South Region (west)

Lamachan

Land Management Plan

Approval date:

Plan Reference No:

Plan Approval Date: 06-04-2020

Plan Expiry Date: 05-04-2030

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.

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CSM 6 Appendix 1

FORESTRY AND LAND SCOTLAND – Application for Land Management Plan Approvals

Forestry and Land Scotland – Property

Forest Region:	South Region (west)
Woodland or property name:	LAMACHAN
Nearest town, village or locality:	NEWTON STEWART
OS Grid reference:	NX 44097332
Local Authority district/unitary Authority	DUMFRIES & GALLOWAY

1. I apply for Land Management Plan approval*/~~amendment approval~~* for the property described above and in the enclosed Land Management Plan.

2. I confirm that the scoping, carried out and documented in the Consultation Record attached, incorporated those stakeholders which the SF agreed must be included. Where it has not been possible to resolve specific issues associated with the plan to the satisfaction of consultees, this is highlighted in the Consultation Record.

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

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

Signed *Andrew P Jarrott*..... **Signed** .....
PP Regional Manager **Conservator**

Region SOUTH (west)..... **Conservancy** .....

Date *06-04-2020*..... **Date of Approval:** .....

Date approval ends: .....

EIA Determination form if required

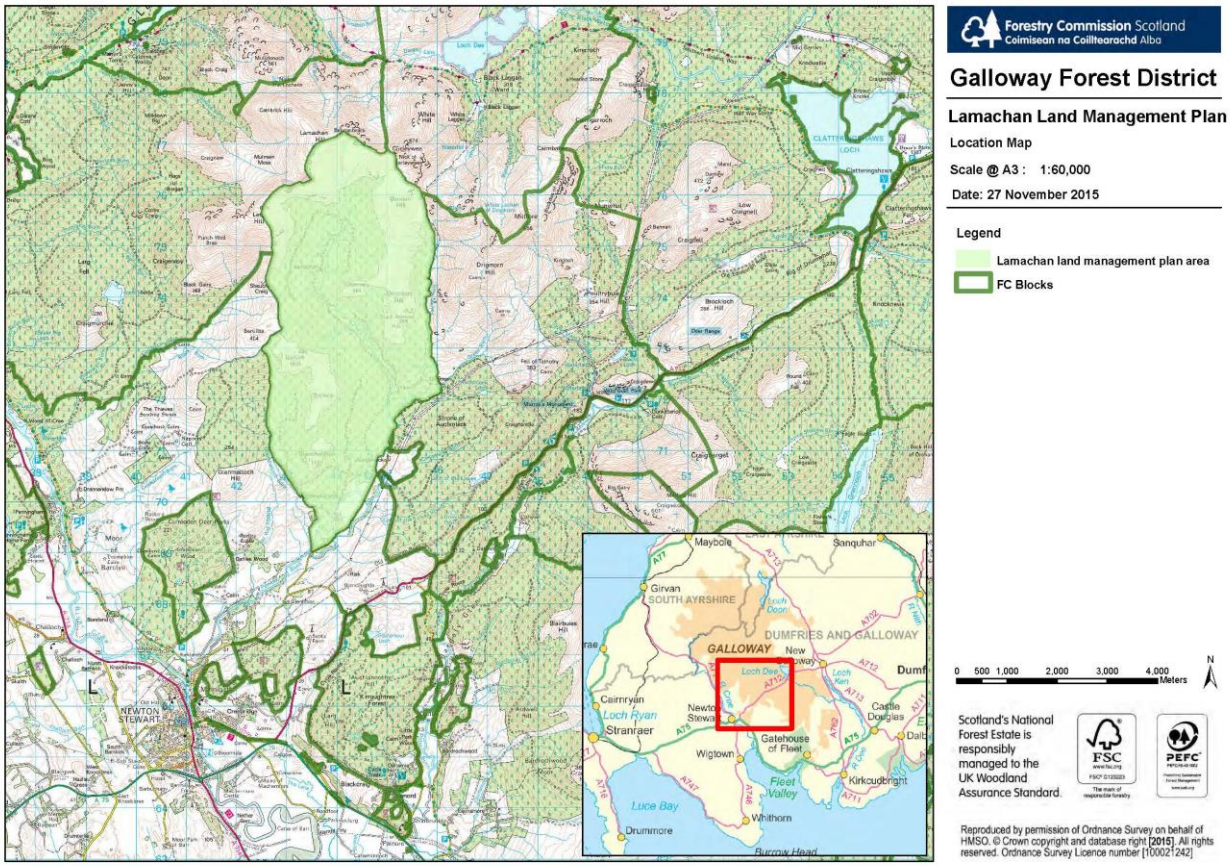
Contents

1.0 Summary of Proposals

The Lamachan forest block is located around 6 km to the north of Newton Stewart, Dumfries and Galloway. Whilst this modest sized plantation of around 1947.5ha is bounded by other Forest and Land Scotland plan areas its hinterland is generally open space that includes open hilltops, riparian corridors and transient felled ground, around 55.0% of the land holding.
The plantation element of the plan area comprises mainly mixed conifer crops, principally Sitka spruce.
The forest is FSC certified and the management seeks at all times to meet the UK Woodland Assurance Standard.

Timber production is a key issue for this Land Management Plan (LMP) and over the years a significant amount of approved clearfelling and recent sanitation felling for *Phytopthera ramorum* has accelerated restructuring of the block. Additional issues still include restructuring the plantation area to introduce even greater age and species diversity, ongoing road upgrade to allow access to proposed felling coupes, effective deer control to promote the establishment of native broadleaves and alternative conifer species, the expansion of native broadleaf woodland focussed around existing Ancient Woodland relict and water quality within the Penkiln Burn subcatchment.

This plan presents our felling and replanting proposals and our forest road formation and upgrade plans for the next ten years (2020 to 2030) in detail. Longer-term management (beyond 2030) of the plan area is also considered, mainly to provide context and to indicate the direction of travel.
The initial ten year period is important because it relates to the parts of the LMP that require specific approvals from Scottish Forestry (South Scotland Conservancy).



Consultation and further information

During the development of this plan we have consulted with the local community and other stakeholders. For further information on the plan please contact:

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Planning Forester

South Region
Newton Stewart Office
Creebridge
Minnigaff
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Email: Stephen.stables@forestryandland.gov.scot
+44 (0) 131 370 5830

2.0 FCS Regulatory Requirements

This section provides a summary of the elements of the plan that are regulated by FCS, specifically focussing on operations and activities within the ten year period of this plan.
An existing key element of diversity throughout this Land Management Plan is open space. In addition to the small areas of internal open space, the recreation areas and our transient clear fell sites there are large swathes of the unit comprising wild open hilltop and agricultural land.

	Area (ha)
Plantation area	1409.0
External open ground	539.0
Total plan area	**1948.0**

As can be seen on the Plantation / permanent external open ground map, plantation area is deemed to account for 1409.0ha, around 72% of the total LMP unit.

2.1 Summary of planned operations

Key activities and operations planned for the first ten years of the plan:

Planned Operations	2020-2030 plan period
Clearfell	66.0 ha
Thinning	355.5 ha
Restock	59.5 ha
Road construction	0.0 m
Road upgrade	14000 m

2.2 Proposed felling in years 2020-2030

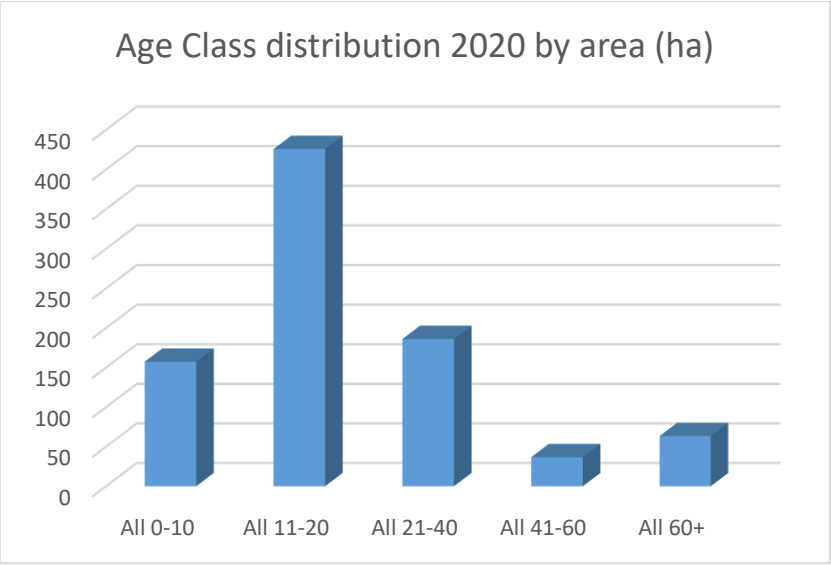
Three coupes, around 7.0% of the plantation area, are proposed for harvesting during the 10yr period of the plan (see tables 1, 2 & 3 below).

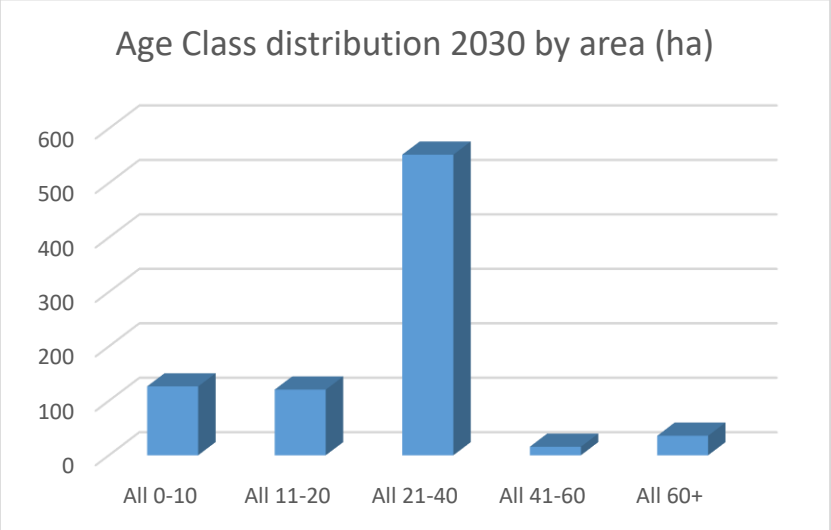
Table 1 – Proposed clearfell coupes first 10 years			
Coupe No.	**Phase**	**Operation**	**Coupe area (ha)**
13006	2	Clearfell	24.0
13019	1	Clearfell	22.0
13060	2	Clearfell	20.0
Total			**66.0**

Table 2 – Proposed clearfell coupes as a % of LMP area (1948.0ha)			
Coupe No.	**Phase**	**Year**	**Percentage**
13006	2	2025	1.2%
13019	1	2020	1.1%
13060	2	2026	1.0%
Total			**3.3%**

Table 3 – Proposed LISS felling coupes first 10 years			
Coupe No.	**Phase**	**Operation**	**Coupe area (ha)**
No LISS coupe felling during plan period			
Total			

Table 4 – Change in Age Class over plan period			
Age of trees	**Growth stage**	**Percentage of class at given year**	
		2020	**2030**
0 - 10	Establishment	18.1	14.9
11 – 20	Thicket	49.0	14.2
21 – 40	Pole stage	21.4	64.9
41 - 60	Maturing high forest	4.2	1.8
61 +	Old high forest	7.3	4.2
		100.0	**100.0**





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 covered by this approval is 40 cubic metres per Land Management Plan per calendar year.
A record of the volume felled in this way is detailed below will be considered during the five year Land Management Plan review:

Table 5 - Other Felling					
LMP/Coupe	**Date**	**Calendar year**	**Location OS NGR**	**Volume estimate (m3)**	**Comments**

2.3 Proposed thinning in years 2020-2030

Thinning will be completed in line with the district thinning plan after an assessment of the coupes against the given criteria.
Coupes identified for LISS methodology will necessitate thinning and have been assessed as suitable for such.
Proposed thinning in Phases 1 and 2 for the 10 year period of the plan are shown in table 6 below.

