

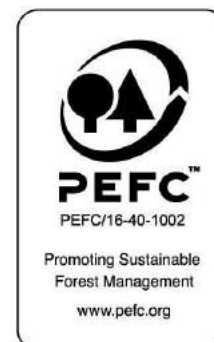
West Argyll Forest District

Barrs & Cadderlie

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.



Plan Reference No: LMP – WAFD -

Plan Approval Date:

Plan Expiry Date:

Barrs & Cadderlie Land Management Plan 2019-28

CSM 6 Appendix 1b - Application for Forest Design Plan Approvals in Scotland

Forest Enterprise - Property

Forest District:	WEST ARGYLL
Woodland or property name:	BARRS & CADDERLIE
Nearest town, village or locality:	NORTH CONNEL
OS Grid reference:	NN062398
Local Authority district/unitary Authority:	ARGYLL & BUTE

Areas for approval

	Conifer	Broadleaf
Clear felling	435.9	
Selective felling		
Restocking	208.6	156.9
New planting (complete appendix 4)		

- I apply for Forest Design Plan approval for the property described above and in the enclosed Forest Design Plan.
- * I apply for an opinion under the terms of the Environmental Impact Assessment (Forestry) (Scotland) Regulations 1999 for roads as detailed in my application.
- I confirm that the initial scoping of the plan was carried out with FC staff on 11/07/2016
- I confirm that the proposals contained in this plan comply with the UK Forestry Standard.
- I confirm that the scoping, carried out and documented in the Consultation Record attached, incorporated those stakeholders which the FC agreed must be included.
- I confirm that consultation and scoping has been carried out with all relevant stakeholders over the content of the design 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.
- I undertake to obtain any permissions necessary for the implementation of the approved Plan.

Signed Conservator.....
Forest District Manager

District West Argyll Conservancy.....

Date **Date of Approval:**

Date approval ends:

Conifers will be restocked to a minimum density of 2500/ha net plantable area. Broadleaves will be established through natural regeneration to achieve a minimum stocking of 1100/ha over a 5 to 10 year period, and 2500/ha if planted. Assessment of regeneration areas in this plan will be made 5 and 10 years after felling. Full establishment will be achieved by year 15, planting when necessary to supplement natural regeneration.



Environmental Impact Assessment Screening Opinion Request Form

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	<input type="checkbox"/>				Forest roads	<input checked="" type="checkbox"/>	1.6
Deforestation	<input type="checkbox"/>				Forest quarry	<input type="checkbox"/>	
Location of work		BARRS					

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.
Construction of access road with stacking/storage area for shared use between FCS and Green Highland Renewables, linking barging facility with existing forest road.
Provide details on the existing land use and the environmental sensitivity of the area that is likely to be affected by the forestry project.
Lower section falls within open ground, upper section within existing plantation due to be felled. The lower section of the proposal falls within the Beinn Nevis and Glencoe NSA and will contain the stacking/storage area. The upper section falls within the North Argyll Area of Panoramic Quality.

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.
No significant effects are expected. There may be a minor landscape impact (but see text 5.9). The more sensitive barge access ramp and facility are covered by separate planning consent, which might be regarded as a significant landscape impact. SNH have noted fish spawning on the Allt Easach, but this should not be at risk provided the forest and Water guidelines are followed.



Forestry Commission Scotland
Coimisean na Coilltearachd Alba

**Environmental Impact Assessment
Screening Opinion Request Form**

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.

SNH, Barrs Lodge, SEPA (See consultation record Appendix 2 and supporting documents folder)

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.

Sensitive Areas

Please indicate if any of the proposed forestry project is within a sensitive area. Choose the sensitive area from the drop down below and give the area of the proposal within it.

Sensitive Area	Area
National Scenic Area (NSA)	0.7
Select...	
Select...	
Select...	
Select...	

Property Details

Property Name:	BARRS & CADDERLIE		
Business Reference Number:		Main Location Code:	501
Grid Reference: (e.g. NH 234 567)	NN071395	Nearest town or locality:	NORTH CONNEL
Local Authority:	ARGYLL & BUTE		

Owner's Details

Title:	MR	Forename:	ROGER
Surname:	WILSON		
Organisation:	FES	Position:	PLANNING FORESTER
Primary Contact Number:	03000676684	Alternative Contact Number:	07776171413



Forestry Commission Scotland
Coimisean na Coilltearachd Alba

**Environmental Impact Assessment
Screening Opinion Request Form**

Email:	roger.wilson@forestry.gsi.gov.uk		
Address:	WEST ARGYLL FD, WHITEGATES, LOCHGILPHEAD, ARGYLL		
Postcode:	PA31 8RS	Country:	UK
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:	
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Summary of Proposals

The Forest District's Strategic Plan for West Argyll Forest District includes a vision statement, to which each individual Land Management Plan (LMP) will make a contribution. The District Vision Statement states that 'West Argyll FD will be a key land manager in Argyll, producing quality timber for the market, providing sustainable employment in both the public and private rural sectors, and opportunities for renewable energy projects. We will also provide well-managed native woodlands for wildlife and places for enjoyment for visitors and local communities'. The Barrs & Cadderlie LMP revision contributes to the District Vision by seeking the following outcomes:-

Economic context

- ◆ Approval for 436.5ha of felling, to be completed within the plan period, and 365.5ha of restocking is being sought, for completion within 10 years of felling.
- ◆ EIA determination for an access track from the proposed landing craft ramp to the forest road for use by FCS and SIMEC Green Highland (GHR) and construction of a stacking area close to the ramp for joint use.
- ◆ Timber production from felling yielding 85.5K m³.
- ◆ Construction of 1.1Km of new access track. (Landing craft facility and ramp requires planning consent, which will be sought separately by the timber merchant on behalf of FCS).

Environmental context

- ◆ Protection of archaeological sites.
- ◆ Restoration of Ancient Woodland sites.
- ◆ Protection of designated sites.
- ◆ Species diversification or change in response to Climate Change Agenda, national targets for broadleaves, UKWAS and plant health issues.
- ◆ Enhancement of water quality through replacement of conifers with native woodland and protection of Barrs private water supply.
- ◆ Rhododendron areas requiring control measures.
- ◆ Facilitation of Alt Easach hydro scheme; shared access, harvesting ahead of works and other project timing considerations.
- ◆ Expansion of Caledonian pinewood area and other native woodland types.
- ◆ Protection of Chequered skipper habitat.
- ◆ Recognition of Wild Land status of surrounding area.
- ◆ Protection of sensitive marine habitats.

Social context

- ◆ Protection of the access to Barrs Lodge through the removal of overmature timber, and adoption of harvesting systems that minimise impact on and maintain access to Barrs Lodge.
- ◆ Landscape enhancement through species change and edge management; benefits to Public Right of Way.

The following tables summarise some of these proposals:-

Species breakdown	2019 (current)	2028 (end of plan period)
Primary species: Sitka Spruce	27%	-
Secondary species: Other conifers	1%	-
Native broadleaf/Scots pine	9%	34%
Failed/felled	2%	2%
Internal open space	5%	8%
Open hill tops	56%	56%

Planned Operations	2019-2028 plan period
Felling	435.9ha
Restocking	365.5ha
Road construction	1.1km

No operations are planned in the subsequent 10-year period, except for 37.2ha of broadleaved natural regeneration.

Critical Success Factors

The following outcomes are required:-

- Timber production requires completion of felling (435.9ha) and restocking (365.5ha), within 10 years of felling. (See section 5.1 Forest Operations area statements).
- Felling of a planned hydro-scheme penstock according to an agreed timescale on the Allt Easach to allow construction to start in 2019.
- EIA determination for 1.1Km of track to access the ramp from the forest road, with stacking area.
- Timber production - 85.5K m³ - requires completion of felling program.
- PAWS restoration requires 9.2ha of conifer removal.
- Landscape enhancement through conifer removal and replacement with native woodland or open space.

Consultation and Further Information:

During the development of this plan we are consulting publically with the local community council and stakeholders known to have an interest in this plan area. For further information on the plan please contact Roger Wilson, Planning Forester, Forestry Commission Scotland on 0300 067 6684 or roger.wilson@forestry.gsi.gov.uk

1.0 Introduction

1.1 Setting and context

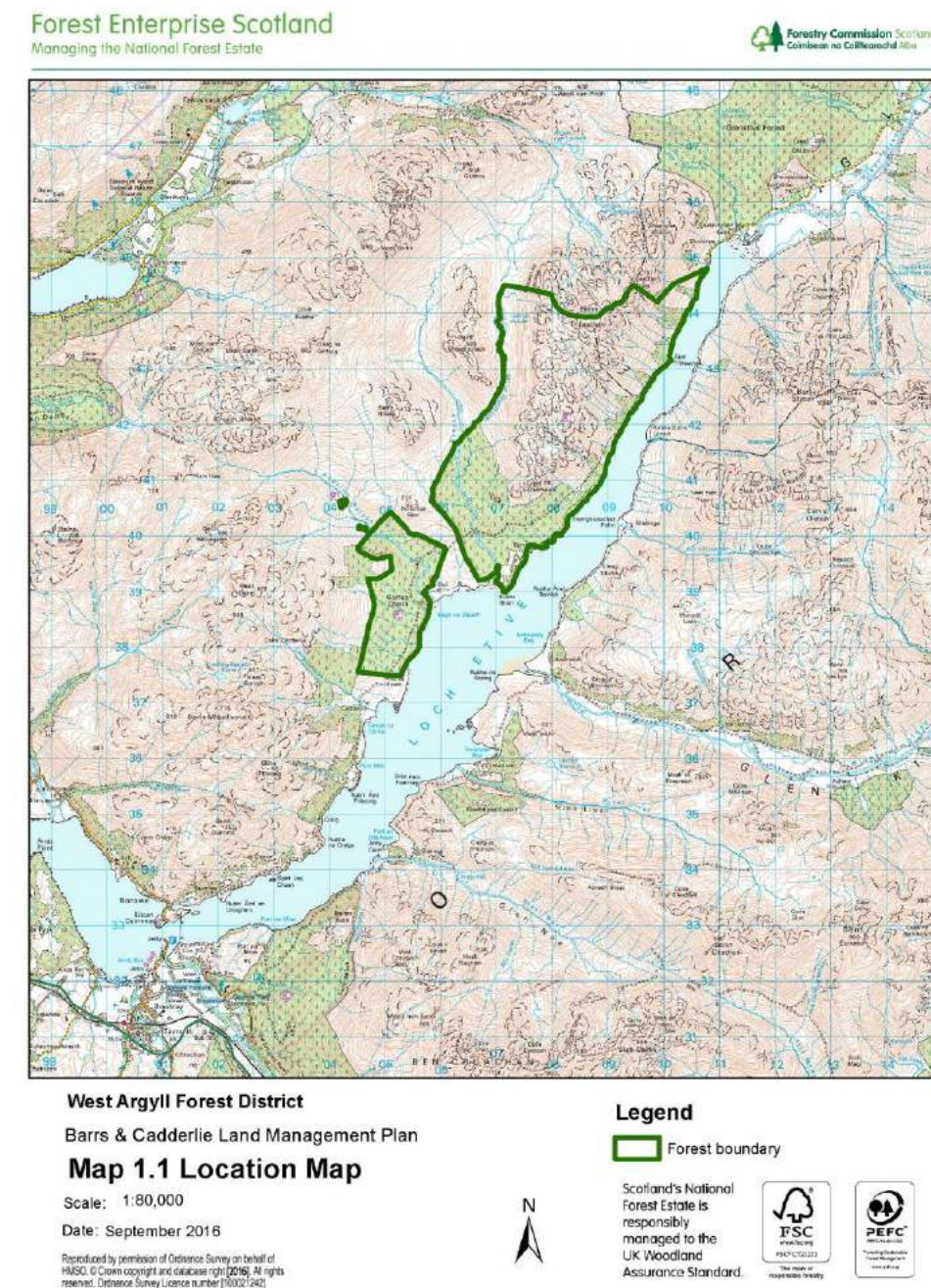
The plan for Barrs & Cadderlie covers 1576.8ha. Of this, Barrs Forest covers 1304.2ha and Cadderlie Forest 272.6ha. The previous indicative plan expired on 27/02/2016. Cadderlie Forest was proposed for sale in 2016. The majority of Barrs is open mountainous land, rising to the summit of Beinn Trilleachan (839m). The shoreside slopes are covered by a patchwork of native woodland, including some Caledonian pinewood. Commercial coniferous woodland occupies the southern part of the area. Cadderlie is a commercial woodland with some areas of failed crop, but with little other open space or diversity. The forest lies within a much larger, imposing landscape encompassing the head of Loch Etive. The area is remote, with poor access. Barrs Lodge is an adjoining property surrounded by the forest. In addition there is a bothy at Barrs. A Public Right of Way passes through the forest via the bothy. A number of environmental designations affect the forest, including the Ard Trilleachan SSSI and Loch Etive Woods SAC (part), the Glen Etive and Glen Fyne SPA (part), the Beinn Nevis and Glencoe NSA (part), and the North Argyll APQ. Loch Etive is also an important shellfish growing area. Numerous archaeological sites are to be found within the native woodland areas. Beinn Trilleachan and the Trilleachan slabs are popular with mountaineers, whilst Beinn Starav on the opposite side of the loch affords impressive views of the Loch Etive side of the plan area. The Allt Easach is a significant watercourse running through Barrs, with its hydro-scheme due for construction in 2018\19.

SNH and Argyll & Bute Council are the Forest District's statutory consultees. However, the northern end of the forest falls within Highland Council. SEPA, RSPB and ConFor are also routinely consulted on plan revisions. The Mountaineering Council of Scotland is also consulted on this area. The Community Council has been made aware of the plan revision proposals. GHR are an important consultee for the plan area, on account of their hydro-scheme proposals, shared access and felling requirements. The Consultation Record provides a summary of all formal correspondence, issues raised and FD responses (see appendix II).

The primary objectives of the plan from the brief can be summarised as follows: -

- ◆ Protection and enhancement of designated sites.
- ◆ PAWS restoration.
- ◆ Improvement of native woodland habitat networks.
- ◆ Native woodland expansion.
- ◆ Protection of private water supply and water quality including Loch Etive by adherence to the Forest and Water guidelines.

- ◆ Landscape enhancement through native woodland expansion.
- ◆ Timber production – commercial conifer areas.
- ◆ Access for timber haulage by sea in association with the construction of a new landing craft ramp, access and stacking/storage facilities.
- ◆ Work with GHR regarding Allt Easach hydro-scheme and work with any others exploring additional renewables schemes in the area.
- ◆ To comply with UKWAS guidance for certification, UKFS and other relevant national guidance see [Links](#)



1.2 History of the woodlands

The forest was acquired in 1957 in several parts. The area acquired included significant areas of existing native woodland along the lower shoreside edge dating from about 1850, but with some degree of planting including a small amount of European larch and Scots pine, dating from 1880 and probably associated with Barrs Lodge. The oak woodland has been coppiced. Small amounts of Caledonian pine possibly dating from 1850 or older also remain. Ownership passed to the Secretary of State for Scotland in 1942, when sheep and cattle grazing, along with deer culling were undertaken. Planting commenced in Cadderlie in 1970 and was completed the following year. However, sections were heavily beaten up in 1972 and 1978, and one section replanted in 1981-2 following a fire. Barrs was planted 1973 and was largely complete by the following year. Some lower areas were burnt attracting subsequent significant regeneration of birch. More recently (1989, 1994, 1998 and 1999), several deer fenced enclosures have been erected to examine regeneration success of Caledonian pine when protected from deer browsing. An Indicative Forest Plan was prepared for the forest, comprising of the Barrs and Cadderlie Forest areas in 2006. A built ranger track was constructed east of the Allt Easach in 2010, replacing a degraded ride-based quad access, and off the end of the forest road, parallel with the shore. Crop assessment was undertaken in 2013. Cadderlie Forest was put up for sale in 2016 and subsequently withdrawn pending development of harvesting strategy for Barrs. A hydro-scheme on the Allt Lochan an Lair/Allt Easach is currently being developed with a planning application due to be submitted shortly.

