

Laurieston Land Management Plan 2018 - 2028

Forest Enterprise Scotland - South Region Laurieston Land Management Plan

Approval date:

Plan Reference No:

Plan Approval Date:

Plan Expiry Date:

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

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



The mark of
responsible forestry



Laurieston Land Management Plan 2018 - 2028

CSM 6

FOREST ENTERPRISE – Application for Land Management Plan

Approvals

Forest Enterprise Scotland – Property

FES Region:	SOUTH REGION
Woodland or property name:	LAURIESTON
Nearest town, village or locality:	LAURIESTON/GATEHOUSE OF FLEET
OS Grid reference:	NX 649 641
Local Authority district/unitary Authority	DUMFRIES AND GALLOWAY

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

I confirm that the scoping, carried out and documented in the Consultation Record attached, incorporated those stakeholders which the FC 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.

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

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

Signed
Planning Manager

Signed
Conservator

District: South Region

Conservancy: South Scotland

Date

Date of Approval:

Date approval ends:

*delete as appropriate

Laurieston Land Management Plan 2018 - 2028

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1.0 Summary of Proposals

The plan proposes an expansion of continuous cover forestry, along with smaller scale clearfell coupes to facilitate an expansion of cover for the nationally important migratory nightjar population. The methods will retain the productive capacity of the forest, while diversifying species stocked and product produced. While expanding the habitat network for the nightjar, the overall productive character of the forest will be maintained throughout the period of this plan.

The plan area covers 3043ha, and is located between the settlements of Laurieston in the north east and gatehouse in the south. There is limited utilisation of the forest as a recreational resource due to surrounding forest areas having greater facilities and different character.

There is some minor internal water bodies, but adjacent major water bodies in the surrounding areas which gives rise to areas of open space. In addition to the open space for water protection and habitat diversification, there are limited internal viewpoints from inside the forest.

2.0 FCS Regulatory Requirements

Table 1 - Clearfell coupes first 10 years

Coupe No	Operation	Area (ha)
56118	Clearfell	74.7
56169	Clearfell	24.9
56161	Clearfell	3.4
56111	Clearfell	34.2
56123	Clearfell	33.9
56007	Clearfell	5.5
56081	Clearfell	14.2
Total Clear fell		190.8

Table 2 - Clearfell coupes as a % of LMP area (3043ha)

Phase No	Coupe	Year	Percentage of Forest
1	56118	2019	74.7ha 2.20%
1	56007	2019	5.5ha 0.18%
1	56081	2019	14.2ha 0.46%
1	56169	2020	24.9ha 0.81%
1	56161	2020	3.4ha 0.11%
2	56123	2026	33.9ha 1.11%
2	56111	2028	34.2ha 1.12%

Table 3 - Restocking coupes, area and species

Felling Phase No	Restock Coupe	Restock Year	Total Coupe size (ha)	1	2	3
1	56118	2022	74.7	SS 74.7		
1	56081	2022	14.2	SS 12.6	OS 1.6	
1	56007	2022	5.5	MB 5.5		
1	56161	2023	3.4	SP 2	MB 1	SS 0.4
1	56169	2023	24.9	DF 20.4	MB 4.5	
2	56123	2029	33.9	OS 33.9		
2	56111	2031	34.2	OS 34.2		

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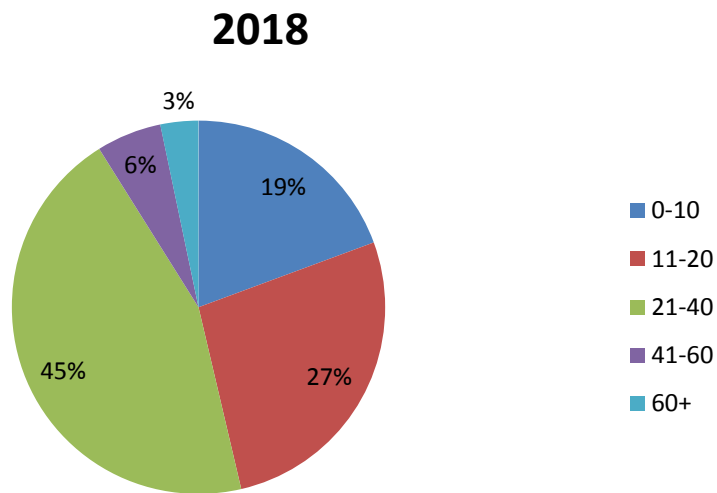


