Forestry Commission Scotland
Coimisean na Coilltearachd Alba

Planning

Cowal and Trossachs Forest District

Land Management Plan

Corlarach

Cowal and Trossachs Forest District

CORLARACH

Land Management Plan

We manage Scotland's National Forest Estate to the United Kingdom Woodland Assurance Standard – the standard endorsed in the UK by the international Forest Stewardship Council® and the Programme for the Endorsement of Forest Certification. We are independently audited.

Our land management plans bring together key information, enable us to evaluate options and plan responsibly for the future. We welcome comments on these plans at any time.

The mark of responsible forestry

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

Forest District:	Cowal & Trossachs
Woodland or property name:	Corlarach
Nearest town, village or locality:	Dunoon
OS Grid reference:	NS136728
Local Authority district/unitary Authority:	Argyll and Bute Council

Areas for approval

	Conifer	Broadleaf
Clear felling	756.1	
Selective felling		
Restocking	734.5	137.3
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 FC staff on 5th December 2014.

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 FC 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 ..... Signed .....

Forest District Manager — Conservator

District ...Cowal & Trossachs FD — Conservancy Perth & Argyll

Date 8th June 2017 — **Date of Approval** 04 DEC 2017

Date approval ends 4/12/27

A Screening Opinion Request form is to be found in Appendix V.

Contents

5.0 Land Management Plan Proposals

5.1 Management
5.2 Future habitats and species
5.3 Restructuring
5.4 Future management
5.5 Species tables
5.6 Age structure
5.7 Management of open land
5.8 Deer management
5.9 Access

Support documents: Maps

- Analysis and concept
- Management zones
- Management
- Future habitats and species
- Roads, tracks and quarries
- Recreation
- Conservation and heritage
- Viewpoints
- Perspectives

Appendices:

I) Consultation record
II) Scoping record and design brief
III) Public consultation questionnaire
IV) Tolerance table
V) Screening Opinion Request
VI) Screening Opinion Request summary
VII) A guide to understanding the Scottish Ancient Woodland Inventory (AWI)

Summary of Proposals

The Corlarach Land Management Plan (LMP) draws on the key themes of the Scottish Forestry Strategy (SFS) (2006), Forest Enterprise Scotland's Strategic Directions and Cowal & Trossachs Forest District's Strategic Plan. Several objectives, for example native woodland restoration are in line with the Argyll and Bute Local Biodiversity Action Plan. The area covers approximately 2700ha.

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.

1. Continue to manage the forest for timber production. Clearfelling, before onset of windblow, and replanting will be the predominant management technique. Shortened rotation lengths will be considered for windthrow prone sites.

2. Sitka spruce will be the main species of choice at higher elevations. ESC principles will be used to guide choice and diversify species structure where site conditions are favourable. Up to date guidance on the effects of climate change will be taken into account.

3. Felling and restocking will be managed over the long term to provide increased age, species and spatial diversity to improve resilience.

4. The forest habitat network (FHN) will be maintained and managed for conservation and landscape interest. Priority open habitats and peatland will be managed in accordance with Forestry Commission guidelines.

5. Ancient woodland will be enhanced or restored as appropriate. A diversity of native and non-native species will be established in the area of long established plantation at Toward.

6. Opportunities will be taken to modify the upper woodland margin taking into account site conditions and objectives.

7. Established breeding birds will be protected. Opportunities will be sought to enhance habitat for black grouse.

8. Known features of archaeological interest will be protected and any new discoveries recorded.

9. An appropriate deer management infrastructure will be established to allow early natural regeneration and protect planted stock.

10. Water supplies will be protected and riparian zones managed, to maintain and improve water quality, increase biodiversity and mitigate against erosion and flooding. Forest and Water Guidelines will be followed during forest operations.

11. The existing recreation infrastructure will be maintained to provide a diversity of experience in more heavily used areas.

12. Visual diversity will be enhanced in more prominent areas in the south and along the Clyde coast. Broadleaved and conifer species will be used and production will not be excluded.

13. The location and size of long term retentions will be reviewed in light of recent experience.

1.0 Introduction:

1.1 Setting and context

The Corlarach Land Management Plan area lies to the south west of the town of Dunoon on the west side of the Firth of Clyde in Argyll. The plan area is orientated approximately south west – north east, reaching from Dunoon in the north to Toward in the south. The Clyde is the effective eastern boundary and Glen Fyne marks the western extent (Figure 1.1). The block consists of an extensive low plateau reaching an elevation of about 400m. The eastern slopes dominate the western side of the entrance to the Clyde and the southern part overlooks Rothesay on the Isle of Bute. Although there is a fringe of settlements and agricultural land close to the shore, the area is dominated by plantation woodland, mainly of commercial spruce.

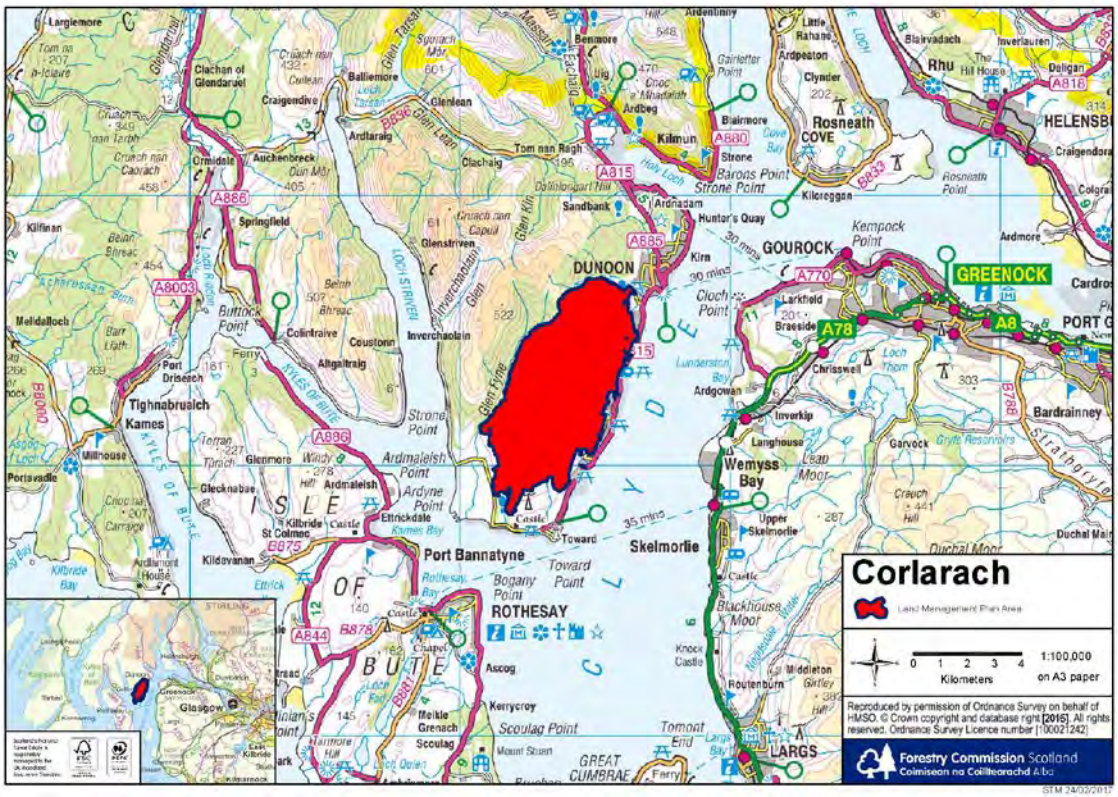

Figure 1.1 Corlarach: location

1.2 History of the plan

This is the second forest plan for Corlarach, the first and second plans having been submitted and approved in 1999 and 2004 respectively. The plan covers an area of approximately 2700ha and continues a general aspiration to maintain production whilst improving the environmental and landscape features. Although there are some small areas of semi natural ancient woodland, dating back to at least 1750, the plan area is dominated by commercial spruce plantation. Planting of first rotation crops took place between the late 1940s and early 1980s and some of these have now been felled and replanted. The plantation is dominated by Sitka spruce with only small areas of Japanese larch and lodgepole pine and few other species. The first two plans introduced a programme of restructuring aiming to achieve a more diverse and resilient forest, aiming to maintain timber production whilst improving the environmental impact of the forest.