2.0 Analysis of previous plan

The previous plan was an indicative plan, comprising a single map with annotated objectives. Indicative plans were produced as a means of gaining FCS plan approval where no operations planned over its 10 year life. This plan expired on 27/02/2016 and was extended to 31/10/2017.

Objectives in the indicative plan were:-

- ◆ Conserve and reveal the underlying landform texture and diversity, and the 'wild land' character.
- ◆ Ensure Forest and Water guidelines are implemented.
- ◆ Promote greater diversity and use of native species in restructured forest to enhance ecological value and visual integration in the wider landscape. Incorporate into expanded habitat network.
- ◆ Work with SEPA to enhance and maintain water catchment quality.

- ◆ Ensure the impact of new forest roads and tracks is minimal.
- ◆ Relocate deer fence over Beinn Trilleachan.
- ◆ Monitor and maintain exclosures.
- ◆ Monitor and control rhododendron.
- ◆ Ship timber from Barrs

Two scenarios were proposed for the design concept in the indicative plan:-

Scenario 1 - Restock with commercial conifers but

- Reduce conifer area by up to 50%
- Conifers to be within 500-800m of the existing forest road
- Improve the visual integration of the forest in the landscape

Scenario 2 - Restock with native species (non-commercial)

- Replicate the Atlantic Oakwood and Pinewood found on the loch shore according to site type.

Of these, due to the difficult logistics of working the area commercially, scenario 2 was favoured.

The following issues were identified in the indicative plan or subsequently, prior to the facilitation of the hydro-scheme development:-

- ◆ Access for timber haulage through the construction of a facility to allow haulage by sea as the current road access would be more costly to upgrade. Road access also limits access for harvesting machinery. Access to a renovated old quarry pier would require forwarder access through the SSSI. Areas of search for a barge or pier with stacking facilities need to be defined and explored.
- ◆ Some timber alongside the access to Barrs Lodge is over 25m tall and is past its projected terminal height above which risk of windblow significantly increases. There is consequently a risk that windblow could block this access, which would prove difficult to clear given the access limitations. Harvesting operations will need to maintain access to Barrs Lodge so a separate access network for extraction is required.
- ◆ There is a marked difference in broadleaved regeneration success either side of the deer fence. The deer fence over the Beinn Trilleachan ridge has various issues associated with it including, landscape and wildlife impact and difficulty in maintaining. The cost of maintaining the fence is high and needs to be reduced.

- ◆ Straight conifer forest edges detract from the landscape. Conifer removal, replacement with native woodland and development of feathered edges will remedy the position.
- ◆ The economics of harvesting the commercial conifers and hauling by sea would favour clearfelling all productive conifers at the same time. This would leave a sizeable area of unmerchantable conifers some distance from the forest road with potential landscape issues, provide continuing cover for deer and continue conifer seeding risk into native woodland areas.
- ◆ Potential hydro-scheme development could affect access and harvesting choices.

3.0 Background Description

3.1 Site factors

3.1.1 Geology and soils

Steep ground within the forest (over 35%) (See Map 3.16), is found around the flanks of Beinn Trilleachan. Very little exists within the afforested area.

The solid geology comprises granite, syenite granophyre and allied types, all intrusive igneous rocks. Much of the underlying geology can be seen on rock exposures across Beinn Trilleachan.

Detailed soil data (see Map 3.1) is not available for the area. Generalised soil mapping data suggests the presence of Unflushed blanket bog, Podzolic ironpans, Peaty gleys, Peaty rankers and rock/scree.

3.1.2 Water

• Soil, water and air quality

No areas of slope instability have been identified. Scree is not very common in the area.

The water quality of the Allt Easach and the Abhainn Dalach were classed as 'moderate by 2015' under the Water Framework Directive in 2007, but had achieved 'high' status by 2014, with no pressures identified. Its source is not on FCS land. A number of smaller watercourses also run through the forest, which have not been assessed. Barrs Lodge has a private water supply whose route is marked out with white tubing, with the pipe buried about 18 inches in depth. The intake is beside the

hairpin above the house, where there is a weir, filter, settling tank and two plastic tanks, all within existing native woodland.

There are several fish farms in Loch Etive. The loch is also noted for shellfish production, which extends up the loch as far as Rubha Bharr. The loch, south of Rubha Doire Larach, is classed as a Marine Consultation Area (MCA), but not a Marine Protected Area (MPA). The upper part of the loch is noted for vertical bedrock walls with variable salinity. Variations in salinity towards the head of the loch are known to reduce diversity of shore and shallow water species. The low salinity prevents shellfish farming towards the head of the loch. Water circulation is also poor, leading to seasonal low oxygen content and increased sensitivity to oxygen depletion. The loch has the slowest flushing rate of any Scottish sea lochs, noted as 14 days. The Deep Water Fireworks anemone (*Pachycerianthus multiplicatus*)(UKBAP species) is noted in soft mud in the upper basin of Loch Etive. Issues with shoreline debris and litter have been noted around Loch Etive. Evidence of aquaculture companies or fisherman's debris affects the Barrs shoreline. Aquaculture companies undertake clean-ups of the worst affected areas.

3.1.3 Climate

• Adapting to climate change

Continentality is in the range 15-20, being fairly typical for the more mountainous parts of the west coast of Scotland. The climate data for the woodland area indicates much falling into 'Warm, moist, sheltered' (See Map 3.3). Coldness, exposure and wetness increases with altitude, with the highest parts being classed as 'Cool, wet, severely exposed'. DAMS scores are in the range 0 - 11 (maximum scores) for the southern end of the forest. The remainder of the wooded area is in the range 12-17. This relative shelter is evidenced in the absence of windblow in the forest to date.

Effective joined up habitat networks help mitigate the effects of climate change by facilitating the movement of site type species through the network. Internal native woodland networks are fairly good in Barrs, with only a few gaps at the northern end. Outwith the forest boundary, there is a developing network to the south and west of Cadderlie, but this is not linked to Barrs. Extensive open networks on private land link with areas of open hilltop within the forest (see map 3.7).

Deep peat soil types where present provide a natural carbon sink. There are no deep peat projects in the forest at present. Upper parts of the conifer area have grown poorly, where some Blanket bog is likely to be present, although vegetation type is predominantly Upland heathland. Current stocking on these areas is either low or failed.

• Flood and Catchment Management

No cases of flooding directly attributable to the forest area are known. SEPA's flood risk data does not highlight any high risk areas within the forest, other than within the bounds of the Allt Easach and the Abhainn Dalach. [Flood Risk Management Maps](#)

3.1.4 Renewable Energy (See Map 3.19)

The Allt Easach hydro-scheme on the Allt Lochan an Lair/Allt Easach will be installed by GHR after harvesting has been completed in and around the vicinity of the proposed hydro-scheme's infrastructure. Its catchment is partly on the neighbouring estate. The scheme is part of a larger project incorporating two other hydro schemes sharing a single grid connection being developed in Glen Kinglass. Construction is planned to start February 2019 and take 18 months to complete. Intake construction is planned for June 2019. It has been agreed that FCS and GHR will share sea access facility construction and roading. Permanent maintenance access to the intakes will be along the existing quad track, which will be upgraded along the relevant section, before diverging to the intake site as a new construction. The penstock follows a different route, but after the construction phase, this will be reinstated completely. An undersea cable will connect the scheme to the local energy distribution network on the other side of the loch. An underground cable will connect the undersea cable to the power house. These works will be covered under GHR's planning application. GHR also intend to upgrade the track from Bonawe quarry for their own use as well.

A scheme in the Cadderlie block on the Abhainn Dalach was not progressed by Gilkes Energy due to grid connection issues.

3.1.5 Infrastructure (see maps 3.13 & 3.19)

No powerlines are recorded in the area. It is assumed that Barrs Lodge has a generator. Other private properties between Barrs and Cadderlie are also likely to have generators. There is a floating pier at the head of the loch (Scottish Woodlands Ltd). There are no telephone cables in the general area.

3.2 Biodiversity and environmental designations

3.2.1 Designated sites

Natura sites and SSSI's (See Map 3.6)

Ard Trilleachan SSSI

The SSSI runs from Rubha Bharr north, excluding Barrs Lodge and crossing the northern edge of the forest area to terminate against the southern private commercial forest

boundary in Glen Etive. It follows the shore, excludes all conifer plantations and extends up the hill to encompass the majority of the native woodland present.

Qualifying features for the SSSI ([Site Information](#)) as a whole are listed as:

- Upland oakwood
- Bryophyte assemblage

A new management plan was agreed with start date 1st November 2015. It detailed:-

Long Term Management Aims

- Improve the condition and extent of both the oak and pine woodland habitats
- Maintain the bryophyte communities to at least their present diversity

Management Objectives

- Continue to cull deer to reduce browsing pressure.
- Increase native tree regeneration across the NFE part of the site.
- Maintain and expand the extent of native woodland cover.
- Control non-native species.

Oceanic species of mosses and liverworts of note that are nationally scarce and found here include; *Campylopus setifolius*

(http://www.bbsfieldguide.org.uk/sites/default/files/pdfs/mosses/Campylopus_setifolius.pdf) *Plagiochila atlantica* (http://www.bbsfieldguide.org.uk/sites/default/files/pdfs/liverworts/Plagiochila_atlantica.pdf) and *Adelanthus decipiens* (http://www.bbsfieldguide.org.uk/sites/default/files/pdfs/liverworts/Adelanthus_decipiens.pdf)

A further survey report in December 2013 for SNH found *Mastigophora woodsia* (http://www.bbsfieldguide.org.uk/sites/default/files/pdfs/liverworts/Mastigophora_woodsia.pdf) on the site for the first time. *Adelanthus decipiens* was not found but was considered likely to still be present. *Plagiochila atlantica* had disappeared from one site, but was healthy elsewhere. Rhododendron was colonising the Allt Doire Dhonncha, but not thought to be threatening the bryophyte community as yet. Site condition was described as 'Favourable - declining'.

Rhododendron and conifer seeding are largely under control within the SSSI.

The Upland oakwood was described as 'Unfavourable, recovering (in 2000), whilst the bryophyte assemblage was described as 'Favourable, maintained (in 2003).

Loch Etive Woods SAC

The Loch Etive Woods SAC comprises several separate areas around Loch Etive and Taynuilt area. It coincides with SSSI designated area within the forest area. Qualifying features for the SAC ([Site information](#)) are:

- Alder woodland on floodplains
- Mixed woodland on base-rich soils associated with rocky slopes
- Western acidic oak woodland
- Otter

The alder woodland, mixed woodland and oak woodland were assessed as 'Unfavourable, recovering' (in 2001). Otter was assessed as 'Favourable, maintained' (in 2016).

Bonawe to Cadderlie SSSI (adjacent area to Cadderlie)

The area extends from the south-western edge of Cadderlie, skirting the edge of Cadderlie croft land and then following the shores of Loch Etive south to Bonawe. It partially overlaps with another part of the Glen Etive Woods SAC. It is notified on account of:-

- Upland oak woodland
- Caledonian igneous rock

The SSSI was when last assessed, the features were considered to be in 'Favourable' condition. Some native woodland planting has been undertaken within and beside the SSSI, adjacent to Cadderlie Forest. [Site Information](#)

Glen Etive and Glen Fyne SPA

This extends over the more mountainous parts of the area, taking in the northern shoreline and associated native woodland and also fringes on the checked high altitude conifer plantation up the Allt Easach. It extends beyond the plan boundary on all sides except below the road between Barrs and Cadderlie. The SPA holds over 4% of the national Golden eagle population. [Site Information](#) The current condition as assessed in 2003 is described as 'Favourable, maintained'. Recreation/disturbance is noted as the only negative pressure on breeding.

Ben Nevis and Glen Coe NSA

The plan area is at the extreme southern edge of the designated area. Only the eastern half falls within the area, the division running down the ridge from the summit of Beinn Trilleachan to Rubha Bharr. The other half falls with the Council's Area of Panoramic Quality (APQ) for North Argyll. It therefore includes some commercial conifer areas east of this ridge. The special qualities identified are generalised below to exclude those specific to other parts of the designated area are:-

- Mountain grandeur
- Classic highland vistas
- Human settlement dwarfed by mountain and moorland
- Long and green Loch Etive

The 'Long and green Loch Etive' refers to; freedom from obvious human infrastructure, settlement or intrusion. [Site Information](#) Council policy considers the area to be 'sensitive' to marine and onshore development. There is a presumption against development.

Ancient Woodland sites (See Map 3.8)

Ancient Woodland is recorded on the NCCS Inventory maps. Only some sites have been assessed for ecological potential and summary threat rating. Native woodland remnants along the Allt Easach are assessed as being of medium ecological value, but under various levels of threat from shading of adjoining commercial conifers. The sessile oakwoods have been assessed and deemed of high ecological value and secure from threats. The Upland birchwoods have yet to be assessed, but a likely to be secure from threats within the deer fence, but possibly threatened by deer browsing outside of this. The oak woodland had been coppiced for tannin production and charcoal production during the 18th and 19th.C. One important habitat point was identified in the survey of 2013, within the Allt Doire Dhonnca ravine. This was W17 Quercus petraea-Betula pubescens-Dicranum majus woodland. In addition, it seems likely that the native woodland remnants within the ravines are also Ancient Woodland remnants. There are no Ancient Woodland sites in Cadderlie.

3.2.2 Species and habitats (See Map 3.5)

Details of sensitive sites are held and noted in separate confidential files.

Birds

- Nest boxes are present north of Barrs Lodge within the native woodland area, but are not maintained.
- Ospreys are seen in the area.
- Black grouse are seen in the area.
- Golden eagles are seen over the area.
- Sea-eagles have been sighted over the area.
- Common crossbills

One potential protected bird species nest site was identified in the area in 2015 as newly built, but did not appear to be used in 2016. No precise evidence of which species had built the nest was found. Further monitoring is required.

Other wildlife

- Juniper is found in the native woodland area.
- Salmon use the lower reaches of the Abhainn Dalach. Survey work by GHR showed that the Allt Easach is of very limited value to salmon.
- Sea trout fishery present on the Allt Easach from the bridge down.
- Otters are seen along the coast.
- Chequered skipper along the road edges
- Badgers are present in the area
- Pine martins are present in the area

Open land

Detailed open habitat survey was undertaken in 2013 for Barrs. Most of the open area is classed as Upland heathland, with small areas of rock, 'Fen, marsh and Swamp grassland', bracken and Blanket bog. A number of important habitat points were identified, falling into three main categories; base-rich flushes M10 *Carex dioica*-*Pinguicula vulgaris* mire, Oceanic montane liverwort heath and acidic flushes M32 *Philonotis fontana*-*Saxifraga stellata* spring. A single point of neutral grassland MG5 *Cynosurus cristatus*-*Centaurea nigra* grassland was also recorded by the north shore. Open land is subject to varying levels of deer browsing, largely influenced by deer fencing. Areas within the deer fence are slowly regenerating with native woodland. There is very little open land in Cadderlie, other than failed areas.