Figure 1 - Age class before plan

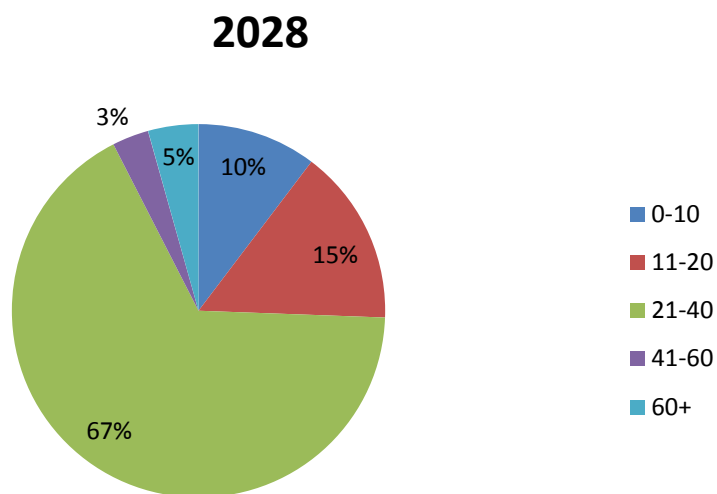


Figure 2 - Age class after first 10 years plan

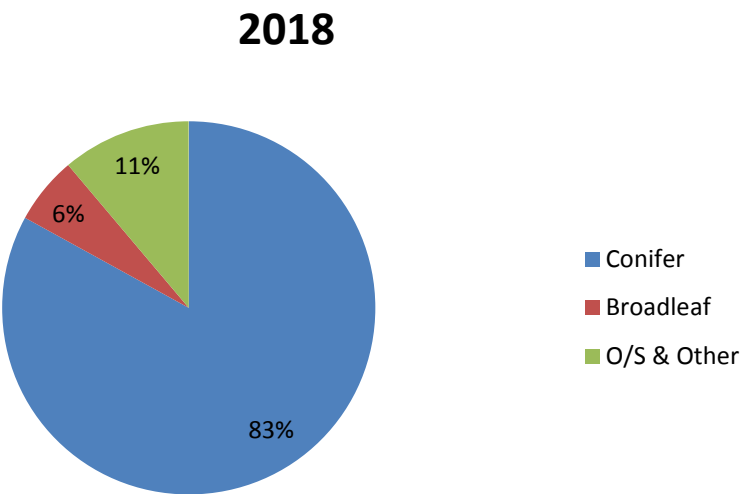


Figure 3 - Species composition at plan start

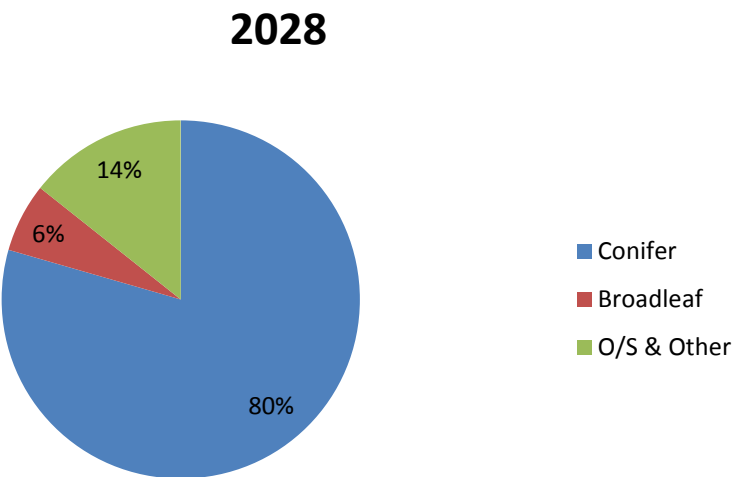


Figure 4 - Species composition after 10 years

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2038

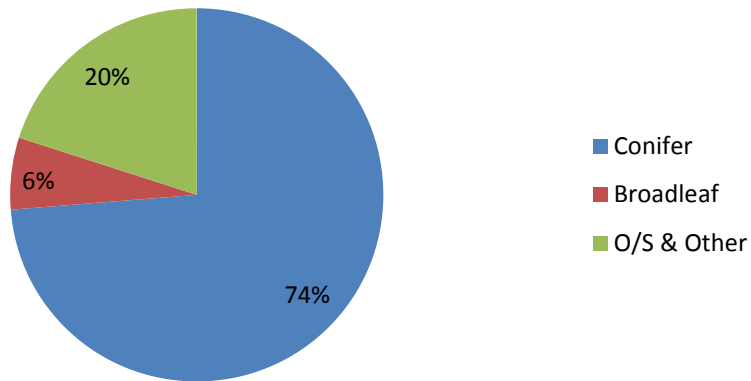


Figure 5 - Species Composition after 20 years

2018

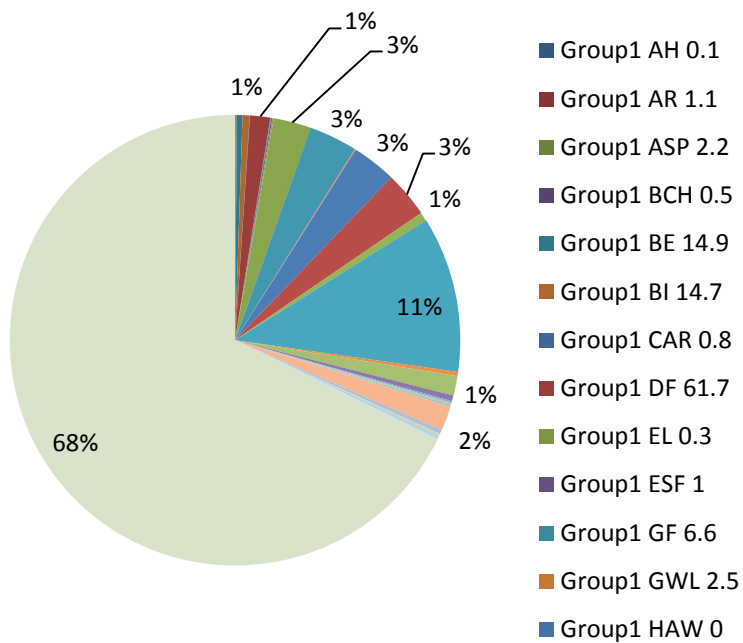


Figure 6 - Species breakdown at plan start, SS is shown at 68%

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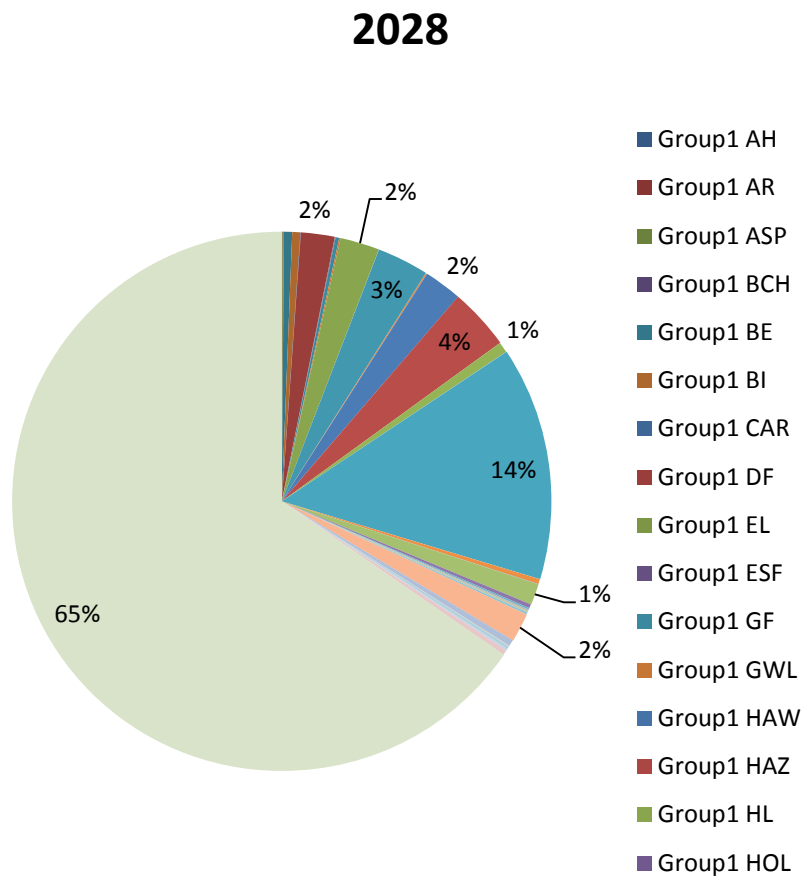


Figure 7 - Species breakdown at year 10 into plan, SS shown at 65%

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2038

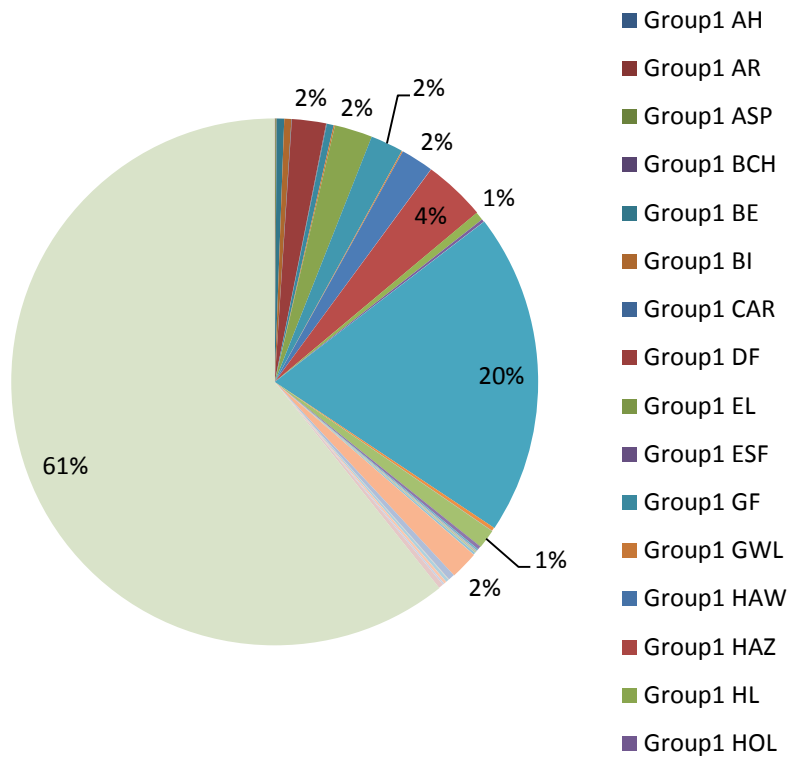


Figure 8- Species breakdown at year 20 of plan, SS shown at 61%

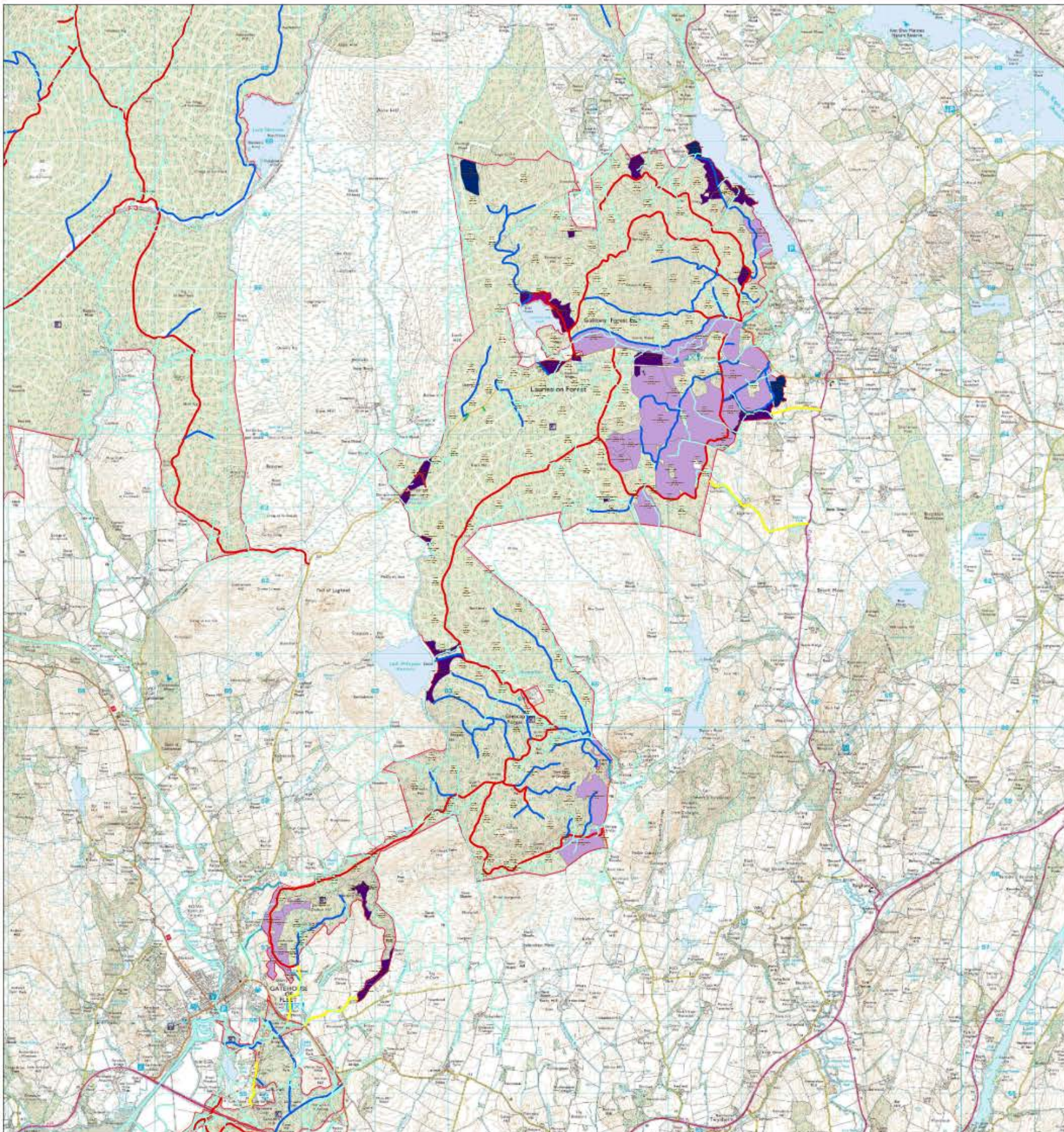
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2.1 Summary of additional planned operations

In addition to the planned clearfell and management coupes, shown in table 1-3, table 4 shows the areas which are under LISS management, which may have small scale operations conducted as part of the wider thinning programme.