2.0 Analysis of previous plan

2.1 Aims of previous plan and achievements

The objectives of the previous plan were described in terms of five more or less distinct zones: Forest Habitat Network (FHN), landscape sensitive zone, alternatives to clearfell zone, clearfell zone and open hill. The overall objective of the FHN is to improve habitat and provide links between habitat types - it incorporates semi-natural ancient woodland, riparian zones and open ground. Key ambitions are to remove non-native conifer and enhance or restore semi natural woodland. The clearfell zone is the area where commercial timber production is concentrated. Economic benefit is a key driver but social, environmental and landscape factors are also to be taken into account. There is an aspiration to diversify tree species where feasible. The open hill zone is that area above the commercial treeline, the overall aspiration for which is steady improvement in habitat and diversity. The landscape sensitive zone overlaps the other four and recognises the position the forest occupies relative to the Clyde and the Island of Bute. The alternatives to clearfell zone concentrated on small areas of better soils at low elevations and sheltered glens. Other factors considered in the plan are protection and improvement of habitat for species of conservation concern (such as black grouse and red squirrel), protection of archaeological features and increased opportunity for access for informal recreation.

The previous plan envisaged a programme of phased felling and restocking designed to achieve the above objectives. Although much of this work has

been achieved there have been significant changes to the felling programme largely due to extensive recent storm damage. This has resulted in modifications to coupe size and shape, earlier felling of some coupes and delays to others. Relatively large areas of wind damaged trees remain to be cleared and it is clear that progress towards the restructuring envisaged in the previous plan has been slowed. Restocking has been in line with the plan though in recent years there have been restrictions on the planting of larch due to risk from Ramorum disease. Norway spruce has been used instead of Sitka, in places, to provide increased diversity whilst maintaining production. Small areas of other conifer and broadleaves have also been planted.

A number of temporary tracks have been constructed to facilitate management, however the road construction programme has been delayed.

2.2 How previous plan relates to today's objectives

The broad objectives of the previous plan are relevant to the new land management plan. Sustainable timber production remains a key objective, and this will continue to concentrate on the use of Sitka spruce. However, the use of alternative species is, increasingly seen as an important element in mitigating the impacts of climate change. This adds weight to the opportunities being sought to diversify species for environmental and landscape reasons. As stands have developed it has become increasingly clear that site conditions at higher elevations are extremely limiting for commercial tree growth. This plan considers opportunities for expansion of open ground, with potentially improved carbon sequestration, as opposed to restocking with conifer with low productivity. The principles and objectives of the FHN remain key to the plan, with added emphasis on management of open ground and diversification of habitat. Managing sensitively for both conservation and landscape remains a key element of the new plan. In the short to medium term the use of alternatives to clearfell will be reviewed

The zones map illustrates the relative importance of the main objectives throughout the area, though there is a degree of overlap.

3.0 Background information

3.1 Physical site factors

3.1.1 Geology Soils and Landform

The Land Management Plan area lies immediately to the north of the Highland Boundary Fault and is underlain by metamorphic rocks derived largely from fine grained sedimentary rocks and sandstones. These rocks break into a slaty consistency but weather only slowly and provide a relatively poor nutrient source. In the Glen Fyne area the metamorphic rocks are derived from basaltic material potentially leading to slightly better soil fertility. Superficial deposits of glacial or fluvio-glacial origin, largely derived from the solid geology are found on the slopes of the plateau. There are extensive areas of deep peat, particularly at higher elevations.

The plan area consists of a low level, undulating plateau at about 350m – 400m. There are several distinct summits the highest of which is Corlarach Hill at 418m. The slopes separating the summits are generally gentle or moderately steep but slopes down to sea level are frequently steeper. The steepest slopes occur in Glen Fyne. Many of the burns on these slopes are deeply incised.

The eastern part of the plan area is covered by Forestry Commission soil maps at a scale of 1:10000, Glen Fyne area in less detail by the James Hutton Institute 1:250000 survey. The surveys indicate the dominance of peaty gleys and unflushed peats, even to quite low elevation. There are small areas of surface water gley at lower levels and brown earths are found on the steeper slopes, for example in Glen Fyne. Field observations confirm this general association though the area of peat on the plateau is perhaps more extensive than indicated. Unflushed peat with poor nutrient status dominates flatter areas merging to flushed peats, deep peaty gley and iron pan soils where the slope steepens. Large areas of peat have been eroded. On steeper slopes, at all elevations, shallow soils and rock outcrops are frequent. These soil types suggest water regimes towards the wetter end of the spectrum and poor to very poor soil nutrient regimes. Moisture availability is unlikely to be a limiting factor in the plan area.

3.1.2 Water

The burns draining the plateau are steep and deeply incised, with waterfalls in places. There is a small reservoir at the northern boundary in Bishop's Glen and two small ponds in the south west of the plan area. These latter are not part of FES ownership. The dam at the head of the Burnmakiman

Burn has been breached and so the Blue Lochan is boggy rather than open water. There are several private water supplies and a water main follows the wayleave above Bullwood. The Ardyne Burn is a classified water body and is currently at good status.

3.1.3 Climate

Using the measures of warmth and wetness defined in the Ecological Site Classification (ESC, see Forestry Commission Bulletin 124) the Corlarach LMP area is categorized as warm and moist at lower elevations, becoming increasingly wet above about 150m. Above about 200m the temperature is described as cool and wet. Average annual rainfall ranges from approximately 1400mm at lower elevations in the south to over 2000mm on the northern parts of the plateau. About 60% falls during the winter months. There are small areas close to sea level and up to 150m in north eastern glens that are classed as sheltered. However the south western part of the plan area is more exposed and becomes increasingly so as elevation increases. Above about 250m there are significant areas classed as highly exposed, especially in the south and west. The very highest elevations are considered too exposed for commercial forestry.

3.1.4 Future climate

Predicting the impact of future climate change presents one of the biggest challenges in forest planning. In the Corlarach area accumulated temperature is predicted to increase by about 45% by 2050, compared to baseline 1960 – 1990 data following medium to high emissions scenarios. Temperatures will continue to rise and be about 60% greater than baseline data by 2080. Relative increase will be even greater at higher elevations and all parts of the forest are predicted to be classed as warm by 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. Moisture deficit is predicted to decrease up to 2050 and then begin to rise again towards 2080. 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.

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. Where exposure is a limiting factor, at present, it seems likely to remain so.

3.2 Biodiversity and environmental designations

Corlarach LMP area is dominated by commercial spruce plantation and has only a small but important range of habitat types. These support a variety of mammals, birds and amphibians as well as good populations of invertebrates. The network of burns provide important links between the various habitats and between higher and lower ground.

There are small patches of semi-natural ancient woodland on the fringes of the LMP area, mainly on the eastern side. These consist of upland oak and birch and occasionally extend in narrow strips up the burns which drain the plateau. Several of these have now been planted with commercial conifer and elsewhere there is encroachment by non-native regeneration. In the south west are the remnants of policy woodlands associated with Toward Castle. The commercial conifer plantation range in age from less than ten to almost seventy years. Though dominated by Sitka spruce there are small stands of other species including Norway spruce and Douglas fir.

There are degraded areas of upland heath at higher elevations and extensive areas of blanket bog. These areas are fragmented and isolated from each other by the conifer plantation. Much of the peat is eroded. The numerous water courses that drain the plateau are frequently incised providing a variety of habitats, from south facing grassy slopes to shady, damp rock faces. In addition to the various water courses the Blue Lochan is an old reservoir which is now largely drained of water. This provides a small variety of wetland habitat from open water to wet heath.

Golden eagle and black grouse are among several priority species that occur in the forest block, respectively hunting and leking on open ground. In recent years there have been a number of sightings of White tailed sea-eagle and ospreys. Peregrine nest just outside the block and hen harrier have been seen hunting over open areas, where there are potential nest sites. Both tawny and barn owls are provided with nest boxes which are regularly monitored.

Signs of feeding and dreys of red squirrels are to be found throughout the block and the presence of pine marten is evidenced by scat on tracks and roads. Frogs and newts are common, frequently using roadside drains for spawning and there is a diverse invertebrate fauna. The Blue Lochan, in particular, hosts a variety of butterflies, damselflies and dragonflies, indicating the importance of open water and associated wetland.

3.3 The existing forest

3.3.1 Species, age structure and yield class

A total of 30 individual species are currently listed as being present in the forest and one or two others are possibly included in general broadleaved and conifer categories. Most of these make up only a tiny percentage of the overall total, which is dominated by Sitka spruce. Table 3.2 summarises species distribution into major groups. Sitka spruce covers 58% of the plan area and almost 80% of the woodland area. Larch is the next most abundant species but makes up less than 7% of the woodland area and Norway spruce accounts for only 2.4%. There are small areas of Scots and lodgepole pine, which make up about 5% of the woodland area between them; all other conifers make up just over 1%. Broadleaved species make up less than 6% of the woodland area, the majority of which is of native species, mainly birch. Open ground has been excluded from table 3.2.