Open Water

Lochan an Lair is roughly divided down its centreline between FCS and private estate ownership. It covers about 6ha. It was assessed as being either an oligotrophic or dystrophic loch.

The legal boundary for Barrs runs along the edge of Loch Etive, except for the section at Barrs Lodge and also to the south of the Allt Easach.

Native Woodlands

Most native woodland is within the SAC. Remnants exist along some of the watercourses and ravines. No native woodland was planted as part of the 70's afforestation. The exclosures contain variable amounts of regeneration, including some Caledonian Scots pine. The amount of Caledonian Scots pine regeneration within these exclosures is in marked contrast to its virtual absence outside due to deer.

Deadwood

Deadwood priority has been assigned according to the ecological classification of the site. Medium and high priority areas comprise existing native woodland, PAWS and riparian areas around main watercourses. A deadwood target of 20m³/ha across the whole forest is an UKWAS target. Deadwood was assessed as abundant within the native woodland areas in 2013.

Invasive Exotic Species

Rhododendron and yellow Azalea are present in the Barrs Lodge area and rhododendron was also found in Eas Doire Dhonncha in 2013. Control is ongoing. Conifer seeding into the SSSI is not currently a problem.

Deer Management

Red and roe deer are present in the forest. FCS holds the shooting rights over the forest area. There is a deer larder at Barcaldine. Deer pressure is described as high against the deer fence. Deer density within the deer fence was last assessed as about 6/Km² and may be higher. The coniferous plantation harbours most of the internal population. Recent improvements to the fence and kissing gates have reduced deer break-ins. However, where the fence enters the loch, it has suffered repeated damage with entangled debris helping the tide to rip out the fence.

Landscapes and Ecosystems

The Glen Etive Woodlands SAC extends up to the commercial private forestry within Glen Etive. Native woodland within the plan area becomes increasingly fragmented towards the northern end. Upland oakwood dominates the southern end of Barrs, whilst Upland birchwood is present to the north. Deep ravines cutting down the mountainside frequently contain ribbons of native woodland, sometimes connecting with native woodland along the shore. Most, but not all of these wooded ravines fall within the SAC. Most lie outside the deer fence. Native woodland regeneration is evident within the deer fence, but very little outside of it. As yet, this hasn't produced a visually straight woodland edge below the fenceline. The SAC resumes to the south of the Cadderlie block and links with the native woodland WGS3 scheme and Bonawe to Cadderlie SSSI on the Ardchattan Estate. There is very little native woodland between the two forest areas to provide a linkage, and only one area of native woodland between Cadderlie Forest and the shore, at the mouth of the Allt Dalach, which is suspected Ancient Woodland.

Open habitats are centred on Beinn Trilleachan, with fingers of open space penetrating down to the shore in places. Open space on a large scale extends to the north and west. An open corridor separates Barrs from Cadderlie Forest. Upland heathland predominates.

3.3 The existing forest

3.3.1 Age class, species and yield class

- **Age class (see table 5.6)**

A single age class for Sitka spruce exists, the area having been planted in 1970-5, apart from a section at the southern end of Cadderlie, planted in 1981, possibly following a fire. Native woodland breaks down into four distinct age classes; old growth oak and Scots pine, with a younger birch element about 65 years old; birch regeneration about 30 years old and recent regeneration arising after deer fencing protection.

- **Species (see Table 5.5)**

Sitka spruce was chosen almost exclusively for the commercial crop. Small amounts of Scots pine and European larch were planted within the oakwood, probably as an amenity feature for Barrs Lodge. Japanese larch was mostly planted as a peripheral firebelt.

- **Yield class (see map 3.11)**

Sitka spruce age classes are very varied, with yield classes up to 22 on lower, better drained slopes, but falling away to extensive areas of check at higher elevations on Blanket bog or rankers. Japanese larch has achieved yield class 8, close to the shore. Yield classes for Barrs were last assessed in 2013. No assessment of broadleaved areas has been undertaken. Yield classes in Cadderlie show more variation throughout, including banding, possibly relating to fertiliser application. If so, failed areas also reflect this pattern, except for one very large strip through the centre of the forest which is otherwise unexplained, and a smaller area at the southern end, possibly the result of a known historic fire.

- **Timber Quality**

The forest grows Sitka spruce of reasonable form. No assessment has been made of the native woodlands.

3.3.2 Access

- **Timber transport**

No harvesting has been undertaken to date. On acquisition, the FC gained the right to construct the existing forest road for timber haulage. Although this was originally along the line of the Public Right of Way, the agreement allowed for the construction of new roads along alternative routes. Timber may be hauled from Cadderlie to Barrs across the private ground, but FCS is entirely responsible for the maintenance of this section of road. When Barrs Lodge was sold, the new owner was granted shared access rights with contributory maintenance obligations from Bonawe quarry and the right to build a road from the existing forest road to the lodge. This was subsequently done. They have responsibility for maintenance of this section of road,

but FCS has the right to haul timber over it provided that they undertake and pay for any maintenance and upgrading required.

Three options were considered for timber transport by sea. There is a stone jetty at Port Ban, by Dail, on private ground, 30m in length, but without built road access to it (NN063390)(Option 3 or adjoining area). This is noted under Argyll & Bute Council's Loch Etive ICZM plan Policy Zone E opportunities and constraints analysis as an opportunity for development for timber transport by sea <https://www.argyll-bute.gov.uk/sites/default/files/planning-and-environment/Loch%20Etive%20ICZM%20Plan%20-%20Policy%20Zone%20E.pdf> Timber transport by sea is supported in the document due to prohibitive constraints affecting road haulage, whilst taking into account existing recreational usage of these jetties. The jetty (jetties)(Option 2)(NN080399) at Barrs is also noted. The Council favours reuse of existing redundant piers and jetties. Council policy is to maintain navigational access to the head of the loch, which therefore limits activities such as aquaculture that might otherwise restrict access. Access by a proposed landing craft ramp at Rubha Bharr formed Option 1 (NN070391). This was preferred as it avoided any direct impact on the SSSI under option 2, was wholly on FCS land, unlike option 3 and was more directly associated with the hydro-scheme infrastructure. There is no plan to remove the ramp after harvesting is completed.

Concrete bridges over the Allt Easach and Abhainn Dalach on FCS ground and a third bridge over the Cadderlie Burn were assessed for GHR on 15/01/2016 and found to be in good condition. Some minor maintenance work was identified. Life expectancy of these bridges was stated as another 30 years. Light vehicle access for forest management purposes will still require the use of the track from Bonawe quarry.

- **Allt Easach Hydro-scheme**

GHR have undertaken consultation with Marine Scotland in regard to jetties and the underwater cable route. GHR have also consulted with the stakeholders reliant on the road from Bonawe to Barrs Forest. It has been agreed that GHR will be responsible for any road repairs arising from their use of the access. Measures will also be put in place to monitor the condition relative to its current condition so that it does not deteriorate below this level. This is the minimum requirement. The proposed access infrastructure to the powerhouse, intakes and pipeline construction route are shown on Map 3.19. GHR will build a bridge across the Allt Lochan an Lair, which will be available for use by FCS harvesting machinery.

- **Marine anchorages**

These are dealt with in Argyll & Bute Council's Loch Etive Integrated Coastal Management Plan 2011. Port Ban, by Dail, on private ground between the two forest areas, is classed as an anchorage, noted within Zone E. Argyll & Bute Council have developed an additional Zone F to cover the remainder of Loch Etive falling within the Highland Council area, and in consultation with Highland Council.

https://www.argyll-bute.gov.uk/sites/default/files/planning-and-environment/Loch%20Etive%20ICZM%20Plan%20-%20Introduction%2C%20Site%20Description%2C%20Guide%20to%20using%20Plan_0.pdf

This document notes the head of the loch as an anchorage. Highland Council has no current plans to produce their own version of this policy document.

GHR had been looking at various possible marine access points for their operations, including Rubha Meadhonach, immediately east of Port Bar, the beach at Rubha Bharr where the proposed cable comes ashore using a landing craft type boat, the small peninsular at Sgeir na Beolarach and old pier at Rubha na h-Oisne, which could allow delivery of materials shipped from the pier at Bonawe, including quarry material. The preferred option by GHR and FCS was the beach at Rubha Bharr as it avoided the SSSI. GHR subsequently opted to use road access from Bonawe in addition to option 1. Option 1 remains jointly supported by both parties.

- **Quad access**

An ATV track was built shortly before 1998 parallel to the Public Right of Way, but not continuing through to the Glen Etive public road. A second track was constructed in 2010 above the Allt Easach to replace a degraded ride-based quad track.

- **Rights of Access**

FCS has a right of access from Bonawe through Cadderlie. FCS is only required to keep the road in a condition fit for its purposes. Barrs Lodge contributes 2.5% of the maintenance costs. All other users make no contribution to the upkeep. Other users include Ardchattan Estate, Dail, Port Ban cottage, Craig Cottage, Bonawe quarry and fish farms. There is a Public Right of Way through the forest connecting onto the Glen Etive public road.

3.3.3 LISS Potential

Much of the commercial area, based on DAMS scores, is suitable for thinning, but has not been thinned due to access restrictions. It is now largely past the thinning window. The proposed future crop should become suitable for thinning and conversion to ATC, provided that the logistical problems associated with working the area are not deemed too onerous, expensive or difficult to market.

Native woodland areas are all managed under LISS. Future areas, such as where PAWS restoration occurs, will also be managed in this way. Thinning in most native woodland areas is restricted by the statutory designations.

3.3.4 Current and potential markets

- **Timber supply**

Timber markets are outwith the FD area. Timber transport by boat typically goes to mills on the Ayrshire and Cumbrian coasts, and to Northern Ireland.

- **Hardwood timber**

No hardwood timber is likely to be felled for commercial use. In the future, replanted areas may yield some timber.

- **Timber in construction**

Future stands of Scots pine and broadleaves may yield some construction grade timber.

3.4 Landscape and landuse

3.4.1 Landscape character and value

- **Landscape**

Ben Nevis and Glencoe NSA (see map 3.5)

This NSA covers over 90K ha. The eastern half of the plan area falls within the NSA, the ridge down from Beinn Trilleachan summit marking the boundary. The NSA encompasses a wide variety of dramatic scenery and important geological structures. It also includes moorland and forest, including Rannoch Moor. SNH's view is that local and national development proposals should take second place to the conservation of intrinsic environmental values in these areas.

SNH's Landscape Character Assessment (Landscape Assessment of Argyll and the Firth of Clyde, Review No. 78, 1996) puts the forest within the 'High Tops' landscape type. Its key pertinent characteristics include:

- Rugged, steep-sided mountain ranges with a massive scale.
- Diverse landform with gullies, scarp slopes and rocky screes.
- Striking exposed rock faces, with scrubby birch-oak woodland in gullies.
- Fast-flowing burns, waterfalls and small upland lochs are attractive.
- Extensive conifer plantations on some lower slopes.

The commercial forest area is at the lower end of the scale of ruggedness and massiveness and generally lacks striking rock faces. The upper area is more typical of the landscape type.

- **Strategic planning zones (see map 3.12)**

Design objectives in each forest area have been broadly assessed by dividing each area into three strategic planning zones. These zones also form the basis for the forest operations Tolerance Table, given in Appendix II. Zones present in the plan area are as follows:-

- **Native Woodland zone** – This encompasses all the afforested area.
- **Low Sensitivity Zone** – This comprises the more mountainous parts of Beinn Trilleachan.
- **FCS Land holding**

The legal boundary around Cadderlie stops short of the high-water mark, leaving only a variable narrow strip of non-FCS ground between the forest and shore, in the ownership of the Ardchattan Estate. A couple of small, isolated areas of open hill exist higher up the Abhainn Dalach. These are unfenced. There are slivers of extra land and lost land around Cadderlie Forest, one, amounting to 3.4ha has been affected by the WGS scheme on the neighbouring estate.

A small area (1.3ha) of spruce on the eastern side of Cadderlie Forest by Dail, perhaps about 45 years old, is not in FCS ownership, although the western edge appears to be on FCS land. It will become isolated when the remainder of the forest is felled. The owner has indicated a desire to discuss the future of these trees in the light of the proposed adjacent harvesting by FCS. Discussions about how to facilitate this are ongoing.

There are a few slivers of lost land around the southern edge of Barrs, all open space. The private property around Barrs Lodge was fenced originally but the fence is now very dilapidated or missing.

3.4.2 Visibility

Landscape Quality

The forest is visible primarily from fairly remote locations, including mountain tops and the eastern shore of Loch Etive. Public viewpoints include; the head of Loch Etive and the Public Right of Way. More distant views are seen from the Taynuilt area and summit of Beinn Cruachan (Munro). The shoreside woodlands are visible from the summit of Beinn Starav (Munro), although the conifers up the Allt Easach are hidden by the Beinn

Trilleachan ridge. The visible area of conifers forms only a minor part in the large scale landscape.

Argyll & Bute Council's Local Plan, currently under revision, maps Barrs as within their Area of Panoramic Quality (APQ) (formerly Areas of Great Landscape Value (AGLV)) for North Argyll. These areas highlight where any proposed development would be looked at more critically. <http://www.argyll-bute.gov.uk/sites/default/files/ldp/adopted/Proposals%20Maps/Area%20Maps/Adopted%20Lorn%20Map.pdf>

SNH's Wild Land areas includes most of northern Argyll (Glen Etive mountains area), focused on the more mountainous and inaccessible areas. The boundary skirts round the commercial forest area, but includes everything else. Wild Land is not a statutory designation, but is nationally important in Scottish Planning Policy and where any development is seen as sensitive. [Mapping Scotland's wildness - Scottish Natural Heritage](#)

3.4.3 Neighbouring landuse

The Glen Creran Estate manages land to the north and west, primarily for sporting and rough hill grazing. Just north of the plan area, there is a floating pier for use for timber haulage from the private forestry in Glen Etive (Glen Etive Estate), managed by Scottish Woodlands Ltd. The adjoining land here is managed as part of Glen Etive Forest for native woodland, with rhododendron control measures in place. The bulk of the forest is managed as commercial coniferous woodland. Fish farms are located in Loch Etive to the south of Cadderlie Forest. Immediately adjoining the western side of Cadderlie Forest is a large native woodland regeneration WGS3 scheme belonging to the Ardchattan Estate. This estate also offers sporting opportunities. Ardchattan Estate own the old downfall to Dail between Barrs and Cadderlie forests. They own a bothy at Dail, whilst Dahl Beag immediately to the east is in private ownership.

A deer fence runs from the southern edge of the forest at the Allt Easach, running north around the external boundary, before cutting across the steep rocky ridge that descends from Beinn Trilleachan. It then turns north running above and protecting the shoreside native woodland before terminating at the loch edge some 400m short of the north end of the forest. It was last inspected in 2011, when its condition was described as excellent. No data is available regarding the apparent stock fence along the western flank as far as Lochan an Lair. There is no fence from there along the legal boundary, over the summit of Beinn Trilleachan and down to the Loch Etive shore. The fencing around Barrs Lodge was recently repaired. No information is available for the apparent stock fence from the Allt Easach to Barrs Lodge, or other internal fences along the shoreside. The lochside edge is unfenced. The loch itself is used for prawn creeling.