Table 4 - LISS coupes

Coupe number	Area (ha)	Type of management
56146	31.29	Strip Shelterwood
56141	9.02	Strip Shelterwood
56037	37.50	Strip Shelterwood
56143	19.23	Strip Shelterwood
56150	12.48	Strip Shelterwood
56055	4.01	Strip Shelterwood
56054	8.44	Strip Shelterwood
56087	45.09	Strip Shelterwood
56544	10.92	Group Shelterwood
56501	5.20	Group Shelterwood
56553	24.08	Group Shelterwood
56547	49.11	Group Shelterwood
56008	17.47	Group Shelterwood
56153	10.81	Group Shelterwood
56526	22.18	Group Shelterwood
56541	3.46	Group Shelterwood
56001	5.35	Group Shelterwood
56505	5.66	Group Shelterwood
56511	24.41	Group Shelterwood
56162	4.88	Group Shelterwood
56555	5.52	Group Shelterwood
56178	4.30	Group Shelterwood
56156	6.31	Group Shelterwood



Galloway Forest District

Laurieston Land Management Plan

LISS areas




Scale @ A1 1:25,000

Date: 17 October 2018

0 320 640 1,280 1,920 2,560 Meters

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-  Natural Reserve
-  Minimum intervention
-  Long term retention
-  Low impact silviculture
-  Open/ other land

Scotland's National
Forest Estate is
responsibly
managed to the
UK Woodland
Assurance Standard



Map 1 - LISS areas

2.2 Proposed felling in years 2018- 2028

Map 2 shows the proposed felling coupes over the first 10 years of the plan. The proposed felling represents 6.4% of the forest area. This felling will take place utilising harvester-forwarder methodology. Wherever possible motor manual felling will be avoided. For the period of the first 2 phases, there are no areas that will require a specialist felling methodology. There may be brash recovery from felling sites where it is judged not to adversely affect the soil conditions, however, this would be after a fallow period to allow for the foliage to drop from branches and be retained within the site. Both internal and external harvesting operators may be used depending on markets and resource availability.

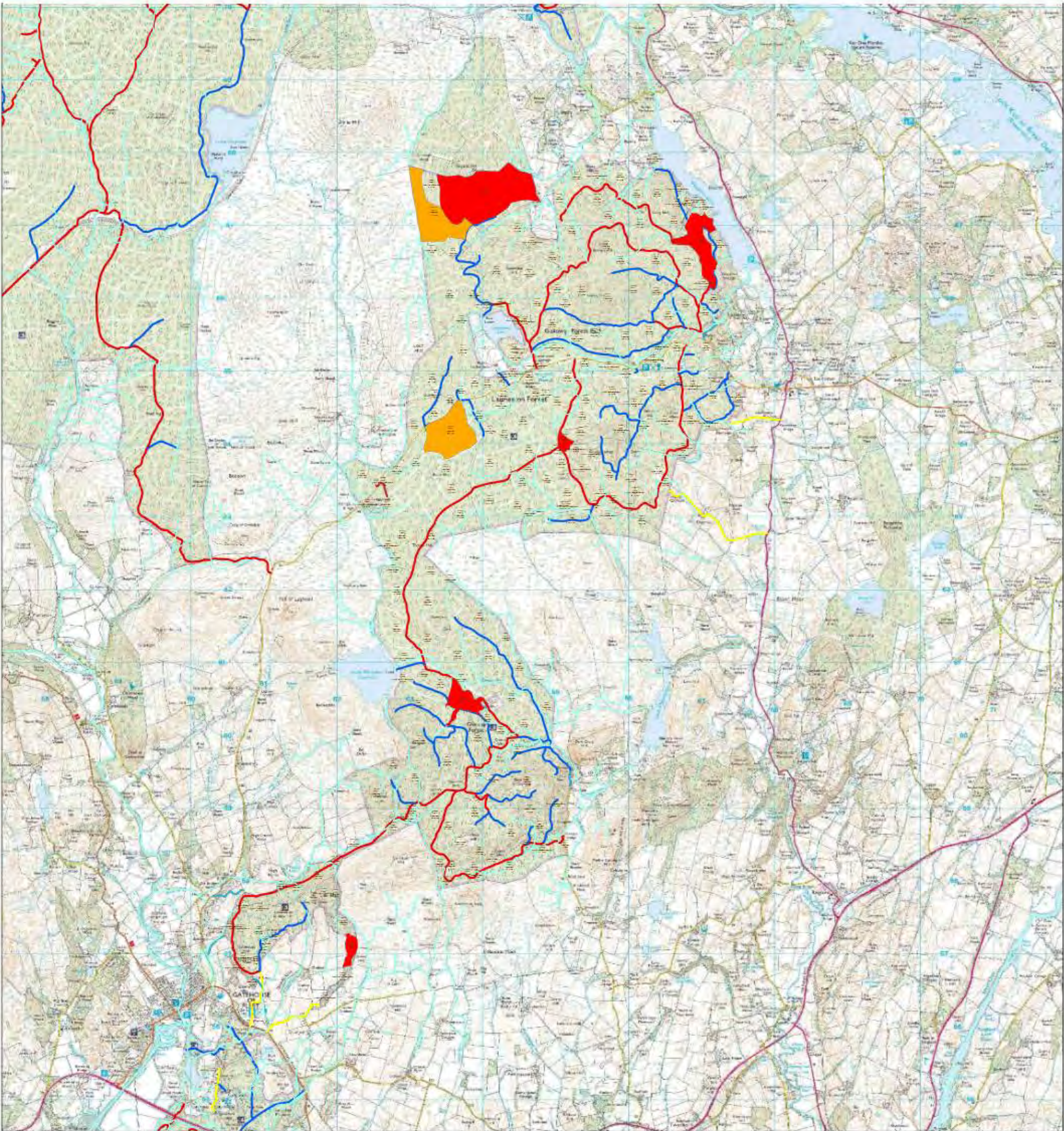
The main crop felled will be Sitka spruce, producing both logs and small roundwood. This will be sold as either as standing sale, or to satisfy ongoing production contracts from the national estate.

It is important to manage forestry activities in acid sensitive water catchment, however, there are no catchments within this Land Management Plan area that have been identified as being either "at risk" or "failing".

For conservation and biodiversity considerations efforts have been made

- to extend the felling period between coupes
- to remove dense conifer plantations above 300m
- Create habitat which is advantageous to riparian areas

All proposed operations sites will be surveyed prior to work taking place to identify the presence of species such as red squirrel, otter or badger that may require specific management treatments i.e. locating dreys or avoiding breeding seasons. Any resident squirrel populations will not be left in isolated blocks of mature conifer where at all possible, and transportation of any isolated populations will be considered as a mitigating measure.



Galloway Forest District

Laurieston Land Management Plan

Operations in First 10 Years

Scale @ A1 1:25,000

Date: 16 October 2018

0 325 650 1,300 1,950 2,600 Meters

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Legend

- Forest Design Plan Boundary
- Phase 1 felling (2019 - 2023)
- Phase 2 felling (2024 - 2028)

Map 2 - First 10 years management

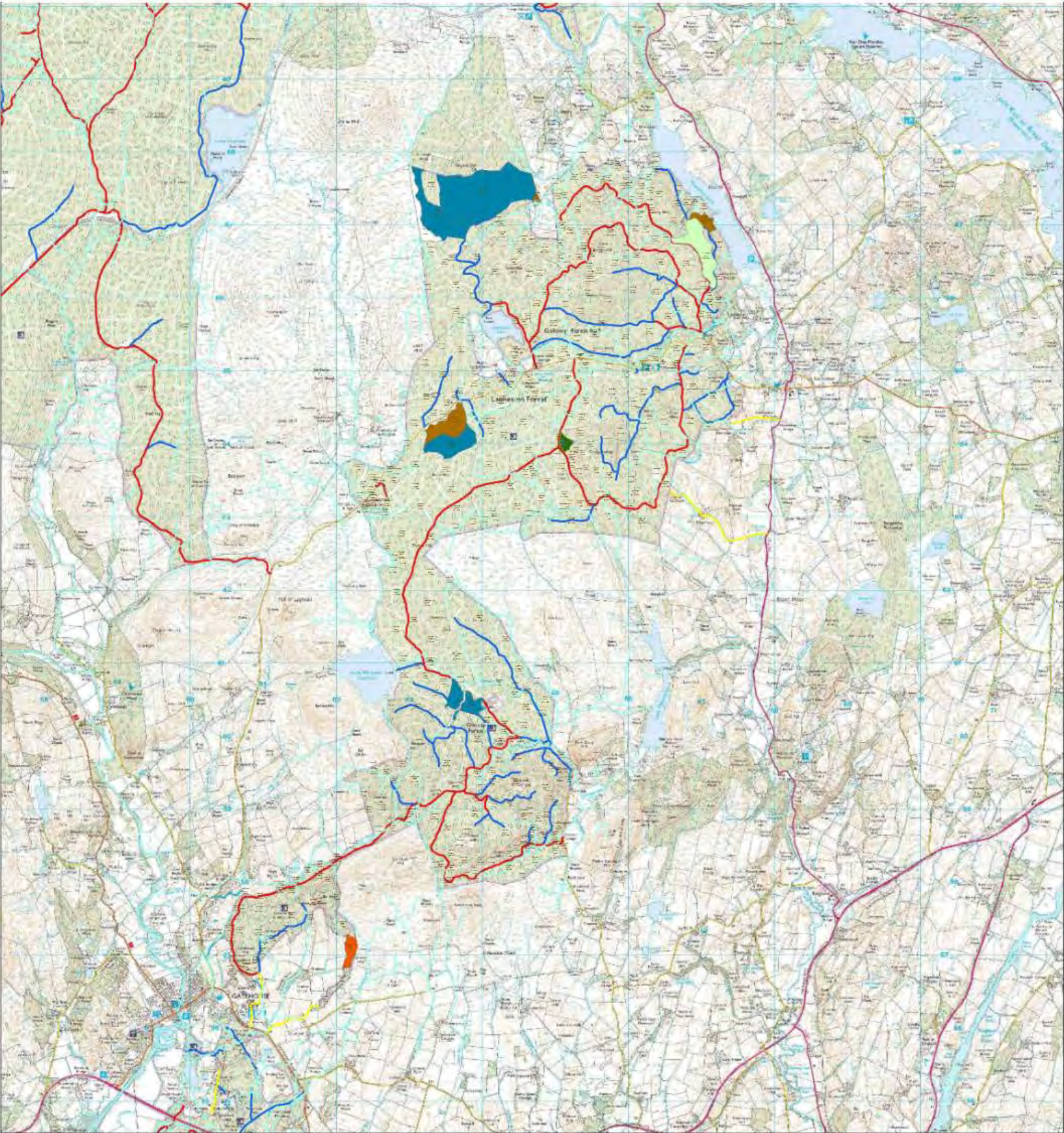
2.3 Proposed thinning in years 2018-2028

Thinning will be completed in line with the district thinning plan after an assessment of the coupes against the criteria given. All coupes which are marked for LISS methodology will require thinning and have been assessed as suitable for such.