Species	Area ha	Area %
Sitka spruce	1579.7	78.9
Norway spruce	48.0	2.4
Larch	139.8	7.0
Lodgepole pine	58.5	2.9
Scots pine	35.8	1.8
Other conifer	27.4	1.4
Native broadleaf	110.5	5.6
Other broadleaf	2.4	<0.1
	2002.1	**100.0**

Table 3.2 Species diversity, Corlarach, 2017

Age Class	Area ha	Area %
0-10	231.8	11.6
11-20	290.4	14.5
21-40	682.7	34.1
41-60	677.3	33.8
60+	119.9	6.0
	2002.1	**100**

Table 3.3 Age diversity, Corlarach, 2017

Table 3.3 gives figures for age class distribution of the woodland area. The distribution reflects the expansion of the wooded area in the 1970s. The

younger age classes are under-represented, though there are large areas of recently felled ground, which are now ready for restocking. The small amount of older stands highlights the fact that there was little woodland present before the commercial plantation was established.

Yield class, (productivity) is measured as maximum mean annual volume increment ($m^3yr^{-1}ha^{-1}$) and there is a wide range in Corlarach. For Sitka spruce, yield classes in excess of 20 can be achieved at lower elevations on sheltered sites with good soil conditions. Growth at higher elevations becomes increasingly restricted by both exposure and poor soil conditions. On the plateau yields class of Sitka is often below 10. At all elevations there are frequent areas of very slow growing trees due to waterlogging. Other conifers grow well at lower elevations on better sites. Performance of both Scots and lodgepole pine is variable dependent on site conditions. There is limited data for existing broadleaved species but yield class 4 -8 should be achievable for faster growing species.

3.3.2 Access

There is light vehicle access into the LMP area at Kilbride, Innellan, Achafour and Ardyne. Haulage of timber is concentrated on the Achafour entrance and the Dunoon Timber Haul Route (DTHR) which runs through Auchamore Estate and meets the public road to the north of Dunoon. The amount of timber that can be hauled along the latter is limited by agreement with the DTHR committee. A well maintained forest road runs north - south through the block with spurs to the southeast above Cluniter and Innellen, north through Glen Fyne and southwest above Ardyne. The higher plateau is less well served by the road network, with currently only a short spur to the east of Corlarach Hill. New forest roads will be required to access several coupes in the main block.

ATV tracks have been constructed in several coupes to aid management operations, however these are not regarded as permanent features.

3.3.3 Potential for continuous cover forestry

Continuous cover forestry (CCF) systems work best where there are deep, well drained soils in relatively sheltered situations. In Corlarach the potential for CCF is limited by climatic conditions, particularly exposure, and the presence of peaty gley soils over large areas of ground. Most potential is found in the east, below about 150m, and in particular the area around Kilbride and Bishop's Glen. Glen Fyne and some lower slopes in the Ardyne/Toward area also offer prospects for these management systems. Timely and consistent thinning is a key success factor and on some, otherwise suitable sites, application of CCF techniques will be best delayed

until the next rotation. There is scope for establishing permanent native woodland for landscape, environment and amenity.

3.3.4 Current and potential markets

Although timber prices fluctuate, there is continued demand for softwood timber of all dimensions and it is expected that there will continue to be a ready market for spruce. Future markets for hardwood and other conifer species are uncertain but expectations are that these will develop over time; in particular the demand for biomass for the woodfuel market is expected to grow.

3.4 Landscape and landuse

3.4.1 Visibility, landscape character and value

Corlarach occupies a prominent position at the entrance to the Firth of Clyde and, though it is outside any designated areas, the landscape has much of value. The eastern and south western slopes are visible from the eastern shore of the Clyde and from the the popular resort of Rothesay on Bute. From the Clyde and Bute ferries there is a constantly changing panorama. The upper plateau is generally not visible from these viewpoints. The undulating nature of the plateau is less dramatic than the hills to the north and west but the deeply incised burns and glens, especially where there are broadleaved woodlands, add character and diversity.

3.4.2 Neighbouring land use

Glen Fyne, to the west, and Auchamore, to the north, are dominated by commercial forestry with rough grazing on low quality hill ground. There is some better grazing at lower elevations and a limited amount of arable farming around Ardyne and the shores of Loch Striven. Dunoon is a popular tourist destination and Castle Toward was, until recently, used as an outward bound centre. There is a fish farm at the entrance to Loch Striven and recreational fishing on the small reservoir in Bishop's Glen.

3.5 Social factors

3.5.1 Recreation

There are car parks and waymarked trails from Dunoon and Ardyne, with wider informal access utilising the main road network. Event based adventure tourism around the Dunoon area utilizes a network of informal trails crossing between neighbouring woodland blocks. The woodland is part of an important tourism landscape backdrop from the Clyde and the Isle of Bute, with icon vantage points within the block and maintenance of the large scale landscape of the plan area is important.

3.5.2 Community

The communities around Dunoon highly value the woodland for local access, events, rural employment and the landscape character within which they live, travel and work. The community has a strong sense of place and a history associated with West coast tourism and community engagement of the surrounding forests.

3.5.3 Heritage

Known heritage features are shown on the conservation map. The most important feature is one of only two scheduled monuments to be found on the National Forest Estate in Cowal and Trossachs Forest District. This consists of a crescentic shaped burial cairn, above Innellan, discovered by Forestry Commission staff in 1991. Other features include field systems, buildings, and enclosures. These are in variable condition. The site of a possible hill fort on Buachailean is in open ground but a cup marked stone, first reported in 1969, near the Corlarach Burn, has not been rediscovered due to the presence of “dense forestry”. Near to the latter are several turf covered mounds of unknown origin. Castle Toward boasted extensive grounds and much of the old policy woodlands are within the LMP area. These include the “Chinese Ponds” which are not in FES ownership. There are several tracks marked on early OS maps, some of which are utilised by the forest road network.

3.6 Statutory requirements and key external policies

The key policy documents influencing the LMP are the UK Woodland Assurance Standard, the UK Forestry Standard (3rd Edition) and the Scottish Forestry Strategy.

4.0 Analysis and Concept

The analysis and concept map summarises the main issues and aspirations for the LMP area.

4.1 Analysis

- Woodland area is dominated by Sitka spruce, with less than five percent broadleaves.
- Timber production is a key objective.
- Storm damage over the past decade has resulted in large areas of windblown trees, not all of which have been cleared.
- Clearance of storm damaged trees has negative implications for medium term species and age structure and resilience to future damage.
- Site conditions are suitable for a range of species at lower elevations, but deteriorate quickly above about 200m – 250m.
- At higher elevations exposure, in particular, restricts species suitability and there are large areas of wet, nutritionally poor soils (deep peaty gley and deep, often eroded, peat).
- Poor site conditions are associated with slow growing and poor quality Sitka spruce and lodgepole pine whose commercial value may be limited.
- Existing larch stands are at threat from Ramorum disease and this species is currently not considered for planting.
- Forest road network currently limits access to higher elevations.
- Limited, and isolated areas of higher level open ground.
- Small areas of ancient semi-natural woodland on the fringes of the plan area.
- Golden eagles use the area and there is potential for other birds of prey to nest.
- There are small numbers of black grouse utilising the woodland margins and open ground.
- Red squirrels occur in suitable woodland habitats.
- Rhododendron is found throughout the plan area and is particularly extensive in the south west. Dense western hemlock natural regeneration is also evident in several areas.

- There is a scheduled ancient monument near Innellan and several non-designated heritage features.
- Eastern, southern, and south western slopes of the plateau are prominent in the landscape, viewed from the Firth of Clyde and the Isle of Bute.
- There are waymarked trails in the north east and south west and a way marked cycle route links the two networks. There is increasing informal use for the woodland area by the mountain biking community.
- There is a large deer population, being enhanced by inward migration from adjacent ground.
- Several burns are used for private water supplies.

4.2 Concepts of the plan

The main objectives of the plan will be to maintain timber production whilst diversifying species and age structure and improving ecological and visual diversity. In addition protection of important mammal, bird and insect species and their habitats will be a priority.

- Continue to manage the forest for timber production, retaining Sitka spruce as the main commercial species, particularly at higher elevations.
- Continue to introduce a wider range of both coniferous and broadleaved species, where site conditions allow, so that there is a clear direction of travel towards achieving UKFS standards on species diversification.
- Devise a coupe structure that allows clearance of remaining windblow whilst maximising opportunity for species and age class restructuring.
- Seek to build future resilience at time of restocking through species choice, judicious use of open space and optimal ground preparation.
- Assess opportunities for continuous cover systems and long term retentions, thin stands in a timely manner where appropriate.
- Where CCF is not appropriate clearfell before onset of windblow.
- Establish a suitable deer management programme to protect vulnerable planted and naturally regenerating trees.
- Retain and enhance the existing forest habitat network, using riparian areas to improve resilience in the commercial timber stands.
- Seek to expand area of open ground and modify woodland margins to improve habitats and benefit priority species such as black grouse.
- Follow guidance on management of afforested deep peat taking account of the potential for carbon sequestration.
- Restore or enhance ancient semi-natural woodlands and seek opportunities to expand area of native woodland.
- Monitor and assess spread of invasive species and establish a management programme.
- Use a range of broadleaved species as alternatives to larch where diversification is desirable for landscape reasons.
- Maintain the existing recreation infrastructure to provide a variety of interest and experience.
- Follow guidelines on heritage features and protect known features, and any newly discovered ones, through appropriate management.
- Protect private water supplies and follow Forest and Water Guidelines during all operations.
- Design an extended road system to allow management of the whole plan area.