3.5 Social Factors

3.5.1 Recreation (See Map 3.17)

- **Tourism**

Occasional cruises sail up Loch Etive during the summer months. Mountain bothies at Barrs and Cadderlie provided limited informal accommodation. The Council favoured better promotion of the area, including eco-tourism and provision of interpretation of wildlife interest along the coastal paths. Wilderness Escapes Ltd plan to host holidays in Barrs during the summer months, providing tepee accommodation beside the mouth of the Allt Easach.

- **Making access easier**

The Public Right of Way follows an existing rough path from the north down. A built track on a slightly higher line commences 800m south of the northern edge of Barrs Forest and is also be used by walkers and mountain bikers. Just beyond the northern end of the forest is the public road up Glen Etive. From the floating pier a hill path runs just outwith the FCS boundary for the most part up to the Coffin Stone and Trilleachan slabs. This is popular with rock climbers. Another path ascends Beinn Trilleachan. The built track links onto the existing forest road to the south, whilst the Public Right of Way appears to pass through Barrs Lodge, passes the Barrs bothy and crosses the Allt Easach. It is then shown as entering the forest, but there is no evidence for a path amongst the commercial conifers, so must run to the south in the open ground between the plantation and the shore. The Council's Core Path data suggests that the northern part of the Public Right of Way is classed as a Core Path, along with the southern section as far as Barrs Lodge, but the middle section follows the forest road and ATV track. The route has been used as part of a Coast to Coast walk. The northern end of the Public Right of Way path is in a poor state. Impressive views are gained off all the paths in the area.

The Core Path follows the Public Right of Way as far as Port Ban, the Public Right of Way then continuing past Dail and between the Cadderlie Forest edge and shore before re-joining the track to Bonawe just south of Cadderlie Forest. The track from Barrs to Cadderlie and through Cadderlie is also a core path. Short tracks also run off the forest road through Cadderlie down to the Abhainn Dalach and also to the shore.

Argyll & Bute Council note under Policy Zone F a desire to see the floating pier facility at the head of the loch retained in some form in the future for recreational use for boats. This would include provision of a service dropping off visitors to cycle or walk back from the pier to their original collection point further down the loch. As part of the redevelopment of the pier for timber despatch by sea, the area to the north was regraded to allow direct access to the loch for canoeists. A car park is also

provided. The Council also suggested an aspirational long-distance cycle route around the loch, linking with the West Highland Way, National Cycle Route at Taynuilt and the Oban to Fort William Sustrans route.

- **Recreation**

No FCS facilities or paths are provided in the forest. Less than 5000 visitors/annum use the path. Most visitors access the area from Glen Etive. Various organisations use the core path as part of longer distance route, such as the Scottish Six Days Trials and the annual Coast to Coast Walk. Campers also use the area. Mountain bikers use the tracks. They are neither encouraged nor discouraged. Council policy is to discourage powered waterborne sports such as jet skis, from the head of the loch. Fishermen use the loch for sea angling.

The Barrs bothy is leased to the Border Bothies Association. Access to the bothy is by foot. Routes include down the side of the Allt Easach, via the Public Right of Way, via the access to Barrs Lodge and groups such as Helensburgh Kayak Club access it by sea. Use of the proposed new access from the beach to the power house site and forest road will improve access to the bothy. Ardchattan Estate has a holiday cottage just north of Cadderlie at Dail. There is an additional private holiday cottage at Port Ban. The Mountain Bothies Association has a bothy at Cadderlie, immediately south of Cadderlie Forest. These are all on the Public Right of Way.

3.5.2 Community

- **Community Engagement – Neighbours**

Immediate neighbours comprise the Glen Creran Estate, Glen Etive Forest (Scottish Woodlands Ltd), Ardchattan Estate and Barrs Lodge. Dall Beag bothy lies between the forest areas. The Glen Kinglass Estate lies on the opposite shore, with residences at Ardmaddy and Inverliver. The Friends of Loch Etive have an interest in the area.

- **Partnerships**

There are no existing community partnerships associated with the forest.

- **Community Ownership and management**

No community interests have arisen to date. There are no community groups associated with the forest.

3.5.3 Heritage

- **Cultural Heritage (See Map 3.15)**

There are no scheduled monuments in the plan area.

A number of unscheduled archaeological features are associated with the forest area. These include various buildings, including old farmsteads, stone walls, shielings and charcoal platforms. There are a couple of summit cairns on Beinn Trilleachan. The Historic Landscape Assessment Project by Historic Environment Scotland identified areas of medieval/post medieval agriculture and settlement in the vicinity of Barrs bothy, and similar historic landuse at the south-eastern corner of Cadderlie.

Policy - Archaeological features will be protected in accordance with the Forestry Commission's Archaeological Guidelines, and UK Forest Standard guideline 'Forests and the Historic Environment'. Standard prescriptions from the West of Scotland Archaeology Service include; leaving 5 meters either side of walls and linear features unplanted and 20 meter buffers around localized sites. Breaches in linear features will be kept to an absolute minimum. Other buffer zone widths are defined for each monument on the conservation plan and against the overlay key.

- Community Empowerment Act (2015)(see FES Community Asset Transfer Scheme (CATS))
- Wild Scotland Best Practice Guidelines
- Land Reform (Scotland) Act 2003

3.6 Statutory requirements and key external policies

The following official designations and environmentally sensitive areas exist in the plan area:-

- APQ – Area of Panoramic Quality, North Argyll
- Ancient Woodland sites
- Ard Trilleachan SSSI
- Beinn Nevis and Glencoe NSA
- Glen Etive Woods SAC
- Glen Etive and Glen Fyne SPA
- Wild land- Loch Etive mountains
- Marine Consultation Area (adjacent)
- Bonawe to Cadderlie SSSI (adjacent)
- Argyll & Bute Development Plan - Sensitive Countryside
- Highland Coastal Development Strategy - Isolated coastline
- Loch Etive Coastal Strip shellfish growing water
- Loch Etive Shellfish Production Area as far as Rubha Aird Rainich

Key external policies include:-

- Scottish Government policy on Woodland Removal
- Scottish government woodland expansion aspirations
- Latest advice on tree diseases, species choice and biosecurity protocols (FES Larch Strategy)
- Measures to combat Climate Change (Climate Change (Scotland) Act 2009)
- Scottish Outdoor Access Code

4.0 Analysis and Concepts for each site factor

The District's Strategic Plan for the period 2014 -17; <http://scotland.forestry.gov.uk/images/corporate/pdf/WestArgyllDsp2014-17.pdf> expands on six key themes introduced in the National Strategic Directions document, <http://scotland.forestry.gov.uk/images/corporate/pdf/FES-strategic-plan.pdf> making specific district responses to these key commitments. The plan for Barrs and Cadderlie needs to take these into consideration. These themes are as follows:-

- **Healthy**, achieving good environmental and silvicultural condition in a changing climate.
- **Productive**, providing sustainable economic benefits from the land.
- **Treasured**, as a multi-purpose resource that sustains livelihoods, improves quality of life, and offers involvement and enjoyment.
- **Accessible**, local woodlands and national treasures that are well promoted, welcoming and open for all.
- **Cared for**, working with nature and respecting landscapes, natural and cultural heritage.
- **Good value**, exemplary, effective and efficient delivery of public benefits.

National key commitments under these themes and the district's specific action response are highlighted where relevant in the text below.

4.1 Analysis

4.1.1 Physical site factors

4.1.1.1 Geology, soils and landform

The underlying geology influences the landform. Landform giving rise to steep ground is unlikely to be an issue for harvesting. However, any road construction north of the existing forest road would be limited in choice of routes available due to slope, should these be required in the future. The Allt Easach is a significant watercourse which would require a substantial bridge crossing if any additional road or track construction was needed above the existing bridge. Forwarder extraction routes and roads in Barrs may be visible from the other side of the loch.

The limited availability of accurate soils data will mean some uncertainty in species choice selection. The general indications are that most of the steeper slopes have Brown earths, podzols or ironpan soils, which will support a wider variety of species. Areas generally classed as Blanket bog look likely to contain significant areas of other soil types. However, upper areas showing poor growth suggest poor soils. These may not be deep peats given the slope, but are more likely to be Peaty

rankers with Upland heathland vegetation. Much of the existing internal open space in the upper Allt Easach contains small rocky outcrops or boulders, rather than bog. The FCS deep peat policy will be followed if any deep peat Blanket bog is identified. There are no deep peat restoration candidates identified in the area.

(National Key Commitment (Healthy): We are exploring how to best steward the carbon resources locked up in the Estate's trees and soils.

4.1.1.2 Water

The condition of the Allt Easach and Abhainn Dalach in 2014 was assessed as 'high' suggests minimal impact from the adjoining conifer plantations. Establishment of native woodland as the successor crop under LISS management will help improve buffering and reduce disturbance episodes. GHR will obtain all necessary consents for the construction of the hydro scheme in 2018.

Potential negative indirect effects through watercourses flowing off FCS land into the loch will be avoided through adherence to the UKFS guidelines during all forest operations. This will also be the case in respect of the Barrs private water supply and any other private supplies that may be present. The combined catchments of the watercourses flowing into Loch Etive that are affected by the proposed felling of 436.5ha of conifers in Phase 1 (See Table 5.3) is 3677ha, hence felling amounts to 12% of the catchment (UKFS - Where water bodies are sensitive to nutrient enrichment, including shallow coastal lochs designated for shellfish, limit any clearfelling to no more than 20% of the catchment in any 3 - year period).

The separate planning consent for the landing craft access will cover water quality protection measures that might affect Loch Etive. This will be submitted by the timber merchant.

Details have been supplied to turn off the water supply for Barrs Lodge when undertaking operations by draining the weir as a suggestion from the caretaker. There is a further settling tank on the supply with stopcock, which also allows this tank to be drained if necessary. Draining the weir before operations start has also been suggested by the caretaker. Details have also been supplied concerning the pipeline, including route, depth, and marking, which will be surveyed and incorporated into GIS before operations start. A 50m buffer around the abstraction point will be created, in line with the UKFS.

Lochan an Lair is unlikely to be affected by any forest operations, given its remote location.

4.1.1.3 Climate

- **Adapting to climate change**

DAMS scores suggest much of the forest is sufficiently sheltered to allow thinning and longer rotation lengths. Sitka spruce top heights in 2013 were recorded as over 25m, with little evidence of windblow to date. Windthrow hazard data would suggest windblow might occur over 24m. However, the lower parts of the forest are some of the most sheltered parts of the FD. No thinning has been undertaken and the thinning window of opportunity has been missed, so clearfelling is the only realistic option.

Development of robust habitat networks is seen as part of the strategy for developing resilience against the effects of Climate Change. Development of native woodland networks within the forest is achievable through PAWS restoration, linking of existing native woodland areas, encouraging native woodland regeneration and developing native woodland as the successor crop to the commercial non-native conifers. An extended native woodland habitat network will be gained through conversion of both conifer forest areas to native woodland.

(National Key Commitment (Healthy): We will help the Estate adapt to climate change and become more resilient to pressure. District specific action: Current evidence suggests that West Argyll will remain a core spruce-growing region, but we will also seek to increase locally suitable native species and other suitable conifers to increase forest diversity).

4.1.1.4 Renewable Energy

It is anticipated that construction of the Allt Easach hydro-scheme will commence in February 2019. The hydro-scheme program of works will consist of a 3 to 4 month period of enabling works before work on the actual hydro-scheme begins. This will follow completion of harvesting around the proposal.

There are no plans to resurrect the scheme on the Abhainn Dalach. Environmental sensitivities are likely to exclude windfarm development in the area.

(National Key Commitment (Productive): We aim to realise the Estate's renewable energy potential, while achieving a reasonable balance with other objectives. District specific action: We will work with energy businesses to increase renewable energy generation in the District in line with the Scottish Government's 2 Gigawatt target for 2020 and the wind energy guidance in the Argyll & Bute Landscape Wind Energy Capacity study (or successor documents)).

4.1.2 Biodiversity and environmental designations

4.1.2.1 Designated Sites

Ard Trilleachan SSSI/Loch Etive Woods SAC

Deer browsing affecting woodland regeneration within the SSSI/SAC is an issue outwith the deer fence. Deer browsing within the deer fence needs to be reduced to help encourage natural regeneration. Continued reduction in deer numbers will aid recovery of Upland Oakwood. Felling all the commercial conifers will aid reduction in deer numbers and therefore benefit the SSSI/SAC.

Rhododendron may become an issue if not dealt with in some areas. Rhododendron control is ongoing. Mosses and liverworts appear fairly secure, although some localised changes were noted, the reasons for which were not identified. Increased native woodland regeneration could affect individual sites by changing the degree of shading or humidity.

Bonawe to Cadderlie SSSI (adjacent area to Cadderlie)

This should benefit from the conversion of Cadderlie Forest to similar native woodland, both visually, strengthening habitat networks and removing conifer seeding risk.

Glen Etive and Glen Fyne SPA

Felling all the conifers now would create only one significant disturbance event, rather than periodic disturbance resulting from a standard restructuring approach. However, currently there are no known nest sites that would affect either forest.

Ben Nevis and Glen Coe NSA

Conifer removal and replacement with native species will help improve the 'Long and green Loch Etive' concept, reducing visible non-native intrusion and commercial management. However, the planned access and haulage arrangements fall within the NSA. Planning consent will take this into consideration.

4.1.2.2 Species and habitats

Ancient Woodland sites

All areas can be fully restored over time. Rhododendron will require further control. Spruce regeneration is not currently a problem. The total area of PAWS is minimal, with native woodland seed sources available.

(National Key Commitment (Cared for): We are restoring around 85% of areas on ancient woodland sites to largely native species – remaining areas will be

enhanced through our management. District specific action: We will continue to enhance ancient woodland remnants and restore plantations on ancient woodland sites to native woodlands, removing mature conifers from 100 ha during 2014-2017).

Birds

Regular liaison with SNH and RSPB will provide further information on current nesting of sensitive species. Any possible active protected species nest sites will be monitored for activity prior to commencing operations as part of the work plan process, following the guidance: [https://www.forestry.gov.uk/pdf/fcpn101.pdf/\\$FILE/fcpn101.pdf](https://www.forestry.gov.uk/pdf/fcpn101.pdf/$FILE/fcpn101.pdf). Increase in open space around the upper margins will benefit the SPA and raptor hunting territory, whilst compensating for loss of open ground to native woodland regeneration lower down. New deer fencing will be marked to reduce collision risks for Black grouse, as per guidance: [https://www.forestry.gov.uk/PDF/FCTN019.pdf/\\$FILE/FCTN019.pdf](https://www.forestry.gov.uk/PDF/FCTN019.pdf/$FILE/FCTN019.pdf)

Other wildlife

Planned operations are unlikely to impact on otters or juniper. Upgrading or maintenance to the existing forest road by GHR for the purposes of accessing the hydro-scheme could impact on Chequered skippers. This will need further discussion if works are required.

The active sea trout fishery on the Allt Easach will need protecting from potential adverse effects of siltation from operations. Operational work plans will detail how mitigation will be achieved.

