Forestry and Land Scotland
Coilltearachd agus Fearann Alba

Merkland

Land Management Plan 2026-2036 South Region-V1.0

Plan Reference No:
Plan Approval Date: 2026
Plan Expiry Date: 2036

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

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A. Description of Woodlands

A.1 Property Details

Property (LMP) Name:	**Merkland Forest Block**
Grid Reference (main entrance):	NR 0057 3764
Nearest town or locality:	Brodick
Local Authority:	North Ayrshire

A.2 Location and Background

The Merkland Land Management Plan (LMP) comprises a woodland on the southern and eastern slopes of Goatfell. It provides a backdrop to Brodick on the isle of Arran and has a major impact in the view from the ferry on arrival to the island. The block area totals 681ha.

The site is located between 2 contrasting National Trust for Scotland (NTS) properties: Brodick Castle to the south and Goatfell in the west and around the north. Brodick Castle is set in formal gardens and policy woodlands, part of the Gardens and Designed Landscape (GDL) and is characterised by mature large conifers. The Goatfell property comprises moorland rising to the top of Goatfell and a new native woodland creation and bog restoration project.

Some restructuring has already taken place accelerated by the felling of Larch due to *Phytopthora ramorum*. The western area of the forest has been earmarked for native broadleaves in order to increase biodiversity and connect with the NTS project to the west.

See Map 1.

A.3 Existing Schemes and Permissions

Type: Land Management Plan
Ref. No: 032/12/02
Details: Expires 28th February 2023

Type: Felling Permission
Ref. No: FPA-10570
Details: Expires 12th June 2028

Type: Variation to Felling Permission
Ref. No: EIA 032-12-02
Details: Expires 12th June 2028

A.4 Stakeholder Engagement

Summary of the main points raised by stakeholders during Scoping (and where they are addressed in the plan). The full consultation record can be found in Appendix I.

1. Native Woodland Expansion (Section C.2.1)
2. Landscape and Visual (Section C.2.16)
3. Access (Section C.2.8)
4. *Rhododendron Ponticum* (C.2.14)
5. Bog Restoration (C.2.12)
6. Visitor Experience (C.2.9)
7. Private Water Supplies (C.2.19)
8. Protected Species (C.2.12)
9. Historic Environment (C.2.11)

A.5 Long Term Vision and Management Objectives

Vision

Native Woodland Expansion, Silvicultural Improvement and Positive Visual Impact will be achieved through carefully managed phased felling, gradual conversion to broadleaved woodland between Glen Rosa and the Cnochan Burn, species diversity and coupe design. Commercial production will be in the east and focus on landscape, ecology and preservation of historical character within the wider site. The improvement of access within the forest will benefit management and contribute towards a quality visitor experience framed within the backdrop of Goatfell, Brodick Castle and productive forestry.

Management Objectives

Objective 1: Expansion of Native Woodland
Indicator of objective being met: Within the plan period, the Glenshant Hill area will have a larger area of established native species and the native woodland network will be improved within the block with connectivity between riparian, woodland fringe and PAWS sites.

Objective 2: Production of commercial softwoods.
Indicator of objective being met: Phase 1 and 2 coupes will mostly comprise mature timber, windblown coupes and the few small remaining areas of larch. By the end of the plan period there will be greater species and age diversity with most commercial crops beginning to shift to the east.

Objective 3: Improvement of Visual Impact.
Indicator of Objective being met: The next rotation will improve both long and short range views. The treeline around open hills will be lowered with native species providing a soft

edge and the transition between FLS and NTS land will be improved. Felled coupes to the west and within the GDL will be restocked with native broadleaves and carefully selected non-native conifers in keeping with the character of the Policy Woodland.

Objective 4: Visitor Experience
Indicator of Objective being met: The block will continue to be a popular visitor destination and FLS will work with NTS to maintain the Goatfell Path as well as other recreational routes where possible. Restocking former non-native conifer and larch sites with a mixture of native broadleaves and policy style non-native conifers as mature timber, larch and windblow are removed over the next two phases.

A.6 General Site Description

A.6.1 Topography and Landscape

In Nature Scot Landscape Character Assessment republished in 2019, the majority of the block is covered by Landscape Character Type (LCT) 83 – Rugged Upland with a strip including and southwest of the castle LCT 61 Coastal Fringe with Agriculture and the strip to the northeast of the castle LCT 59 Raised Beach Coast and Cliffs.

Rugged Upland
The mountains of north Arran represent the remains of a major granite intrusion which has deformed the Highland Boundary Fault. Landscape is grand, large scale and remote and signs of human settlement are scarce. The landcover is dominated by sparse moorland rough grassland and extensive areas of exposed rock. Views are characterised by outcrops, unforested peaks and the Arran Mountains. Woodland is mostly absent apart from some areas of coniferous plantation which have altered the character of lower slopes and the odd pocket of native species mostly along lower burns.

Coastal Fringe with Agriculture
This area runs south around the coast from Brodick to Machrie Moor incorporating some areas of beach which can be wild in character. Geology is varied with both metamorphic and sedimentary rocks. There is an even pattern of dispersed coastal settlements with many cottages and farms and the overall character is small scale and rural. Views from the area are long range, scenic and coastal out towards the mainland and surrounding peninsulas with the upper cliff edge very prominent. Landcover comprises a strong pattern of small pastures, enclosed by stone walls, hedgerows and small woodlands. Semi-natural woodlands in the upper areas tend to give way to introduced species such as Beech in the lower parts and Brodick Castle area has a mixture of introduced species.

Raised Beach Coast and Cliffs

Post glacial sea level changes have left raised beaches which comprises the beach, cliff and also areas above and are cut into a variety of rock types. This creates a complex landscape of crags and cliffs. The overall perception is of a narrow landscape with emphasised vertical scale and views out towards the mainland. Settlement is defined by a pattern of dispersed farmhouses and linear villages such as Corrie. Woodland within this type is a mixture of native broadleaves, introduced species from the castle gardens as well as scrub on the lower slopes by the sea.

Landscape designations

The following landscape designations impact upon the block:

- North Arran National Scenic Areas (NSA)
- North Arran Wild Land Area (WLA)
- Brodick Castle Garden and Designed Landscape (GDL – national important)
- North Arran Special Landscape Area (SLA)

Visibility

Long range views from the wider landscape into the forest occur from the Caledonian MacBrayne's ferry as it leaves Ardrossan and this visibility increases as it nears Brodick Bay. Much of the area is very visible from Brodick sea front, the village itself and the A841 from Lamlash. The eastern strip of the forest is the least visible from outside with some short range views from Corrie and the public road.

See Appendix V for full assessment.

A.6.2 Geology and Soils

The Highland Boundary Fault runs through the upper edge of Merkland. The plan area rises from sea level to 350m and the planted tree line is at 330m. Underlying geology is predominately Permian Old Red Sandstone with Highland Quartzites north of the Fault; the remainder are Highland Schists and Carboniferous sedimentary rocks.