5.0 Land Management Plan Proposals

5.1 Management

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, Forests and Water Guidelines (5th edition).

The coupes have been planned in such a way as to remove the most extensive windblown areas as early as possible. Although account has been taken of landscape, size and shape have been largely dictated by existing crop boundaries and topography. Most of the block can be worked by harvester/forwarder, however some steeper slopes may require winch operation. The distribution of windblow, topography and the desire to fell to windfirm edges has resulted in some large coupe sizes. Landscape impact is offset by the overall landscape scale and distance when seen from the most significant viewpoints. Foreshortening of the view of the upper plateau also helps in this regard. Where possible the year of felling has been set to avoid adjacency issues and to create a diverse age structure in the future. Some coupes, particularly late phase coupes, may have to be revised in future plans if conditions dictate.

Sitka spruce and lodgepole pine on wet peat and peaty gley, in exposed situations are often very slow growing or have failed. Economic harvesting of these stands is hindered by a lack of access. In the short to medium term slow growing stands will be retained till they reach a suitable size.

Several stands have been designated as long term retentions, for example in the lower part of Glen Fyne and broadleaved stands above Ardyne. These stands will be assessed on a regular basis and future management options determined at that time. Part of Glen Fyne has also been given Natural Reserve status. In this area only management beneficial to the environment, e.g. rhododendron control, will be carried out.

Stands of larch will be monitored on a regular basis and any suspected occurrence of Ramorum disease will be further investigated. Confirmed cases of Ramorum disease become subject to Statutory Plant Health Notices

(SPHNs) and all larch trees within 250m will be felled, including any larch regeneration. At this point the whole site will be assessed and a felling coupe designed that allows removal of the required larch whilst creating practical coupe boundaries that fit within the spirit of the plan. A plan amendment will be sought for any associated non-larch trees.

5.1.1 Thinning

Some older stands have been thinned in the past but this practice has been scaled back in recent years. Attempting to carry out renewed thinning operations in older stands would increase the risk of wind damage to unacceptable levels. Greater opportunity exists where there are younger trees in sheltered situations on better drained soils. There are several stands in the Kilbride area now approaching 10m – 15m height which will be considered for first thinning. In addition the possibility of bringing broadleaved woodland above Ardyne into a thinning programme in future years will also be assessed.

5.1.2 Potential for Continuous Cover Forestry

No stands have been designated for continuous cover forestry in this plan period. Although there is undoubtedly potential in the area around Kilbride, and other sheltered low lying areas, opportunities to begin the process by thinning older stands have now diminished. Stands that are approaching the age of first thinning will be assessed at a future date for their potential. Several stands, with a range of species and ages, have been designated as long term retentions for both environmental and landscape reasons. Some of these may also be suitable to bring into CCF management in the future.

5.2 Future habitats and species

The future habitats map shows the restocking proposals of the plan. Timber objectives will be met by continuing to use Sitka spruce but opportunities will also be taken to increase the percentage of other productive conifers and broadleaved species. These opportunities are largely limited to the area below the main forest road and even here, soil conditions and resource limitations mean that Sitka spruce will still be the main species of choice.

Productive broadleaves will be concentrated where access allows the more intense management required for these species. There are only small areas of ancient semi-natural woodland which will be enhanced and expanded where possible. On the very best sites, broadleaved species will be established by planting and appropriate protection put in place. Elsewhere, e.g. riparian zones in the forest habitat network, the preferred method of establishment will be by natural regeneration.

At higher elevations the species of choice will remain Sitka spruce. Species such as Norway spruce will also be planted where conditions allow and adequate protection can be given from browsing animals. On poorer sites the use of Lodgepole pine as a nurse species will be considered. Few other species are capable of growing in these exposed situations but those that are, for example noble fir will also be considered. More detailed proposals will be developed following clearfelling, and at the operational planning stage, when site conditions can be better assessed. Where there is extensive deep peat the latest guidance on restocking such sites will be followed. This will take into account the desirability of restoring bog habitat vis a vis establishing an acceptable commercial stand, capable also of meeting carbon sequestration targets.

Buffers along larger burns and between individual restock coupes will provide an opportunity for the extension of open space and/or native woodland. The preferred method of tree establishment in these areas will be natural regeneration but small scale planting will be considered as an option in certain areas. Work will, in part, be determined by available resources and more detailed assessment of options will take place following clearfelling. It is expected that there will be Sitka spruce natural regeneration in some of the buffers between restock coupes. An adaptive approach to management will be taken in these circumstances and the amount of Sitka, or other species, that is accepted will be determined on a site by site basis (see section 5.7). This approach will also be adopted in managing open hill ground.

5.3 Restructuring

The felling programme continues a process of restructuring the forest, which has been developed in previous plans. This process has been disrupted by the extent of recent wind damage. Coupe size is relatively large for the size of the woodland but as discussed above this is largely dictated by ground conditions and location of remaining wind damaged trees. Adjacency issues have been avoided as far as possible and future stability will be achieved by replanting Sitka spruce and other species in discrete stands with wide buffers between them.

5.4 Future management

Table 5.1 indicates the area of forest to be felled and volume figures during the plan period. These figures are net and open ground incorporated into felling coupes is not included. The values are approximate and coupes will be surveyed to provide more precise figures prior to felling.

Phase	Area (ha)	Volume (m^3)
1	377.2	127145
2	378.9	168033
	756.1	295178

Table 5.1 Proposed felling

	Mixed broadleaves	Mixed conifer	Open	Totals
Phase 1	17.5	283.4	0.5	301.5
Phase 2	119.8	451.1	131.4	702.3
Totals	137.3	734.5	131.9	1003.7

Table 5.2 Proposed establishment

Table 5.2 summarises the establishment proposals for the plan area and includes both planting and natural regeneration. The figures also include approximately 126.5ha of previously felled ground that will be restocked early in the plan period. This and the open ground figures account for the difference between area felled and restocked.

Where production is the key objective conifers will be planted at densities of about 2700 stems per hectare and broadleaves in the region of 3500. Target densities for native woodland regeneration will vary depending on site objectives, but is expected to be in the region of 500 to 1500 stems per hectare. Areas indicated as mixed natural regeneration, on the future habitats map will be allowed to develop a similarly variable density of native and non-native species, aiming to achieve an overall tree cover of at least 50% in the medium to long term. If supplementary planting is required this will be carried out to reach comparable densities.

The presence of natural regeneration 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. Alternatively a more pro-active approach may be taken: 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 ten years and future commitments to natural regeneration outlined in the plan revision.

Open areas will be allowed up to 20% tree cover. Sitka spruce regeneration will be kept within acceptable tolerance limits on both open ground and in areas where the aim is to achieve a native woodland. Small amounts of rhododendron are known to be present and appropriate measures to control this species will be put in place.

5.5 Species tables

Table 5.3 and Figure 5.1 indicate the change in relative species composition between 2017 and 2047. This shows a reduction in the amount of Sitka spruce relative to other species over the 30 year period. Initially this fall is rapid but then the percentage levels off at just over 60%. A threefold increase in the relative amount of lodgepole pine is indicated. This is because lodgepole pine is an alternative to Sitka spruce at higher elevations on poor sites. It is expected that there will be some variation in these figures depending on site conditions but the overall trend is considered realistic. The amount of larch reduces (a response to the threat from Phytophthora ramorum), and this will be compensated by some of the rise in broadleaved species. There is also an increase in other conifers the most frequently used of which will be Norway spruce. The latter species has not always been individually identified as final species choice will be dependent on several factors including site conditions. The amount of native broadleaves is expected to increase significantly and there is a modest increase in non-native species. Much of the native broadleaves will be low density natural regeneration in the forest habitat network.