2.4 Proposed restocking in years 2018-2028

The proposed restocking from clearfells have been selected by ESC, on-site observations and the previous rotations. Where it has been suitable to diversify the species utilising both BL and alternative conifers, this had been undertaken. The 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. As with the felling, replanting may occur with the use of internal or external planting operators, utilising trees provided by various nurseries of the correct provenance. Deer control will be managed internally, in line with the deer control strategy for the district.

The national restocking plan for FES is based on a presumption that restocking will take place as quickly as possible to avoid the loss of productive area for extended periods of time. This plan's restocking period is based on a fallow period of 3 years (see tolerance table) which has been established as the most advantageous timescale through both experimental results within the district and feedback from previous establishment operations. This fallow period has been key to reducing the incidence of loss due to *Hylobius abietis* and a reduction in chemical usage on the NFE. This fallow period is under constant review, and where we believe we can shorten this period with acceptable losses through increased beat-up, greater ground preparation and/or using treated trees, we will take the opportunity. Any extension to this period will be noted in the mid-term review and any exceptions to the 3 year rule described and amendments will be applied for as per the requirements of the tolerance table. One of the objectives for felling and restocking is to have at least a 7 year or 2m separation between felling and restocking of neighbouring coupes for both visual amenity and overall forest structure. Wherever possible, this plan will resolve adjacency issues by delaying felling, rather than restocking outside the normal 3 year window.



Galloway Forest District

Laurieston Land Management Plan

Restock in First 10 Years

Scale @ A1 1:25,000

Date: 16 October 2018

0 325 650 1,300 1,950 2,600 Meters

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Legend

- | | |
|-------------------------------|--|
| Forest Design Plan Boundary | Birch (BI) |
| Sitka spruce (SS) | Oak (OK) |
| Norway spruce (NS) | Ash (AH) |
| Lodgepole pine (LP) | Beech (BE) |
| Scots pine (SP) | Mixed/ other broadleaves (MB/XB) |
| Larch sp (EL/HL/JL) | Open land |
| Douglas fir (DF) | Species Mixture:
Main colour = Dominant species
Dots = Secondary species
Sitka spruce with Birch shown here |
| Mixed/ other conifers (MC/XC) | |

2.5 Access and roading 2018-2028

There will be no new road required for the first 10 years of the plan. The existing road network is well suited to the management operations, however, upgrading of roads will be required within the forest and will be assessed at the time of operations.

ATV tracks are utilised deer control, and their placing, length and direction is assessed at time of restock. Permanent ATV tracks will be retained and upgraded when required.

2.6 Departure from UKFS Guidelines

The UKFS guidance for adjacency has been met wherever possible. Given the reduced coupe size, landscape considerations, hylobius management, and possible stand stability, the adjacency guideline will not always be possible to follow. The adjacency guideline will primarily be addressed by delayed felling, with the secondary option being delayed restocking.

2.7 Tolerance table

See appendix 4

3.0 EIA Screening Determination for forestry projects

3.1 Proposed deforestation

Deforestation within the LMP area will only occur where there has been an identified benefit to the wider environment or community. This will be in the form of the creation of permanent open space. The rationale behind this will be to enhance water quality or the enhancement of viewpoints. At year 20, the amount of open space in the place will account for 20% of the total plan area, an increase of 9% almost entirely from conifer removal from watercourses and catchment areas.

3.2 Proposed forest road works

There is no extension of the forest road network planned for the area during the 10 year approval period, but upgrading of existing roads will be required to facilitate forestry operations. These will be identified once an assessment of the route required prior to operations has taken place. 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, and none of the roading projects within the forest block will be over the threshold requirements.

3.3 Proposed forest quarries

To reduce the impact of transportation of stone, as much suitable stone shall be won from locally available quarries within the forest block. Where this is undertaken all works shall be done in accordance with The Quarries Regulations(1999). 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.

3.4 Proposed afforestation

There is not proposed afforestation of permanent open space areas. Some naturally regenerated dispersed tree cover, 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

- To maintain the productive capacity of the forest
- To maintain and enhance the habitat available for migratory nightjar species, specifically by introducing a strip shelterwood system where this is appropriate and retain existing group shelterwood systems
- Retain and enhance the broadleaves and remnant designed landscapes (beech avenue)
- To increase the species diversity of the forest utilising the areas cleared for *P. ramorum* and where diversification would not detract from the overall diversity of the forest.

5.0 Introduction

5.1 The existing land holding

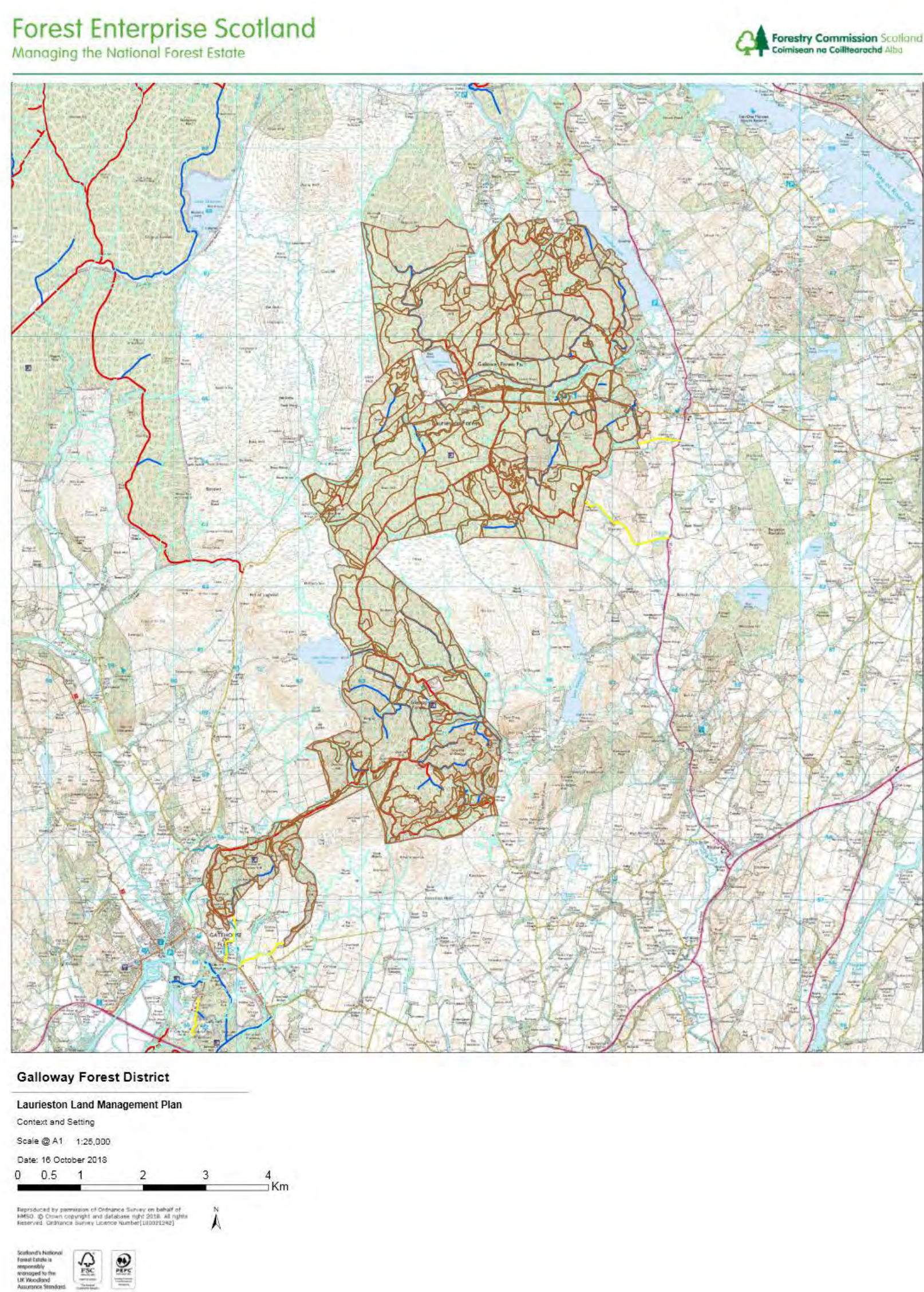
Laurieston forest block includes the areas described on OS mappings as Laurieston Forest, Glengap Forest and Disdow wood, lying between Laurieston village and Gatehouse of Fleet. These contiguous areas cover 3043ha, with no large areas of open hill ground within the forest block.

The first of the 3 large forest blocks to be acquired by the Forestry Commission was Disdow, immediately north of Gathouse in 1933. This was followed in 1938 by Laurieston, with Glengap following in 1945. Two smaller blocks were added in 1965 and 1985.

The areas are mostly given to first/second rotation conifer on poor quality former agricultural land. The primary species is Sitka spruce, sometimes grown in a mixture with lodgepole pine on wetter ground. The drier areas have been stocked with Larch, however, this has been affected by *P. ramorum*.