Table 6 - Proposed thinning

Felling phase	Proposed thinning year	thinning area (ha)	% plantation area
Phase 1	2021	156.9	11.1
Phase 1	2022	0.0	0.0
Phase 1	2023	28.3	2.0
Phase 1	2024	0.0	0.0
Phase 1	2025	0.0	0.0
Phase 2	2026	16.6	1.2
Phase 2	2027	101.0	7.2
Phase 2	2028	0.0	0.0
Phase 2	2029	52.7	3.7
Phase 2	2030	0.0	0.0

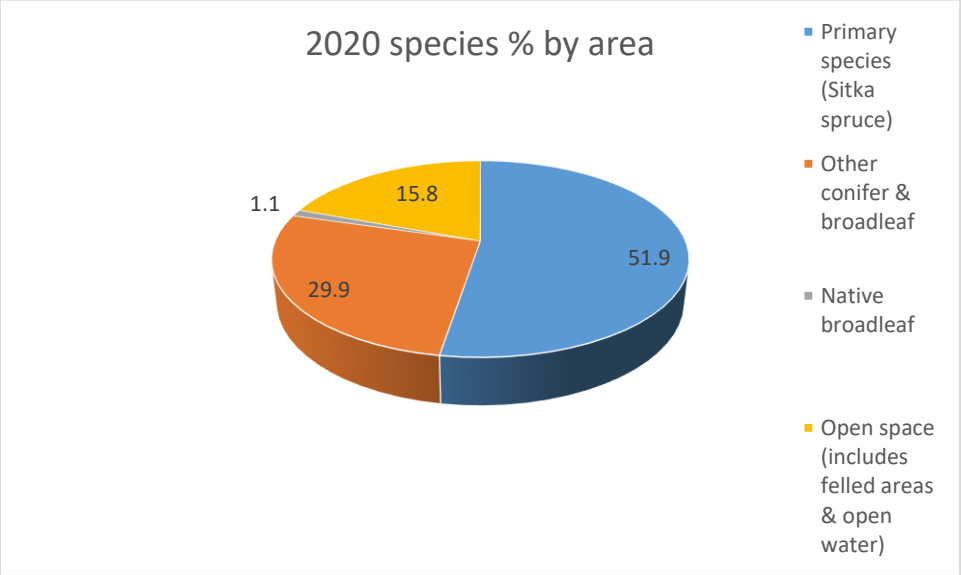
2.4 Proposed restocking in years 2020-2030

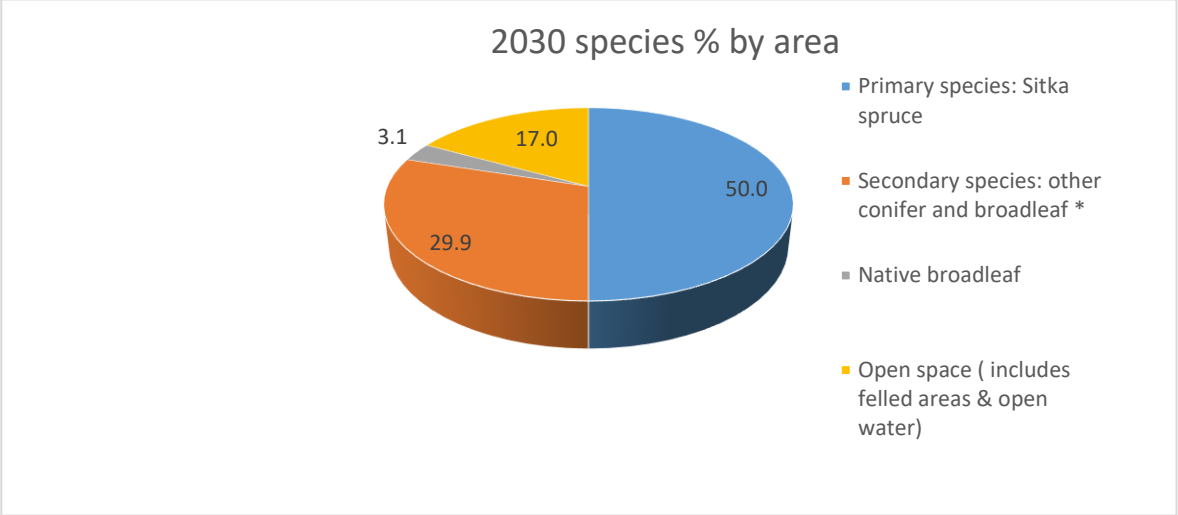
Our restocking proposals on clearfell sites have been selected by ESC, on-site observations and the previous rotations. Where appropriate, species diversification has been undertaken utilising both BL and alternative conifers for species diversification. Species choice also meets the criteria for restocking under UKFS, UKWAS and internal FC policy.
Inverted mounding will be preferred, but hinge and trench mounding may also be used as site dictates. No ploughing will be undertaken due to the excess carbon release on peaty soils and the development of asymmetrical root plates which will affect stand stability.
Restocking will involve internal staff or external planting operators utilising trees of appropriate provenance sourced from various nurseries.
Deer control will be managed internally in line with the deer control strategy for the district.
Proposed restocking and the changes in species for the 10 year plan period are shown in tables 7 & 8 below.

Table 7 – Restocking coupes, area and species			
Restock coupe	**Phase**	**Restock year**	**Restock species**
13019	1	2023	13.5ha SS/SP/OC 8.5ha Open
13060	2	2029	19.5ha SS/NS/OC/BL 0.5ha Open
13006	2	2028	22.5ha BL

Table 8 – Change in species over plan period		
Species breakdown by area %	**2020 (current)**	**2030 (end plan period)**
Primary species: Sitka spruce	51.9	50.0
Secondary species: other conifer and broadleaf *	31.2 (10.2)*	29.9 (10.2)*
Native broadleaf	1.1	3.1
Open space	15.8	17.0

** The broadleaf species percentage within the Secondary species figure is included for illustration to reinforce the significant increase in broadleaf across the plan area over the plan period*





2.5 Access and roading 2020-2030

There are no new forest roads planned for construction during the approval period for this LMP however regular and significant lengths of upgrade and maintenance will inevitably be required.
The proposed construction over the 10 year plan period is shown below in table 9 below.

Table 9 – Proposed Roads construction and Maintenance		
Period of Proposed Construction	**Proposed length for construction**	**Proposed length for maintenance**
2020 to 2024	0.0m	7000m
2025 to 2029	0.0m	7000m
Beyond 2030	0.0m	10000m

2.6 Departure from UKFS Guidelines

The LMP seeks to follow UKFS guidance in all aspects.
Whist a 2m height differential should be achievable across all restock areas, given our trend towards a reduction in coupe size, landscape considerations, Hylobius management and stand stability, it may not always be possible to follow the adjacency guideline.
The adjacency guideline will primarily be addressed by delayed felling i.e. a coupe will not be felled until all surrounding crops are at least 2m tall however in the mid to short term the secondary option to deal with adjacency through delay restocking i.e. a coupe will not be restocked until

all surrounding crops are at least 2m tall remains (see Threshold Tolerance table section 2.7)

2.7 Tolerance table

See Appendix IV

3.0 EIA Screening Determination for forestry projects

3.1 Proposed deforestation

There is no proposed woodland removal within the LMP.
Where there has been an identified benefit to the wider environment or community, modest increases to permanent open space, mainly focussed within riparian zones and on upper treeline margins, are however likely.

3.2 Proposed forest road works

There is no planned new road construction for the period of this plan however upgrading and maintenance of the existing road network will be required to facilitate forest operations, up to around 1000m/year.
An assessment of the roading network throughout the National Forest Estate has been undertaken to see if a Construction licence from SEPA is required for works; none of the planned roading projects within the forest block will exceed the threshold requirements.
Currently all timber haulage from the block, and also from private plantation to the north and west, uses the existing forest road network as part of a main timber haul route to exit south and eastwards through the Queens Way plan area onto the A712.

3.3 Proposed forest quarries

To avoid the risk of using rock of unsuitable chemical content and to reduce the impact of stone transportation, stone material for forest road upgrade and other new construction to service the planned timber harvest will be sourced from our main quarry in the area, Lamachan quarry. This single substantial principal quarry is shown on the suite of maps.
Development quarry work over the lifetime of the plan will inevitably be required to provide a regular source of material for forest road maintenance. Where this is undertaken all works shall be done in accordance with The Quarries Regulations(1999). Additional quarry development proposals outwith the agreed tolerances will be submitted to FCS for approval prior to any work taking place (see Tolerance table Appendix IV).
To avoid diffuse pollution arising from rainfall derived leaching, appropriate soakaways are in place in the main quarries and all construction work will comply with the general binding rules specified in the Water Environment (Controlled Activities) (Scotland) Regulations 2011.
District policy is to target Irish pipe bridges and other inappropriately designed structures for removal as they are known barriers to fish

migration; there are no known such structures identified in the Lamachan LMP area.

3.4 Proposed afforestation

There are no new planting areas proposed for the period of this plan. Naturally regenerated dispersed tree cover on open ground, where the canopy cover is less than 20% of the area, will be accepted where this does not significantly impact on other management objectives such as water quality, landscape, and deer control.

4.0 Critical Success Factors

The following factors are deemed critical for the successful implementation of the Land Management Plan:

- Sustainably maintain the productive capacity of the plantation production
- Enhance existing and expand Native broadleaf areas throughout plan area
- Improve water quality throughout R Cree catchment through enhancement of the riparian zones (centred on Penkiln and Pulnee Burns)
- To increase the species diversity of the forest notionally utilising the areas cleared for *P. ramorum*.

5.0 Introduction

5.1 The existing land holding

The Lamachan LMP totals around 1948.0ha and lies some 6km north east of Newton Stewart, Dumfries and Galloway.
It bounds directly onto the Forestry and Land Scotland (FLS) land management plan units of Queens Way to the south and Brigton and Backhill o' Bush to the north. An intimate mix of private plantation forestry and agricultural land lies to the west of the plan area.
A significant part of the plan area, around 867.8ha, comprises open hill ground much of which is managed under a grazing tenancy.
Part of the Galloway Forest Park, the plan area also lies within the larger designated Western Southern Uplands Environmentally Sensitive Area (ESA).
This plan is a revised submission of an earlier 10 year plan approved in 2006. Single year extended approvals by FCS and a final extension until 31 March 2021 by Scottish Forestry have subsequently been agreed.

5.2 Setting and context

5.2.1 Core timber production

Timber production is a key objective with most of the block managed under clearfell – artificial restock silviculture.
Significant areas do however present DAMS scores < 17 suggesting that lower lying sections to the south of the block may be candidates for alternatives to clearfell silviculture such as Low-impact Silvilcultural Systems (LISS) or Minimum Intervention broadleaf areas.