Species	2017	2027	2037	2047
Sitka spruce	78.9	66.8	63.0	61.8
Norway spruce	2.4	2.2	2.3	1.7
Larch	7.0	3.9	3.4	3.0
Lodgepole pine	2.9	6.7	7.9	9.1
Scots pine	1.8	1.2	1.3	1.1
Other conifer	1.4	5.9	6.4	7.4
Native broadleaf	5.6	13.4	15.7	15.9
Other broadleaf	<1	<1	<1	<1
	100.0	100.0	100.0	100.0

Table 5.3 Change in species diversity over time in Corlarach (percent planted area)

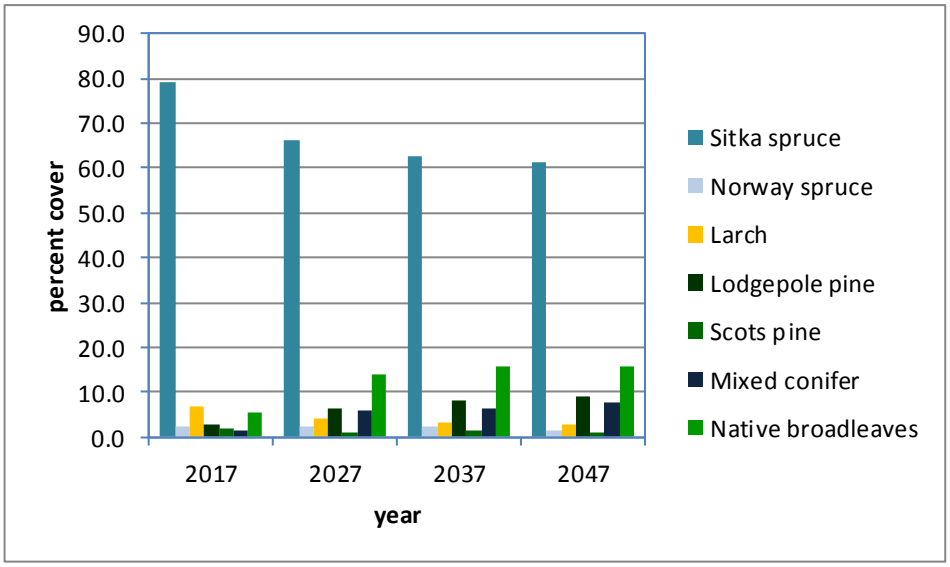

Figure 5.1 Change in species diversity over time in Corlarach (percent planted area)

5.6 Age structure

Table 5.4 and Figure 5.2 show the change in relative age structure between 2017 and 2047. These figures indicate that it will take some time to achieve a balanced age structure. The sharp peak in stands less than 10 years old is a direct consequence of large scale windblow clearance. The early fall in older age classes which will not be fully compensated for till after 2047.

Age Class	2017	2027	2037	2047
0-10	11.6	41.1	26.5	19.0
11-20	14.5	12.4	30.6	20.4
21-40	34.1	27.2	29.9	40.2
41-60	33.8	15.5	8.9	17.3
60+	6.0	3.8	4.1	3.1
	100.0	100.0	100.0	100.0

Table 5.4 Age structure in Corlarach (percent of forested area)

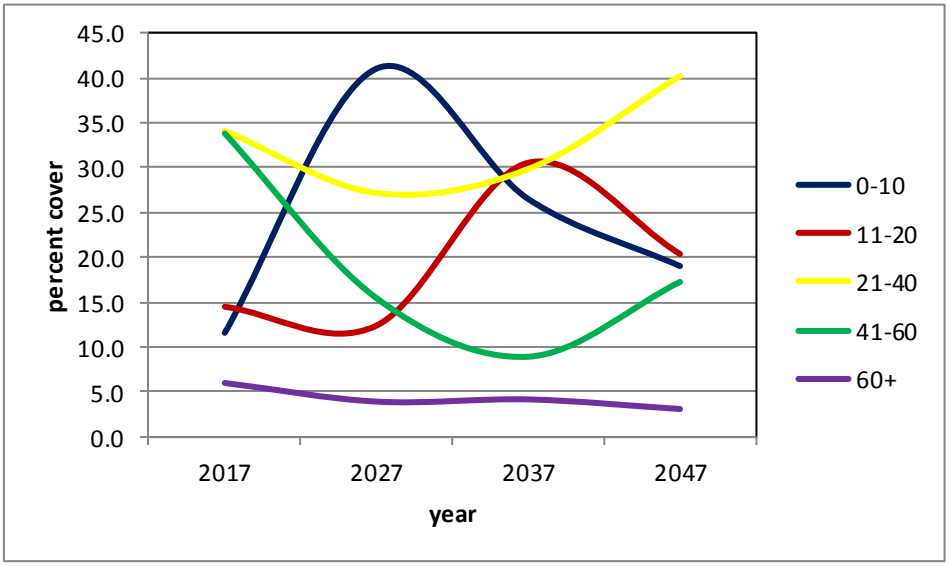

Figure 5.2 Age structure in Corlarach (percent forested area)

5.7 Management of open land

	2017	2027	2037	2047
Forest	74.0	70.6	68.4	74.3
Open	26.0	29.4	31.6	25.7

Table 5.5 Relative area of open ground and forest (%).

Table 5.5 summarises the relative distribution of open ground to forest in 10 year intervals between 2017 and 2047. The figures include transient open space, where felled coupes have not yet been restocked; areas designated “successional” have been divided between open space and native natural regeneration. In addition natural regeneration will be accepted in designated open areas, as long as canopy cover does not exceed 20%. Some of the open space is taken up by the roadline and a buffer zone around this will be kept clear of dense tree growth. Permanent wayleaves make up a moderate percentage of the area and these will be managed in association with the relevant utility company. Open land is also incorporated into most of the restocking coupes though this is not identified specifically in the plan.

5.8 Deer management

Successful establishment of broadleaves and softer conifers will require deer control in order to keep browsing to a minimum. The preferred approach is to manage background deer numbers through culling, bringing numbers down to a sustainable population where browsing damage is at an acceptable level. Fencing may be considered as an option on some sites, for example where shooting is precluded on safety grounds. An added benefit of reducing deer numbers will be the improvement of open ground habitats and development of native woodland through natural regeneration.

5.9 Access

Several new roads will be required to access first and second phase coupes. The approximate positions of these and roads required beyond the plan period are shown on the roads map. A number of ramps will also be required to enable harvesting machinery to access felling coupes. The precise location of these will be determined during operational planning but the expectation is that there will be one ramp for approximately 100m of coupe/road interface. Ramps will be approximately 3m wide and generally

up to about 15m long; they will not be treated as permanent features. In addition approximately 37.8km of ATV tracks will be required to facilitate silvicultural operations and deer management on coupes to be restocked. These tracks will be approximately 2m wide and there will be a minimum amount of disturbance when they are being constructed. They will not be treated as permanent features and will be allowed to grass over once restocking is complete. Indicative positions of the tracks are shown in the roads and tracks map. Final position will be within ± 100m of the indicated positions and the nominal area amounts to about 7.6ha. An EIA determination form for roads and tracks is to be found at the front of this document. A written request can be found in appendix V and a summary in Appendix VI.

Material for road maintenance and construction will be obtained from quarries within the plan area and these are indicated on the roads and tracks map.

The roads and tracks map also indicates access points and haulage routes in and out of the woodlands, with approximate volumes. Timber from the northern part of the block will be carried north along the Dunoon timber haul route to exit onto the A885 at Heronlea. The amount of timber that can be taken along the haul route is controlled by agreement with the managers of the route. Timber from the southern part of the block will exit the forest at Ardyne onto the unclassified road and be taken through Toward, Innellan and Dunoon towards the shipping facility at Sandbank and beyond.

Appendix I: Land Management Plan Consultation Record

Consultee	Date contacted	Date response received	Issue raised	Forest District Response
Forestry Commission Scotland	09/08/16	09/08/16	Chaired scoping meeting. Percentage of Sitka spruce should be reduced to comply with UKFS standards. Similarly percentage of broadleaved species should be increased. Queried possible replacements for larch at restocking and expect to see mention of contingency felling of larch in event of occurrence of Ramorum disease. Is there specific management for priority species. Cultural heritage. Raised question of nature and extent of recreation facilities. Which viewpoints are to be used in production of visualisations. Are councils and local communities notified of timber haulage	FES will develop proposals that will show a clear direction of travel towards achieving UKFS standards. Contingency measures for the felling of larch in the event of an outbreak of Ramorum disease will be described in the plan. FES are aware of several priority species including black grouse and red squirrels and will manage some sites to benefit these species. FES are aware of one designated ancient monument and other non-designated sites. All will be given appropriate levels of protection. There are short and longer distance trails in the forest with potential links beyond. There are no immediate plans to develop these further. FES will re-examine viewpoints and choose at least five.

			arrangements. Asked about new road requirements. Asked about restructuring proposals and coupe sizes.	FES confirmed that A&B Council were informed of approximate haulage figures and that Community Councils would be in the future. Several hundred metres of new road will be required to access first and second phase coupes. Approximate routes will be developed in the plan. FES believe that it might take up to two rotations to complete a full restructuring exercise. Size and shape of landscape can absorb relatively large coupes.
CONFOR	09/08/16	No response received		
SEPA	09/08/16	09/08/16	Response by letter which contained several generic and other more or less specific recommendations, some of which is not relevant to this plan or the scale of LMP. Ardyne Burn is a classified water body, currently at good status. Outline proposals for management of INNS. Protect public and private water supply.	UKFS guidelines will be followed during operations. More detailed analysis of site specific work will be carried out at operational stage. FES will plan operations to minimise risk to classified water bodies. Large parts of Glen Fyne are dedicated to Continuous Cover Systems and Long Term Retention/Natural Reserve. Outlined. Protection measures will be put in place during operations.