Soils range from surface water gleys on the lower slopes rising through upland brown earths and peaty gleys and podzols to deep peat on the upper edges. Much of the plan area is on medium slopes divided by several very steep watercourses. The land becomes steeper between Merkland Point and Corrie.

The James Hutton Institute "Land Capability for Forestry" classification for much of the area is F4 and F5 (land with moderate or limited flexibility for growth and management of tree crops) with smaller area F6 and F7 (land with very limited flexibility or unsuitable for growth and management of tree crops). Taking into

consideration current tree growth, soils and DAMS, there is more opportunity for commercial species diversity than the classification suggests.

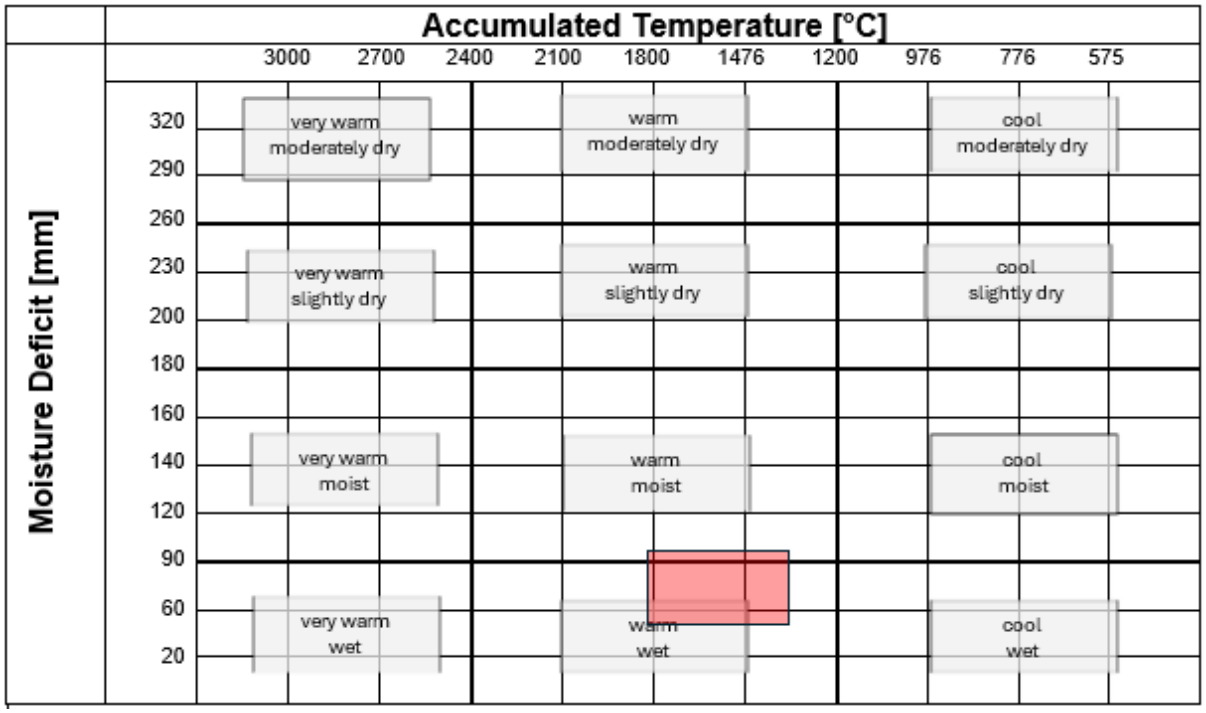
There are three areas classified as having slope instability. A substantial area above Brodick Castle and an area below Maol Donn have Low to Moderate Risk. A third area lower down below Maol Donn is considered Low Risk.

See Map 8.

A.6.3 Climate

The Isle of Arran has a predominantly mild windy oceanic climate heavily influenced by the Gulf Stream. Merkland, being on the island's east side, is relatively sheltered from the prevailing southwest wind. Annual rainfall in the block ranges from 1000-1200mm mainly falling during the winter months October to February.

The current local climate is mostly warm-wet as highlighted on the table below. The image is base on the following climatic figures:
Accumulated temperature: from 1354°C to 1823°C
Moisture deficit: from 49mm to 96mm



Guidance on Climate Change suggests an increased frequency of extreme weather events with the climate remaining wet and mild. Whilst there may be little impact on this woodland with regard to primary species choice, there may be future threats to wildlife habitats.

A.6.4 Hydrology

A number of watercourses are located within Merkland: Cnocan Burn, Merkland Burn, Uisge nam Fear/Man Burn and Corrie Burn. Water is taken from outside the plan area from Cnocan Burn to feed the hydro-electricity scheme at Cladach. There are a number of private water supplies within the site which are fully detailed in Appendix IV. The Corrie Drinking Water Catchment covers the far northeastern tip of the site.

There is some risk of flooding around the various burns. No part of the plan area lies within a Potentially Vulnerable Area.

See Map 3.

A.6.5 Windthrow

The central north area of the block lies within an area of relatively moderate to high DAMS (Detailed Aspect Method of Scoring), scores >17. Elsewhere there are no significant areas of windthrow with small patches starting on the edges of some mature crop.

A.6.6 Adjacent Land Use

Glen Rosa, Brodick Castle and Gardens as well as the area of Goatfell around the FLS boundary are owned by the Scottish National Trust. To the east, there is a public road and a few residences around Merkland and 'Pirates Cove'.

A.6.7 Access

Public access is via the forest roads and a connecting network of tracks which are promoted by the National Trust as recreational routes. The forest can be entered through Brodick Castle, has the Goatfell Path passing through in the western area as well as the Arran Way (Core Path AR78) which runs from Corre to Brodick Castle.

See Map 3.

A.6.8 Historic Environment

There are a number of historic sites recorded within the block, none of them designated. The most significant features are a dyke which marks the lower third of the site and policy woodland and Brodick Castle which is of national importance. Although the latter lies outside the FLS boundary, the building and gardens are part of the shared historical landscape.

See Maps 3 and 9.

A.6.9 Biodiversity

The following ecological designations are within or adjacent to the forest block:

- Arran Moors SSSI
- Arran Northern Mountains SSSI
- Arran Moors SPA
- Corrie Foreshore and Limestone Mines SSSI
- Merkland Woods nr Brodick LNCS
- Meol Donn south of Corrie LNCS
- Rubha Salach to Merkland nr Brodick LNCS

Protected Species
Merkland features various protected species and is a Red Squirrel Stronghold. Squirrels are at good densities and benefit from the mixed tree species within the forest and in the adjacent NTS woodland. Raptors are associated with the open ground within and moorland surrounding the LMP zone. The network of watercourses and riparian habitats are well used by Otters for breeding and movement and support vascular and lower plants related to the temperate rainforest classification. Elsewhere, badgers and bat species are present.