In the North east of the Laurieston area is a PAWS site which will continue to be restored with the removal of a Western Hemlock seed stand. There is also an area above Gatehouse of Fleet (South Disdow) which contains many veteran broadleaf and alternative conifer trees, which has resulted in a LEPO designation. The lower west section of Disdow is part of the Fleet Valley national scenic area. There are also small historic areas of broadleaves in the north along the Laurieston-Gatehouse of Fleet road, known locally as the beeches.

5.2 Setting and context



The block is surrounded by a combination of open hills, lochs and agricultural holdings. There is a small private forestry block which abuts the forest boundary on Slogarie hill. There are 2 major water bodies on two of the boundaries of the block; Woodhall loch at the north east boundary and loch Whinyeon in the south east. There is also Lochenbreck Loch, which is internal to the forest block, but not owned by FES. There is also the water processing works currently operated by Scottish Water. There are limited recreation facilities with the picnic area around the Kennick burn providing the only maintained recreation infrastructure. There is fishing on all of the surrounding and internal water bodies.

There are two small settlements which surround the forest block; Laurieston to the East of the forest from where the forest draws its name and Gatehouse of Fleet to the immediate south of the forest block.

Timber harvesting must take into account the neighbouring areas road infrastructure and harvesting must abide by the Timber transport Forum guides for excluded and consultation routes, and utilise internal forest road networks wherever possible.

The north west of the plan lies the Laughenghie and Airie Hills SSSI, and the Woodhall loch SSSI lying to the North East.

The internal, and some external viewpoints, have been affected by large amounts of felling associated with sanitation felling of larch killed by P. Ramorum. This felling was in addition to the original felling design set out in the previous plan which largely aimed to retain larch for landscape and biodiversity reasons. This additional felling resulted in some trees being exposed on skylines and hilltops. There has also been extensive windblow in areas which have been converted to LISS at a late stage, mainly focussed around Kenick burn area.

The 1994 Dumfries & Galloway landscape assessment categorises most of the area as 16a, upland fringe with forestry where the key characteristics are elevated rolling terrain, panoramic views over valley lowlands and the contrast between wide open spaces and more intimate landform. Summary guidelines suggest that forest proposals should achieve informal patterns of forest integrated with open space and valley woods.

The 2000 Galloway local Forestry Framework groups most of the area into "Dee 8" where guidance suggests that restructuring should pay particular attention to forest edges, riparian zone, enhancements and opening up key viewpoints. There

has been some informal clearance of the Fuffock hill viewpoint which affords views out across the surrounding area.

5.3 LMP Presentation

This LMP is presented as a whole, rather than divided into management zones. There are no discrete divisions within the plan as the forest is contiguous over the 3043ha covering the plan. The management objectives are based on the themes given in the Forest Enterprise Scotland corporate plan 2017-2019 along with the Galloway district forest strategy

6 Plan Objectives

6.1 Issues

- Habitat for nightjar must be maintained and enhanced. The small coupe clearfell size and variety of habitat must be continued to protect this valuable species in the north Glen gap/South Laurieston area
- Recreation area at Kenick burn has suffered from extensive windblow leading to path disruption and a diminished visual amenity. Furthermore extensive infection and death of mature larch around the area will cause further lowering of visual amenity.
- Recent thinning programme has left some unthinned areas which will be subject to windblow before ideal rotation age.
- An area of LMP is used by a schedule 1 raptor with an expansive exclusion zone. Strict timing restrictions hampers the ability to harvest in this area.
- Larch is likely to be lost entirely from the species mix in the forest because of the rapid spread of *P. Ramorum* causing the subsequent death of this tree.
- Restructuring of age class has been hampered by *P. ramorum* and windblow

6.2 Key Challenges

- The primary species in the area is a mix of first and second rotation spruce crop. Due to windblow the planting age has remained broadly similar in the second rotation and there was little chance for diversification. This has reduced the opportunities for restructuring of forest in this rotation.
- Maintaining mature conifer species, mostly spruce, for red squirrel past optimal rotation and stability. While reducing large seeded broadleaves to reduce the food source available to grey squirrel while maintaining historic character high amenity areas.
- Maintain the management of the local deer population at a low enough level to allow for natural regeneration of broadleaves and protect planting of vulnerable tree species.
- The reduction in coupe size for nightjar, while balancing the guidance of adjacency from the UK forestry standard can lead to a “checkerboard” appearance of coupes.
- Maintaining recreation capacity while removing infected larch from surrounding areas will be a short term challenge

6.3 Management objectives

Maintain the productive capacity of the forest: Galloway Forest District is responsible for contributing the largest amount of timber to the national programme, and as such must maintain the productive character and capacity of many of the forest blocks. This will utilise the more productive species for the site, mainly Sitka spruce, however this will be guided by the Ecological Site Classification (ESC) system and alternatives will be introduced where viable. The productive zones are shown in the concept zone map (map 5)

Maintain and enhance the habitat for migratory nightjar: 92% of Scotland's population of nightjars (RSPB, 2005) live in a handful of sites in Dumfries and Galloway. Laurieston forest block is one of these key sites and management will continue in consultation with RSPB over areas which are believed to be key to the nightjar. The combination of introducing a strip shelterwood system to the east of the forest, maintenance of the existing group shelterwood system and the use of smaller clearfell coupe size should all combine to enhance habitat availability for this species. The shelter wood systems are shown in concept map (map 5) and LISS map (map 1)

Increase the diversity of species at restock in the forest to enhance resilience: While there is a reliance on Sitka spruce to produce the majority of softwood from the forest, there will be an increase in the diversity of productive species, focussing on increasing alternative conifer and productive broadleaf where site conditions allow providing there would not be a large drop in volume from the forest overall. These alternative conifers will be located on the better soil conditions which are concentrated around the north west and southern areas of the block. See map 7 for restocking plans.

Diversify the products from the forest: To increase the diversity of products and to spread the time at which volume is removed from stands, a thinning programme will be used and maintained wherever possible given the constraints for the site type and exposure for the stand. This process is described in more detail in the Galloway Forest District Thinning Strategy.

Maintain the restructuring the forest in age class: Restructuring an even aged forest in one rotation is not possible, and will continue for at

least the next two rotations. The restructuring will take advantage of any disruption to the scheduled felling based on, such as *P. ramorum* felling.

Maintain the recreation capacity of the forest: Parts of the forest area used by mostly by the local community for informal recreation – mainly walking, dog walking and horse riding.

7.0 Analysis and concept

7.1 Analysis

Table 5 - Analysis of the the concepts and the implentation available

Objective	Opportunities	Constraints	Concept
Maintain the productive capacity of the forest	<p>Capitalise on the areas which have been cleared of larch to diversify the species used for restock to promote sustainable timber supply and increase resilience within the forest.</p> <p>Expand the use of Low Impact Silvicultural Systems in concert with increasing habitat for nightjar</p> <p>An increased use of thinning within the block will increase the potential supply of green sawlogs* from the LMP area and give the opportunity to further diversify silvicultural management or extend rotational length thus allowing for a greater age diversity throughout the forest block.</p> <p>Enhance age diversification of the forest through felling of smaller coupes.</p>	<p>Roading for access to allow for smaller, repeated harvesting operations.</p> <p>Full engagement with the thinning programme to allocate an appropriate intensity of harvesting.</p> <p>Adjacency constraints and maintaining felling of trees around MMAI to maximise productivity.</p>	<p>Create an area of strip shelterwood for nightjar and group shelterwood around the key recreation areas.</p> <p>Implement modest scale road building and upgrade programme required to service proposed operations coupes including LISS/CCF</p> <p>Continue restructuring of forest based upon the MMAI</p>
Maintain and enhance the habitat for migratory nightjar	<p>Smaller coupe size can be used to create transient open space, along with boggy areas retained as open space post harvesting</p> <p>Use of strip and group shelterwood will provide transient open space of varying size, with mature trees beside the areas.</p>	<p>Adjacency constraints may lead to the even age forest having a "checkerboard" appearance from a small coupe size, which would not provide interlock with the surrounding landscape</p>	<p>Utilise a reduced coupe size, permanent open space, and CCF methodology to enhance the habitat area and variety to maximise the capacity of the forest block for migratory Nightjars.</p> <p>The CCF approach will focus in the east of the forest, in the leeward side</p>