SEPA			Less than 20% of acidified catchments should be felled in any three year period. Carbon balance and impacts on peat should be considered.	There are no identified acidified catchments; amount of felling will be restricted where it fits objectives (particularly windblow clearance). Latest guidelines on management of peatland will be referred to.
SSE	09/08/16	no response received		
RSPB	09/08/16	15/08/16	No comments.	
Dunoon Community Council	09/08/16	11/08/16	Could not attend scoping meeting. No comments received.	
South Cowal Community Council	09/08/16	25/08/16	Attended scoping meeting. Concern at amount of timber that might be hauled through Innellen.	FES will keep Community Councils up to date with haulage requirements.
Scottish Water	09/08/16	12/08/16	Written response. Confirmed that there are no Scottish Water drinking water catchments or abstraction points. There are known Scottish Water Assets and SW request that FES consult with them prior to operations in the vicinity of known assets.	FES will follow Forest and Water guidelines, protect public water supply and consult if working near known assets.
Argyll and Bute Council (Planning)	09/08/16	09/08/16	Attended scoping meeting. Raised possibility that there may be more heritage features than currently known. Asked about potential to link trails with others on neighbouring estates.	FES will afford the same level of protection to any newly discovered sites as those that are already known. See response to FCS above.
Argyll and Bute Council (Roads)	09/08/16	12/08/16	Attended scoping meeting. Raised possibility of shipping timber from Ardyne.	FES has examined this in the past and it has been deemed not to be a suitable option.

Argyll and Bute Council (Roads)			Queried use of access into forest block from Innellen and at Kilbride.	No plans to use the Innellen entrance for anything other than light vehicles. The option of using Kilbride for heavier traffic will be retained but is likely only to be used in exceptional circumstances.
Auchamore Estate	09/08/16	09/08/16	Attended scoping meeting Queried what species might be used to replace larch. Are young stands of larch to be monitored for disease. Are there plans in place to control rhododendron? Asked that felling coupes that would make use of Dunoon timber haul route be highlighted in the plan. Raised concerns regarding deer management and the difficulties of establishing “soft” conifers and broadleaved species.	Birch is probably default species but others, e.g. aspen will be considered. Stands of larch are and will continue to be monitored. There are ongoing efforts and these will be described in the plan. FES will highlight coupes and keep haul route partners informed. Deer management proposals will be outlined in LMP.
Blairbuie Estate	09/08/16	No response received		
SNH	09/08/16	15/08/16	Did not attend scoping meeting. Advised that FES liaise with RSPB/Argyll Raptor Study Groupwith regard to sensitive bird species.	FES have close links with the ARSG and are aware of sensitive species in the forest block.
West of Scotland Archaeological Service	09/08/16	10/18/16	Unable to attend scoping meeting. Requested that the revised plan be sent for comment.	WoSAS should be invited to comment at final consultation stage.

Appendix II. Scoping Record and Design Brief

Corlarach Land Management Plan: Scoping Report

Corlarach Land Management Plan covers approximately 2700ha of wooded and open ground overlooking the Clyde estuary to the south of Dunoon.

This report presents a draft set of objectives and accompanying design brief for the plan area. These objectives and design brief have been developed following an internal and external scoping process and a drop in session for the general public held in Dunoon. A draft concept and analysis map, minutes of the external scoping meeting and a summary of the comments made at the drop in session are included.

The main objectives of the plan will be centred around timber production and landscape with additional emphasis on conservation. Recreation is a small but important feature within the plan area and there is scope to develop this further.

Objectives

A key objective is to maintain the productive potential of the forest whilst delivering a limited range of other ecosystem services where appropriate.

Design Brief

Manage the forest for timber production. Clearfelling, before onset of windblow, and replanting will be the predominant management technique. Shortened rotation lengths will be considered for windthrow prone sites.

Sitka spruce will be the main species of choice, particularly at higher elevations. Ecological Site Classification (ESC) will be used to guide choice and diversify species structure where site conditions are favourable. Up to date guidance on the effects of climate change will be taken into account.

The percentage of native broadleaves will be increased to eventually conform with UKFS requirements.

Where larch was to have been planted for primarily landscape reasons, alternative species which will add similar visual diversity will be used. Larch stands will continue to be monitored for potential infection from Ramorum disease.

Felling and restocking will be managed over the long term to provide increased age, species and spatial diversity to improve resilience.

The forest habitat network (FHN) will be maintained and managed for conservation and landscape interest. Priority open habitats and peatland will be managed in accordance with Forestry Commission guidelines.

Ancient woodland will be enhanced or restored as appropriate. A diversity of native and non-native species will be established in the area of long established plantation at Toward.

Opportunities will be taken to modify the upper woodland margin taking into account site conditions and objectives.

Established breeding birds will be protected. Opportunities will be sought to enhance habitat for black grouse.

Known features of archaeological interest will be protected and any new discoveries recorded.

Rhododendron ponticum will be managed in line with Forest District strategy.

An appropriate deer management infrastructure will be established to allow early natural regeneration and protect planted stock.

Water supplies will be protected and riparian zones managed, to maintain and improve water quality, increase biodiversity and mitigate against erosion and flooding. Forest and Water Guidelines will be followed during forest operations.

The existing recreation infrastructure will be maintained to provide a diversity of experience, in more heavily used areas.

Visual diversity will be enhanced in more prominent areas in the south and along the Clyde coast. Broadleaved and conifer species will be used and production will not be excluded.

The location and size of long term retentions will be reviewed in light of recent experience.

Timber haulage will be managed in such a way as to minimise the number of timber lorries passing through residential areas.

Minutes of scoping meeting held on Thursday 1st September 2016 at Dunoon Pier

Attendees: Barry Blackwood (FCS); Brian Close (Argyll and Bute Council) Paul Farrell (Argyll and Bute Council); Catherine Kennedy (FCS); John Hair (FES); Stephen Murphy (FES); Eleanor Stevenson (South Cowal Community Council); Stephen Tong (Tilhill - Auchamore Estate)

Apologies: Dunoon Community Council; RSPB; Scottish Water; SEPA; SNH; WoSAS

Invited: Blairbuie Estate; CONFOR; SSE;

The meeting convened at 2pm.

All present introduced themselves.

CK explained the purpose of the meeting and described the Land Management Plan (LMP) process. The objective of this meeting is to identify key issues that will influence the development of a revised management plan for Corlarach Forest. A public drop in session is to be held following this meeting. It was explained that the LMP process is a key tool in delivering sustainable forest management. The plan itself is a strategic document through which Forest Enterprise Scotland seeks approval for felling and restocking over the ten year life of the plan. It is not an operational plan which is dealt with through a detailed work plan system. It was also stressed that the proposed windfarm development at Bachan Burn would not be included in these discussions.

SM gave a short presentation describing the location and physical features of the plan area, including a summary of climatic conditions current species distribution. The plan will developed in the context of Scottish Government policy with particular stress on climate change, carbon sequestration and resilience; key issues include timber production, access and health, natural environment, heritage and landscape. He stressed the various policy documents which inform the development of the plan and illustrated key issues relating to climate change, timber, The current felling and restocking proposals were also shown and a brief review of recent management given.

CK pointed to the dominance of Sitka spruce in the species mix and said the percentage of this species should be reduced to comply with the UK Forest Standard. In addition the relative abundance of broadleaved species should be increased, again to comply with UKFS. The question of a replacement for the larch was also raised.

ST wondered what species were being considered as replacements for larch.

SM said that birch was probably the default species of choice but other species that could add colour at different seasons are also being considered. Aspen is a good example.

There was a general discussion about the status and spread of *Phytopthora ramorum* (also called Ramorum disease)in larch.

ST pointed to a recent outbreak at Innellan and wondered whether arrangements were in place to monitor young stands of larch and whether any prophylactic felling was planned.

JH that young stands of larch close to the Innellan outbreak were monitored from the air with back up inspection from the ground. There are no plans for prophylactic felling.

CK expects to see mention of contingency felling of larch, in the event of occurrence of ramorum disease, in the LMP.

CK asked whether there was any specific management for priority species.

SM said that the presence of red squirrels and black grouse was well documented but that no specific management was in place. He agreed that retention of older Norway spruce would benefit red squirrels.

ST suggested that large seeded broadleaves could be included in the species mix as grey squirrels were not a problem in this area.

He also pointed to the presence of brown hares on the higher ground at Auchamore.

SM was unaware of this but would report it to C&T environmental team.

CK raised the issue of cultural heritage.

SM said here is one scheduled monument. The site of this is regularly monitored and cleared if necessary. There are several other features of varying quality, these are given appropriate protection, as would any newly discovered sites.