5.2.2 Grazing lease

Much of the open ground to the north of the plan area is subject to a full Agricultural tenancy agreement. The tenancy is projected to continue over the period of the plan.

5.3 LMP Presentation

There are no discrete divisions within this forest block, the area is therefore presented and considered as a whole.
Management objectives are consistent with themes identified in the Forest Enterprise Scotland corporate plan 2017-2019 (awaiting Forestry and Land Scotland Corporate Plan currently in draft)

6.0 Plan Objectives

6.1 Issues

Key management issues to consider for this LMP are:

- Continued commercial timber production in a plan area that has been heavily affected by recent clearfell and now comprises significant areas of recently restocked and young pole stage crop
- Compromised restructuring of age class by *P. ramorum* and windblow
- Likely long term loss of larch from species mix throughout the block
- Management of the R Cree and its tributaries catchment to maintain water quality
- Ongoing developments and management of open ground (Agricultural tenancy to north)
- Expansion of native broadleaf areas
- Improve habitat for Black Grouse

6.2 Key Challenges

Key challenges are:

- Continue to restructure plantation and over time develop a diverse forest structure
- Increase species diversity, particularly targeting broadleaf woodland, in a block where poorer soil types and exposed steep ground limit options for species choice at elevation
- Identify areas appropriate for LISS development
- Accelerated conversion of existing mixed pole stage conifer and broadleaf crops into broadleaf woodland in the south of the area
- Manage operational impacts within R Cree catchment riparian network
- Varying intensities of tree canopy cover has locally resulted in fluctuating Black Grouse numbers however there is now an opportunity to address this through habitat improvement

6.3 Management objectives

Objective 1: Ensure that the plantation continues to contribute to the District's variety of timber production targets.

South Region currently contributes a large amount of timber to the national programme and requires the productive character and capacity of its component forest blocks to be maintained.

Much of the Lamachan block has been clearfelled over previous approved plans. With a fairly robust forest road network in place and targeted

continued conifer restocking, the plan area remains well suited towards future sustainable timber production of a range of product type.

Objective 2: Continue to restructure plantation forest and increase age and species diversity (particularly Native broadleaf).
Restructuring over a single rotation is not practical so it will continue through subsequent rotations.
The reduced scale of planned clearfell over the plan period and the proposed significant increase in broadleaf restock to the southern end (centred on the existing Ancient Woodland areas) and alternate secondary species restock to replace the virtual loss of larch as a commercial crop will contribute towards the long term age class and species diversity of the plan area. Long Term Retention areas and the use of Alternatives to Clearfell (ATC) will improve internal spatial diversity.

Objective 3: Increase the use of Alternatives to Clearfell (ATC) management systems.
There is scope, after removal of the pole stage conifer crop, to convert areas to the south of the block to Minimum Intervention broadleaf woodland. Further up the valley systems thinning of additional conifer areas will create future Low Impact Silviculture (LISS) areas.
Higher up the valley system at elevation, Clearfell will remain the prime management type.

Objective 4: Improve water quality and alleviate peak flows from the LMP unit.
The proposed enhancement of riparian zone buffers throughout the plan area, following all best practices and guidance during forest operations, should contribute towards maintaining and ameliorating the current good ecological status of the Penkiln Burn and associated tributaries that drain to the R Cree catchment.
For additional future site stability and water quality benefits, planned increases in the area of open ground and the restocking of permanent broadleaf crop that will result in a greatly reduced operational impact will be initiated.
Liaise with statutory bodies over catchment management and Natural Flood Management (NFM).

Objective 5: Manage open agricultural ground areas.
Maintain the current agricultural lease sites and explore other opportunities to develop agricultural land use within the plan area.

Objective 6: Manage area to benefit Black Grouse.
Improve habitat for Black Grouse, focussing on known lek sites and other areas, by increasing the area of open ground and Native broadleaf planting available for the species throughout the plan area and creating substantive linkages between valley floor and the woodland edge.

7.0 Analysis and concept

7.1 Analysis

The following table sets out the site factors that are deemed significant in influencing the long-term management of the forest block.

Factor	Opportunity	Constraint	Concept Development
Timber	Provide planned sustainable timber supply	Creation / enhance conservation habitats Concentrated timber harvesting impact by *P ramorum* over short timescale	Reduce coupe size / increase area under LISS. Maintain viable conifer restock programme and increase area of BL in subsequent rotations. Remove flow peaks from timber production
Biodiversity	Restore ASNW remnants and connect to other external ASNW habitat networks	Fragmented nature and moderate quality of existing ASNW remnant Extended restructure period	Extend BL woodland / open space connectivity to riparian zones and internal / external open space. Increase through BL restock species diversity
Biodiversity	Enhance Black Grouse habitat	Moderate levels of species diversity Lack of appropriate mature conifer crop	Increase BL restock for species diversity and target towards woodland fringe. Identify mature conifer retention areas and extend rotation lengths throughout. Identify localised boggy areas as open space
Environmental Quality	Maintain and enhance water quality within the subcatchment of the Penkiln Burn and the water catchment of the R Cree	Conifer monoculture planted close to watercourses Moderate levels of species diversity Extended period of landscape change	Increase area under LISS/reduce coupe size. Riparian enhancement through increased open space / BL restock. Increase species diversity (BL and minor conifer)

Environmental Quality	Enhance views of block from minor county road	Rapid period of landscape change due to *P ramorum* infection Moderate levels of species diversity	Reduce coupe size. Increase area under LISS/reduce coupe size. Increase species diversity.
Environmental Quality	Develop Low Impact Silvicultural Systems on better site types	Local site type constraints	Identify areas for LISS expansion
Water quality: Catchment management and peak flows	Maintain current good water quality status of Penkiln Burn Make a positive contribution to the moderation of peak flows within the R Cree catchment.	Conifer monoculture planted close to watercourses. Current lack of tree species diversity. Extended period of landscape change. Natural regeneration of conifer in riparian buffer zone.	Increase species diversity toward UKFS requirements (BL and minor conifer). Enhance riparian corridors through additional native broadleaves planting/recolonization within wider open space buffer zone. Monitor conifer regeneration and control where resources allow.
Wildlife – Red Squirrel	Maintain Red Squirrel habitat and connectivity	Utilising large-seeded BL species as major component in broadleaf mixtures.	While not a stronghold area for red squirrels, avoid large seeded BL as far as possible. Felling order will not isolate squirrel population.
Wildlife - Deer	Increase opportunities for BL and soft conifer establishment to meet UKFS needs. Effective control could lead to an expansion of natural broadleaf colonisation,	High cost implications. Neighbouring properties may have differing objectives and may be affected by reduced deer numbers.	Larger felling coupes facilitate deer control and make restock areas less sensitive to deer damage. Clearfell areas can create open areas to allow deer control. Group restock species sensitive to deer

	especially in riparian corridors, and increased flora diversity on open ground for a relatively low cost/ ha. Link timing of deer control effort to the timing of browsing-sensitive restock.	Public access can constrain deer control.	browsing into areas where deer control can be targeted.
Wildlife – Black Grouse	Soften woodland boundaries with adjacent open ground to improve habitat for Black Grouse with low density restock.	Areas difficult to reach for deer control to minimise browsing of alternative conifer/BL	Target areas of BL/SP where control can be maintained, otherwise reduce density of LP planting to create more open buffer with adjacent open ground.
Wildlife - Otter	Enhance connectivity of aquatic and riparian habitat networks, allow/encourage migration between catchments and increasing genetic diversity in D&G	Disturbance during felling works and extended restructure period. Natural regen of conifers in riparian buffers	Increase connectivity of internal open space to riparian zones and external open space / woodland fringe. Monitor conifer regen at review and control if resources allow.
Access and Health	Enhance access and enable communities to enjoy woodlands. Fragmented single species high forest offers additional internal and external views	No current formal recreation in block.	Maintain open hill access through existing plantation structures. Enhance in-forest experience with increased open space and species diversity. Introduce signage as appropriate as forest structure becomes more attractive.

7.2 Concept

The concept forms the broad framework for the detailed design and is presented graphically in map 4: Analysis and Concept. A variety of themes, often overlapping, are outlined as follows:

Commercial confer zone / Core timber production

Significant areas of upland spruce and mixed conifer plantation within the LMP will continue to be managed as commercial crop to meet the district programme commitments. Better site types to the south of the block and along the Penkiln valley bottom will facilitate extending rotation lengths in some conifer crops (through additional LISS areas), will allow for increased species diversity including commercial broadleaf production and will create opportunities for smaller clearfell coupe sizes.

Penkiln Burn riparian zone / floodplain

The Penkiln Burn runs centrally north / south through the plan area. Water quality issues within this subcatchment and the larger R Cree catchment and the creation of a significant habitat network centred on the development of this riparian corridor are critical success factors in the plan. Given the importance of the watercourse for breeding salmonids, opportunities will be taken to go beyond the basic proposals of the legal drivers and voluntary codes i.e. the UK Forestry Standard (UKFS) the Forest and Water Guidelines (FWG) and the UK Woodland Assurance Standard (UKWAS) to fully open up the riparian corridor.

Ancient Semi Natural Woodlands

There are scattered areas of ASNW remnant within and adjacent to the design plan unit. Opportunities exist over time to restore our existing fragmented ASNW areas through conifer removal, the development of LISS and greater species diversity and to further enhance them through linkages to other more favourable external ASNW areas along the Penkiln Burn valley.

Visible roadside corridors / cycle route

The block is seen in the mid view as a series of limited yet attractive views from the minor county road that runs along the southern boundary. The road forms part of a long distance FES cycle route. Area specific Visitor zone treatments will be developed for the corridor to enhance the views through greater species diversity, mainly broadleaf, and through the development of Low Impact Silviculture Systems.

Open hill grazing / open hill

Open hill ground is a significant component of permanent open space within the plan. The open hill top summits of Larg Hill, Lamachan Hill and Bennan Hill to the north and Stronbae Hill and Garlick Hill to the east and west are all prominent features in the local landscape that are both linked and separated by conifer plantation creating an extensive length of woodland edge perimeter. Much of the open ground is managed under two grazing tenancies.

Whilst there are no intentions to reduce the area of open hill through conifer restock, small additional broadleaf planting areas targeted along riparian zones have been identified for biodiversity benefit.
Large scale coupes will be acceptable on some of these hill sides to address landscape issues. The creation of additional permanent open space or woodland fringe that will connect some of these open hilltops through the forest matrix to the low lying areas of the Penkiln Burn valley is a plan objective.

Residentials

There is a residential property on the edge of the LMP area with a private water supply within the forest. Improving visual and species diversity and minimising ground disturbance around the site is an additional objective for the plan.

8.0 Long Term Land Management Plan Proposals

8.1 Management

The Lamachan LMP has been designed in accordance with sound silvicultural and environmental principles within the framework outlined by the UK Forestry Standard, the UK Woodland Assurance Standard and the Galloway FD Strategic Plan.

An overarching aim for management of the block over the next 20 years is to provide a continuing supply of timber for national markets. Sitka spruce will be the key species for this along with alternative conifers and productive broadleaves targeted where site conditions produce acceptable growth.