Deer Control

The Mountaineering Council of Scotland was critical of the deer fence running parallel to the shore on the grounds that it would stop natural deer movement up and down the hill and result in a significantly greater impact of flora immediately above the fence. Difference in regeneration success is apparent, but not yet a landscape issue. Deer fencing will be kept under review in conjunction with deer management policy for the area. Improving the condition of the SAC is a priority. High costs of maintaining the deer fence (£6K/annum) may require rationalisation of the fencing layout in the future. Deer fencing will be maintained in good condition for the time being. Deer fencing will remain an important element of crop protection in the future. A proposal to fence off the southern end of the SSSI to stop deer movement from the commercial conifer area was proposed but will not be required if all the commercial conifers are felled. A proposal to deer fence below the Trilleachan slabs was not progressed by Scottish Woodlands Ltd.

Reduction in deer numbers will be needed where conifers are to be replaced with broadleaves by natural regeneration. This is likely to be aided by complete felling of the conifers, without retaining any checked areas within the core felling area. It is currently thought that the conifer areas harbour much of the deer population that

leaves this area at night to graze within the native woodland areas. Consequently, complete felling followed by proactive deer control should reduce browsing impacts within the native woodland area as well.

(National Key Commitment (Healthy): We will help the Estate adapt to climate change and become more resilient to pressure. District specific action: We will deliver our Deer Management Plans for each of the Deer Management Units in West Argyll District in collaboration with neighbours and key stakeholders).

Native Woodland

Native woodland can clearly regenerate when protected against deer browsing. Non-native regeneration is largely localised, comprising mainly of scattered rhododendron bushes. Planting of native woodland to replace some of the existing commercial conifers will expand the area of seed source and protect existing remnants. Native woodland % is likely to exceed 25% of the plan area within 25 years. Further increase is likely through new native woodland regeneration, but over a much longer timescale.

(National Key Commitment (Cared for): We aim to increase broadleaf tree cover from the current 8% of woodland cover to around 20%. District specific action: Our new Land Management Plans will use data from the Native Woodland Survey of Scotland to identify where expansion of broadleaf woodland will improve the habitat network and buffer ancient woodland fragments).

Open habitats

Most of the open habitat is relatively secure. The small area of Blanket east of Lochan an Lair was described as degraded; the reasons for this are unclear. Open neutral grassland within the deer fence could potentially be at risk of native woodland regeneration, so interventions might be necessary for this particular important habitat type. Some loss of Upland heathland will also occur as native woodland regeneration occurs. There is no indication that the management of open land outside the FCS fence on Beinn Trilleachan and along the Allt Lochan an Lair is affected by the open land management policies of the adjoining estate.

(National Key Commitment (Cared for): We are committed to maintaining the best open habitats in good ecological condition. District specific action: We will continue open habitat surveys in West Argyll District to ensure completion by 2019).

Deadwood

Deadwood within the native woodland areas is good, but is low in commercial conifer areas, especially as there are few windblown pockets to assist. This is likely to change over time as native woodland expands and matures.

Invasive species

Rhododendron control required in the Allt Coire Dhonncha was assessed in 2013 as being relatively easy to remove. If it wasn't addressed soon, however, it was stated that it would become more difficult to do so in the future. Control is ongoing, particularly in the area around Barrs Lodge.

(National Key Commitment (Healthy): We are committed to dealing with invasive plants and animals that threaten habitats and biodiversity. District specific action: We have treated 25% of the rhododendron in West Argyll and have moved 2,250 ha into the follow-up phase, tackling particular concentrations in Appin, Carradale, Lochgilphead and on Mull).

4.1.3 The existing forest

4.1.3.1 Age class, species and yield class

The current age class structure of the forest is noted in Table 5.6. This will change once harvesting commences. Future age class structure may be influenced by regeneration success, planting and harvesting decisions, LISS management and deer densities. Planting using varying percentages of Scots pine in mixture with broadleaves will be employed to strengthen native woodland linkages between the sections of SSSI. A higher percentage of Scots pine will be used on lower, more productive slopes, with potential for commercial production in the future. Distribution of higher density Scots pine areas will be dependent on suitability as found on-site inspection post harvesting, but the overall % of Scots pine given in the plan will be maintained. Blanket bogs at higher elevations have shown to be unsuitable for Scots pine, but suitable for birch, although may take time to colonise and would best be regarded as edge woodland opportunities. The new native woodland will be managed as LISS limited potential for future commercial output. Birch has grown reasonably well on the lower slopes, but marketing such produce may be challenging given its location. Some Sitka spruce regeneration may be expected and will be accepted under low intervention management, up to a limit of 10% of the area. This will be reviewed if regeneration becomes more extensive.

There are no reported cases of *Phytophthora ramorum*, *Dothistroma* or *Chalara* in the forest or the surrounding area. The Caledonian Scots pine remnants present have already been identified as a priority for protection and expansion, with exclosures showing evidence of regeneration. Ideally, use of seed from these trees would be used to help expand the area.

(National Key Commitment (Healthy): We will help the Estate adapt to climate change and become more resilient to pressure. District specific action: We will implement mitigation strategies for current tree disease threats, such as *Phytophthora* disease of larch (tackling existing and new outbreaks),

***Dothistroma* needle blight of pine, and *Chalara* disease of ash (if it becomes established in Argyll)).**

(National Key Commitment (Productive): We intend to manage at least a quarter of our expanding broadleaf woodlands to produce quality hardwoods and woodfuel. District specific action: We will increase the area of broadleaf trees for the production of quality hardwoods and woodfuel during 2014-2017. We will bring timber to the competitive market that is suitable for biofuel projects).

4.1.3.2 Access

Haulage by sea requires the construction of the marine access ramp. Access for shipping is limited by the Falls of Lora and narrows at Bonawe, imposing size and draft limits on landing craft. Landing craft will only be able to dock or sail at high tide, but loading can take place at any time.

Access for sea transport requires construction of a tractor-trailer link track to the facility at Rubha Bharr (Option 1). This track will be built to normal forest road standard and will also be used by GHR. A stacking facility is also required to accumulate sufficient material for a landing craft and for storage of some hydro-scheme construction materials by GHR. The bridges over the Abhainn Dalach and Allt Easach are pinch points on the network and will need to be used for timber haulage. Option 2 from the pier at Rubha na h-Oisinne (NN080399) was formulated so that if Option 1 had proved unviable due to the bathymetric survey returning unsuitable findings for siting a landing craft facility here, then a second option would be needed. This option is not preferred because of its potential impact on the SSSI. This would include upgrading the existing track, creating a stacking facility near the jetty, probably including the old quarry (see View 14) and creating a new track through the open alder wood up to the forest road.

The Mountaineering Council of Scotland (MCoFS) was initially critical of the ATV track that runs parallel to the shore, partly as it had been constructed within the NSA, partly because the finish was poor and partly as it could potentially result in further neglect of the condition of the parallel Public Right of Way. Track construction was intended to provide access to the exclosures and assist with deer control, both welcomed by SNH. MCoFS subsequently became supportive, including favouring extension of the ATV track northwards if the opportunity arose for FCS to do so. This is currently unlikely. The Scottish Rights of Way Society also erected a sign directing walkers off the Public Right of Way onto the ATV track. There are currently no plans to alter the present position.

MCoFS were consulted on the new track up the Allt Easach in 2010, who were generally unsupportive of the proposal, but said that they would not object to the proposal, provided that re-profiling of the track would take place as part of any felling plan in order to reduce the visual impact; and that reinstatement should take place if there was no longer any need for the track in the future. This track is now

proposed to form the permanent maintenance access for the hydro intakes, with minor upgrades required to make it suitable for maintenance use. There is an opportunity to discuss potential improvements. GHR intend to discuss directly with MCoFS and agree an approach with FCS and SNH prior to the upgrading works being undertaken. This approach has been used successfully before on GHR projects. The track will largely remain within a permanent wooded screen after restocking.

Access for deer control is considered satisfactory. Construction of any further access tracks should be kept within the projected bounds of the wooded landscape.

(National Key Commitment (Productive): We will use our work programmes to promote the development of the forestry and land management sectors. District specific action: We will construct 75km of new forest roads to improve access to manage the National Forest Estate in West Argyll).

4.1.3.3 LISS Potential

All existing native woodland areas will be managed under LISS, primarily by Minimum Intervention. Most of the SSSI/SAC is classed as a Natural Reserve on account of its high woodland biodiversity value. Management of the Scots pine/broadleaved planted areas will depend on future markets and commercial viability of thinning operations.

(National Key Commitment (Healthy): We are committed to high quality silviculture and, increasingly, to using alternatives to clearfelling. District specific action: Opportunities for low impact silvicultural systems will increase in the next rotation as more forest becomes accessible by road. We will review where alternatives to clearfelling can be practised (taking into account the climate change predictions of increased rainfall and more storm events) and include this in our Land Management Plans as they are developed. Low impact silvicultural will be concentrated in native woodland areas).

4.1.3.4 Current and potential markets

Timber markets are likely to remain outwith the forest district. Timber volumes would have to be sufficient to justify shipping, including construction of the landing craft ramp. For this reason, maximising the felling of commercial conifers will be needed to justify the operations.

Should *Phytophthora ramorum* be found, larch would be felled under a Statutory Plant Health Notice. Timber would have to go to approved sawmills for processing. Felling of larch must be completed within an agreed timescale and before flushing. All larch within 250m of an infected site must also be felled under the notice. A little

larch is present is the area proposed for felling. There is also a small localised stand within the SSSI.

(National Key Commitment (Productive): We aim to provide at least three million cubic metres of softwood timber per year on a sustainable basis. District specific action: West Argyll District will bring 500,000 cubic metres of timber to market each financial year. We will adjust this as necessary in line with the development of plant health issues and windblow events).

(National Key Commitment (Productive): We will market timber in ways that encourage value adding and create additional jobs in manufacturing and processing, while recognising the benefits of contributing to local economic activity, especially in more fragile rural areas. District specific action: We will hold a 'log-shop' event annually for the local sale of specialist timbers to support small-scale wood processing. We will endeavour to assist small-scale timber business start-ups with short-term wood supplies).

4.1.4 Landscape and landuse

4.1.4.1 Landscape character and value

SNH's Landscape Character Assessment

The suggested specific landscape guidelines for 'High Tops' that are pertinent to the plan area are as follows:-

- Forestry should be concentrated in areas with a relatively homogenous landform and should not extend uninterrupted across adjacent ridges and valleys. Wherever possible, the upper limit of plantations should allow development of a natural tree line.
- Narrow fast-flowing mountain burns, with their scattered bank-side vegetation, and small upland lochs are a focus for views along mountain valleys. Forestry plantations should be designed to ensure that the setting of these important local landscape features is carefully conserved.
- The expansion of native woodland, Scots pine and broadleaves into all natural sites should be encouraged.

Natural tree lines are developing above the existing native woodland areas, albeit modified by deer browsing and influenced by the location of deer fences. Current variations in regeneration density either side of the deer fence north of Barrs Lodge to the end of the block should continue to be assessed for any negative landscape impact. Should this arise, then changes to either the course of the fences concerned or to deer management should be implemented. Apart from deer pressure, increasing rockiness with attitude is likely to create a natural treeline over time. No visible impact has been created by the erection of the smaller rectangular enclosures, although this also will need ongoing assessments, given the apparent improved success of regeneration within them.

Any future changes to these should either remove them or redesign them to follow more natural alignments. The current upper boundary to the Natural Reserve area is somewhat arbitrary, neither reflecting the course of the deer fence, current treeline or any natural feature. The future disposition of scattered native woodland regeneration in this area is also generalised in the design, with only some suggestion of where better soils may be present that could favour the development of future woodland.

The Allt Easach and Abhainn Dalach both have native woodland developing along their corridors, which will be retained where present. Sizeable riparian buffers will be afforded these watercourses, with further potential for native woodland regeneration. Other riparian areas along smaller watercourses may regenerate over time, but given the lack of seed sources at present, will be left open for now.

Conversion of Cadderlie to native woodland will tie in with the adjoining WGS scheme and Glen Etive Woods SAC

4.1.4.2 Visibility

The commercial coniferous areas form only a small part of a large-scale landscape, albeit a sensitive one. Very few viewpoints allow all of this area to be seen. The landscape scale can accept removal of all commercial conifers in one go. The change to native woodland will be a positive one in the landscape.

The current upper plantation edge around Barrs is fairly diffuse, due to failures and check. Care will be needed when establishing the successor crop not to create hard upper edges, but create a degree of feathering. The successor crop also needs to enclose as much of the built ranger track as possible, rather than leaving it isolated as a feature on the open hill. Lower stocking densities are also envisaged for the main riparian corridors, to provide a degree of openness along the watercourses to benefit fish. Some edges to Cadderlie need to be redesigned to avoid hard, straight or angular shapes appearing in the landscape. However, redesigned open space along the edges could potentially infill with natural regeneration over time. The western edge of Cadderlie largely borders the native woodland WGS scheme on the Ardchattan Estate. Continuity of woodland cover between the two areas will help reduce the current straight upper edge to Cadderlie Forest, which therefore does not need to be scalloped. Similarly, continuity of open space between the two would have a positive effect. At present, growth patterns within the WGS scheme are irregular and understocked, but include a significant proportion of Scots pine. Areas of poorer growth may also not regenerate so well, so some natural diversity is likely to arise. However, the legal boundary falls within the fence line along parts of the western and southern edge of Cadderlie, amounting to 6.1ha net of conifers, for which consent from the neighbour to fell will be sought, but policy is not to replant these areas. These areas, forming linear strips along the forest edge are, however, likely to infill with regeneration, although this is not taken into consideration in the

plan figures. Similarly, a smaller area of extra land amounting to 3.4ha of conifers exists on the boundary of Barrs.

The south-western side of Barrs above the forest road follows the spine of a prominent ridge descending from Doire nan Saor. Ideally, the new plantation edge should be scalloped off the ridge and extra land returned to open space. The remainder of the upper boundary would also benefit from the development of a scalloped and feathered edge, to overcome the current linear edges to the forest. This is likely to arise naturally over time and be less conspicuous with mixed native species choices. The dark Caledonian Scots pine remnants stand out sharply in the lighter landscape. Any future planting of Scots pine should avoid geometric patterns or shapes in the landscape. Any cultivation should avoid long continuous straight edges.

The upper Allt Easach area is largely checked and sparse SS plus remnants of a larch fire belt, the net planted area being about 23ha. It is uneconomical to fell this area as there will be little or no recoverable timber from this area and machine access would need much of the material for tracks. Neither does it contain any Blanket bog for restoration. It also provides screening for the ranger track. However, if left to grow to maturity, it could potentially cause other problems. Conifer seeding into the planned native woodland area might arise. The coupe would be isolated, both for harvesting access and visually in the landscape. ESC suggests that Scots pine and birch would be suitable for the area, but also predicts satisfactory growth of SS, but the results must be viewed as suspect, current growth perhaps suggesting unrecognised nutrient deficiencies and thin soils. Felling to waste and returning to open space, including consolidation of existing Upland heathland priority habitat within the area is probably the best option, with edge woodland through natural regeneration a more long-term objective. Some limited planting to meet edge woodland objectives may be undertaken within this area after felling. No woodland removal is planned, except on normal landscaping grounds adjusting upper planting boundaries where appropriate.