Priority Habitats
Ancient Semi-Natural Woodland is recorded along watercourses and the lower third of the forest. Approximately 12% of the total block area is classified as PAWS. The block falls within the Temperate Rainforest Zone and with the habitat concentrated around the Cnocan and Merkland Burns. There are some areas of Blanket Bog on the higher slopes.

Deadwood Ecological Potential across Merkland comprises high and medium around watercourses and the lower slopes with the majority of native tree species. The upper slopes of the forest are considered as having low potential.

See Map 10.

A.6.10 Invasive Species

Rhododendron ponticum is widespread throughout the plan area and FLS has been controlling it for many decades. The extensive areas have now been cleared and there is an ongoing annual program of chemically treating regrowth. At present, there is little *R. ponticum* control carried out on the neighbouring private estate with the result that there is a major seed source directly adjacent to Merkland.

Japanese Knotweed is only found in one area as a small clump which has been successfully treated but the site will continue to be monitored annually.

Salmonberry is present throughout Merkland in relatively low densities and is treated during rhododendron management operations.

A.7 Woodland Description

See Map 2 which shows the current tree species composition and pattern.

Merkland is dominated by conifers accounting for around 56% of the design unit. There is some diversity within the plantation area however the dominant species is Sitka Spruce. Within the Priority Woodland and more fertile soils, Norway Spruce, Scots Pine as well as some Douglas Fir and European Silver Fir are present.

Broadleaves contribute around 11% towards overall species diversity, include Ancient Semi-Natural Woodland and are concentrated around riparian areas and the lower slopes.

Open hilltop, open water and other ground (hydro electric and wayleaves) accounts for around a further 33% of the site with most of the open space around the lower slopes of Goatfell and Meol Donn.

Around the policy woodland area, age is well distributed with planting years from pre 1900 to 2025. In the northern and eastern commercial areas, the variation is poor due to the significant amount of commercial crops planted between 1971 and 1990.

To date, Merkland has been managed on a Clearfelling and Restocking system with a low amount of Thinning.

Table 1: Area by species

Plan area by species						
Species	Current Area (ha)	%	Year 10 Area (ha)	%	Year 20 Area (ha)	%
Sitka spruce	313.1	46	178.3	26	130.7	19
Other conifers	66.2	10	87.8	13	111.6	16
Native broadleaves	32.4	5	92	14	87.3	13
Other broadleaves	48.7	7	112.4	17	143.8	21
Open ground	182.08	26	197.34	28	191.78	29
Fallow	38.1	6	12.74	2	15.4	2
Total	680.58	100	680.58	100	680.58	100

The data listed in Table 1 is reflected in the bar-chart below:

Chart 1: Area by species

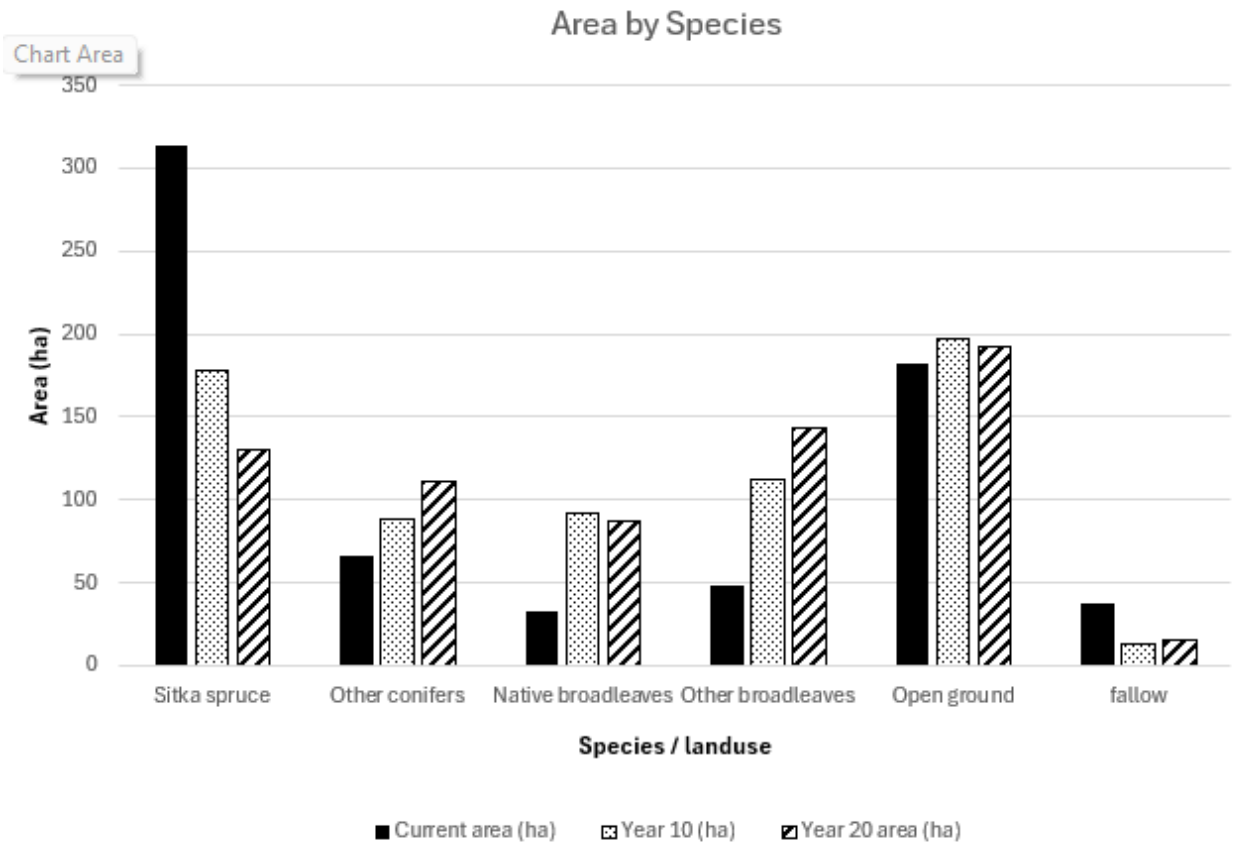
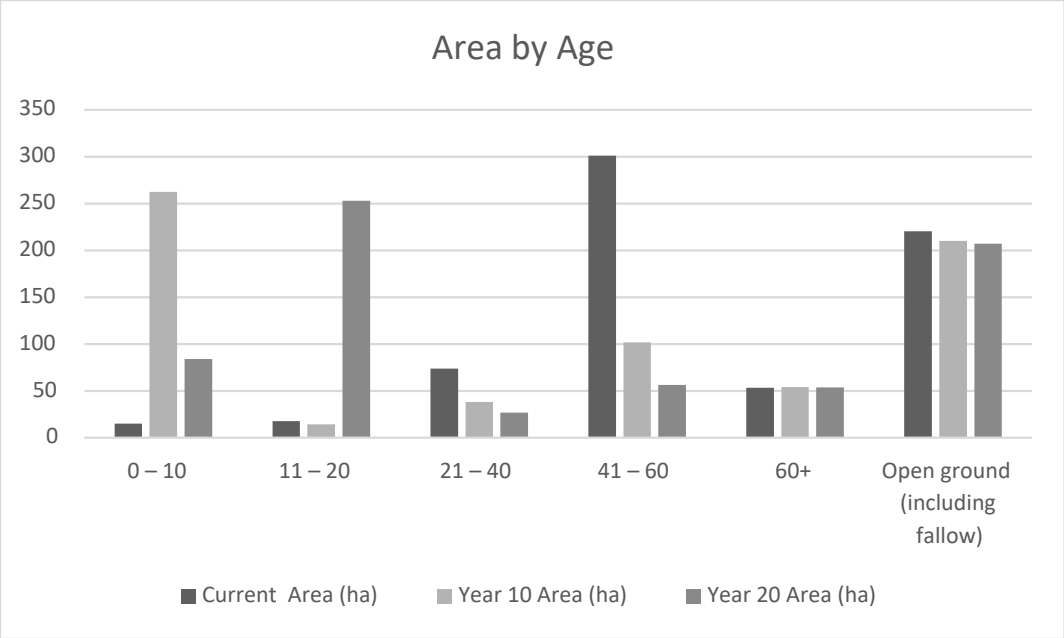