The accompanying Management map provides details of our coupe management proposals and the table below provides a summary of the average annual felling and thinning volumes (m3ob) expected for the next 10years (plan period) and beyond:

Fell period	Thinning / LISS	Clearfell	Total
2019-2021	12795	13030	25825
2022-2026	10530	0	10530
2027-2031	12400	3130	15530
2032-2036	11165	15740	26905
2037-2042	9810	13860	23670

8.1.1 Clear Felling

During previous iterations of the plan, significant areas of the Lamachan block have already been felled resulting in a reduced programme for the next 10 year period.

With less visible, larger scale coupes at elevation and the merging of several of the more visible low lying coupes into a single large scale coupe that has a long term objective to transform into an alternative to clearfell site of broadleaf woodland, the average coupe size within the plan area remains relatively high.

The following table reflects proposals contained within the Management map for the Lamachan LMP area and shows

- the coupe clearfell proposals by species and hectare for the 10 year period of the plan

Clearfell proposals for 10 year plan period (* note that only the conifer element of coupe 13006 will be harvested)

Coupe	SS	NS	Larch	SP	LP	Other con.	BL	Open space	Total
13006	17.0	2.5	2.5	-	1.5	0.5	-	-	24.0
13019	9.5	-	5.0	-	6.5	0.9	-	0.1	22.0
13060	13.0	3.0	-	-	1.0	2.5	-	0.5	20.0
Total	**39.5**	**5.5**	**7.5**	**0.0**	**9.0**	**3.9**	**0.0**	**0.6**	**66.0**

The limited clearfell proposed in this table confirms that no more than 25% of the plan area is scheduled for harvesting in any five year period within this plan approval.
Given the prevailing site types, coupes higher up the valley will be managed under a clearfell management type using conventional harvester and forwarder working while those lower lying coupes may be subject to shelterwood systems.
Block restructuring, with 8-10yr age gaps developed between felling coupes (and possibly even wider gaps immediately adjacent to Black Grouse areas) remains an objective.
Adjacency issues will either be dealt with through delay felling i.e. a coupe will not be felled until surrounding crops are at least 2m tall or, more infrequently, through delay restocking i.e. coupe not restocked until surrounding crops are at least 2m tall.
Our intentions, where possible, to retain mature conifer species through extending their rotation length (mainly Scots Pine and Norway spruce) should generate a more diverse age class structure in the plantation thus improving the spatial appearance and structure of the block.
All proposed operations sites will be surveyed prior to work taking place to identify the presence of species such as Otter, Squirrel, Bats and Badger or adjacency of other species sensitive to disturbance that may require specific management treatments i.e. avoiding breeding seasons**.**

It is of course important to manage forestry activities in acid sensitive water catchments however the Lamachan plan area does not lie within an "at risk" or "failing" catchment**.** In extensively (>50%) forested catchments like those present in and around the Lamachan LMP area however additional measures to reduce the impact of forestry will be more closely considered.
For conservation, biodiversity and water quality considerations efforts have been made

- to increase conversion of conifer stands to broadleaf woodland

- to extend the felling period between coupes to over 7yrs
- to marry coupe shape better to landform and where possible to reduce the overall size of the remaining clearfell coupes

8.1.2 Thinning

Thinning will be undertaken in line with the districts programme, utilising appropriate equipment and methodologies.
Previous efforts have taken place centred mainly along the more sheltered valley bottoms of the LMP; success has been variable.
Carried out on a 5-7yr cycle in accordance with our local policy, crops will be thinned to improve timber quality but also to realise amenity, biodiversity and landscape objectives. Whilst opportunities to dramatically increase the overall thinnable area and move more of the block from a clearfell to Group Shelterwood management system are somewhat limited by site type, opportunities to develop a more focussed thinning regime extending further up some of the lower lying valley systems second rotation crops are available.

8.1.3 Continuous Cover Forestry (CCF)

Site type constraints and crop ages suggest that certain areas within the block are appropriate for management under some type of Low Impact Silviculture System (LISS) to try and maintain permanent woodland cover and contribute to the protection and improvement of water quality, soil quality and biodiversity.
Using Group Selection systems, where appropriate, in some second rotation crops and through regular crown thinning and occasional small-scale clearfells of <2ha (perhaps centred on windthrow) we may be able to provide spatial diversity and areas for either natural regeneration or targeted restock of small seeded native tree and shrub species.
Group Selection generally encompasses:

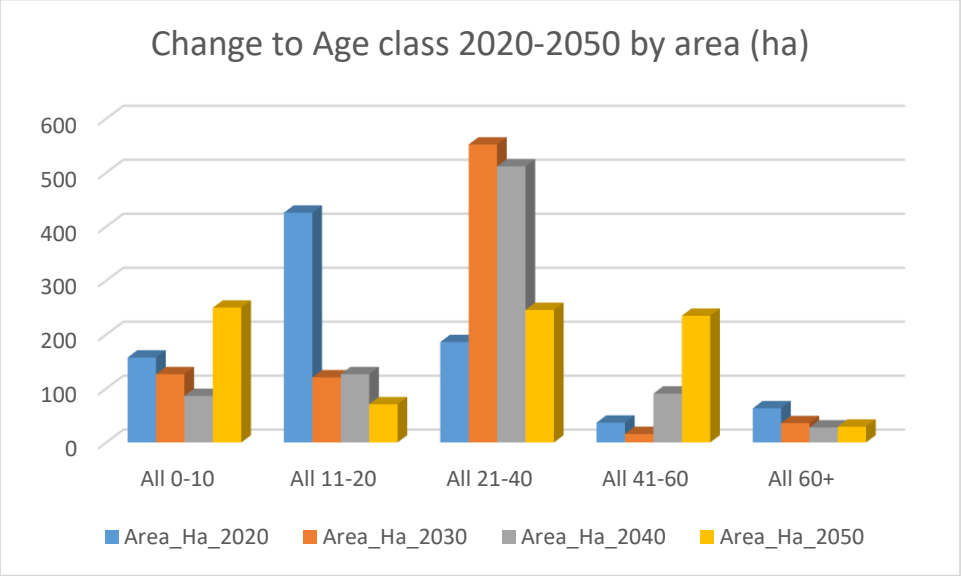
- progressive thinning
- clearance of windthrow patches
- small-scale felling patches of 0.5ha up to 2.0ha to stimulate restructuring and promote regeneration of target tree species

If there is a management requirement for any coupe greater than 2.0ha to be felled then that prescription will be initially agreed with the FCS as per the agreed Tolerance Table.

8.1.4 Restructuring

Through time our planned clearfell, restocking and the creation of additional open space will continue to gradually change / improve the spatial

appearance and structure of the block from the current area of recently restocked and young pole stage crop into a more varied age class plantation.
The following table shows the change in plantation age class structure from 2020 to 2050 in 10 year intervals.



An increase in the area of broadleaf and Long-term Retention of mature conifer species such as Norway spruce, in tandem with our revised thinning plan, will also benefit the block in landscaping terms and in a greater diversity of habitat throughout.

8.2 Restocking proposals, future habitats and species

There is limited felling scheduled for the first two phases of the LMP, two coupes in phase one and a single LISS coupe in phase two. Restocking is limited to these sites and where the opportunity arises, will accommodate natural regeneration. Ground preparation and planting of quality nursery stock of appropriate provenance will take place.
Natural regeneration will play a larger part in the LISS areas where no ground preparation or disturbance is anticipated, there remains however the possibility that regenerating trees will not provide sufficient stocking.
Where natural regeneration is anticipated the areas will be surveyed at year 4 and where the density of tree cover is insufficient (i.e. not established at 1100 stems per ha.) then the site will be enriched / restocked with native broadleaf in the following planting season.
The accompanying Future Habitats and Species map provides details of our proposed restock species and habitats for the Lamachan LMP area.
The following tables show

- the coupe restocking proposals by species and hectare for the first 10 years of the plan
- the proposed change to area by species at current, 10 and 20 year intervals

Restock proposals for 10 year plan period

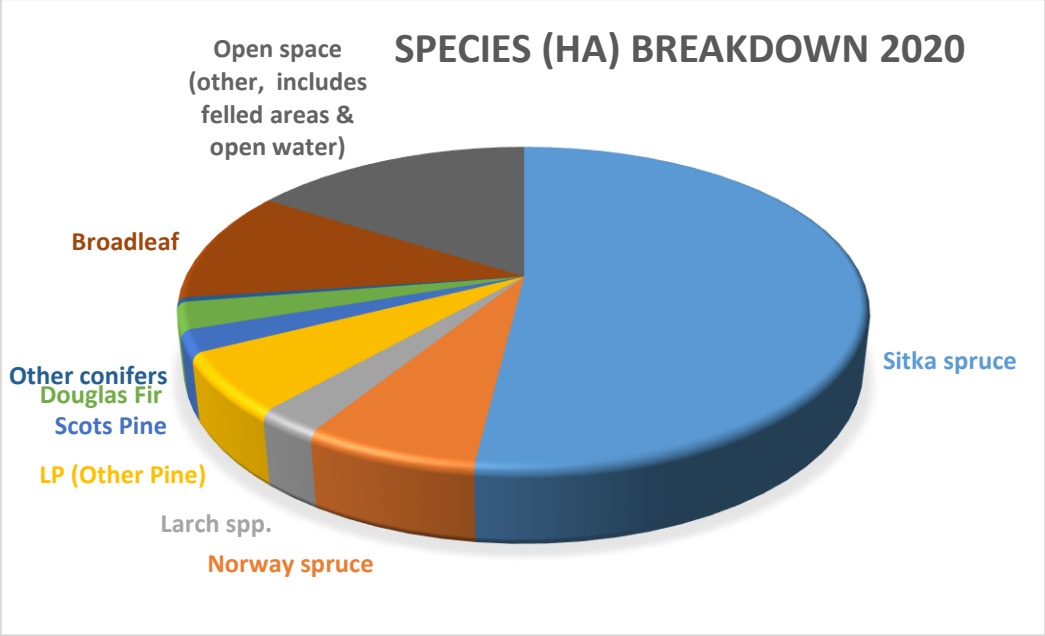
Coupe	SS	NS	Larch	SP	LP	Other con.	BL	Open space	Total
13006	-	-	-	-	-	-	22.5	1.5	24.0
13019	4.0	-	-	8.6	-	0.9	-	8.5	22.0
13060	9.0	3.0	-	-	-	7.0	0.5	0.5	20.0
Total	***13.0***	***3.0***	***0.0***	***8.6***	***0.0***	***7.9***	***23.0***	***10.5***	***66.0***