BC knew of the presence of a cup and ring marked stone. This is believed to have been off FES land, on Blairbuie Estate but is a pointer to potential other finds.

SM said there was currently no interpretation boards at any known heritage sites and none were planned.

ST raised the issue of rhododendron control.

SM said any efforts to control invasive species had been concentrated in the south west corner of the plan area, but that a lot more work was needed.

JH confirmed that control of invasive species would be described in the revised plan.

SM described existing recreation facilities in answer to a question from CK.

JH described links to wider area and wondered whether many people used the timber haul route through Auchamore Estate.

ST confirmed that the haul route is used, and in particular since the clearance of large areas of windblown trees. He believed this was a core path and wondered about the

extent of core paths in Corlarach. He also believed that such routes did not require waymarking and, indeed, this can lead to difficulties at peak felling and haulage times.

SM will check status of core paths.

BC asked whether links could be created through Blairbuie at Glen Fyne.

JH said there were no immediate plans – resources, in particular, were a limiting factor.

ST asked what FES do when outside groups build facilities without permission (e.g. mountain bike trails).

JH said that these were generally dismantled if found, as the landowner has a responsibility for public safety.

CK asked about both internal views and key external positions from which the forest could be seen. The latter could be used to produce visualisations of how the forest might develop in the future.

SM said that internal viewpoints and visual diversity would be maintained at key locations and where resources are available but this was likely to be a dynamic process.

Four viewpoints were used in the previous plan: Dunoon, Inverkip, Wemyss Bay and Rothesay.

BC suggested using Bishop's Seat as a viewpoint as it overlooks the forest from the north. The foot ferry between Gourock and Dunoon and the Bute ferry should also be considered.

CK confirmed use of five viewpoints (6 if two ferry crossings are considered).

She then raised the question of timber production and timber haulage.

JH Said a proportion of timber felled was taken north along a shared haul route, significantly reducing the number of lorries passing through Dunoon. The remainder took a southern route, using the public road through Toward and Innellan. The latter was a more efficient use of resources. The amount of timber using the haul route was subject to negotiation and any changes would result in review of current agreements.

PF asked whether timber could be shipped from Ardyne.

JH replied that this has been considered but that it is not really feasible, as there are currently no timber-handling facilities at Ardyne.

CK asked whether communities and the Council were notified of transport arrangements.

SM said A&B Council were.

JH confirmed that Community Councils would be provided with details in the future. He said there was no timber transport management plan in place for the B815 and the

unclassified road to Achafour and would expect only to inform the Argyll and Bute Council of approximate volumes being carried on public roads.

ES expressed some concern with narrow roads round the southern part of the forest and through Innellan and would expect this to be an issue for the community.

PF believed timber transport on public roads was manageable and did not consider a TTMP would be required.

ST said it would be useful to show those felling coupes that would use the haul route in the LMP. The haul route has worked very well and he foresees no serious obstacles if the agreement had to be renegotiated.

JH said he would update haul route partners on expected timber movement. He also said there were no plans to use the Innellan access for anything other than light vehicles, in response to a question from PF. The option of using the Kilbride access would be retained, but only used in exceptional circumstances.

CK asked what new road requirements would be required.

SM said that several hundred metres of new road would be required but that more precise details could only be provided following development of draft felling proposals.

JH confirmed this, especially as it is likely that there is likely to be a total review and possibly complete redesign of the felling boundaries because of the amount of windblow in the plan area.

ALL there was brief discussion of the proposed hydro scheme on the Burnmakiman Burn. This has planning approval but is unlikely to have a major impact on the land management plan.

ST raised concerns about deer management. There has been heavy damage in the area Tilhill manage around Toward and it is now difficult to establish mixed conifers and mixed broadleaves in Auchamore.

JH said deer management would be addressed in the LMP and that FES deer management teams would be asked to liaise with neighbouring estates.

CK asked about restructuring the forest and about the appropriate size and shape for felling coupes.

ST suggested that given the size and shape of the landscape and distant viewing points coupe sizes could be quite large.

JH said that it might take up to two rotations to complete a full restructuring programme.

CK agreed that many issues could be addressed at restocking.

She then asked if there were any other matters of concern from SCCC.

ES reminded the group that there are likely to be concerns regarding the movement of timber lorries through he village.

JH basic information regarding likely haulage patterns can be included in the plan.

ST pointed to the presence of pine martens and ES agreed they were quite common around Innellan.

CK summarised the meeting and detailed the next steps.

SM to complete a scoping report to include minutes of the meeting, table of issues and action points to address these in the plan.
SM to develop plan, for submission to Conservancy, which will then be put out to final consultation.

Specific issues raised:
- species diversity
- biodiversity
- priority species
- landscape and viewpoints
- timber haulage
- deer management

The meeting closed at 16.00.

Corlarach Land Management Plan
Public Consultation Questionnaire
1st September 2016

Summary of responses

14 people attended the event and 6 questionnaires were completed. All respondents lived in Dunoon, Innellan or Sandbank.

In general there was a favourable attitude to the work being carried out by FE Scotland.

Most respondents used the woods on a regular basis, arriving by a variety of methods, appreciating the closeness and ease of access. Walking (with or without a dog) and cycling were the most frequent activities; horse riding was mentioned via email.

There was strong representation from a group interested in expanding facilities for mountain biking.

People expressed a liking for the landscape and the views from the woods; the variety and mix of tree species were all appreciated, as were the peace and quiet of the woods.

The most frequently mentioned dislikes were regarding the appearance of clearfell sites. One respondent would like to see changes to the access and car parking at Kilbride.

NB: All forests managed by FCS 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. Callander FDP will incorporate the various requirements of UKWAS within its proposals.

Appendix III Public Consultation Questionnaire,1st September 2016

1. **Where do you live?.....**
2. **How often do you visit the woods?**
   Every day once or twice a week occasionally
3. **Which part?**
   Kilbride……..Ardyne……..Innellan……..Other
4. **How do you get here?.....**
5. **What do you do?**
   Dog walking walk run cycle other
6. **What do you like most?.....**
   ……
7. **What do you dislike?.....**
   ……
8. **What would you change?.....**
   ……
9. **What is the most important feature of the woods?.....**
   ……
10. **What do you think of the mix of tree species……..**
    ……
11. **Would you like to see changes to this mix?.....**
    ……
12. **How did you find out about this drop in?**
    Dunoon Observer Poster (town) Poster (woods) Other……
13. **Are there any other comments you would like to make?……**
    …….……

Appendix IV: Tolerance Table.

	Adjustment to felling coupe boundaries	Timing of restocking	Change to species (including boundaries)	Windthrow response	Changes to road lines
FC 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	Up to 2ha as a single unit with >50%windblow	
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	2ha to 20ha as a single unit with >50% windblow	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

Appendix V. Screening Opinion Request

Corlarach LMP –roads, tracks and ramps

This is a request for an EIA determination for works covering construction of roads, tracks and ramps in Corlarach 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 11.9km of new roads and 37.8km of tracks will be required to access harvesting sites and to facilitate harvesting, silvicultural and deer management operations. In addition up to 90 ramps will be required to allow harvester/forwarder access into coupes that are to be felled during the design plan period.

A preliminary desk exercise and, in some instances a survey, of proposed roadlines has been carried out and their positions are shown on the roads and tracks map. A more detailed assessment of routes will be made prior to construction and a tolerance of ± 60m adhered to. The footprint of roads will be approximately 7m and the nominal area amounts to 8.4ha. Several roads will require to be upgraded prior to operations, however the nominal footprint of the road will not be increased. All work will be carried out in accordance with standards set out in the most up to date guidelines.

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 7.6ha.

Ramps will be approximately 3m wide and up to about 15m long. The nominal area is approximately 0.4ha. 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.

An EIA determination request form is to be found at the front of this document and a summary of proposed works in Appendix VI. A revised EIA determination will be sought if any specific sensitive issues are encountered before construction.

1	Landscape	The first 500m of the new road for access into coupe 11009 will be visible from Dunoon. However the view is relatively distant and the profile of the hillside will help break up the line. Careful design will be used to further mitigate any landscape impact. This coupe is due to be restocked with conifers and broadleaves and, once established, the road line will not be clearly seen. Small sections of the proposed new road in coupe 11042 are just visible from Wemyss Bay, and Bute. However the view is very distant and the road is generally beyond the horizon. The road will not be visible once the restocked coupes become establsihed. There are no major landscape issues with either tracks or ramps. Several coupes are visible from the east shore of the Clyde, from Bute and from ferry routes but views are distant and tracks are unlikely to feature significantly.
2	Watercourses	All work will conform to the 5th edition of the UK Forestry Standard Guidelines “Forests and Water”.
3	Archaeology	Where archaeological features are known to occur these will avoided. Care will be taken to avoid damage to any new features discovered during operations.
4	Biodiversity	Work carried out will be sensitive to permanent and temporary features of conservation value (e.g. spawning frogs and toads in roadside drains).
5	Access	There are no major access issues.
6	Recreation	Construction will not impact on the informal use of existing roads and tracks.
7	Material	ATV tracks will use material from on site. Material suitable for roads ramps will be sourced from local FES quarries.