Table 2: Area by age

Plan area by Age						
Age Class (years)	Current Area (ha)	%	Year 10 Area (ha)	%	Year 20 Area (ha)	%
0 – 10	14.9	2	262.4	39	83.9	12
11 – 20	17.5	3	14.2	2	252.8	37
21 – 40	73.8	11	38.2	6	26.7	4
41 – 60	301	44	101.7	15	56.2	8
60+	53.2	8	53.9	8	53.8	8
Open ground (including fallow)	220.18	32	210.18	30	207.18	31
Total	680.58	100	680.58	100	680.58	100

The data listed in Table 2 is reflected in the bar-chart below:

Chart 2: Area by age



A.8 Plant Health

Phytopthora ramorum infection has been found throughout this forest block. Sanitation felling has already taken place in accordance with SPHN requirements with some remaining small areas of larch.

Hylobius, the Pine weevil, can cause extensive damage to young conifer crop. As part of the Region's chemical minimisation strategy, the Hylobius Management Support System (HMSS) is used to measure Hylobius numbers on clearfell sites. Using billet traps a sample of the districts conifer restock areas are assessed. Weevil numbers are recorded and are used along with other site data to determine the optimum time for site restocking. This more flexible fallow period between felling and re-stocking may result in restocking not taking place within two years of felling. (see Tolerance table section 2.7 as agreed with FCS).

Dothistroma Needle Blight (DNB) has been identified on Lodgepole Pine on the island but this species is not present in Merkland. However there are 32ha of Scots pine as well as small stands of Corsican and other pine species in adjacent NTS land so it is likely it is in the general area.

The Nationally-important plant collections in Brodick Castle Gardens add to the importance of diligence over plant health within the block.

B. Analysis of Information

B.1 Constraints and Opportunities – and Concept

Constraints and Opportunities		
Factor	Constraints	Opportunities
Landscape	National Scenic Area North Arran Special Landscape Area Brodick Castle Garden and Designed Landscape Transition to Open Hill	Create a softer edge to the forest as it moves into the open hill. Lower treeline around hills. Focus commercial production in east. Smaller coupes around NTS walks. LISS for some lower areas adjacent to Brodick Castle. Use of fruiting and flowering species and blocky conifer mixtures.
Biodiversity	Protected Species Temperate Rainforest Zone PAWS	Utilise existing broadleaves as seed source where viable. Remove non-native species from PAWS. Expand native woodland and increase connectivity within block and to Glen Rosa planting. Habitat creation for protected species through increase in woodland. Retention and increase in Norway Spruce for Red Squirrels.
Access	No operational access in north.	Improve road network.

	Poor operational access to PAWS.	
Water	Flood Risk around burns. Large Clearfell Coupes. Drinking Water Protected Area. Private Water Supplies.	Extension of riparian broadleaves will be beneficial for flood risk and water quality. Large clearfells to be replaced by areas of native broadleaves and open space. PWS buffering with open space and native broadleaves.
Plant Health	*Phytopthora Ramorum.* *Hymenoscyphus fraxineus.* *Hylobius.*	Phases 1 and 2 to focus on removal of remaining larch.
Herbivore Browsing	Expansion of native species. High public access. New ATV tracks required.	Effective deer control will assist an expansion of native broadleaves. Extended access network.
Invasive Species	Rhododendron ponticum.	Program of *r.ponticum* removal in PAWS.
Historic Environment	GDL/Policy Woodland. Variety of undesignated sites.	GDL enhancement through removal of windblow. Increase in native broadleaves will protect areas from operations in the long term.

Visitor Experience	Large amount of desire lines and informal access. Relatively large clearfells. Goatfell Path. NTS path network. Arran Coastal Way.	Phased felling and small coupes around recreational routes. Expansion of forest road network will encourage access. Removal of windblow will be beneficial visually. Increase in native broadleaves will be positive for amenity use especially in west.
Timber Production and Haulage.	Age Uniformity. Dominance of Sitka Spruce. Prioritisation of Larch areas. Timber transport to mainland. Unthinned crop.	Provide planned sustainable timber supply. Extend road system improving access Majority of Larch into Phases 1 and 2. Expansion of broadleaves and diverse commercial softwoods.
Soils	Deep Peat.	Increase in open areas in north around Deep Peat.
Material Assets	Hydro Electric Schemes at Cladach and Merkland Burns	Sites protected with Long Term Retentions and Riparian Woodland.

Concept

*Expansio*n of Native Woodland
Gradual conversion to native broadleaves on Glenshant Hill will link NTS planting in Glen Rosa and riparian native woodland in the Cnocan Burn. Continued progression of PAWS restoration through continued removal of non-native conifer regen and *R. ponticum* and herbivore management.

Production of commercial softwoods.
Production focus moved from northern hill ground to the east of the forest with a diversification in species and use of mixtures. New roading to allow access to the concentration of mature timber in the central area and future management. Accessible remaining larch and windblow targeted in Phases 1 and 2.

Improvement of Visual Impact.
Redesign of coupes around open hill will commence in Phases 1 and 2 to improve landscape and visual impact. Transition to open hill and from NTS owned land will be improved through buffers of native broadleaves and open space and a mixture of native broadleaves, appropriate diverse conifers and blocky mixtures within the designed landscape.