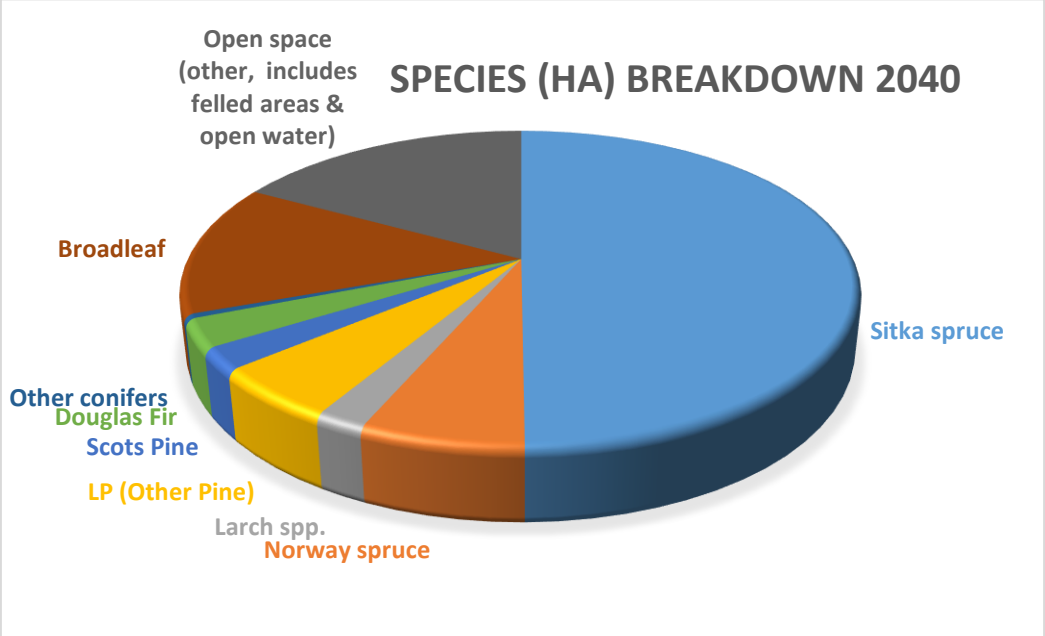
Notes on restock coupe work schedule

13006	A selection of merged coupes centred on PAWS area with significant areas of developing BL that contains elements of pole stage conifer throughout; Premature clearfell of conifer will initiate the opportunity to generate a long term native BL matrix with only occasional alternate minor conifer throughout.
13019	Core production coupe; restock moved downhill leaving additional open space at elevation adjacent to SP area for Black Grouse habitat with SS towards core production area
13060	Core production coupe; SS, NS and other conifer matrix with open space and BL to coupe edge, watercourse and forest road

Species	2020 area (ha)	2020 by area %	2030 area (ha)	2030 by area %	2040 area (ha)	2040 by area %
Sitka spruce	731.2	51.9	704.6	50.0	702.3	49.9
Norway spruce	97.9	7.0	93.9	6.7	93.9	6.7
Larch spp.	36.5	2.6	29.3	2.1	28.9	2.1
LP (Other Pine)	85.1	6.1	75.3	5.4	75.3	5.3
Scots Pine	31.4	2.2	31.4	2.2	31.4	2.2
Douglas Fir	38.4	2.7	40.6	2.9	40.6	2.9
Other conifers	6.2	0.4	6.2	0.4	6.2	0.4
Broadleaf	158.9	11.3	187.6	13.3	190.3	13.5
Open space (other, includes	222.9	15.8	239.6	17.0	239.6	17.0

felled areas & open water)						
Open space (open hilltop)	539.0	-	539.0	-	539.0	-
Total	**1947.5**	**100.0**	**1947.5**	**100.0**	**1947.5**	**100.0**





8.3 Open land

8.3.1 Open land; Quarries

There is a single active quarry identified on the features map. Lamachan quarry will remain as an area of permanent open space during its active life as will other smaller inactive/disused quarry sites.

8.3.2 Open land; Grazing

To the north of the plantation area open hilltops are a significant component of permanent open space within the plan. Much of this ground is subject to a full Agricultural tenancy agreement that is projected to continue over the period of the plan.
There are no plans to increase the area under tenancy.

8.3.3 Open land; Other

Other open land in the forest is directed by two primary goals; watershed protection and riparian zone enhancement and the use of open habitat for a number of species that use the forest.
The long term aim for the former "wild camping" at grid reference NX44176962 is open ground. The site will however be regularly monitored for broadleaf natural regeneration which is an acceptable alternative.

8.4 Visitor Zones

Most of the Lamachan block falls into the local FES interactive and passive visitor zones (see features map).
Recreational demands within these zones will impact only lightly on our management choice.

8.5 PAWS (Plantation on Ancient Woodland Site) Restoration

The areas of PAWS to the south of the plan area (Dalnader Wood), currently planned for restoration, are critically under threat from shading by the existing conifer crop and by herbivore impact.
Planned conifer removal (coupe 13006) within the plan period will initiate the restoration process hopefully facilitating colonisation of the area by the surrounding broadleaves. The situation will be monitored and should undesirable species colonise the site then further clearance and enrichment planting may be required.
The area will ultimately resort to a Group Shelterwood management system.

8.6 Natural Reserves, Minimum Intervention and Long Term Retention

Natural Reserves are predominantly wooded, permanently identified locations of high wildlife interest or potential managed for high conservation or biodiversity value in perpetuity.

As there are sufficient selected Natural Reserves of higher biodiversity value to be found throughout the district, broadleaf areas and isolated conifer retentions will provide our focus for Minimum Intervention management within this LMP area.

Save for the area of *P mugo* conifer retention at elevation, there are no Natural Reserves in the plan area.

Minimum intervention has management with no systematic felling or restocking although operations such as fencing, control of exotics and pests, safety work and trail maintenance are permitted.

In Long-term Retention areas, trees are retained for environmental benefit significantly beyond the age or size generally adopted by the woodland enterprise.

Around 4.3% of the plantation area has been identified as either Long Term retentions or Minimum Intervention.

9.0 Management Prescriptions

Forest Management Types

- Clearfelling
  Generally clearfelling will be carried out by harvester and forwarder, there are no planned clearfell areas that necessitate skyline felling. All timber will be processed as cut to length (CTL) and will utilise brash mats and appropriate machinery to reduce ground damage and compaction.
- Thinning
  As determined by the district thinning programme, much of the block will now comprise second rotation crop first thinnings that will predominately be racks cut into the coupe, every 6-8 rows. Where terrain and slope allows, chevron patterns will be utilised and where an area is not possible to thin, a severance rack will be cut to split the thinned and unthinned coupes. Subsequent matrix thinning will focus on improving timber quality with suppressed, double stemmed, wolf and co-dominants the focus of removal, where this will not create instability in the stand. The volumes will be assessed pre and post thinning, with inspections to ensure the stand quality is being enhanced.
- Low Impact Silvicultural System (LISS)
  Group shelterwood – Small scale group fellings or areas which have been subject to windblow will be harvested to a maxium of 50m diameter (2 tree lengths) to ensure that humidity and windspeed levels are at their optimum levels for natural regeneration to occur. The regeneration will be monitored (see Natural regeneration).
- Natural regeneration
  Natural regeneration will be utilised where appropriate and managed under the district guidance and the guidance from the natural regeneration working group. Regeneration will be monitored to inform and facilitate interventions such as respacing, enrichment planting or ground scarification. This will apply to both clearfell and LISS areas.
- Long Term Retentions
  Long Term Retentions (LTR) are an important area of the forest for biodiversity. Where these are present, it would be expected that they would also contain standing deadwood and large woody debris, especially of native broadleaves in excess of 20cm diameter.
- Natural Reserves/Minimum Intervention
  Save for the area of conifer reserve at elevation of *P mugo*, there are no Natural Reserves in the plan area.
  There are however modest areas of Minimum Intervention areas identified within the plan where, in the long term, as much deadwood as possible will be retained, in excess of the $20m^3$/ha as recommended by the UKFS. This

will include a variety of heights and species where available. No trees will be ring girdled or cut above stump level to create deadwood habitat.

Operational Access

- The LMP unit has excellent operational access within the forested areas however, additional ATV tracks may require construction to allow for deer control. No new roads construction is required however, road upgrades will be required for the thinning and LISS operations. This will be assessed as part of the operational assessment.

Deer Management

- Current Deer management is maintained in line with the districts deer management strategy. A sustainable deer population exists such that there is a potential for natural regeneration of broadleaves.

Management of Open Ground

- Post clearfelling, there will be no conifer restocking within 20m (and on occasion up to 50m) within the main watercourse riparian zones. It is expected that some of the riparian zones, designed open ground and broadleaf areas will fill in with natural regeneration of both conifers and broadleaves. Through the delivery of this Land Management Plan (LMP) FES will manage natural regeneration in such a way as to ensure that, where practicable, it does not significantly impose a negative impact upon the objectives of the plan. Natural regeneration will be managed so that any negative impact upon designated, protected or promoted habitats, species, landscapes and catchments within or adjacent to the LMP area is minimised and where possible mitigated. The advice of the Galloway Fisheries Trust and comments from SEPA will be taken into account when planning management of natural regeneration. All Native broadleaves will be retained.
- For areas designated as permanent open space natural colonisation and regeneration will be managed in line with the management objectives for the areas.

PAWS Restoration

PAWS restoration will look to remove all non-native conifers, especially where there is mature cone-bearing and shade tolerant conifer.

New Woodland Creation

There are no areas identified for the creation of New Woodland.

Public Access & Core Paths

Whilst the block is used by hillwalkers to access the surrounding hills, there are no Core paths as identified in the Dumfries and Galloway Core Paths Plan and the block is not considered core for recreational development.

Heritage Features

There are several minor heritage features throughout the area but there are no Scheduled Monuments or Category A listed buildings present.

Appendix I: Land Management Plan Consultation Record

Statutory Consultee	Date contacted	Date response received	Issue raised	Forest District Response
IUCN; Rosemary Green	27 Nov. 2015	23 Dec. 2015	• Need to maintain large broadleaves on Penkiln for / being used for otter holts	Noted in LMP text; (see Appendix 3.4.2)
UPM Tilhill; StephenSmith	27 Nov. 2015	22 Dec. 2015	• Greater emphasis on timber production and income generation	Noted in LMP text as a clear management objective; (see section 6.3 objective 1)
SEPA; John Gorman	27 Nov. 2015	15 Dec. 2015	• Increased use of natural regeneration queried • Welcomed broadleaf woodland expansion • Best practice for road construction and quarry developments highlighted • Importance of drainage and aquatic habitats highlighted • Location and treatment of private water supplies highlighted	Noted in LMP text; (see various sections particularly section 9.0 for natural regeneration treatment)
R Cree Hatchery & Habitats; Terrence Flanagan	27 Nov. 2015	16 Dec. 2015	• Welcome permanent broadleaf infrastructure however requested 20m buffer for all watercourses to be kept clear of conifer regeneration • Identified positive opportunities for collaborative working	Noted in LMP text; (see various sections)

			• ~~Welcome increases~~ to use of agricultural estate • Identified their preferred option for broadleaf restock of cleared larch sites • Identified important spawning and nursery burns for salmon and sea trout	
Historic Scotland; John Malcolm	27 Nov. 2015	14 Dec. 2015	• There are no historic environment assets of national importance • Contact local council regarding unscheduled archaeology	Noted in LMP text; (see Appendix 3.6.3)
RSPB; Chris Rollie	27 Nov. 2015	11 Dec. 2015	• targeting of broadleaf woodland expansion • expansion of open ground habitats	Noted in LMP text as a clear management objective; (see section 6.3 objectives 2, 4 & 6)
SNH; Newton Stewart	27 Nov. 2015	No reply received		
Dumfries & Galloway Council; Simon Fieldhouse	27 Nov. 2015	No reply received		
Galloway Fisheries Trust; Jamie Ribbens	27 Nov. 2015	No reply received		
CONFOR; Jamie Farquhar	27 Nov. 2015	No reply received		
Saving Scotland's Squirrels; Heinz Traut	27 Nov. 2015	No reply received		
Cree Valley Community Co.: Richard Kay	27 Nov. 2015	No reply received		
Visit Scotland; Paula McDonald	27 Nov. 2015	No reply received		

