	P	2025	7.0
				HL	1.0	MC	P	2025	2.5
				MC	0.5	NW	P/NR	2025/33	7.4
						Open			7.4
9079	2023	1	1.7	HL	1.7	NW	NR	2033	1.3
						Open			0.4
9083	2031	2	2.8	SS	2.0	MC	P	2033	1.1
				HL	0.2	NW	NR	2041	1.1
				NS	0.4	Open			0.6
9089	2024	1	8.2	SS	7.7	MC	P	2026	3.3
						NW	P/NR	2026/34	3.3

Coupe	Fell Year	Phase	Gross Area	Felling Species	Felling Net Area	Establishment Species	P/NR	Year	Area ha
						Open			1.6
9097	2026	1	11.7	SS	5.4	SS	P	2028	1.8
				JL	4.0	MC	P	2028	1.7
				WH	0.1	NW	P/NR	2028/36	6.3
						Open			2.0
9098	2027	2	19.2	SS	4.5	SS	P	2029	11.1
				NS	0.4	NW	NR	2037	3.5
						Open			4.7
9101	2029	2	14.8	SS	3.6	SS	P	2030	2.7
				NS	0.4	NW	NR	2039	6.5
				LP	2.0	Open			5.7
				WH	4.3				
9106	2022	1	25.2	SS	13.2	SS	P	2024	11.7
				JL	2.3	NW	P/NR	2024/32	5.3
				NS	3.5	Open			8.3
				LP	0.7				
				SP	1.7				
				MC	0.4				
9102	2024	1	27.1	SS	15.3	SS	P	2026	5.9
				HL/JL	0.2	NW	P/NR	2034	14.5
				NS	1.8	Open			6.8
				WH	0.1				
9103	2029	2	11.0	SS	7.2	SS	P	2031	8.7
				HL	0.1	NW	NR	203	0.7
				NS	1.0	Open			1.7
				LP	0.4				

Coupe	Fell Year	Phase	Gross Area	Felling Species	Felling Net Area	Establishment Species	P/NR	Year	Area ha
				WH	0.1				
9108	2023	1	16.9	SS	2.1	NW	NR	2033	13.4
				JL	2.6	Open			3.5
				WH	1.2				
clearfell			**447.7**		**347.8**			**SS**	**194.6**
restock only			**76.9**		**na**			**MC**	**64.9**
gross			**524.6**	**net**	**347.8**			**SP**	**0.3**
								NW	**163.4**
								Open	**101.4**
								gross	**524.6**

Approximately 311ha will be planted and 112ha will be established by natural regeneration.