Laurieston Land Management Plan 2018 - 2028

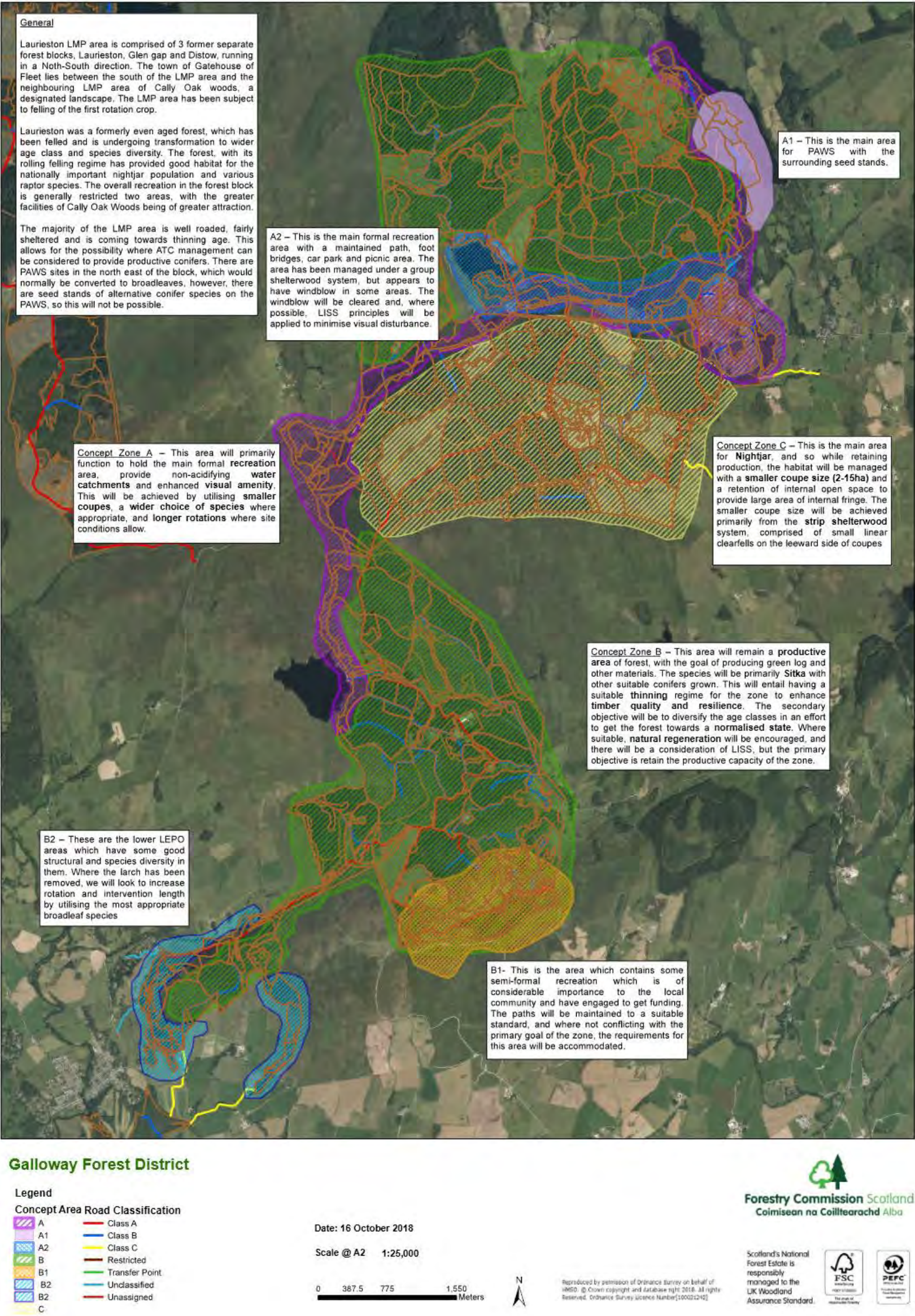
			of the prevailing SW wind.
Increase the diversity of species at restock in the forest to enhance resilience	<p>Utilising the areas which have been cleared before MMAI or scheduled felling will allow for a wider variety of tree species to be planted.</p> <p>Greater confidence in the growth characteristics of alternative conifers and access to better or improved alternative species will allow for planting in a greater range of site types</p>	<p>Availability of suitable alternative conifers</p> <p>Marketing of alternative conifers to local markets</p>	<p>Maximise the use of alternative conifer in restocking.</p> <p>Give indicative mix of species in restocking plans, confirm suitability with ground-truthing as to suitability of alternative conifer species for the site.</p>
Diversify the products from the forest.	<p>Early interventions are possible within the forest structure to allow for the greater diversity of products produced from initial thinnings (small roundwood/chip) and final thinnings (green sawlogs)</p> <p>The forest block is well roaded and nearly all coupes are accessible for interventions without further road construction</p>	<p>There will be upgrading required to ensure that all coupes can be accessed at the correct time.</p> <p>There will an increased timespan for timber haulage to be taken from the forest</p>	<p>Prioritise first thinning operations within the forest block and ensure that the roads are of suitable condition and sufficient permanent racks are established within coupes for future operations.</p> <p>Work with the council to ensure that timber traffic utilises internal forest roads for as much haulage as possible.</p>
Maintain the restructuring the forest in age class	<p>The existing forest has sufficient stability to tolerate moderate amount of extension beyond MMAI to facilitate restructuring</p> <p>Ability to utilise LISS/CCF areas for multi-age cohorts of trees within the same stand</p>	<p>The larch clearance has created unplanned sequences of felling</p> <p>Unstable stands have necessitated felling of coupes at a similar time which exacerbated the restructuring challenge</p>	<p>Restocking will continue to diversify age structure as far as possible and increased thinning will allow for extension of second rotation stands, allowing for greater scope for restructuring in the future</p>
Maintain the recreation capacity of the forest	<p>The path network is in fairly good condition and could be maintained with little upkeep.</p>	<p>The area around Kenick burn has suffered from extensive windblow</p>	<p>Utilise the larch felling to restructure the area, leaving character trees as seed trees. Leave the area</p>

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	The area around Fuffock hill has been identified as a viewpoint by the local community and the area has been cleared to provide a hilltop view.	and will require restructuring The larch around Kenick burn will require felling due to ramorum and will further detract from the landscape amenity value	for the prescribed fallow period (3 years) to avoid Hylobius and monitor natural regeneration before finalising replanting plans.
--	---	--	---

* green sawlogs refer to a log classification system using specific criteria defined in "Classification and Presentation of Softwood Sawlogs" Second Edition (Forestry Commission Field Book 9. 1990). Green are of higher quality for sawmilling, with red being of lower quality.

7.2 Concept

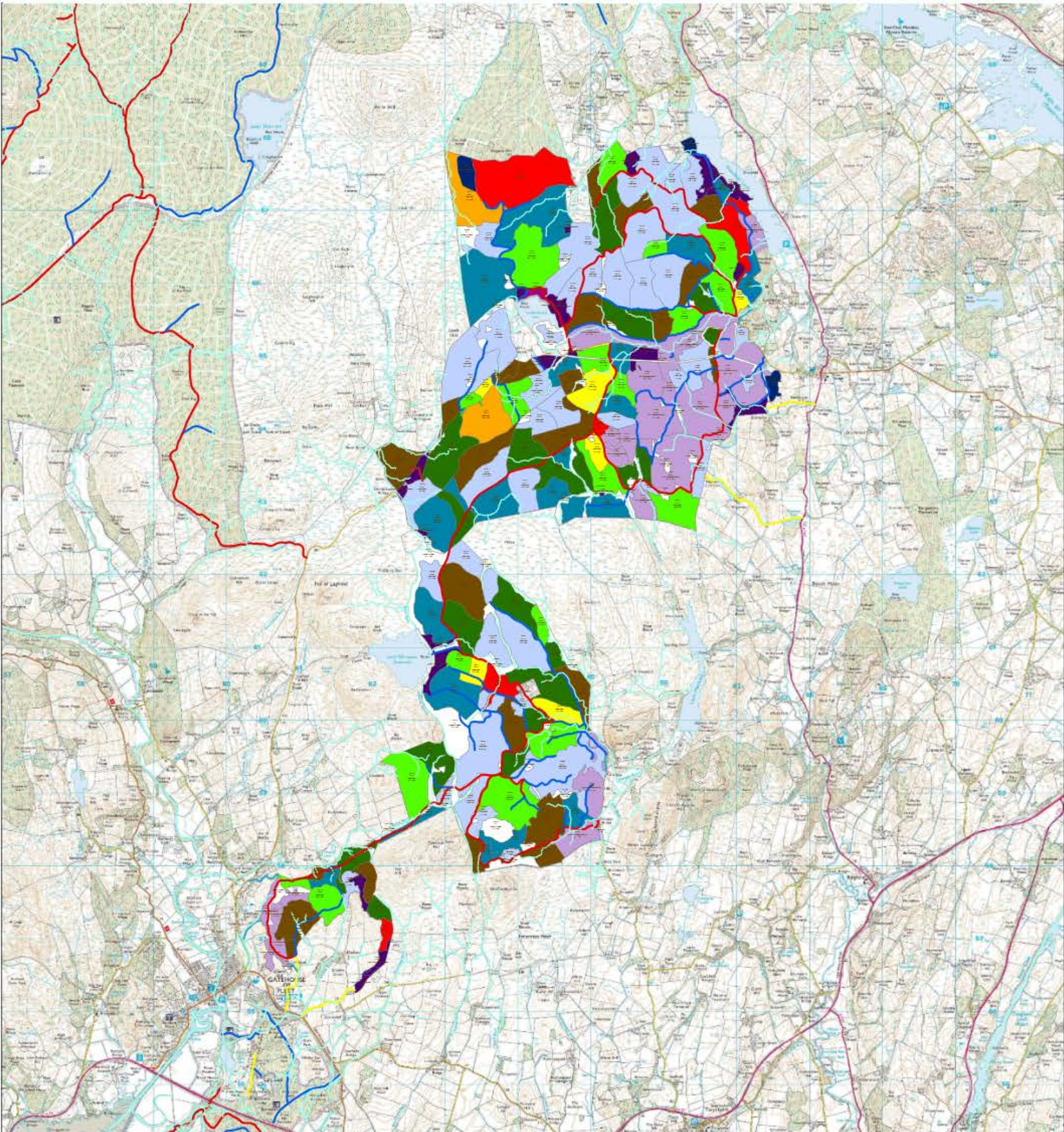


Map 5 - Concept Zone Map

8.0 Long Term Land Management Plan Proposals

The overarching aim for the forest management over the next 20 years is to provide a continuing supply of timber for the national markets, whilst maintaining and enhancing the area for nightjar. This will be achieved by utilising mostly Sitka spruce, with alternative conifers and productive broadleaves utilised where site conditions would allow acceptable growth. The increasing use of CCF, in the form of both group and strip shelterwood will allow for greater habitat for nightjar, when combined with small coupe clearfell. An increase in thinning will provide a wider range of forest products over a longer period, while increasing silvicultural options.

This plan area is in the process of restructuring and diversification which will take more than one rotation given the uniformity of the crop and the moderately successful thinning programme. This restructuring has been severely disrupted, as previously stated, by the *P. ramorum* felling.