Visibility of hydro-scheme infrastructure will be covered under GHR's planning consent. Visibility of the landing craft ramp and beach access is considered in the separate planning application for this facility. Visibility of the stacking area, given it is on relatively flat land, is likely to have minimal impact when seen from View 8 Inverkinglass. Visibility of the shared track from the stacking area to the forest road follows the line of the Allt Easach and does not cut over any ridges. It will be of limited visibility from View 8 after harvesting, but will then disappear as the replacement crop becomes established.

Wild Land around the head of Loch Etive will be visually improved by removal of commercial conifers and replacement with native woodland.

4.1.4.3 Neighbouring landuse

Neighbouring landuse is unlikely to change in the foreseeable future. Deer management is the primary overlapping interest on open ground. Deer fencing policies will play a part,

although no change is currently envisaged. Felling of the adjoining conifers to the Cadderlie block by Ardchattan Estate is the subject of a separate felling licence application by the estate.

4.1.5 Social Factors

4.1.5.1 Recreation

No recreation facilities are planned. Further landscape improvements through forest redesign will improve the attractiveness of the forest over time to visitors. No concerns about access or condition of the Public Right of Way have been raised recently. Mountain biking will not be discouraged, but neither are there any plans to improve access for bikers. There is no requirement for Visitor Zones as no operations will be necessary after the conifers have been felled.

Felling of commercial conifers and replacement with native woodland will improve the setting and visitor experience for along the Public Right of Way and Core Paths. Some re-rooting of paths during harvesting operations may be necessary. Access along the core path will be maintained wherever possible. Where this is not possible, diversions will be put in place as appropriate or closure for the duration of operations agreed with the Argyll and Bute Council Access Officer.

(National Key Commitment (Productive): We will work with partners to develop the Estate's potential for tourism. District specific action: We will work with our local partners in the Argyll Forest Tourism Initiative and Visit Scotland, as well as local destination organisations, to develop the forest tourism potential of Argyll).

(National Key Commitment (Treasured): We are committed to creating more uniquely special places across the Estate and to delivering benefits to an increasingly diverse range of Scotland's people. District specific action: We will define and invest in the management of visitor zones to make them more attractive and welcoming).

(National Key Commitment (Accessible): We will continue to invest available resources into high quality facilities that encourage and help visitors experience and enjoy the outdoor environment. District specific action: We will make use of our visitor survey data to refocus our investment in recreation facilities on projects that improve the quality of sites in Argyll with higher footfall).

4.1.5.2 Community

No initiatives are currently being planned.

4.1.5.3 Heritage

There are numerous archaeological sites within the native woodland areas. It is unlikely that any will receive funding to assist in their preservation. Forest operations are unlikely to affect them. Many lack accurate recorded locations. Those that may be affected by forest operations will be searched for prior to operations commencing by the Environment team.

The district's Cultural Heritage Strategy details working methods around sites. The district's heritage records have been consulted, which include data from searches of the RCAHMS inventories, WoSAS online data and NMRS. Old one-inch Ordnance Survey maps have also been checked for sites.

4.1.6 Statutory requirements and key external policies

The Council's Areas of Panoramic Quality covers the area. Modifications for harvesting access are likely to be minimal. Any landscape concerns regarding the GHR proposals and landing craft ramp will be covered under the relevant planning consents.

Ancient Woodland sites will be restored. Timescales follow the harvesting schedule. No requirements for halo thinning have been identified to date.

The Glen Etive Woods SAC and Ard Trilleachan SSSI will benefit from deer management policies and control of rhododendron.

The Glen Etive and Glen Fyne SPA is unlikely to be affected by management activities in the forest.

The Beinn Nevis and Glen Coe NSA is unlikely to be affected, apart from an improvement in the small area of conifers to be felled and replanted with native species. Any landscape concerns regarding the GHR proposals and the marine access ramp/slipway will be covered under the relevant planning consents.

The adjoining Marine Conservation Area is unlikely to be affected providing that the UKFS guidelines are followed.

The Wild Land area is unlikely to be affected as the area will remain relatively inaccessible. Progressive removal of the spruce and replacement with native species will enhance the visual wildness of the area.

4.2 Plan Concepts (See Map 4.3)

4.2.1 Physical site factors

4.2.1.1 Geology, soils and landform

Any deep peats bearing low yield class spruce crops will not be restocked or will be allowed to develop a low stocking of native broadleaved woodland as edge woodland. No deep peats have been identified to date. Straight edges will be scalloped and shaped to reflect landform.

*National theme - **Cared for** - delivery through forest design that respects landform; Blanket bog restoration.*

4.2.1.2 Water

The UKFS guidelines will be followed. Barrs Lodge will be contacted ahead of operations in their water catchment. Key riparian habitat corridors will be given wider buffers (15 - 30m) and dappled shade conditions encouraged to benefit migratory fish.

4.2.1.3 Climate

Native woodland habitat network development will increase resilience against climate change. Tree species diversity will be increased across the area under Sitka spruce to strengthen resilience against climate change through planting a wider variety of native species.

FCS is working with GHR so that respective operations and developments work in harmony. GHR will produce various documents covering arrangements, including an 'Agreement for Co-operation', 'Construction Management Plan' and 'Working Principles', to be included in the lease. FCS will work proactively with hydro-renewables developers should any additional schemes be tabled.

4.2.2 Biodiversity and environmental designations

Management activities will seek to minimise negative impacts on landscape and wild land sensitivities of the area. The NSA and APQ will be enhanced by conversion to native woodland.

Management of the Glen Etive Woods SAC and Ard Trilleachan SSSI will be in accordance with SNH's management plan. Woodland management will not adversely affect the Glen Etive and Glen Fyne SPA.

Full PAWS restoration is envisaged for the plan area. Natural regeneration is the preferred method of establishment of such sites. Native woodland development will strengthen and expand native woodland habitat networks in the plan area.

Timings of operations and buffer zones will follow specified guidance for key species.

*National theme - **Cared for** - delivery by development of improved habitat network linkages; protection and enhancement of open habitats.*

4.2.3 The existing forest

4.2.3.1 Age class, species and yield class

Age-class distribution will move towards an old growth forest over time. Species diversity will be increased. Species selection where planted will avoid the use of disease-prone species. Over half of the plantable area will become broadleaved woodland by 2100.

*National theme - **Cared for** - delivery of at least 20% broadleaved woodland cover contribution to FD Strategic Plan target of around 20% cover through the design.*

*National theme - **Healthy** - delivered through species diversification, removal of diseased trees and planting of alternatives to increase resilience against Climate Change.*

4.2.3.2 Access

A track is required in Phase 1 to access the new landing craft ramp, along with stacking space. Access to the intakes will be covered by GHR's planning consent. These will not be required for harvesting access. No new ranger tracks will be built.

No road network linkage proposals from neighbours are currently anticipated.

*National theme - **Productive** - delivery through contribution to FD Strategic Plan road construction target of 75km.*

4.2.3.3 LISS Potential

Native woodlands will be managed under LISS, but most are unlikely to be thinned in the future due to designations and access difficulties. Some of the proposed second rotation pinewoods and associated native woodland should be thinnable in the future.

*National theme - **Healthy** - Area managed under LISS will be increased over time.*

4.2.3.4 Current and potential markets

Markets will be restricted by the need for transport by sea. Future markets will need to focus on pine/native woodland.

*National theme - **Productive** - delivery through commercial conifer timber production; and productive broadleaves through thinning beech.*

4.2.4 Landscape and landuse

4.2.4.1 Landscape character and value

Increased use of native species and PAWS restoration will strengthen native woodland habitat corridors, providing greater visual unity across the landscape. These changes will take time to establish. The NSA will be enhanced by adjacent conversion of spruce areas to native woodland.

*National themes - **Treasured and Cared for** - delivery of landscape improvements through species diversification and restructuring.*

4.2.4.2 Visibility

The current policy of maintaining existing deer fences around the forest will be continued, working with neighbours as appropriate. There are no plans to fence the unfenced sections of the property. Continued use of internal deer fences and exclosures will be kept under review.

*National theme - **Healthy** - delivery of Deer Management Plan commitments.*

4.2.4.3 Neighbouring landuse

The Forests and Water guidelines will be adhered to when working upstream of private water supplies. Neighbours will be kept informed regarding operations that might affect them.

4.2.5 Social Factors

4.2.5.1 Recreation

There are no new proposals in the plan area. Conversion to native woodland will enhance the visitor experience.

*National theme - **Treasured** - delivery through improvements to Visitor Zones.*

4.2.5.2 Community

No major drivers or concerns.

4.2.5.3 Heritage

Settings have been improved where possible through species diversification and increase in open space. Best practice is contained in the district's Cultural Heritage Strategy and UKFS guide 'Forest and the Historic Environment', which will be adhered to.

*National theme - **Cared for** - protection and enhancement of cultural assets.*

4.2.6 Statutory and legal requirements and key external policies

FES will work with SNH to implement the management plan for Glen Etive Woods SAC and Ard Trilleachan SSSI. FES will work with SNH in relation to the Glen Etive and Glen Fyne SPA. FES will work with SNH in relation to the Beinn Nevis and Glen Coe NSA. FES will continue to restore PAWS with the intention of full restoration for the plan area. Minimizing construction of roads and tracks and carefully siting those planned will help protect the Area of Panoramic Quality. Diversifying species choice, avoiding creating geometric linear features and shapes, and feathering of edges are examples of techniques also applied.

***All national themes** - we will comply with UKWAS, the UKFS and all other policy documents and legal obligations.*

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Table 4.1 - Analysis of Opportunities and Constraints (see maps 4.2 & 4.3)

Factor	Opportunities	Constraints	Concept development
Fencing and deer management	Deer fencing useful in controlling deer population and thereby encouraging natural regeneration.	Deer fence is costly to maintain. Could adversely affect landscape if regeneration follows fenceline. Unrealistic to fence along legal boundary due to topography.	Maintain deer fences. Consider realignment if problems arise. Work with neighbour to encourage reduction in external deer pressure.
Species choice	Opportunity to replace current commercial spruce forest with native species. Use of native species will improve landscape/amenity and could still yield marketable timber.	Use of Scots pine is restricted due to risk of Dothistroma infection to existing Caledonian pinewood remnants. Native woodland could potentially be more difficult to establish due to deer pressure. Loss of commercial value using native species.	Plant or encourage natural regeneration of native woodland. Consider additional deer fencing. Scots pine to be included on better sites for potential commercial timber production, but excluded within a 550m buffer around existing pinewood remnants.
Native woodland regeneration	PAWS restoration through felling and natural regeneration can be included in the plan. Some expansion likely onto unplanted areas over longer timescale within the deer fence.	Deer pressure limits regeneration outside the deer fence and has some impact within. Loss of open habitat and increased shading may affect some species.	Favour use of natural regeneration on PAWS sites. Keep deer management policies under review and fit for purpose. Allow natural development of woodland.
Access for harvesting	Option to for marine access would overcome cost issues of upgrading long section of shared access track and use of consultation route beyond to North Connel. GHR supportive of marine access and collaborations on the development of the marine access plan.	Ramp and access to ramp within NSA and APQ.	Marine access to be progressed by FCS. The marine access will be used by both FCS and GHR.
Coupe size	Felling all productive mature conifers now would be the most cost effective, particularly in regards to remote working and shipping.	Felling all mature conifers now would create a large area of felling and reduce benefits from restructuring.	Fell commercial conifers in Phase 1.
Access for deer management	Further provision, e.g. extending track up the west side of the Allt Easach, within second rotation crops and SSSI/SAC would aid regeneration protection.	Hill tracks increase access to Wild Land and have visual impacts within the NSA and APQ.	Any new tracks should be sited within the wooded area and the design should conform to current guidance from SNH.
Public access/amenity/recreation	Opportunity to improve appearance of the forest through planting/regeneration of native species.	Wild Land and designations may mitigate against new built facilities. Area has low public usage and access so may not justify expenditure.	No expenditure planned.
LISS Management	Management under LISS is preferable both visually and environmentally.	Current conifer crop is past the window of opportunity for thinning. Retention without incurring wind damage is unlikely.	Clearfell existing conifers. Manage native woodlands and second rotation crops under LISS.
Open land	Opportunity to feather /scallop edges to improve transition from commercial forest to open hill. Opportunity to increase open land where poorly growing conifers are present.	Open space is a cost to commercial forestry. Reduction in woodland area might make the existing ranger track more visible. Deforestation is counter to the Climate Change agenda.	Improve edges with scalloped design and/or use of feathering/native woodland. Develop edge woodland and avoid deforestation.

5.0 Management Proposals

5.1 Forest stand management (see map 5.1)

5.1.1 Commercial areas

◆ Clearfelling

No felling has taken place to date. The whole area under commercial conifers can be felled using tracked/wheeled machinery, without the need for winches, although there are a few steep snaps. Additional stacking facilities at the landing craft ramp will be required to store sufficient volume (800T) to fill a boat for timber transport by sea. Harvesting is expected to take two years to complete. The final harvesting plan will only be drawn up after LMP approval, probably from autumn 2018 onwards. A tractor-trailer system will be used in the forest and both tractor-trailer equipment and 8-wheeler lorries used to transport timber to the stacking area. FCS will carry out pre-hydro-scheme development felling works, including penstock and intake access tracks. This will be completed by January 2019. Main harvesting is otherwise planned to start from April 2019 and take 18 months to complete. Movement of harvesting equipment may involve use of the access track from Bonawe quarry. A single harvester will be brought in by road to cut the roadline. Felling will start as soon as LMP approval is obtained. All other heavy machinery will come in by boat. Felling after the roadline has been cut will then remove trees between the Allt Easach and the roadline. These arrangements will be detailed in the felling contract.

Some degree of felling conifers to waste may be anticipated in the higher areas. From an environmental/landscape perspective, it would be preferable to fell these to waste at the same time. Access to this area would also be lost after felling conifers lower down the hill. Some 23ha (net) of conifers may be affected.

Conifers within slithers of extra land amount to 7.3ha net area. These cannot be felled without either being taken into FCS ownership or the land owner consenting to their felling in writing and evidence submitted to Conservancy prior to commencement of harvesting. This consent was received on 3rd May 2018 (see correspondence). Ardchattan Estate has also requested arrangements to fell a small stand of conifers belonging to them beside Cadderlie at Dail at the same time. They will apply for a felling licence. This will be agreed with the timber merchant at the time. Further discussions on legal boundary issues are planned.

Table 5.1 - Felling Areas Analysis (Conifers)

	PHASE (GROSS AREAS)									
	1	2	3	4	5	6	7+	LISS	Open & Other	SUM
AREA	435.9	-	-	-	-	-	-	144.7	996.1	1576.8
%	28	-	-	-	-	-	-	9	63	100

No more than 25% shall be felled in any 5 - year period (See UKWAS 3.4.2).