Visitor Experience
High visitor numbers benefitting from improved access, views and amenity value due to the increase in native woodland and redesign work. The Goatfell and Arran Coastal Way paths will continue to run through the forest and alongside with the network of other trails provide a valuable recreational resource for tourists and locals alike.

Map 3 illustrates how the plan concept incorporates the important constraints and opportunities into the management objectives.

C. Management Proposals

C.1 Silvicultural Practice

To date, Merkland has been managed on a clearfell and restock silvicultural system with relatively little thinning. The block generally has DAMS score of 10-16 which suggests that parts may be a candidate for alternatives to clearfell in the future.

C.2 Prescriptions

C.2.1 Felling

Sites proposed for clear felling in the plan period are identified as Phase 1 and Phase 2 management coupes on Map 4. Refer to Table 3 for scale of felling.

Stands adjoining felled areas will be retained until the restocking of the first coupe has reached a minimum height of 2m. Phase 1 and 2 clearfell coupes identified in this plan with known adjacency issues are listed below with the planned approach to achieving height separation. For any future clearfell coupes where adjacency is not possible, and there is no exemption under the Scottish Forestry Act, an amendment will be discussed and agreed with Scottish Forestry before the coupe is felled.

46019 and 46021 are both in Phase 2. In the medium term, the felling of these coupes will have a notable visual impact. This part of the forest is extremely complex with mature timber around the Goatfell path and recreational tracks. There is windblow, Western Hemlock and *R.ponticum* seeding onto adjacent PAWS and surrounding area including proposed large clearfells to the north. To best mitigate temporary canopy loss, the

approach is to remove these areas in different years of the same phase and restock promptly with a mixture of native and non-native species.

Any other planned tree felling (e.g. selective felling, felling of individual trees, or felling of coppice) is shown on Map 5.

Scattered naturally regenerated SS >10cm dbh will also be removed within the western area which is getting converted to native broadleaves and lower Glen Shant and Meol Donn treelines.

Other tree felling in exceptional circumstances

FLS will normally seek to map and identify all planned tree felling in advance through the LMP process.

However, there are some circumstances requiring small scale tree felling where this may not be possible and where it may be impractical to apply for a separate felling permission due to the risks or impacts of delaying the felling.

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

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

*Infrastructure includes forest roads, footpaths, access (vehicle, cycle, horse walking) routes, buildings, utilities and services, and drains.

The maximum volume of felling in exceptional circumstances over the plan area covered by this approval is 75 cubic metres per calendar year.

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

[N.B. Trees may be felled without permission if they: are of less than 10 cm diameter at breast height (1.3 m); pose immediate danger to persons or property; are completely dead; or are part of Authorised Planning Permission works or wayleave agreements].

NB: SF approval may be required beyond 5m either side of utilities even if the wayleave agreement says 10m.

C.2.2 Thinning

Potential sites for thinning in the plan period are on Map 5. Table 4 details coupe prescriptions and the potential area.

Thinning will normally be carried out at, or below, the level of marginal thinning intensity (i.e. removing no more than 70% of the maximum MAI, or YC, per year). Higher intensities (no more than 140 % of maximum MAI, or YC, per year) may be applied where thinning has been delayed, larger tree sizes are being sought or as part of a LISS prescription. In all cases work plans will define the detailed thinning prescription before work is carried out and operations will be monitored by checking pre and post thinning basal areas for the key crop components.

C.2.3 Low Impact Silvicultural Systems (LISS)

Areas identified for LISS management are shown on Map 4.

Felling within the Shelterwood system will utilised to improve views and native woodland quality in the lower slopes in the GDL and around Brodick Castle. Selected felling will target windblow, any remaining isolated larch and prolifically seeding non-native conifers in and around PAWS sites while retaining other species and veteran trees such as Douglas Fir. It is anticipated that this approach will be beneficial for visual impact, the transition between NTS land and FLS ownership as well as biodiversity and amenity.

C.2.4 Long Term Retentions (LTR) / Natural Reserves

Stands identified as LTR and Natural Reserve are shown on Map 4.

There is one Natural Reserve coupe in the block. These are predominantly wooded, permanently identified locations of high conservation value and on this site relates to the temperate rainforest habitat along the Cnocan Burn.

Two Long Term Retention coupes (46018, 46038) are along the Merkland burn where existing stands can be preserved to enhance the riparian network and assist with age diversity within the block.

Deadwood retention is concentrated in riparian areas especially where the Long Term Retention and Natural Reserves cover the two main burns.

C.2.5 Restocking Proposals / Natural Regeneration

Planned restocking of felled areas, and proposals for the future habitats and tree species over the whole plan area are shown on Map 6. See Table 5 for areas, establishment, and

mix proportions. Timing of restocking will comply with the plan tolerance table shown in section C.4.

Where required, the choice of ground cultivation technique will consider the short-term benefits for establishment against any long-term side effects on tree stability, access for future forest operations and the environment. There will be a preference for the least intensive technique.

Stocking densities will be at least 2500 stems per ha for conifers and 1600 sph unless justified elsewhere in the plan. If the restock or natural regeneration should fail to reach these levels the site will be beaten-up to the required planting density. This will be assessed at year 3 and year 5 after planting with beat-up by at least year 5.

There will be a preference for natural regeneration of native woodland areas however planting at high density may be necessary where sites are adjacent to *R.ponticum*. Any non-productive broadleaf planting will be native to the area and will complement existing naturally growing scrub and woodland to give the most ecological value. There has also been an allowance for some non-native conifer regeneration for areas being converted to broadleaves.

The Restocking Strategy for Scotland's National Forest Estate explains that we will minimise chemical usage in restocking (insecticides and herbicides) by considering options at the site scale, and using tactics such as delayed planting to achieve this.

Table 3: Felling

Scale of Proposed Felling Areas										
Total Plan Area			680.58 ha							
Felling	Phase 1	%	Phase 2	%	Phase 3	%	Phase 4	%	LTR	%
Area (ha)	158.57	23	123.37	18	44.71	7	34.57	5	25.6	4

Table 4: Felling by species by phase

Species	**Phase**	
	Phase 1 (ha)	Phase 2 (ha)
Conifers	158.85	123.37
Broadleaves	0	0

Table 5: Thinning

Potential thinning over the first 10 years of the plan		
Coupe	Prescription	Area (ha)
46107	Thinning of no more than 30% to remove non native conifers from areas earmarked for conservation objectives.	132.37
46005	Commercial Thinning removing no more than 30% of Sitka Spruce <20 years old.	17.56
Total area where thinning may be undertaken during the plan period		149.93

Table 6: Restocking

Felling Phase	**Map Identifier (coupe number)**	**Species to be planted - or established through natural regeneration (nr)**	**Area (ha)***
1	46014	NMB/SS (60/40) DF	13.13 5.79
1	46033	SS NF/SS (70/30) NMB	19.3 16.26 15.02
1	46022	NMB	15.23
1	46026	SS NF NMB	4.62 7.11 3.99
1	46031	SS NMB MB	17.63 8.89 1.31
2	46019	NS/NSF (70/30) NMB	15.22 2.31
2	46021	MC/MB (60/40) NMB	7.27 4.29
2	46013	SS NMB/SS (70/30)	4.14 24.62
2	46039 17.83	SS MB NS NMB/SS (70/30)	5.01 6.10 2.73 0.52
Fallow (P1)	46003	NMB/SS (70/30)	19.8
Fallow (P1)	46027	SS MB 4.71	3.88 4.71
		Total Restocking Area (ha)	**228.88**

*Net area to be planted excluding designed open ground

C.2.6 Protection

Management of deer is an underpinning activity essential for the delivery of benefits from Scotland's National Forests and Land. The aim is to manage healthy wild deer populations and manage deer impacts across the Estate consistent with the carrying capacity of the land and successful delivery of FLS land management objectives. Deer Management Plans direct the priorities for management and are available on request.