Galloway Forest District

Laurieston Land Management Plan

Operations Map

Scale @ A1 1:25,000

Date: 17 October 2018

0 375 750 1,500 2,250 3,000 Meters

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Scotland's National Forest Estate is responsibly managed to the UK Woodland Assurance Standard

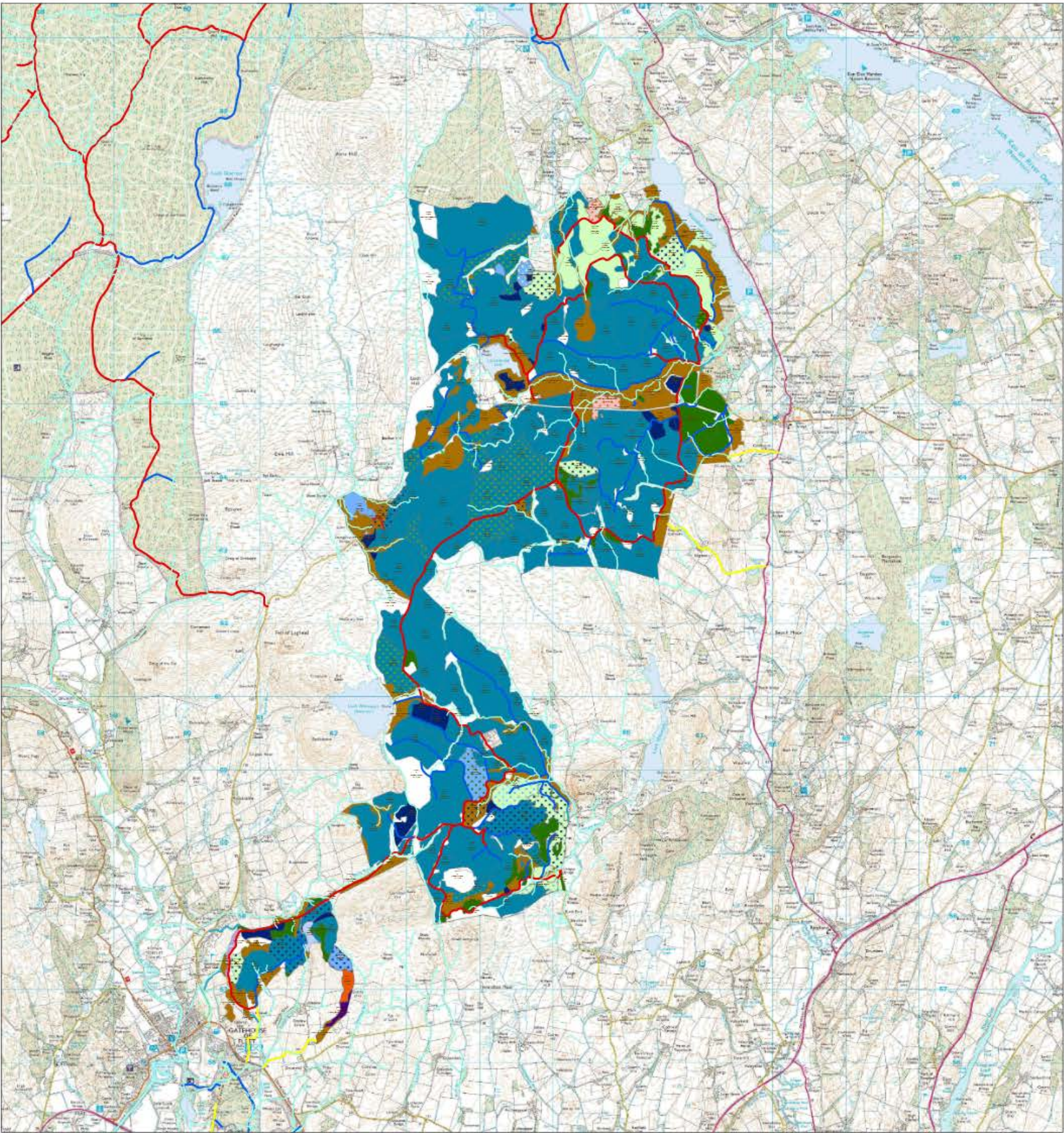
FSC

PEFC

Legend

Forest Design Plan Boundary	Phase 7 felling (2049 - 2053)
Phase 1 felling (2019 - 2023)	After 2053
Phase 2 felling (2024 - 2028)	Natural Reserve
Phase 3 felling (2029 - 2033)	Minimum intervention
Phase 4 felling (2034 - 2038)	Long term retention
Phase 5 felling (2039 - 2043)	Low impact silviculture
Phase 6 felling (2044 - 2048)	Open/ other land

Map 6 - Full Plan Area Operations Map



Galloway Forest District

Laurieston Land Management Plan

Restocking Map

Scale @ A1 1:25,000

Date: 17 October 2018

0 370 740 1,480 2,220 2,960 Meters

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FSC
PEFC

Legend

Forest Design Plan Boundary	Birch (BI)
Sitka spruce (SS)	Oak (OK)
Norway spruce (NS)	Ash (AH)
Lodgepole pine (LP)	Beech (BE)
Scots pine (SP)	Mixed/ other broadleaves (MB/XB)
Larch sp (EL/HL/JL)	Open land
Douglas fir (DF)	Species Mixture: Main colour = Dominant species Dots = Secondary species Sitka spruce with Birch shown here
Mixed/ other conifers (MC/XC)	

Map 7 - Full Plan Area Future Habitats and Species

Laurieston Land Management Plan 2018 - 2028

8.1 Management

The existing CCF or LISS areas have not been managed to a high enough standard to prevent losses in the areas due to windblow. This has resulted in a degradation of the areas, and a challenge to maintain the CCF nature of the area. This management plan will seek to enhance these areas which are now a key management objective.

There is a general lack of maturity to the forest, with the first rotation being harvested and the replanted. This means that the felling programme is relatively limited for the next 2-4 phases. The one large scale felling operation will be the felling around Slogarie hill, discussed below. Beyond this there is little clearfelling in the scope of the plan, with a concentration of first thinning operations, CCF/Shelterwood systems and regeneration control.

The felling of Slogarie hill has been designed after plans for the neighbouring forest had been considered. There was a previous intention to clear the hillside coupe, but as the neighbouring forest will restock to the border, the visual disturbance would be high if the restock did not encompass the whole hill side.

8.1.1 Clear Felling

The first three phases of the plan contain little felling, with the area increasing in the fourth phase (Table 6). This reflects the lack of age diversity in the the plan, which will continue to be restructured over the age of the coupes. The 4th phase contains a larger felling area as more of the restocked areas will approach MMAI.

Phase	No of coupes	Area	Percentage of area
1	5	122.70 ha	4.0
2	2	68.11 ha	2.2
3	6	64.52ha	2.1
4	18	343.63 ha	11.3

Table 6 - percentage of forest area felled in each 5 year phase.

8.1.2 Thinning

Thinning will be undertaken in line with the district thinning strategy, utilising the correct machinery and methodology. This programme will cover

more than this single forest block and will continue to rotate in a 5-7 year cycle around the district as opportunities arise. The coupes selected for thinning are based on both the management prescription and the district thinning guide which gives criteria for selection of a coupe. Once the coupe is deemed viable, further assessments are made against wildlife constraints, possible ground damage, coupe location and economic considerations. The economic considerations include the market for the projected products from the thinning and the infrastructure costs which are associated with the operation. Thinning also has to consider the species which is planned to be thinned or the heterogeneity of the stand as an undertaking. Where the stand varies from the dominant Sitka spruce species, there is a lack of experience and knowledge of the effects of thinning in the forestry sector generally, so a cautious approach will be taken with alternative conifer species.

8.1.3 Continuous Cover Forestry (CCF)

The use of continuous cover forestry is key to the success of this management plan in providing a greater diversity of habitat within the forest block while simultaneously providing a diversity of timber product from the required thinning and felling operations. The areas which have been selected for CCF have been assessed against the district thinning guide criteria for DAMS (Detailed Aspect Method of Scoring) for acceptable exposure scores. There will be a pre-commencement assessment of the regeneration potential from the remaining standing crop, targeting mast years for the desired species. For most areas, the regenerative species will be a shade tolerant or semi-shade tolerant conifer. Where the desired species does not regenerate, there will be an assessment made as to whether this species is acceptable or whether there will have to be enrichment planting or clearance of the undesired regeneration.

The use of strip shelterwood will be focused on utilising the standing Sitka spruce crops, with the strips cut 50m (two tree height wide) on the leeward edge of the crop. This will allow for the maximum range of equipment to be used and require the minimum supervision of operations by harvesting foresters and allow the district to build experience and capacity for CCF operations. These 50m strips will be repeated on a 5 year cycle. The areas where this system is proposed are not however at maturity yet and will have to wait until strip shelterwood creation is required. They will have the thinning interventions required for CCF operations.

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8.1.3 Restructuring

Age of trees	Growth stage	Percentage of class at given year	
		2018	2038
0 - 10	Establishment	17.21	11.68
11 - 20	Thicket	23.95	3.52
21 - 40	Pole stage	39.76	31.88
41 - 60	Maturing high forest	5.00	20.11
61 +	Old high forest	2.92	5.30
	Open space / felled areas	11.15	27.50
Total		100.0%	100.0%

Table 7 - Change to age profile over scope of plan

8.2 Restocking proposals, future habitats and species

There is little felling within the first two phases of the forest plan, with five coupes in phase one and three coupes in phase two, therefore the restocking is limited to these sites. However where the opportunity arises areas will be restocked with the correct species for the site and utilise suitable natural regeneration should it occur. Where planting is required, ground preparation and planting of transplanted nursery stock with the correct provenance will occur.

Natural regeneration will play a larger part in the CCF-LISS areas which will attempt to be entirely restocked by natural regeneration and no ground preparation. There is, however, the possibility that the remaining trees will not provide sufficient regeneration of the suitable species and in these instance both a further assessment of the growing conditions will occur. Options for remedial action will include such operations as enrichment planting, increasing light levels and increased ground disturbance.