Please complete this form to find out if you need consent from Forestry Commission Scotland, 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	☒	15.91
Deforestation	☐				Forest quarry	☐	
Location of work		Corlarach Forest by Dunoon					

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.
See relevant sections of LMP and 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 3 the LMP

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 will be minimal environmental impact

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.
See section 5.9 and appendix VI of the LMP

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
Select...	
Select...	
Select...	
Select...	
Select...	

Property Details			
Property Name:	Corlarach		
Business Reference Number:		Main Location Code:	
Grid Reference: (e.g. NH 234 567)	NS136728	Nearest town or locality:	Dunoon
Local Authority:		Argyll and Bute Council	

Owner's Details			
Title:	Mr	Forename:	John
Surname:	Hair		
Organisation:	FES	Position:	Planning Manager

Primary Contact Number:	0300 067 6600	Alternative Contact Number:	
Email:			
Address:	FES		
Aberfoyle			
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:	

Appendix VI. Screening Opinion Request summary - forest roads and tracks

Coupe	Length (m)	Area (ha.)	Purpose	Landscape	Water quality	Archaeology	Biodiversity	Access	Recreation	Material
11009	1500	1.05	access for harvesting	some sections visible from Dunoon	crosses mains water pipe	no known issues	no significant issues	from existing forest road	n/a	nearest FES quarry
11011	510	0.36c	access for harvesting	no issues	standard protection measures	no known issues	no significant issues	from forest road	n/a	nearest FES quarry
11023	210	0.15	access for harvesting	no issues	standard protection measures	no known issues	no significant issues	from existing forest road	n/a	nearest FES quarry
11033	2340	1.64	access for harvesting	no issues	standard protection measures	no known issues	no significant issues	from existing forest road	n/a	nearest FES quarry
11042	1400	0.98	access for harvesting	visible from Clyde and Bute	standard protection measures	no known issues	no significant issues	from existing forest road	n/a	nearest FES quarry
11046	1780	1.25	access for harvesting	no issues	standard protection measures	no known issues	no significant issues	from existing cforest road	n/a	nearest FES quarry
11051	810	0.57	access for harvesting	no issues	water supply point; standard protection	several unscheduled sites in east of coupe	no significant issues	from existing forest road	n/a	nearest FES quarry
11053	3365	2.36	access for harvesting	no issues	standard protection measures	no known issues	no significant issues	from forest road and 11051	n/a	nearest FES quarry
11003	1820	0.36	crop establishment and deer management	no issues	standard protection measures	no known issues	no significant issues	from forest road	n/a	to be found on site
11009	2760	0.55	crop establishment and deer management	some sections visible from Dunoon	standard protection measures	no known issues	no significant issues	from forest road	n/a	to be found on site
11010	3415	0.68	crop establishment and deer management	no issues	standard protection measures	no known issues	no significant issues	from forest road	n/a	to be found on site
11011	2670	0.53	crop establishment and deer management	no issues	standard protection measures	no known issues	no significant issues	from forest road	n/a	to be found on site

11018	2300	0.46	crop establishment and deer management	no issues	standard protection measures	no known issues	no significant issues	from forest road	n/a	to be found on site
11023	1785	0.36	crop establishment and deer management	no issues	standard protection measures	no known issues	no significant issues	from forest road	n/a	to be found on site
11033	1935	0.39	crop establishment and deer management	no issues	standard protection measures	no known issues	no significant issues	from forest road	n/a	to be found on site
11037	1788	0.36	crop establishment and deer management	no issues	standard protection measures	no known issues	no significant issues	from forest road	n/a	to be found on site
11042	2145	0.43	crop establishment and deer management	visible from Clyde and Bute	standard protection measures	no known issues	no significant issues	from forest road	n/a	to be found on site
11046	2700	0.54	crop establishment and deer management	no issues	standard protection measures	no known issues	no significant issues	from forest road	n/a	to be found on site
11049	3475	0.70	crop establishment and deer management	visible from Bute	protect water supply	no known issues	no significant issues	from forest road	n/a	to be found on site
11051	3065	0.61	crop establishment and deer management	no issues	protect water supply	several unscheduled sites in east of coupe	no significant issues	from forest road	n/a	to be found on site
11053	2180	0.44	crop establishment and deer management	no issues	standard protection measures	no known issues	no significant issues	from forest road	n/a	to be found on site
11058	1810	0.36	crop establishment and deer management	no issues	protect water supply	no known issues	no significant issues	from forest road	n/a	to be found on site
11064	1365	0.27	crop establishment and deer management	visible from Clyde	standard protection measures	no known issues	no significant issues	from forest road	n/a	to be found on site
11083	320	0.06	crop establishment and deer management	no issues	standard protection measures	no known issues	no significant issues	from forest road	n/a	to be found on site
11086	2225	0.45	crop establishment and deer management	visible from Clyde	standard protection measures	no known issues	no significant issues	from forest road	n/a	to be found on site

Appendix VII. A guide to understanding the Scottish Ancient Woodland Inventory (AWI)

Summary and policy statement

This summary is intended for developers, planners, foresters, ecologists and others who need to use the AWI in their work. It defines Ancient Woodland, briefly describes why it is important and gives the meaning of the categories in the AWI.

Ancient Woodland

In Scotland, Ancient Woodland is defined as land that is currently wooded and has been continually wooded, at least since 1750.

Ancient Woods are important because:

- They include all remnants of Scotland's original woodland; their flora and fauna may preserve elements of the natural composition of the original Atlantic forests.
- They usually have much richer wildlife than that of more recent woods.
- They preserve the integrity of soil ecological processes and associated biodiversity.
- Some have been managed by traditional methods for centuries and demonstrate an enduring relationship between people and nature.
- Woods and veteran trees are ancient monuments whose value to the local community and historians may be as great as that of the older buildings in a parish.
- Once destroyed, they cannot be recreated.

Although there is no legislation specifically protecting ancient woodland, Scottish Planning Policy identifies it as **an important and irreplaceable national resource that should be protected and enhanced**, as should other native and long established woodlands with high nature conservation value. SNH will seek to use the planning system to protect ancient woodland. The Scottish Government's policy on control of woodland removal states that there is a strong presumption against removing ancient semi-natural woodland or Plantations on ancient woodland sites, amongst other types of woodland.

Other woodlands, hedgerows and individual trees, especially veteran trees, may also have significant biodiversity value and make a significant contribution to landscape character and quality, so should be protected from adverse impacts resulting from development.

If a development would result in the severing or impairment of connectivity between important woodland habitats, workable mitigation measures should be identified and implemented, potentially linked to the creation of green networks.

The Ancient Woodland Inventory is a map-based tool that shows the location of many of our most valuable woodlands.

The Ancient Woodland Inventory

The Ancient Woodland Inventory (AWI) is a PROVISIONAL guide to the location of Ancient Woodland. It contains three main categories of woodland, all of which are likely to be of value for their biodiversity and cultural value by virtue of their antiquity:

i. Ancient Woodland (1a and 2a)
Interpreted as semi-natural woodland from maps of 1750 (1a) or 1860 (2a) and continuously wooded to the present day. If planted with non-native species during the 20th century they are referred to as Plantations on Ancient Woodland Sites (PAWS).

ii. Long-established woodlands of plantation origin (LEPO) (1b and 2b)
Interpreted as plantation from maps of 1750 (1b[1]) or 1860 (2b) and continuously wooded since. **Many of these sites have developed semi-natural characteristics, especially the oldest ones, which may be as rich as Ancient Woodland.**

iii. Other woodlands on 'Roy' woodland sites (3)
Shown as unwooded on the 1st edition maps but as woodland on the Roy maps. Such sites have, at most, had only a short break in continuity of woodland cover and may still retain features of Ancient Woodland.

A note of caution
The AWI was derived from the Roy maps (c1750) and the OS 1st edition (c1860). It is not definitive and should be used with care; when evaluating woods it is important to:

a) Examine the site on the ground, looking for archaeological, biological and other indicators of antiquity and of its current biodiversity value

b) Examine old maps; the OS 1st edition and Roy maps are available on www.nls.uk. **Woods not shown on the AWI, but present on the historic maps, are likely to be ancient and should be treated as such** unless evidence is available to the contrary.

c) seek specialist advice if in doubt

Information on AWI can also be accessed form the Land Information Search (LIS) from the Forestry Commission Scotland.

[1] This category was not originally used, although the information was preserved in the database. At digitisation these sites were reclassified as 1b (Plantation on Roy map) to recognise their greater age.