C.2.7 Fence erection / removal

No new fence erection for deer or stock control is planned. A plan for the removal of old fencing no longer required is in place. Fencelines are typically removed after approximately 15 years. Timing and length are is dependent on achieving stand establishment and trees becoming less susceptible to browsing.

C.2.8 Road Operations

Map 7 shows the existing forest road network and any associated quarries, timber haulage egress points, and any local 'Agreed Timber Transport Routes'. Any planned new roads or quarry expansions in the plan period are also indicated on this map. The lengths of planned new roads are given on the map and are reflected in the EIA screening opinion request submitted with the plan.

C.2.9 Public Access

The Core Paths and other recreational routes within the site will continue to be preserved. It is anticipated that the increase in native broadleaves and redesign of coupe shapes will greatly enhance the visitor experience within the forest. Visitors will only be asked to avoid routes while certain work is going on that will create serious or less obvious hazards for a period (e.g. tree felling).

Scotland's outdoors provides great opportunities for open-air recreation and education, with great benefits for people's enjoyment, and their health and well-being. The Land Reform (Scotland) Act 2003 ensures everyone has statutory access rights to most of Scotland's outdoors, if these rights are exercised responsibly, with respect for people's privacy, safety and livelihoods, and for Scotland's environment. Equally, land managers must manage their land and water responsibly in relation to access rights, and FLS will only restrict public access where it is absolutely necessary and will keep disruption to a minimum.

C.2.10 Woodland Management in Visitor Zones

Visitor Zones have been identified in areas where FLS encourage and manage access or where the woodland managed by FLS interacts with popular visitor sites or access routes.

Where present these are shown on Map 3.

In these areas, single trees or small groups of trees will be removed when necessary to protect facilities, infrastructure and trails, or to enhance the setting of features, or to maintain existing views.

Woodland in these zones will also be thinned, or trees re-spaced, for safety reasons (including to increase visibility to ensure that sites are welcoming and feel safe) and where it is necessary to enhance the experience of the forest setting, through the development of large trees, or preferential removal of trees to favour a particular species.

C.2.11 Historic Environment

The Regional Historic Asset Management Plan includes conservation management intentions for designated historic assets on Scotland's National Forests and Land. Details of all known historic environment features are held in FLS's Heritage Dataset and included within work plans for specific operations to ensure damage is avoided. Significant historic environment features will be depicted on all relevant operational maps. Areas of historic environment interest will be checked both on FLS's records and also with the Council's HER prior to the commencement of forestry activities. Any upstanding features will be clearly marked, both on the ground and on operational maps. Care will be taken to avoid any damage to surviving structural elements.

Map 9 and Appendix II provide more information about the historic environment features within and adjacent to the plan area.

C.2.12 Biodiversity

UK forestry Standard (UKFS) guidance is to manage a minimum of 15% of the forest management unit with conservation and the enhancement of biodiversity as a major objective. The figure for this plan (including long term retention and minimum intervention copes) is around 46%

Designations
All designated sites within and adjacent to the block have been protected with open space and/or native broadleaves where felling is taking place within the next ten years. This should help to alleviate non-native seed dispersal onto neighbouring land and protect as well as improve the condition of these sites.

Priority Habitats
ASNW and Native Woodland will continue to be protected from felling and livestock encroachment. Native broadleaves have been increased throughout the block connecting Glen Rosa to the Cnocan Burn. Open space will be increased around the northern slopes which contain Deep Peat and options for management continue to be explored.

Opportunities for retaining or creating deadwood will be identified during the planning of all felling works, favoring areas with the highest deadwood ecological potential (typically within riparian corridors). Valuable deadwood and deadwood areas will be marked on contract maps. Where it is safe to do so, and does not compromise LMP objectives, standing mature dead trees will be retained as these offer excellent potential for a range of species. Riparian areas present the best ecological potential for deadwood retention. Opportunities will be identified when felling coupes 46031, 46039, 46013, 46033, 64019 and 46014 which lie in areas with high ecological deadwood potential.

Priority Species
Sightings of all species will continue to be registered. Many will also benefit from the expansion of native woodland and continued positive riparian management which will improve habitat linkage corridors. In order to encourage Red Squirrel, future planting will focus on native, small seeded species of broadleaves as well as increasing the amount of Scots Pine and Norway Spruce and retaining mature trees where viable. It is anticipated that the increase of open ground on the higher slopes of the site will be beneficial for raptor species.

C.2.13 Tree Health

The removal of larch will continue in line with the Arran Larch Strategy with the majority of areas felled in Phases 1 and 2. Alternative removal methods such as eco plugging will be considered for the few small remaining isolated areas.

All good practice guidance will be followed in relation to *Hylobius* and any other threats to the resilience of the block.

C.2.14 Invasive Species

There will continue to be an annual program of chemical rhododendron control targeting regrowth and riparian areas. Liaison with NTS will continue to ensure there is synchronicity with clearance work and specific areas are targeted.

Japanese Knotweed will continue to be monitored and Salmonberry will be cleared during rhododendron work.

C.2.15 New Planting

There is no intention or potential at present for new woodland creation.

C.2.16 Landscape and Visual

The plan will achieve greater visual integration within the GDL between FLS and NTS properties through expansion of native woodland and planting with conifers in the character of the policy woodland. A phased program of felling, forest edge redesign and restocking using resilient species and open space around the hills will create a 'natural' transition between forest and open hill and improve key views.

See Appendix V for full assessment.

C.2.17 Wildfire

Fire risk for Merkland has been assessed as Medium to High based upon the context of the forest and high recreational interest in the wider area. Proposals within this plan aim to limit the risk through increased species and age diversity, coupe structure and buffering of existing features (i.e. Arran Moors SSSI and the Merkland Head Dyke) and management prescription (i.e. LISS adjacent to highly populated areas). Additional measures will be considered at operational planning stage (i.e. forest road maintenance and brash recovery).