Consultee	Issues raised from LMP being on public register	Forest District Response to consultee	FCS consideration
SEPA: Simon Watt; Senior Planning Officer	• **No objections raised (general advice provided on RBMP, Pollution prevention and Environmental Management, Natural Flood Management, Private water supplies and other Good Practice)**	• **Noted, general advice in the main already containe within LMP text)**	•
RSPB: Ed Tooth; Conservation officer	• **General comments raised essentially focussing on the woodland edges and open ground management specific to Black Grouse management and habitat** • **Possible windfarm application raised**	• **Black Grouse issues addressed throughout LMP text (proposed management will increase species diversity, soften woodland edge, create linkages from valley floor to open hill and improve habitat connectivity** • **Renewables issues noted within text**	•

Appendix II: Tolerance Table

PROCESS TO BE APPLIED IN RESPECT TO ANY ALTERATIONS TO APPROVED FOREST PLANS

1) Adjacency issues will normally be dealt with through delayed felling i.e. a coupe will not be felled until all surrounding crops are at least 2m tall

2) Where this cannot be achieved then adjacency issues may be dealt with through delayed restocking i.e. a coupe will not be restocked until all surrounding crops are at least 2m tall. Where this approach is adopted an assessment must be made and recorded, at the time of the decision being taken, to ensure wider forest and habitat structure is not being significantly compromised. Such evidence must be presented at 5 year review

3) 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 ****
FC 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 eg. evergreen conifers or broadleaves		• Increase by up to 5% of coupe area	

Approval by exchange of letters and map	Y		• 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	• Up to 5ha
Approval by formal plan amendment may be required	Y	• Felling delayed into second or later 5 year period • Advance felling 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 FCS, 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 FCS should be informed of extent prior to clearance and consulted on where clearance of any standing trees is required*

Appendix III: Supporting Information

III/1.0 The existing forest and land

1.1 History of the land holding

The Lamachan block comprises two areas, Queens Hill and Lamachan, that were previously separate plans but were subsequently amalgamated in 2006 to create a medium scale, contiguous plan area that physically contains most of the Penkiln Burn catchment.
The block was acquired in its entirety as part of a single significant land purchase in 1950 from the Earl of Galloway (see table below).

Acquisition date	**Deed No**	**Title**	**Seller**
Jan 1950	11150	Part of Galloway Estate	Earl of Galloway

Conifer planting generally took place between 1952 and 1962 resulting in a fairly even aged crop structure. Restructuring, accelerated by windthrow, has been ongoing since the mid 1990s and has contributed to a greater age class diversity within the block.
Highly erodible soils resulted in part of the Lamachan being involved in EU LIFE Environment project UK182. The demonstrations site was established by a locally based partnership of organisations dedicated to the protection of rivers and streams. Its primary purpose to demonstrate measures to minimise sediment output related to timber harvesting, forest road construction and use and forest cultivation and drainage.
The recent *P ramorum* infestation has resulted in the removal of significant areas of retained mature larch and other spruce crop areas, seriously impacting on the spatial structure and appearance of the block.

III/2.0 Analysis of previous plan

2.1 Aims of previous plan and achievements

Objectives from the previous plan were as follows:

Previous plan objectives	Assessment of Objectives during plan period
Commercial softwood timber production in forest core. Diversify age structure and species composition of the block through	A significant amount of clearfelling took place over the previous plan period. Regrettably as a result of the extensive *P ramorum* infestation, additional sanitation felling of the

restructuring to benefit habitat and visual diversity	older, retained Larch has also taken place significantly compromising the structural diversity of the block.
Improve riparian zones particularly along significant watercourses as identified by Galloway Fisheries Trust Monitor and improve water quality as per Guidelines	The felling of tracts of conifer plantation within the block has significantly opened up the Penkiln Burn riparian corridor facilitating the creation of additional open space and broadleaf woodland.
Provide, and enhance, the Recreational, historical and archaeological resource for local communities and visitors to area	Existing features have been maintained during the plan period. Planned felling, and additional felling for the *P ramorum* infestation, has provided new opportunities to develop the recreation infrastructure.
Expand open ground area within upper catchment of Penkiln and Pulnee Burns (targeted above 300m)	The creation of additional open space / woodland fringe within the plan area, particularly at elevation, has been inconsistent over the period of the previous plan with significant conifer natural regeneration impacting proposed areas.
Create moorland fringe on plantation margins to improve Black Grouse habitat	Additional open space / woodland fringe creation on the upper / elevated margins of the plan area is creating habitat suitable for Black Grouse.

2.2 How previous plan relates to today's objectives

Whilst the 2006 approved plan objectives have generally been met, they have over the period become slightly outdated.
Key Scottish Forestry Strategy themes and objectives for the plan, see table below, are now more directly related to the revised brief (see Appendix III).

	Priority
Productive; Promote sustainable timber supply through revised felling and restock plans and LISS based thinning. Implement modest road building / road maintenance programme required to service proposed operations coupes. Increase areas of broadleaf woodland creation, areas of native species for additional biodiversity and faster growing commercial species (Sycamore and Oak) where possible. Create a more diverse age structure for the forest.	High
Healthy;	High

Protect water, soil and air and contribute to Scotland's landscape through agreed management plans for SSSI sites, following UKWAS standards and forest guidelines and through the management of views from minor roads and surrounding hills. Follow UKWAS standards and Forest and Water guidelines to maintain and improve water quality in the River Cree catchments. Improve external / internal design through revised species choice. Manage heritage features according to FES Archaeological guidelines. Manage watercourses within DP unit in keeping with UKWAS standards and Forest and Water guidelines to maintain and improve water quality and to improve feeding and spawning conditions for fish.	
Cared for; Secure and restore PAWS and Ancient Woodland remnant areas along Penkiln valley within general BL expansion. Follow / exceed UKFS standards and Forest and Water guidelines to maintain and improve water quality in the R Cree catchment. Protect water soil and air and contribute to Scotland's landscape through the management of views from surrounding minor county roads. Improve external / internal design through revised, more diverse species choice. Maintain and enhance plan area for priority species. Manage SAMs as per management plans.	medium
Accessible; Improve public enjoyment by providing a varied and enjoyable woodland experience through localised intensive management regimes, improved signage and facilities and a maintained road network.	medium
Good value; Maintain and develop limited Recreation facilities infrastructure within the block and overarching Biosphere buffer & Dark Skies park zone	low

III/3.0 Background information

3.1 Physical site factors

3.1.1 Geology Soils and landform

The underlying solid geology of the forested area is composed of sedimentary greywackes and shales of the Ordovician and Silurian period with extensive areas of Ordovician Black Shales. The higher hills impinge on the metamorphic aureole associated with the Galloway granitic intrusion of the Red Sandstone era.
The parent rock has been generally overlain with morainic material and boulder clay with peat deposits forming in the central low lying areas and alluvial deposits in the valley bottoms. This combination of geology and glaciation has generally resulted in very poor skeletal soils in the uplands and poor, stony, generally shallow rooting gleys and peaty gleys but also with limited areas of Brown earths and Iron pan soils nearer the valley bottoms. Induration is not uncommon (see table below).

Soil type	**% cover**
Brown Earths	7.4
Iron pans	3.5
Rankers	13.6
Peaty / SW gleys	66.5
Blanket / Juncus / Molinia bogs	9.0
total	**100.0**

The James Hutton Institute "Land Capability for Forestry" classification (previously Macaulay Institute) for the area is a mix of F5 (land with limited flexibility for growth and management of tree crops) and F6 (land with very limited flexibility for growth and management of tree crops). This classification is indicative of the dominance of poorly draining soils, a high risk of windthrow and a fairly restricted choice of tree species resulting in a monoculture of shallow rooting Sitka Spruce and Sitka Spruce / Lodgepole Pine mixtures.
Elevation in the block ranges from 70 to 700m with the highest plantation at around 480m. The block is framed by the south facing slopes of Larg Hill (675m), Lamachan Hill (716m) and Curlywee (674m). The lower slopes of Stronbae Hill, Black Benwee Hill and the Garlick Hill form a more intimate relationship with the forest. Slopes within the plan area are generally moderate becoming steeper at elevation.

3.1.2 Water

The uplands of the Lamachan LMP are the source of the Penkiln and Pulnee burns that flow south, initially separated by the Bennan Hill ridge, and ultimately drain entirely west to the R Cree.
The Penkiln Burn is currently classified as having good status for water quality and is scheduled to remain so into the long term (SEPA overall condition of bodies of surface waters 2014).

Numerous other minor watercourses; the Pulbae Burn, Green Burn and Campbells Burn are typical of others within the R Cree catchment and also lie within the plantation area.
Overall management of waterbodies and catchment areas is a key environmental issue and water quality is a high priority.
Whilst surface water acidification, watercourse over shading, siltation risks and drainage and riparian management are particular concerns within the R Cree catchment, none of the minor catchments affecting the Lamachan plan area are either "at risk" or "failing".

We aim to comply with best practice in minimising sediment release from any forest operations and preventing any deterioration in their ecological status / potential. As an aid towards catchment recovery, ongoing measures to reduce the impact of forestry such as specific treatments that exceed water guidelines recommendations in Forest and Water guidelines 5th edition will be implemented to create significantly wider aquatic and riparian zones and provide long term protection against disturbance from future forestry operations and loss of light from canopy closure (a minimum of 20m for the significant burns mentioned above). Due to the high incidence of existing open space within the plan, many of the catchments already only have moderate percentages of forest canopy cover over 300m, a figure likely to drop further given our proposed restructuring and planned reduction in future conifer restocking at elevation.

Brown trout, Eels Pike and Perch are all found in all of these watercourses but they are also important spawning and nursery areas for Atlantic salmon and Sea Trout. Downstream, out with the plan area, the R Cree Hatchery and Habitat Trust take water from the Penkiln Burn for their salmon hatchery.

FES has considered flood risk of peak flows at the exit of the site and also further downstream. The plan area lies within the Newton Stewart PVA (Potentially Vulnerable Area 14/12) that is mainly affected by river flooding. Newton Stewart and Minnigaff are the SEPA identified Objective Target

Areas (OTA) downstream of the LMP area where there are known periodic flooding instances. A series of actions to manage flooding in the PVA, focussing entirely on non-forest activities have been set by SEPA and agreed with flood risk management authorities and are identified in the table below.

Selected Actions
Flood protection scheme/works
Flood forecasting
New flood warning
Community flood action groups
Awareness raising
Emergency plans/response
Strategic mapping and modelling
Self help
Maintenance
Planning policies

It is appreciated that new planting with associated operations of draining and ploughing can give rise to a very slight increase in peak flow (up to 20% at site scale), however with no additional areas of new planting proposed for this LMP, a planned optimal clearfell programme, well designed and significant riparian buffers and where appropriate forest wetland creation to minimise this effect, no increase to the existing flooding risk is anticipated.

There is a single private dwellings holding at Glenshalloch (a pipe and well supply) within the plan area, details of all known private water supplies are held in a District GIS layer (see constraints map).
All work undertaken will comply with the Forests and Water Guidelines (5th Edition) although in this sensitive catchment riparian buffer zones will be enhanced.

3.1.3 Climate

Located in the south west of Scotland the area has a predominantly mild windy oceanic climate influenced by the Gulf Stream. Annual rainfall in the block ranges from 1400mm in the lower valley floor up to 1800mm on the hilltops, compared to the district range of 1000-2000mm, and falls mainly during the winter months, October to February. Although primarily a mid elevation plantation, much of the block is susceptible to the prevailing westerly winds with damaging gales likely during the early part of the year.