Table 5.2 - Felling and thinning volumes (Conifers)

Average Annual Felling volumes by phase	Clearfelling (Km3)	Thinning (Km3)
2017-2021	17.1	Nil
2022-2026	Nil	Nil
2027-2031	Nil	Nil
2032-2036	Nil	Nil

Table 5.3 - Forest Operations Area Statement - Phase 1 felling

FELLING COUPE AREA (HA)		RESTOCK AREA (HA)	
Conifer	= 435.9	Scots pine	= 208.6
Open space	= 122.0	Open space	= 155.2
		Felled - Area for broadleaves by natural regeneration after 10yrs (net area)	= 37.2
		Broadleaves by natural regeneration	= 21.9
Broadleaves to be felled	= 0	Broadleaves by planting (net area)	= 135.0
Broadleaves (not to be felled but within coupe area)	= 4.3	Existing Broadleaves	= 4.3
TOTAL	= 562.2	TOTAL	= 562.2

Conifers will be restocked to a minimum density of 2500/ha net plantable area. Broadleaves will be established through natural regeneration to achieve a minimum stocking of 1100/ha over a 5 to 10 year period, and 2500/ha if planted, where the objective is full stocking. Assessment of regeneration areas in this plan will be made 5 and 10 years after felling. Full establishment will be achieved by year 15, planting when necessary to supplement natural regeneration (see Map 5.7 Propagation type). Areas for regeneration will not be fully stocked, being designed to create a graded upper edge and dappled shade along primary watercourses. A small proportion of SS regeneration may arise and will be accepted within the matrix (up to 10%). Where edge woodland, including upper edge landscaping, riparian corridors and bog woodland are planned, a minimum 20% stocking will be achieved by year 15.

◆ Thinning

Thinning is only likely in second rotation crops, but the economics of thinning the crop may not justify the operation. However, the reasonable degree of shelter might allow late thinning, which would improve the economics. The birch areas excluded from the Natural Reserve and outside the SSSI/SAC could yield some timber if

thinned, but this is unlikely on its own given the low volume available. Decisions on whether to thin will be taken at a much later date than the period of this plan.

◆ Continuous cover forestry

CCF management is possible in the next rotation, but conversion operations are likely to be uneconomic.

◆ Long-term Retentions

There are no Long-term retentions in the plan.

5.1.2 Non-commercial areas

◆ Natural Reserves

The Ard Trilleachan SSSI and Glen Etive Woods SAC woodland is mostly classed as a Natural Reserve. The management boundary around the Natural Reserve is relatively generalised, but this is unlikely to affect management practices throughout the designated woodlands. Management practices are as agreed with SNH. There are no plans to remove the 1880 stand of Scots pine and European larch, amounting to 0.5ha, from the Natural Reserve.

◆ Minimum Intervention

Areas of native woodland outside the Natural Reserve will be managed in this way. Areas of native woodland regeneration above the current tree line will also be included in the future as they will take time to develop significant natural value for inclusion within the Natural Reserve area.

Table 5.5 - Current Area Summary – Low Impact Systems

TYPE	AREA (HA)	%
Continuous Cover Areas	-	-
Natural Reserves	235.0	15
Minimum Intervention Areas	34.4	2
Long Term Retentions	-	-

5.2 Future habitats and species (see map)

◆ Species rationale

Most of the area will need to be planted due to lack of adequate seed sources. Ash will not be planted due to Ash Dieback disease, *Chalara fraxinea*, unless disease-resistant varieties are available. Scots pine will be planted in variable mixtures with native broadleaves, but not within a 600m buffer around existing Caledonian pinewood remnants due to the potential of infection by *Dothistroma*. Consequently, the area east of Barrs Lodge will be entirely broadleaves and here establishment by natural regeneration should be possible given surrounding seed sources. Some planting of local Caledonian Scots pine may be undertaken if trees are available.

Table 5.6 - LMP Species Distribution

WOODED AREA	2019		2028		2100	
	AREA (ha)	%	AREA (ha)	%	AREA (ha)	%
Sitka spruce	418.8	60	4.8	1	15.4	2
Larches	17.4	3	0.3	-	-	-
Caledonian SP	3.1	-	3.1	-	5.7	1
Scots pine	0.2	-	208.6	30	208.6	30
Birch	91.3	13	88.2	13	88.2	13
Oak	41.2	6	48.4	7	48.4	7
Native Broadleaves	8.4	1	190.5	27	214.8	30
Failed	31.4	4	-	-	-	-
Felled, under regeneration	-	-	37.2	5	-	-
Internal open space	86.0	13	116.7	17	116.7	17
TOTALS	697.8	100	697.8	100	697.8	100

Open hilltops	875.9		875.9		875.9	
Water	3.1		3.1		3.1	
TOTALS	1576.8	100	1576.8	100	1576.8	100

Broadleaved areas contribute considerably more than the UKWAS target of 15% of the woodland area being managed with conservation and biodiversity objectives. A tentative estimate for the potential change in area under Caledonian pinewood is given due to the uncertainty of regeneration or increase in woodland across existing open space. Internal open space increase is largely the result of upper edge landscaping and riparian corridor

creation. An indicative amount of SS regeneration is shown although the long-term goal will be for its complete removal. Regeneration of broadleaves (88.7ha) is only counted as established by year 15.

The above species breakout is UKFS compliant, as per the following table:-

Table 5.7 Forest Land Use

Land Use	Threshold limits	Plan outturns
SS	75	2
Other conifers	10	30
Native Broadleaves	5	50
Open space	10	18
Total	100	100

◆ Habitat networks

The Existing Habitat Networks map (see map 3.7) identifies the main habitat networks, both open, native woodland and riparian. Map 5.7 illustrates future habitat networks. Native woodland can be expected to regenerate in lower riparian corridors. PAWS restoration will strengthen the native woodland linkages. Native woodland habitat networks will also contribute to the deadwood resource, providing a deadwood habitat network as a consequence.

5.3 Restructuring

Development of a well-balanced age structure is unlikely in the future as the forest will develop to become an old growth forest unless interventions are undertaken. Should clearfelling of planted native woodland based on a future coupe structure, this would allow restructuring. However, the economics of such operations would need assessing at the time.

5.4 Future management

◆ Invasive species

The FD's program of eradication will deal with rhododendron in Barrs. Conifer regeneration removal will be prioritised to target Ancient Woodland sites, conservation areas and areas of landscape sensitivity. Timescales for removing conifer regeneration from other areas will be longer. Rhododendron presence will be reassessed at mid-term review and again for the next plan.

◆ Monitoring

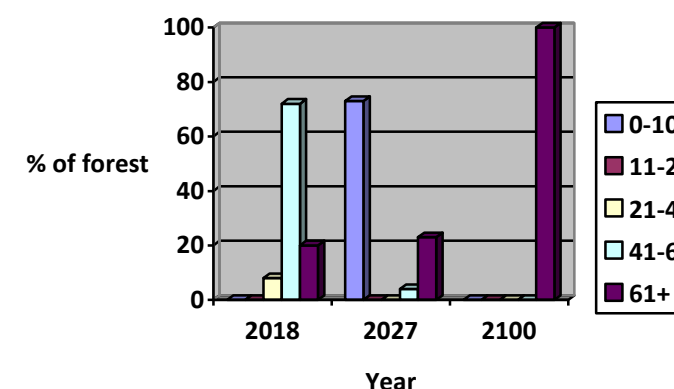
Monitoring of outputs within the plan area are handled in accordance with the district's Monitoring Plan. Subjects are grouped under Key Themes from the Strategic Plan. Specific methodologies are detailed under separate guidance documents. Responsibilities for undertaking, recording and responding to the results of ongoing monitoring are also detailed in these documents. Any relevant to LMP delivery will be reviewed at the mid-term review stage. Monitoring within the Glen Etive Woods SSSI is undertaken by SNH.

5.5 Age structure

Table 5.8 – Future forest structure

Age of Trees (Years)	Successional Stage	Percentage of Forest over Year		
		2018	2027	2100
0 - 10	Establishment	-	70	-
11 - 20	Scrub & Early Thicket	-	-	-
21 - 40	Thicket & Pole Stage	8	-	-
41 - 60	Mature High Forest	72	5	-
61+	Old Forest	20	25	100
TOTALS		100	100	100

Chart 1 - Future Forest Structure



Old growth forest is expected to increase over time, particularly through the development of new and existing native woodland. Establishment, scrub and early thicket stages are probably under-represented at present, having a low percentage presence that has not been recorded in the SCDB. This may include some understorey. Planting years are generalised estimates in the SCDB. The amount of colonisation on existing open land is also difficult to predict, but is assumed it will accrue at a minimal rate.

5.6 PAWS restoration

All the areas on the NCCS inventory that are classed as 'Ancient Woodland Sites' or 'Long-Established Semi-natural origin' will be restored to native woodland. Natural regeneration will be the preferred method of broadleaved establishment.

5.7 Management of open land

Existing open hill tops and open edges will be retained, although some broadleaved regeneration will be accepted where this does not conflict with other environmental values. Upland heathland is the main priority habitat in these areas. Management of 'lost' land outside the FCS fence is unlikely to change unless fences are realigned. 'Extra' land not in FCS ownership but inside the FCS fence will not be replanted.

No peat restoration projects are currently proposed. The FCS document 'Deciding future management options for afforested deep peatland' will be followed; [Deep peat practice guide launched - Forestry Commission Scotland](#). Excess woody growth will be removed.

5.8 Deer Management

Deer stalking will be the preferred method of deer control, in line with the FD's Deer Management Strategy. Deer management will comply with SNH's 'Code of Practice on Deer Management'; [Code of deer management - Scottish Natural Heritage](#) Deer fencing will comply with the Joint Agency Fencing guidance; [Deer fencing guidance - Scottish Natural Heritage](#). Deer management will focus on protecting regeneration sites.

5.9 Access (see map 5.8)

All FCS access tracks and facilities may be built primarily from a new quarry near the head of the new track down to the slipway, of proposed dimensions 20m by 20m, and will not exceed the threshold requiring an EIA determination in a non-sensitive

area. It will have a maximum rear wall height of 4m. It will be back-filled after use. It is anticipated that the back-filled quarry and batters/cuttings will green over quickly without need for seeding. Maximum batter/cutting height will be 1.5m. Track construction will be UK Forest Standard compliant and will follow the Forest and Water Guidelines 5th Edition. Stream crossings will be processed under the SEPA CAR Regulations in advance of construction. The road will include several passing places and a few culverts, mainly dealing with water from old plough drains. Diffuse pollution measures will be employed. The road works fall outside of the private water catchment to Barrs Lodge. The design will conform to the Timber Transport Forum document 'The design and use of the structural pavement of unsealed roads, 2014';

<http://timbertransportforum.org.uk/attachments/article/12/TTF%20The%20design%20and%20use%20of%20the%20structural%20pavement%20of%20unsealed%20roads%202014.pdf>

It will also conform to SNH's 'Constructed tracks in the Scottish Uplands' revised September 2015;

<http://www.snh.org.uk/pdfs/publications/heritagemanagement/Constructedtracks.pdf>

The track from the existing forest road to the slipway will be to standard forest road specification for timber haulage, with a combination of tractor-trailer units and 8-wheeler lorries using the road from FCS and construction traffic from GHR. The proposed stacking/storage area above the shore will be shared between FCS (for timber stacking) and GHR (for temporary storage of materials during hydro-scheme construction). GHR's storage area will be 50m x 50m to the south-eastern side of the access road and unfenced. The FCS section on the opposite side will occupy an area around 50m x 30m, with a 20m buffer to the Alt Easach. However, this area will only contain a couple of spurs of hard core onto which machinery will run, between and around which timber will be stacked onto the existing ground surface. GHR will construct the new road from the existing forest road to the proposed slipway, including the stacking/storage area, using contractor TSL, and FES will contribute to the cost of construction, in similar fashion to PFI (Private Finance Initiative) funding. GHR will include the slipway in their planning application and construct it when access has been completed by FCS. The proposed start date for this construction is April 2019. GHR will obtain necessary consents from relevant authorities, such as the Crown Estate. Should GHR not pursue the hydro-scheme, FES will submit a planning application for the slipway and ramp. Stone for maintenance and upgrade by GHR from Bonawe to Cadderlie is likely to come from Bonawe quarry. Stone for use by GHR for track improvements and construction for the hydro-scheme will be won along the routes or from local existing borrow pits. GHR will upgrade the road from Bonawe quarry primarily for their own use as far as the track access points in Barrs. The timber merchant may upgrade the existing in-forest road when required during the harvesting and extraction period. In addition to the above, road maintenance of the existing road within the working area will be in agreement with other users where appropriate, and by agreement between FCS and GHR. GHR will also construct a spur road to their proposed power-house, off the new roadline, which will be covered in their planning consent. GHR will

decommission and remove the slipway on completion of timber dispatch. Some remedial decommissioning of the stacking/storage area will also take place, covering it with soil and vegetation to bring it back to a natural appearance. No decision has been taken regarding reinstatement of the section of road from the stacking area to the plantation edge, pending consideration as to whether it could assist in accessing the bothy for its future maintenance.

Visually, (with reference to view 8) the barging facility will be seen as a small-scale feature, along with the access ramp to it (covered by the planning consent). The terrain on which the stacking area will be constructed is relatively flat. It is unlikely to be visible, if not partially concealed behind the SSSI native woodland on the ridge on which the bothy stands, although timber stacks and GHR's storage materials may possibly be visible. The road from the stacking area to the plantation edge will be concealed behind the wooded ridge noted above. Thereafter the road will be visible as a small-scale feature in the landscape, although this may be compounded by the adjacent penstock route until that is landscaped after construction is finished. The roadline will largely be hidden from Beinn Starav (view 9) by topography. It will not be visible from Barrs Lodge. Over time, the roadline will be concealed in the new native woodland. Construction of GHR's storage area will respect the boundary of the SSSI. Part of the stacking area and all of the lower section of road below the plantation edge falls within the NSA. The remainder falls within the North Argyll Area of Panoramic Quality (See Map 3.5 for designation boundaries).

Haulage will adhere to the following protocols 'The ATTG Protocol for Timber Haulage in Argyll and Bute'; <http://www.argyll-bute.gov.uk/sites/default/files/ATTG%20Protocol%20for%20Timber%20Haulage%20in%20Argyll%20and%20Bute%20-%20Updated%20April%202012.pdf>
And with the 'Protocol for Timber Transport Operations (Appendix 1)'; http://www.argyll-bute.gov.uk/sites/default/files/ATTG%20Timber%20Haulage%20Protocols%20for%200Argyll%20%20and%20Bute%20Appendix%201_0.pdf

Haulage will be by landing craft.