FLS continues to work closely with Scottish Fire and Rescue Service (SFRS) to prevent and tackle wildfires that threaten Scotland's National Forests and Land. FLS support SFRS in their lead role for fire prevention and suppression through creating annual fire plans, maintaining a duty rota, and providing additional logistical support. FLS's primary objective is always to protect people's health, safety and wellbeing.

C.2.18 Soils

Brash mats (or alternative measures) will be used to protect sensitive soils. There will be minimal soil disturbance and machine movement on sites with clay soils to reduce the risk of compaction or damage to the soil structure. Felling residue will usually be left on site to allow nutrient recycling, with consideration for the practicalities of restocking. Where required, the choice of ground cultivation technique will consider the short-term benefits for establishment against any long-term side effects on tree stability, access for future forest operations and the environment. There will be a preference for the least intensive technique.

C.2.19 Hydrology

FLS will continue to adhere to Forest and Water Guidelines when working around water. It is anticipated that the expansion of riparian woodland will be beneficial for flood risk.

Details of private water supplies have been identified and are held in the regions GIS layer. All will be protected in accordance with the Forest and Water Guidelines and have been fully assessed in Appendix IV.

C.2.20 Utilities, Renewables and other developments

The majority of the Cnocan Burn scheme is already buffered with a Natural Reserve and native broadleaves. Redesign around the newer Merkland scheme will also protect the infrastructure with the area now Long Term Retention.

C.3 Environmental Impact Assessment (EIA) and Permitted Development Notifications

Table 6 – EIA projects (in Phase 1)

Total area (hectares) for each project type and details by sensitive or non-sensitive area.					
Type of Project	Sensitive Area		Non-sensitive Area		Total
Afforestation	0%Con	0%BL	0%Con	0%BL	ha
Deforestation	0%Con	0%BL	0%Con	0%BL	ha
Forest Roads	1.84ha		ha		ha
Quarries	0ha		0ha		ha
Provide further details on your project if required.					

This is a summary of any EIA projects proposed in Phase 1 of the plan. A separate EIA screening opinion request application should be submitted with the plan. EIA determination only lasts five years so Phase 2 projects will need a new screening opinion request application at the plan's mid-term review.

C.4 Tolerance Table

See Appendix III.

Appendices

Map 1 – Location
Map 2 – Current tree species
Map 3 – Concept
Map 4 – Management
Map 5 – Thinning
Map 6 – Future habitats and species
Map 7 – Timber haulage
Map 8 – Soils
Map 9 – Historic environment

Map 10 – Ecological and Landscape Designations
Map 11 - DAMS

Appendix I – Consultation record
Appendix II – Historic Environment Records
Appendix III – Tolerance table
Appendix IV – Private Water Supplies
Appendix V – Landscape and Visual Appraisal

Appendix I: Consultation record

See section A.4 for a summary of the main points raised below by stakeholders and where they are addressed in the plan.

Issue	Raised by	Requirement / Recommendation / Concern / Aspiration
Biodiversity	• Scottish Wildlife Trust • National Trust for Scotland • Nature Scot • SEPA	• Habitat protection in relation to Rubha Salach Burn/Filmy Fern/Merkland Burn/riparian vegetation. See C.2.5, C.2.12, C.2.3. • Heronry. See C.2.12 • Nightjar habitats creation in larch felled areas. See C.2.12. • Expansion of Native Woodland including riparian areas. See C.2.5. • Deep Peat on Upper Edges. Request to protect and potentailly restore. See C.2.12. • Glen Rosa Habitat Restoration – request to consider transitional scrub woodland in change to open hill/bog restoration area. Montaine Scrub Action Group Best Practice Guides and Woodland Grazing Toolbox recommended. See C.2.5 and C.2.12. • R. Ponticum Control – request for neighbour co-operation. See C.2.13. • Likely significant effect on Arran Moors SPA – HRA will be required. Noted. • Arran Northern Mountains SSSI, Arran Moors SSSI - advice to maintain and enhance features where possible. See C.2.12. • 6 LNCS within the area – request to help with connectivity and enhance to improve biodiversity. See C.2.12 and Map 6. • Protected species and necessity for mitigation flagged. See C.2.12. • Herbivore Management – recommended collaboration with Arran Deer management group and use of natural regeneration where possible. See C.2.6 and C.2.7. • Support for LISS, LTR, increase in native species, increase in smaller and more natural looking coupes. See C.2.5 and Appendix V. • Request to reduce Sitka Spruce around Meol Donn. See C.2.5.

Issue	Raised by	Requirement / Recommendation / Concern / Aspiration
Landscape	• National Trust for Scotland • Historic Environment Scotland	• Asks use to consider use of SPF, DF, SP as they are significant land features. See C.2.5 and Map 6. • Request to add Brodick Castle to maps and note the site is of national importance. See Map 9, A.6.a and A.6.8. • Suggestion we clarify that replanting decisions in inventory landscape would be informed by understanding of it's cultural significance. See Appendix V. • Asks us to note 3 category A buildings within the designed landscape as important elements as well as the paths and rides. See Appendix V. • Suggests we consider a viewpoint from Brodick Castle. This was considered not appropriate by FLS due to tree and topography screening. In addition the view goes out to sea rather than over forest. • Northern Arran National Scenic Area flagged – suggestion that creation of new roads may have an impact. See EIA Screening Requests and Appendix V. • North Arran Wild Land Area Flagged. See Appendix V.
Access	• National Trust for Scotland	• Request for Forest Road connections to NTS tracks. See C.2.9. • Request for NTS to retain vehicle Access Rights for Hydro and Goatfell Track. FLS continue to liaise with NTS. • Visitor Zone/Ancient Woodland – concern over trampling of flora by visitors and request to encourage walkers to use formal tracks. See C.2.9.
Water	• SEPA • Public Drop In	• Gives good practice advice on pollution protection. See C.2.19. • Gives good practice advice on ground preparation and soils management. See C.2.19. • Advice on use of culverts and log bridges for heavy machinery. See C.2.19. • Advice on washing operational machines. See C.2.19. • Advises on importance of detection and protection of private water supplies and infrastructure as well as good practice. See Appendix IV and C.2.19. • Provided details of Merkland Hydro Scheme. Noted. • Map provided by neighbour of PWS. See Appendix V and C.2.19.
Cultural Heritage	• West of Scotland Archaeology Service (WoSAS)	• Flags possibility that undiscovered sites and finds may be present as the site hasn't been extensively surveyed. See C.2.11, Appendix III and Map 9. • GDL flagged as is nationally important - LMP needs to consider the impact of it's proposals. See Map 9 and C.2.11.

Issue	Raised by	Requirement / Recommendation / Concern / Aspiration
Recreational Access	• Public Drop In • North Ayrshire Council	• Continuation of recreational access. See C.2.9, C.2.5 and Appendix V. • Request to preserve Core Paths. See C.2.9.
Fencing	• National Trust for Scotland	• Request for co-maintenance of fence between FLS land and Goatfell. Request programme of repairs. See C.2.7.