Guidance on Climate Change suggests that the District can expect an increased frequency of extreme weather events with the climate remaining wet and mild. Whilst there may be little impact on this DP block with regard to primary species choice (mainly conifer) there may be future threats to wildlife habitats. The development and maintenance of a diverse range of habitat networks is considered to be important.

3.2 The existing forest

3.2.1 Age structure, species and yield class

Species / Yield class

With the large open hill areas at elevation, around half (55.4%) of the plan area is currently classified as some type of open ground.

Details of open ground components including transient clear felled areas are shown in the table below with their management treatments covered in the main body of the text document under section 8.3 Open Land.

As the clearfelling programme diminishes and planned Black Grouse habitat developments and woodland fringe creation impacts, the area of open ground will inevitably fluctuate.

Open ground type	**Area (ha)**
Open hilltop	867.8
Felled area	173.7
Unplanted	16.1
Streamsides	13.6
Deer glades	3.2
Quarries	1.2
Open water	0.1
Recreation	1.8
Agricultural land	0.0
	1077.5

Species diversity in the plantation area is currently quite good. Sitka Spruce and Sitka Spruce and Lodgepole Pine crop mixtures generally dominate the block at elevation, accounting for almost 60% of the plantation area, however in the more fertile valley bottoms and lower elevation sites a more diverse broadleaf (around 10.0%) and mix of minor conifer species (around 11.0% Norway Spruce, Scots Pine, Douglas Fir and Larch) prevails. This figure would be higher were it not for recent felling of much of the Larch component because of the *P ramorum* infection.

Yield class is variable within the conifer crops ranging from YC18 in the valley bottoms down to quite poor YC 4 crop at elevation, where browsing damage is also an issue.
Options are available to increase species diversity through restocking with alternative conifer species better suited to site conditions such as Scots Pine or increased broadleaf restocking.

Age Structure
Whilst existing species diversity may be modest, there is a measure of spatial diversity within the Lamachan LMP with all stages of crop growth represented.
The growing stock is however currently skewed towards pole stage crops (around 50.0% by plantation area) giving the block a generally open feel. Block restructuring, with 8-10yr age gaps developed between felling coupes (and possibly even wider gaps immediately adjacent to Black Grouse areas) remains an objective and our intentions to retain broadleaf woodland and, where possible, mature conifer species through extended rotation length (mainly Scots Pine) will maintain and continue to improve the spatial appearance and structure of the block.

3.2.2 Access

Timber haulage is solely via the Lamachan and Queens Way internal forest road networks and exits FES plantation onto the A712 Newton Stewart to New Galloway road. The A712 is categorised as an "agreed route" on the Dumfries and Galloway Timber Transport Group Agreed Routes Map west for Timber Haulage. The U244 unclassified county road bounds the block to the south and only provides light vehicle access to the forest road network apart from a very short section of the road that links the forest road networks of the two blocks.
The Lamachan block is fairly well roaded. Recent partnership working through the Strategic Timber Transport Fund (STTF) has resulted in the FES road network being extended to the west to provide access to private sector plantations.
There is no planned new forest road construction scheduled for either the first or second phase approval period for the Land Management Plan (see table below).

Period of Proposed Construction	Proposed length for construction
2020 to 2024	0.0m
2025 to 2029	0.0m
Beyond 2030	0.0m

Road upgrade of the existing forest road network to facilitate access to the remaining first rotation crops is required to service the timber volume forecast for the plan period.
The Lamachan quarry is a substantial quarry to the north end of the block that provides quantities of stone material for road construction and upgrade to service forecast timber volume in the local area. The quarry, along with proposed / planned forest roads for the plan period and beyond, is identified in the suite of DP maps.

3.2.3 LISS potential

Significant areas of the plan, mainly to the south, have already been identified for LISS management (Low Impact Silvicultural System).
Other areas, containing second rotation crops and/or scattered areas of ASNW remnant, also have low to moderate DAMS scores (Detailed Aspect Method of Scoring) of 17 or less. Opportunities therefore exist over time to restore our existing fragmented ASNW areas through conifer removal, the development of LISS and greater species diversity and to further enhance them through linkages to other more favourable external ASNW areas along the Penkiln Burn.
LISS is defined as "Use of silvicultural system whereby the forest canopy is maintained at one or more levels without clearfell of areas over 2.0ha.

3.2.4 Thinning potential

Significant areas of the plan, mainly to the south, have already been identified for thinning.
Other second rotation crop areas with low DAMS scores and generally within the valley systems can potentially be added to the thinning layer.

3.3 Land Use

3.3.1 Agricultural land

The area lying to the north of the plan is under a full Agricultural tenancy and is projected to remain so for the period of the plan.

3.3.2 Neighbouring land use

The Lamachan LMP adjoins other FES Land Management Plan units to the north and east, essentially conifer plantation or more commonly onto open hill ground dominated by heather moorland and rough grassland with scattered lochans and areas of exposed rock. To the west there is a small area of private plantation and the private dwellings of Glenshalloch and Auchinleck Lodge. To the south neighbouring land use is more agricultural.

3.4 Biodiversity and environmental designations

3.4.1 Designations

There are no environmental designations (e.g. SSSI, SAC) within or adjacent to the LMP area.

3.4.2 Habitats and species

Ancient Semi Natural Woodland (including PAWS sites) is present to the south of the plan area along the Penkiln burn valley floor.

The Lamachan LMP is considered to be part of the core area for Black Grouse within the district. A red listed UKBAP species, Black Grouse has been recorded at numerous locations and lek sites within the boundary of the LMP unit and surrounding open ground. Large numbers of the species were reportedly present prior to canopy closure and while numbers have fluctuated as tree canopy closure has increased the plan presents a great opportunity to provide for the species through enhancing the wetter brood rearing areas in the valley floors with scattered broadleaf planting and increased amounts of open ground, by creating habitat linkages between valley floor and the woodland edge and by establishing stands of native broadleaf species for winter browsing on adjacent sites favoured by Black Grouse. Whilst management aimed at improving habitat will essentially be concentrated around known lekking areas, the plan will however look to both maintain the species range and enhance it through a greater degree of habitat connectivity.

Red Squirrel is present within the block at low densities but the area is not considered to be part of the "Red Squirrel Stronghold site". These areas are designated by the Scottish Government as sites where Red Squirrel can be assisted to survive through positive management practices. Whilst there are external links to other external broadleaf areas along the valley bottoms, our continued commitment to second rotation conifer plantation with increased areas of Scots Pine, Norway Spruce and small seeded Broadleaf restock will ensure that the block remains advantageous towards Red squirrel.

A number of upland LBAP priority bird species are associated with the open ground within and surrounding the design plan. All of these wide ranging raptors should benefit from the planned creation of open ground and low density broadleaf corridors linking the lower elevation valley sites to the open ground hill-tops and the other management prescriptions already identified for Black Grouse.

The principal water bodies and existing riparian habitats are well used by Otters for breeding and movement. Positive riparian zone management

measures, often exceeding basic water guidelines, such as an increase in small seeded BL cover coupled with our aim to keep sections of stream banks permanently vegetated and persisting throughout subsequent rotations and retaining mature broadleaves will increase both the availability and connectivity of suitable breeding and feeding habitat for both of these species. Galloway FD Environment staff now also prepares brash piles along water courses, specifically providing excellent cover for rearing, resting and breeding otters. The main benefits for FES is that providing these features greatly reduces the likelihood that otters will create resting places or breeding sites within commercial forest stands and the brash piles are also likely to be used by a wide range of animal species and provide valuable deadwood habitat.

3.4.3 Riparian habitat

All watercourse within the plan area lie within the R Cree catchment and are covered by the Solway Tweed river basin district 2015-2027 management plan. Many of the watercourses, primarily the Glenshalloch Burn, the Pulnee Burn and the Penkiln Burn, are considered to be particularly important for water quality and it will benefit from proposed increases to the width of riparian zone, generally in excess of basic guidelines identified in Forest and Water guidelines 5th edition, to provide long term protection against disturbance from future forestry operations and loss of light from conifer canopy closure.

Riparian zone enhancement is a key objective for the plan (see section 6.3). The linking of these principal watercourses to others in the area that >0.5m wide and are also subject to riparian zone improvements, and other external and internal open space within the block will create permanent larger habitat networks.

3.4.4 Invasive species

Invasive non-native species (INNS) can impact directly on many environmental aspects of an area and are specifically recognised as a significant risk to water environments potentially causing problems for communities who rely on rivers and lochs for their livelihoods.

There are no records of Japanese Knotweed, Giant Hogweed and Himalayan Balsam for the block however small pockets of *Rhododendron ponticum* are present. Monitoring is ongoing and identified species will continue to be treated as per the District's INNS Policy.

3.4.5 Pests and diseases

The block is actively monitored and trapped for Grey squirrel incursion when resources allow.

Dothistroma Needle Blight (DNB) has been identified on Corsican and Scots Pine crops in the district, although at present is only causing mortality in CP. Although there is little evidence of DNB within the Queens Way land management plan area the pathogen has been identified in adjacent forest design blocks and its wider presence in the block cannot be ruled out. Given the impact on structural and species diversity of the block by the recent *Phytopthora* infection, Scots Pine will play an important element in planned restock so future DNB surveys may increase in intensity.

Hylobius, the Pine weevil, can cause extensive damage to young conifer crop and is found both in this plan area and throughout the district. As part of the districts chemical minimisation strategy, the *Hylobius* Management Support System (HMSS) is used to measure *Hylobius* numbers on clearfell sites. Using billet traps virtually all of the districts conifer restock areas are assessed. Weevil numbers are recorded and 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).

Phytopthora ramorum infection has been confirmed on Larch throughout the district. Infected areas were initially felled to comply with the requirements of a Statutory Plant Health Notice (SPHN) but are now treated under a "management zone" agreement. Large swathes of both pole stage and mature larch within the Lamachan plan area has been infected. Planned restocking in the block will, in the foreseeable future, avoid the use of larch with other minor conifer (not Sitka spruce) and broadleaf woodland contributing more towards the species diversity of the block.

Heterobasidion annosum is not endemic in the block. Stump treatment with urea after felling will however be required in the areas of poorer site types. There is no record of Ash dieback *Chalara fraxinea* present in the LMP area. FCS published a *Chalara* Action Plan for Scotland in 2013 that will be followed should a future outbreak be identified.

3.5 Landscape

3.5.1 Landscape character

The Scottish Natural Heritage National Landscape Character Assessment categorises the area as straddling two character types type 181 "Rugged Uplands with Forest" and type 172 "Upland Fringe" where typically there is

"dark green sitka spruce dominated forest on lower slopes of rugged granite uplands".

The main issues arising over this character type are

- the incremental loss of hill farm land and other open land to forest expansion
- modification of existing forests and landscape character enhancement through forest design
- threats to cultural features and wild land scenic areas through forestry planting
- potential wind power development given the landscape sensitivity

In developing this plan design the following key landscape specifics have been addressed:
Improved forest design should reflect topographic diversity in open space patterns, species mix and coupe pattern with the relatively large scale relief allowing for some larger scale felling coupe design in the plan hinterlands.

The main landscape concern remains the use of interconnected patterns of open space linking open hill down into the lower basin areas and the use of alternative species with a greater future reliance on broadleaf and minor conifer species such as Scots Pine and Douglas Fir for restocking.