Appendix I: Land Management Plan Consultation Record

Statutory Consultee	Date contacted	Date response received	Issue raised	Forest District Response
Argyll & Bute Council	16/05/2018	16/05/2018	Acknowledgement only – passed to Oban Planning Office Ref:180516-000558	
SNH	27/06/2017 & 16/05/2018	27/06/2017 (initial on site response) 23/05/2018	Would prefer beach access. Relaxed about replanting with SP. Would welcome further open space development should regeneration fail. Advised of sea trout fishery on lower Allt Easach and need for its protection.	Advised that future species plan for upper areas of Barrs has only 30-40% regeneration target. Sea trout fishery noted and protection through work plan mitigation measures (See 4.1.2.2)
Neighbours	Date contacted	Date response received	Issue raised	Forest District Response
Barrs Lodge - Mr Ehrman	Various including 27/06/2017 16/01/2018(he contacted us)	27/06/2017 at site meeting 17/01/2018	27/06/2017 - would prefer beach option. Concerned about SS in restock plan, wanted native species	Explained that the plan had to cater for a limited amount of SS natural regeneration, which we would not be able to control on an ongoing basis due to cost (See Section 5.2)
Robert Hudson - Dhal Beag	28/03/2017 & 10/05/2018	24/03/2017	Concerned about being kept informed about activities and proposals - hydro scheme, shipping, timber, increases in activity; no objections to the proposals	Outline of hydro-scheme forwarded and offer to keep in the loop 28/03/2017.
Ardchattan Estate (Sarah Troughton)	11/04/2017 08/01/2018 01/03/2018 03/05/2018	03/02/2017 03/05/2018	We raised questions about their use of the Dail downfall and stand of conifers by Dail. She requested a meeting once our plans had progressed, which would also include discussion about her trees, & hydro-scheme(s). Wanted to fell adjoining hectare of conifers at Dail. Permission granted to fell extra land conifers and request for all parties to cooperate over relevant permissions.	Agreed to meeting and would keep her posted. Estate to forward felling licence. Estate and timber merchant to agree terms. See correspondence and note in 5.1.1
Glen Noe Estate (Estate manager – Andrew Servant, Heriot Maitlands Trust)	24/07/2018			
Inverliver	10/05/2018			
Ardmaddy	10/05/2018			
Glen Etive Forest/Estate (Scottish Woodlands Ltd)	22/05/2018			

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Community Groups	Date contacted	Date response received	Issue raised	Forest District Response
Ardchattan Community Council	13/12/2017	13/12/2017	No issues likely given sea transportation – will seek further views of CC members. Informed that CC was meeting GHR in January to discuss the hydro-scheme.	
Taynuilt Community Council	10/05/2018			
Others	Date contacted	Date response received	Issue raised	Forest District Response
SEPA	16/05/2018	04/06/2018	15-30m buffers on all watercourses 50m buffer around Barrs Lodge water supply abstraction point as per UKFS.	FD follows UKFS/Forest & Water guidelines 7 15-30m on key watercourses (4.2.1.2) Provisions noted under 4.1.1.2
RSPB	08/01/2018	25/01/2018	Guidance provided on use of helicopters. Monitoring of potential protected species nest site prior to works commencing to assess if an active nest. Black grouse – recommended marking of (new) deer fencing. Restocking – wanted to see control of SS regen in next rotation to benefit native woodland networks.	Guidance forwarded to GHR. Advice forwarded to GHR. Work plan will take into account (4.1.2.2) – advice forwarded to FD Environment team. No new fences proposed. Any new fencing will follow guidance (4.1.2.2). FCS does not have the budget to undertake ongoing control.
John Campbell (caretaker Barrs Lodge & bothy, community councillor & shipping pilot)	13/12/2017 (he contacted us)	13/12/2017	Informed us he was the boat pilot for shipping from the existing pier, a member of the community council and offering to help with the plan.	Advised shipping likely down to merchant buying timber. Welcomed any information to assist with plan.
Confor	09/01/2018			
Mountaineering Council of Scotland	10/05/2018			
Border Bothies Association	10/05/2018			
Scottish Wild Land Group	10/05/2018			
SIMEC Green Highland (GHR)	Various	Various	Discussions about access and timing of operations.	No outstanding issues

Appendix II: Tolerance Table

Tolerance Table for West Argyll Forest District

Area or Zone	Action required	Adjustment to coupe boundaries (to a limit of 20% of coupe area)	Timing of restocking (years after felling)	Changes to species (in excess of 25% change)	Windblow clearance (ha>40% blown)	Changes to roadlines (m from centre line)
Native woodland areas	Exchange of letters	1.5ha	5 yrs	No threshold	0.5ha native species. 5ha conifer	50m*
	Plan amendment	3.0ha	10yrs**	No threshold	10ha conifer	100m
Landscape sensitive areas***	Exchange of letters	0.5ha	3 yrs	Between evergreen and deciduous conifer species. No threshold for native species.	2ha conifer	50m
	Plan amendment	1.5ha	5 yrs	Between evergreen and deciduous conifer species. No threshold for native species.	5ha conifer	100m
Low sensitivity areas****	Exchange of letters	3.0ha	4 yrs	Between evergreen and deciduous conifer species. No threshold for native species.	5ha conifer	200m
	Plan amendment	5.0ha	7 yrs	Between evergreen and deciduous conifer species. No threshold for native species.	10ha conifer	400m

* Any impact on existing ancient woodland will be agreed with no threshold

** Due to preference for natural regeneration

*** Includes all landscape designation areas, e.g. NSA's, designed landscapes, plus WIAT, community woodlands and FD Strategic Planning Landscape Zone

**** All other areas not included in other zones. Localised environmental sensitivities within the zone will be covered under existing management plans. Consultation on these sites will be undertaken as part of the normal approval process and methods detailed in work plans.

Note: Any increase in open space will be subject to EIA thresholds for deforestation unless part of normal process of forest restructuring

Appendix III: LMP Brief and Introductory Information for Initial Stakeholder Meeting

(Outcomes from Initial Stakeholder meeting to be added in italics)

Introduction

Barrs & Cadderlie Forest covers 1576.82ha. The forest was acquired in 1957). The area acquired included significant areas of existing native woodland along the lower shoreside edge of Barrs dating from about 1850, but with some degree of planting including a small amount of European larch and Scots pine, dating from 1880, probably associated with Barrs Lodge. The oak woodland has been coppiced. Small amounts of Caledonian pinewood possibly dating from 1850 or older also remain. Ownership passed to the Secretary of State for Scotland in 1942, when sheep and cattle grazing, along with deer culling were undertaken. Planting commenced in 1970 and was largely complete by 1974. Some lower areas were burnt attracting subsequent significant regeneration of birch in Barrs or being replanted in 1981 in Cadderlie. More recently (1989, 1994, 1998 and 1999), several deer fenced enclosures have been erected to examine regeneration success of Caledonian pine when protected from deer browsing in Barrs. An Indicative Forest Plan was prepared for the forest in 2006. A built ranger track was constructed east of the Allt Easach in 2010, replacing a degraded ride-based quad access, and a second track off the end of the forest road, parallel with the shore a few years earlier. Crop assessment was undertaken in Barrs in 2013. Cadderlie Forest was put up for sale in 2016. A hydro-scheme on the Allt Lochan an Lair/Allt Easach has recently been proposed by Green Highland Renewables.

The majority of Barrs is open mountainous land, rising to the summit of Beinn Trilleachan (839m). The shoreside slopes are covered by a patchwork of native woodland, including some Caledonian pine. Commercial coniferous woodland occupies the southern part of the area. The forest lies within a much larger, imposing landscape encompassing the head of Loch Etive. The area is remote, with poor access. Barrs Lodge is an adjoining property surrounded by the forest. In addition there is a bothy leased to a local scout group. A Public Right of Way passes through the forest via the bothy. Beinn Trilleachan and the Trilleachan slabs are popular with mountaineers, although views of the forest from the ascent and summit are very limited. Beinn Starav is a popular Munro with more extensive views of the forest from the other side of the loch. A number of environmental designations affect the forest, including the Ard Trilleachan SSSI and Loch Etive Woods SAC (part), the Glen Etive and Glen Fyne SPA (part), the Beinn Nevis and Glencoe NSA (part), and the North Argyll APQ. Loch Etive is also an important shellfish growing area. Numerous archaeological sites are to be found within the native woodland areas.

Issues from the Indicative plan

The following issues were identified in the indicative plan or subsequently and now need to be addressed and covered in the new plan:-

- Access for timber haulage is best achieved either through the construction of a pier or barging facility, to allow haulage by sea. The current road access would be more costly to upgrade. Road access also limits access for harvesting machinery. Access to a renovated quarry pier would require road access through the SSSI. Barge access would be off FCS ground? *It was agreed that forwarder access to the proposed pier would be required rather than a road. The floating pier at the head of the loch might provide a cheaper solution if it could be moved for the duration of the harvesting operation rather than bringing in from somewhere else. Area of search for new pier site is required along with appropriate stacking facilities. Outline approval from SNH for these works within the SSSI/SAC including tree felling has been given on the basis that native woodland expansion gains outweigh the negative impact on the designated area.*
- Some timber alongside the access to Barrs Lodge is over 25m tall and is past its projected terminal height above which risk of windblow significantly increases. There is consequently a risk that windblow could block this access, which would prove difficult to clear given the access limitations. *It was agreed that use of existing forest road would need to remain accessible for owners of Barrs Lodge during harvesting operations, so a separate network of extraction routes feeding into the pier access would be needed. The bridge over the Allt Easach would need to be used and requires further structural checks.*
- There is a marked difference in broadleaved regeneration success either side of the deer fence. The deer fence over the Beinn Trilleachan ridge has various issues associated with it including, landscape and wildlife impact and difficulty in maintaining. *Line of existing fence is the best for the current approach but the cost of maintaining it in the order of £6K/annum is unrealistic - need to find ways to reduce it. No further exclosures planned. External deer pressure is high. Conifer area harbours most of deer population. Plan by Scottish Woodlands to deer fence below the Trilleachan slabs has not progressed. It was proposed to restock by natural regeneration with small areas of planting. Any SS regen may be left - low intervention management. Rhodoendron control is ongoing.*
- Straight conifer forest edges detract from the landscape. *Will be resolved through conifer replacement with native woodland and natural feathering of edges.*
- The economics of harvesting the commercial conifers and hauling by sea would favour clearfelling all productive conifers at the same time. This would leave a

sizeable area of unmerchantable conifers some distance from the forest road, which would require felling to waste. *Proposed to leave unmerchantable trees to grow on and harvest later. Any proposal to work with future owners of Cadderlie Forest regarding timber haulage might be compromised by potential haulage legalities over private ground between the two forests.*

- *The Mountaineering Council of Scotland changed their position on objections to the ATV track and favoured extending it northwards.*
- *Visitor Zones not needed as no work will be done after conifers have been removed.*

Plan Objectives

The role of Scotland's National Forest Estate focuses on 6 key themes:-

- **Healthy** - achieving good environmental and silvicultural condition in a changing climate
- **Productive** - providing sustainable economic benefits from the land
- **Treasured**- as a multi-purpose resource that sustains livelihoods, improves quality of life, and offers involvement and enjoyment
- **Accessible** - local woodlands and national treasures that are well promoted, welcoming and open for all
- **Cared for** - working with nature and respecting landscapes, natural and cultural heritage
- **Good value** - exemplary, effective and efficient delivery of public benefits

The plan will deliver on these themes in the following ways:-

Productive

- Timber production – conifers.
- Productive native woodland planting.
- Road construction - contribution to the 75Km target in the Strategic Plan - access to proposed pier or barge site only.

Cared for

- Enhancement and protection of habitats.
- Follow management plans for Glen Etive Woods SAC/Ard Trilleachan SSSI.
- Landscape improvement that responds to landform and respects natural features; enhancement of NSA.
- Protection and enhancement of cultural heritage assets in accordance with UKFS guidance in 'Forests and Historic environment'.

- PAWS restoration.
- Improvement of habitat networks.
- Control of rhododendron.

Treasured

- Improvements to Visitor Zones.
- Landscape improvements through replacement of coniferous plantation with native species.

Healthy

- Increase resilience to Climate Change through species diversification.
- Implementation of Deer Management Plans.
- Area managed under LISS will be increased.

All themes:-

- To comply with UKWAS guidance for certification.
- To comply with UKFS.
- To comply with all other relevant guidance and policies, FD Strategic Plan and overarching FCS plans.

The primary objectives of the plan from the design brief can be summarised as follows: -

- ◆ Protection and enhancement of designated sites.
- ◆ PAWS restoration.
- ◆ Improvement of native woodland habitat networks.
- ◆ Native woodland expansion.
- ◆ Protection of the water supplies and water quality.
- ◆ Landscape enhancement, including improvements to Visitor Zones through native woodland expansion.
- ◆ To comply with the Forest and Water Guidelines.
- ◆ To comply with UKWAS guidance for certification and UKFS.
- ◆ Timber production – commercial conifer areas.
- ◆ Facilitation of access for timber haulage in association with the construction of a new pier or barge access.
- ◆ Objectively explore possibilities for renewables.

Critical Success Factors

The following outcomes are required:-

- Commercial timber production requires completion of felling (224.4ha) and restocking (??ha) through natural regeneration and/or planting, within 10 years of felling.
- Construction of pier or barge site to facilitate timber haulage by sea.
- Roding – construction of 0.7Km forwarder track to link to pier.
- Timber production 98Km³ - requires completion of felling program.
- PAWS restoration requires felling of 9.2ha of conifers.

Stakeholder consultation

In addition to the FD's statutory stakeholder's (SNH & Argyll & Bute Council), SEPA is routinely consulted. The RSPB, Confor and SSE have also asked to be routinely consulted. The Ardchattan Community Council will be consulted. Neighbours, where identifiable, will also be consulted, notably Barrs Lodge, Ardchattan Estate and the Glen Creran Estate. There are no plans to hold a public drop-in consultation for this plan, but information will be posted on line on the FCS website at various stages of the plan development, with the approved plan eventually being made available here.

Appendix IV: Glossary

ASNW	Ancient Semi-natural Woodland
ATC	Alternative to clearfell management
CCF	Continuous cover forestry
EMIS	Establishment Management Information System
FCS	Forestry Commission Scotland
FD	Forest District
FDP	Forest design plan
FE	Forest Enterprise
GHR	SIMEC Green Highland
HAP	Habitat action plan
HER	Historic Environment Scotland
ICZM	Integrated Coastal Zone Management
LIFE	Financial Instrument for the Environment
LISS	Low Impact Silvicultural System
LMP	Land Management Plan
LP	Lodgepole pine
MCoFS	Mountaineering Council of Scotland
NSA	National Scenic Area
PAWS	Plantation on Ancient Woodland Sites
RSPB	Royal Society for the Protection of Birds
SAC	Special Area of Conservation
SAM	Scheduled Ancient Monument
SNH	Scottish Natural Heritage
SDA	Stocking Density Assessment
SPA	Special Protection Area
SS	Sitka spruce
SSSI	Site of Special Scientific Interest
WAFD	West Argyll Forest District
WoSAS	West of Scotland Archaeology Service
YC	Yield Class

Appendix V: Supplementary Information

Available for inspection at:

West Argyll Forest District
 Whitegates
 Lochgilphead
 Argyll
 PA31 8RS
 Tel: 0300 067 6650

Documentation includes:-

- Roadline surveys
- Production Forecast
- Sub-compartment database
- Conservation plan
- Landscape Character Assessment by SNH
- Aerial photos
- Forestry Guidelines
- Recreation Plan
- Strategic Forest Design Plan
- Forestry Commission approval procedures
- Inventory of Ancient, long-established and semi-natural woodland, Argyll & Bute District (NCCS)
- Soil surveys
- Crop survey

Appendix VI: Provenance Guidance Chart

West Argyll FD LMP provenance guidance chart

Species	Guidance
SS	Improved QSS standard throughout
VPSS	Limited use in best locations
SP	High rainfall type specified as standard
NSP	From the nearest appropriate zone near CFR areas
LP	Only ALP being used in mixture with SS on poorer sites
DF	Seed stand or coastal origin
ESF	Czech or central European
NF	Registered seed stands
GF	Scottish registered seed stands
WH	Registered seed stands with low fluting
WRC	Scottish seed stands
NS	Seed stands, Eastern European or Harz
JCR	Northern Japanese range
XC	PSSB will advise on any other minor species
<p>Notes: PSSB can provide the most up to date guidance on provenance selection including advice on best suited seed stands. Virtually all seed supplied by PSSB comes from registered seed stands and is based on geographic area compatibility. Use of VPSS has declined as seed orchard QSS improves and this also has a wider genetic base for resilience purposes.</p>	