The following stakeholders responded with no comment or no issues:

- Arran Trust.

The following stakeholders were contacted during scoping but did not respond:

- RSPB
- North Ayrshire Council
- Ayrshire Roads Alliance
- Arran Community Council
- Arran Trust
- Butterfly Conservation Trust
- Confor
- Raptor Study Group
- Scottish Badgers Trust
- Visit Arran
- Visit Scotland

Appendix II: Historic Environment records

Historic Environment Records						
Map ref	Designation	Name	Feature Description	Grid Reference	Importance	Area (ha)
1	Undesignated	Hamilton Graveyard	Burial Enclosure	NS 010381	Local	0.02
2	Undesignated	Merkland	Building	NS019382	Local	0.01
3	Undesignated	Merkland	Drain	NS019382	Local	0.01
4	Undesignated	HLA Relict Area	RCAHMS HLA data; TYPE = Country Park; RELIC TYPES 17th-20th Century Designed Landscape / Not Applicable Not Applicable / Not Applicable Not Applicable	NS013380	Uncategorised	76
5	Undesignated	HLA Relict Area	RCAHMS HLA data; TYPE = Plantation; RELIC TYPES 17th-20th Century Designed Landscape / Not Applicable Not Applicable / Not Applicable Not Applicable	NS012386	Uncategorised	188.2
6	Undesignated	HLA Relict Area	RCAHMS HLA data; TYPE = Managed Woodland; RELIC TYPES 17th-20th Century Designed Landscape / Not Applicable Not Applicable / Not Applicable Not Applicable	NS023386	Uncategorised	19.81
7	Undesignated	HLA Relict Area	RCAHMS HLA data; TYPE = Rough Grazing; RELIC TYPES 18th Century-Present Rectilinear Fields and Farms / Not Applicable Not Applicable / Not Applicable Not Applicable	NS025390	Uncategorised	16.32
8	Undesignated	Cnocanoner	Farmstead	NS006382	Local	0.007

Historic Environment Records						
Map ref	Designation	Name	Feature Description	Grid Reference	Importance	Area (ha)
9	Undesignated	Hamilton Graveyard	Burial Ground	NS010381	Local	0.007
10	Undesignated	Merkland	Garden Feature	NS019382	Local	0.007
11	Undesignated	Merkland	Lade	NS019382	Local	0.007
12	Undesignated	Brodick Castle	Dyke	NS 0110 3874	Local	0.15
13	Undesignated	Brodick Castle	Dyke	NS008383	Local	0.42
14	Undesignated	Merkland Head Dyke	Stone dyke marking upper limit of Designed Landscape	NS 0118 3880	Regional	4.02
15	Undesignated	Brodick Castle	Turf Dyke	NS002383	Local	0.23
16	Undesignated	Brodick Castle	Dyke	NS005384	Local	0.5
17	Undesignated	Brodick Castle	Turf Dyke	NS 0045 3840	Local	0.13
18	Undesignated	Merkland	Short section of dry stane dyke	NS018389	Local	0.4
19	Undesignated	Glenshant	Dyke	NS000380	Local	0.95
20	Undesignated	Merkland	Turf Dyke	NS 0063 3850	Local	0.22

Historic Environment Records						
Map ref	Designation	Name	Feature Description	Grid Reference	Importance	Area (ha)
21	Undesignated	Cnocan Burn	Sheiling Hut	NS 0018 3888	Local	0.002
22	Undesignated	High Corrie	Circle	NS 0241 4117	Local	0.006

Appendix III: Tolerance table

	Maps Required (Y/N)	Adjustment to felling period *	Adjustment to felling coupe boundaries **	Timing of Restocking	Changes to Restocking species	Changes to road lines	Designed open ground ** ***	Windblow Clearance ****
SF Approval normally not required	N	• Fell date can be moved within 5 year period where separation or other constraints are met.	• Up to 10% of coupe area.	• Up to 2 planting seasons after felling.	• Change within species group e.g. evergreen conifers or broadleaves.		• Increase by up to 5% of coupe area	
Approval by exchange of letters and map	Y	• Advance felling of Phase 2 coupe into Phase 1	• Up to 15% of coupe area	• Between 2 and 5 planting seasons after felling, subject to the wider forest and habitat structure not being significantly compromised.		• Additional felling of trees not agreed in plan. • Departures of > 60m in either direction from centre line of road	• Increase by up to 10% of coupe area • Any reduction in open space of coupe area by planting.	• Up to 5ha
Approval by formal plan amendment may be required	Y	• Felling delayed into second or later 5 year period. • Advance felling (phase 3 or beyond) into current or 2nd 5 year period.	• More than 15% of coupe area.	• More than 5 planting seasons after felling, subject to the wider forest and habitat structure not being significantly compromised.	• Change from specified native species. • Change Between species group.	• As above, depending on sensitivity.	• In excess of 10% of coupe area. • Colonisation of open space agreed as critical.	• More than 5ha.

NOTES:

* Felling sequence must not compromise UKFS, in particular felling coupe adjacency

** *No more than 1ha, without consultation with SF, where the location is defined as 'sensitive' within the Environmental Impact Assessment (Forestry) 1999 Regulations (EIA)*

*** *Tolerance subject to an overriding maximum 20% open space*

**** *Where windblow occurs SF should be informed of extent prior to clearance and consulted on where clearance of any standing trees is required*

Larch Tolerance Table

	Adjustment to Felling period	Timing of Restocking and species component	Felling of larch within a mixed coupe	Changes to Road Lines
SF Approval normally not required	Fell date for phase 2 can be moved forward where larch comprises 50% or more of the coupe species component.	changes to restocking proposal that exclude larch and closely related species in the same genus, eg Sitka and Norway Spruce. Up to 2 planting seasons after felling		
Approval normally by exchange of letters and map	Felling moved between phases 1 and 2 where larch comprises less than 50% of the coupe species component	Changes to restocking proposals that include larch or closely related species in the same genus, eg Sitka and Norway Spruce. Between 2 and 5 planting seasons after felling	Areas of pure larch up to 20% of coupe area within phase 1 and 2 can be felled to remove the sporulating host, with restocking deferred until the rest of the crop is felled. Where the Larch constitutes more than 20% of the coupe component, then the whole coupe must be felled and restocked together.	New road lines (subject to EIA screening opinion) or tracks within existing approved plans necessary to allow the extraction of Larch material. Where necessary Prior Approval should be dealt with directly with the relevant Regional Council
Approval by formal plan amendment is required	Advance felling into current or 2nd phase for pre-emptive larch removal			Where a new public highway entrance or exist is required. Where necessary Prior Approval should be dealt with directly with the relevant Regional Council