There are areas of conifer plantation on blanket bog that is marginal for economic woodland where targeted reduction of the plantation and the creation of native peatland edge woodland is planned. A variety of habitat networks using existing scattered semi natural woodland will be created linking the lower valleys to the slopes and hill summits.

To sustain the constituent features of agricultural areas and hill farming as an essential feature of this forest dominated landscape, there are no plans to diminish agricultural land use and all known and discovered heritage features will be buffered in areas of open space.

3.5.2 Landscape designations

Lamachan Land Management plan area is not located within a nationally designated or Wild Land Area however it will lie within a Local Landscape Area designation as identified by Dumfries and Galloway.

3.5.3 Visibility

The southern section of the plan area is visible in the near and mid distance view from the minor county roads and parts of the upland areas are visible at distance from the A714 public road that runs from Newton Stewart to Wigtown.

The rest of the block is less visible but can be viewed internally from a variety of vantage points afforded by the forest road network and there are extensive and dramatic views in all directions from the hill summits that rise above the plantation.

Restructuring began during the previous approved iterations of the Lamachan plan however recent extensive sanitation felling of larch for *P ramorum* has dramatically impacted on views within and outwith the block.

3.6 Social factors

3.6.1 Recreation

There are no Core paths as identified in the Dumfries and Galloway Core Paths Plan however the block is used by hillwalkers to access the surrounding hills. Apart from a small informal car parking area to the south east of the block, there are no formal FES facilities in the plan area and it is not considered to be a core block for recreational development.

3.6.2 Community

All local Community Councils, in this instance Cree Valley Community Council, are in receipt of the latest version of our local Strategic Plan and there are two private dwellings, Glenshalloch and Auchinleck Lodge, to the western edge and southern tip of the plan area respectively.

Both the residents and the Council were included as part of our stakeholder consultation.

3.6.3 Heritage

Following *FES Historic Environment Planning Guidance*, this Land Management Plan describes and considers the conservation and management of the historic environment. The LMP includes details of all relevant scheduled monuments, listed buildings, designed landscapes and the most significant undesignated features.

Designated historic environment features are recorded in the Designated Historic Assets Register (maintained by the FCS Archaeologist). Scheduled monuments and listed buildings are managed within a programme of individual Monument Management Plans and Condition Surveys respectively. FCS also maintains a programme of detailed measured survey of our most

significant sites in order to enhance the national historic environment record and inform conservation management.
Whilst there are no Scheduled Monuments or Category A listed buildings present in the plan area, a raft of other archaeological heritage features, settlement remains and sheep pens are present and listed in the table below.

Feature name	**Grid ref.**	**Description**	**Treatment**
Scars of Lamachan	NX44137625	Enclosures	Located north of plantation on open ground: **Maintain in open space**
Lamachan	NX43657445	Dwelling structure and field boundary remains	Located in open ground adjacent to forest road: **Maintain in open space**
Lamachan	NX73507436	Enclosure	
Halo (split stone)	NX43037240	Large split boulder	Located in open ground north of recent restock: **Maintain in open space**
Pulnee Burn	NX45987494	Sheep pen (may have been farmstead)	Located east of plantation on open ground: **Maintain in open space**
Pulnee Burn	NX46097513	Enclosure	Located east of plantation on open ground: **Maintain in open space**
Machercroft	NX44657315	Farmstead	Not located: **Maintain in open space / BL area**
Glenshalloch Burn	NX42857175	Enclosure / structures	*Not located in pole stage crop*
Benera	NX43347185	Sheepfold	*Not located in pole stage crop*
Benera	NX44007141	Sheepfold	Located in open ground: **Maintain in open space**
Benera	NX43107127	Enclosure	*Not located in pole stage crop*
Glenshalloch	NX43397034	Farmstead / field system	Remains within young plantation: **Maintain in open space**

Glenshalloch	NX43737049	Farmstead / field system	Remains within young plantation: **Maintain in open space**
Dalnader Wood	NX44177043	Farmstead / field system	Remains within BL plantation: **Maintain in open space**
Murdoch's Cave	NX43737071	Cave, supposed hiding place of Murdoch, a celebrated 14th C robber	*Not located in pole stage crop*
Kiln	NX44367053	Corn kiln	Located and overgrown with vegetation: **Maintain in open space**
Clawyetts	NX44307149	Field system, structures	*Not located in mature crop*
John's Hill	NX45237204	Field system & structures	Generally not located in mature crop (sheep pens identified adjacent to forest road): **Maintain in open space**
Hespie's Linn waterfell	NX45047256	Building	Remains within BL plantation: **Maintain in open space**
Penkiln Burn	NX44447357	Structure	Remains within BL plantation: **Maintain in open space**
Sheep pen	NX45647345	Sheepfold	Located in open ground: **Maintain in open space**
Drigmorn	NX45947233	Field system	Located in pole stage crop: **Maintain in open space**

All significant features will be protected and managed following the *Forestry and Archaeology Guidelines* (2011), the FCS policy document *Scotland's Woodlands and the Historic Environment* (2008) and the supporting *FES Historic Environment Planning Guidelines* (available from the FCS Archaeologist).
Known heritage features are marked on workplans before the start of forestry operations. Machine operators are fully briefed on their responsibilities prior to all sites being worked. The known record is based on features recorded on the 1st edition OS Map (1850).

Felling coupes, access roads and fence lines will be surveyed prior to any work being undertaken to ensure that upstanding historic environment features can be marked and avoided. Historic environment features, including drystane dykes, coming to light during forest operations will be surveyed, recorded, mapped and monitored for inclusion in future versions of the Design Plan and to demonstrate Forestry and Land Scotland compliance with the UK Forestry Standard.

At planting and restocking historic features will be removed from ground disturbing operations with opportunities to enhance the setting of important sites considered on a case-by-case basis (such as the views to and from a significant designated site).

Any recent archaeological surveys that have been undertaken on behalf of FCS have been incorporated into the Forester GIS Heritage Module geodatabase - and any new archaeological surveys required (in unimproved upland areas for example, or areas within which the archaeological record is unusually rich) are undertaken to the standards laid out in *FES Historic Environment Planning Guidelines.* This will ensure that undiscovered historic environment features are mapped and recorded prior to forestry establishment and management operations - and will ensure the continued comprehensive protection of the known archaeological resource.

3.7 Forest Renewables

Currently there are no renewable developments planned for the Lamachan LMP unit however the possibility remains that the area could be subject to future windfarm and/or mineral extractions applications.

Forestry and Land Scotland (FLS) is working to develop the wind and hydropower potential of the land and forests that we manage for the Scottish Ministers. Our aim is to ensure that the potential of the National Forest Estate is developed and managed in ways that

- contribute to the Scottish Government's renewable energy target
- maximise financial returns from the National Forest Estate
- secure benefits for local communities and
- achieve a reasonable and sustainable balance with other FLS objectives

3.8 Statutory requirements and key external policies

- The legal status of the land is purchased.
- This Land Management plan is in accordance with guidance supplied in
- UK Forestry Standard (4th edition)
- FCS, the role of Scotland's National Forest Estate and strategic directions
- Forest & Woodland strategies
- Design techniques for forest management planning
- Native Woodland Survey of Scotland
- Rationale for Woodland Expansion
- Policy on Control of Woodland Removal
- Managing Forests in Acid Sensitive Catchments
- Historic Land Use Assessment
- Deciding future management options for afforested Deep Peatland

Appendix IV. Land Management Plan Brief

The main management objectives in this medium scale plan focus on Timber production, Water quality (Penkiln Burn within R Cree catchment) and Conservation (restoration of relict Ancient Woodland sites).
The block lies around 5.0km north east of Newton Stewart, Dumfries and Galloway

Key Strategic Directions from Role of Scotland's National Estate	Local District Strategic Plan Priorities	Actions / Prescriptions
Healthy: good environmental and silvicultural condition in a changing climate	• Commitment to high quality silviculture and increased use of alternatives to clearfell • Adapt to climate change and make woodlands more resilient to pressure • Deal with invasive species that threaten habitats and biodiversity • Stewardship of carbon resources locked up in Estate's trees and soils	• *Increase and develop* area of woodland managed under LISS particularly lower lying river valley areas associated with Penkiln Burn • *Improve resilience* through increased use of Alternatives to clearfell, smaller coupe size and increased species diversity • *Increase* area of broadleaf woodland and *establish / maintain* a permanent woodland infrastructure along riparian zones (Penkiln, Glenshalloch and Pulnee Burns) • *Increase* use of natural regeneration in our restocking • *Control* invasive species as per FES guidelines (specifically R. ponticum) • *Continue* with *P. Ramorum* management as per district guidance
Productive: provide sustainable economic benefits from the land	• Contribute to local economy by maintaining core timber production • Expand area of productive broadleaf and diversify timber markets • Provide work in rural areas • Consider species diversity and use of mixtures in forest resilience	• *Meet* production forecast commitment through revised felling and thinning plan • *Enhance* the productive yield by correct species choice for site type restock in line with district targets for diversity • *Increase* area of productive broadleaf • *Implement* modest road construction / maintenance programme and quarry development required to service proposed harvesting operations
Treasured: a multi-purpose	• Involve and engage with local people /	• Continue to *consult* with local communities and stakeholders through Land Management plan process

resource that sustains livelihoods, improves quality of life and offers involvement and enjoyment	encourage partnership working • Place for research and development • Create uniquely special places across the Estate	• *Continue* long term partnership working with SEPA and GFT on tributaries within R Cree catchment • *Incorporate* Research & Development into Land Management Plan including monitoring of P Ramorum
Accessible: woodlands that welcome and are open for all	• Improve access and enhance existing facilities • Use for health benefits and outdoor learning	• *Retain and improve* access (specifically access for walkers through plantation to open hill tops)
Cared for: working with landscape and the natural and cultural heritage	• Ancient Woodland sites • Increase area of broadleaf cover in block focussing on the creation of habitat networks • Landscape • Maintain open habitats in good ecological condition • Safeguard heritage features • Conserve vulnerable species • Flood management within Newton Stewart PVA	• *Maintain and restore* Ancient woodland along Penkiln valley (specifically Dalnader Wood fragments within plantation) within general BL expansion • *Increase* area of native BL throughout plan area for added biodiversity, targeting a permanent BL woodland infrastructure along riparian zones (Penkiln and Pulnee Burn) • *Create* additional permanent open habitat at elevation • Block is visually prominent as viewed at distance from the A714 Wigtown road corridor; *maintain and enhance* local landscape through additional species diversity, open space integrated management and revised coupe shapes to better suit landform • *Manage* agricultural use of the estate within the block (specifically Lamachan and Drigmorn grazing tenancies) • Although not a priority area for Red Squirrel*, maintain and enhance* area for Red Squirrel (priority species) • Water quality and flood management in the R Cree catchment is important; m*anage* watercourses and private water supplies within DP unit in keeping with (often exceeding) UKWAS standards, Water Framework Directive and Forest and Water guidelines to maintain and improve water quality within the R Cree catchment (particularly Penkiln Burn, Glenshalloch and Pulnee Burn) and reduce flood risk in the PVA

		• *Manage* minor heritage features as per FES guidelines
Good value	• Seek diverse range of income streams • Reduce carbon emissions from business activities	• *Continue* to offer deer leases over plan area • *Facilitate* energy infrastructure and minerals exploration as required by National policy