The restocking has avoided creating isolated pockets of broadleaves which would be impractical to maintain and due to lack of maintenance would fail to meet management objectives. Broadleaves have been collected into larger coherent areas where they can be successfully managed to deliver the maximum benefits to the forest.

8.2 Open lands

The open land in the forest is directed by two primary goals; the enhancement of the riparian zones and watershed protection and the use of this habitat for a number of species within the forest. This has been utilised on the upper west areas for Loch Whinyeon. A secondary goal is to utilise open space for the viewpoint on Fuffock Hill, allowing an uninterrupted panoramic view.

8.3 Visitor Zones

Laurieston is not connected to the core recreation areas for Galloway, and has the more heavily visited Fleet oak woods (Cally woods) immediately to the south. The recreation facilities are mostly utilised by local residents who utilise the forest on a regular basis for dog walking and shorter walks.

There is a formal recreation area around Kenick Burn, which provides shorter walks around the burn, with the some rest areas incorporated. The plan will look to retain these areas and will attempt to restructure the surrounding coupes utilising a CCF approach.

There is an informal, unsignposted, longer walk from the north of the plan at Summerhill – Slogarie which follows forest roads and is also subject to a claimed right of way, which follows the forest roads.

8.4 PAWS Restoration

To facilitate the restoration around the Woodhall Loch area, the existing Western Hemlock seed stand has to be felled and removed. The removal of this alternative conifer seed site requires that Forest research is informed and given the opportunity for a final seed collection prior to felling. Once this area is removed, it is hoped that the area is colonised by the surrounding broadleaves, however, this will be monitored. If there is unsuitable species colonise the site then enrichment planting of native broadleaves will be carried out and conifers cleared.

9.0 Management Prescriptions

Forest Management Types

- **Clearfelling**
Clearfelling will be done with harvester and forwarder, with none of the areas scheduled for clearfell necessitating 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. Subsequent brash recovery may take place where this will not adversely affect soil quality on the site.
- **Thinning**
As determined by the district thinning programme, this will be focused on first thinnings which 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. 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.
- **CCF/LISS**
Strip shelterwood – 50m (or 2 tree lengths) drifts to be cut in the leeward side of coupes from the previous cut. These will be repeated at 5 year intervals. Regeneration will be monitored to ensure that there is sufficient coverage of the area cut, and if necessary supplemented with additional planting and ground preparation.

Group shelterwood – Areas which have been subject to windblow will be harvested to a maximum 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 to ensure that the correct species are regenerating at the correct density to maintain forest cover.
- **Natural regeneration**
Natural regeneration will be utilised where appropriate and managed under the district guidance and the guidance from the natural

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regeneration working group. This may include interventions such as respacing, enrichment planting or ground scarification. This will apply to both clearfell and CCF 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
There are areas of natural reserves identified within the plan which will retain as much deadwood as possible, in excess of the 20m³/ha as recommended by the UKFS. This will include a variety of heights and species where available. No trees will be girdled or cut above stump level to create deadwood habitat

Operational Access

- The forest block has good operational access withing the forested areas, however, additional ATV tracks may need to be created within the forest block to allow for deer control. No additional roads are required, however, road upgrades may be required for the thinning and CCF operations. This will be assessed as part of the operational work planning assessment.

Deer Management

- Deer management has been maintained in line with the districts deer management strategy. This has allowed a sustainable level of deer to be maintained, allowing for natural regeneration of broadleaves to occur.

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

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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.

- 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 existing on site.

Appendix I: Land Management Plan Consultation Record

Statutory Consultee	Date contacted	Date response received	Issue raised	Forest District Response
SNH - Dumfries and Galloway	29.06.2018	None		
Forestry Commission Scotland	29.06.2018	None		
CONFOR	29.06.2018	None		
Dumfries and Galloway Council	29.06.2018	13.07.2018	None	
Historic Scotland	29.06.2018	10.07.2018	None	
SEPA	29.06.2018		Biosecurity for American Signal Crayfish SEPA construction site licences	Met on site to discuss, incorporated biosecurity into plan and ongoing liaison. No construction site licences required
Balmaghie Community Council	29.06.2018	01.07.2018	None	
Gatehouse of Fleet Community Council	29.06.2018	None		
Visit Scotland	29.06.2018	None		

Consultee	Date contacted	Date response received	Issue raised	Forest District Response
IUCN Otter Specialist Group	29.06.2018	None		
Red Squirrels in South Scotland	29.06.2018	None		
RSPB	29.06.2018	23.07.2018	Use of group shelterwood. Increase in O/S	Areas already in use for group shelterwood.

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				Expansion possible once these are functioning correctly. OS increased where suitable.
Galloway Fisheries Trust	29.06.2018	None		
Galloway & Southern Ayrshire Biosphere	29.06.2018	None		
Neighbour - PS	29.06.2018		Access and hedgecutting	
Neighbour – EL	29.06.2018		Species diversity and public access	Public access ongoing issue with the community and access layer. Species diversity is looked at for restock, however as little felling in first 10 years, not large opportunity to alter restocking
Neighbour – GM	29.06.2018		Road construction and access	FCS civil engineers responded with details of road construction.
Neighbour – NH	29.06.2018		Species diversity	Species diversity is looked at for restock, however as little felling in first 10 years, not large opportunity to alter restocking

Appendix II: Supporting Information

Select relevant sections only.

Include any issues which have informed the development of the plan – any key features and baseline information, any survey information, any issue that is referred to in the main text, any studies that have been carried out, any additional analysis of options.

1.0 Background information

1.1.1 Geology, Soils and landform

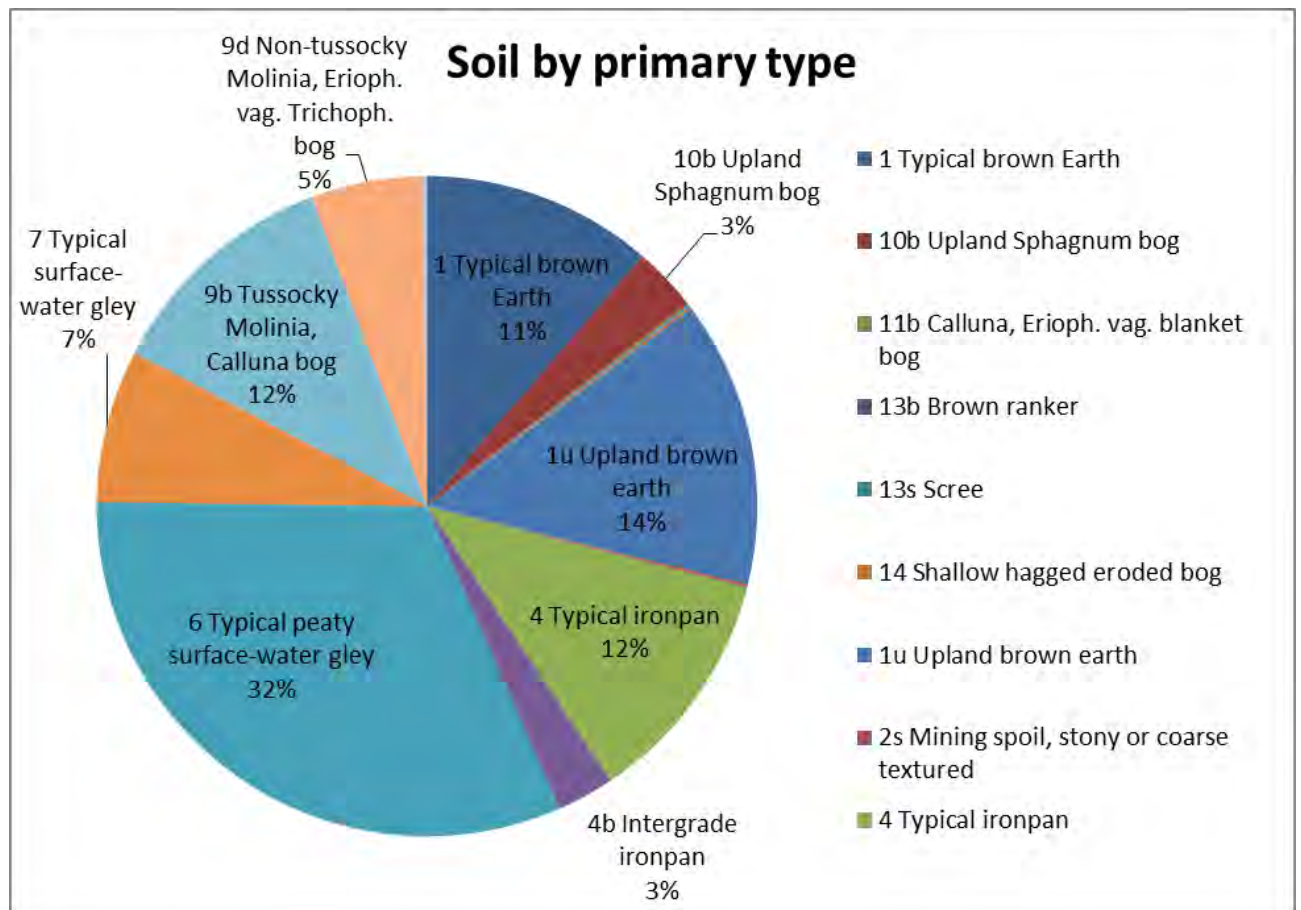
Geology: The block is situated on an extensive area of Silurian Greywackes and Shales.

Geomorphology: Set in an undulating landscape interspersed with a series of minor peaks the most significant being Slogarie Hilt (256m) and Kennick Hill (260m) in the north and Bengray (366m) and Fore Hill of Glengap (300m) to the south.

Elevation: ranges from 50 meters near Gatehouse of Fleet to 366 metres.

Soils: The soil survey coverage within the block is at a fairly detailed scale showing areas of brown earths; upland, podzolic and basic (25%), with some ironpans (15%). The majority of the soils comprise of Gleys and Peaty gleys (39%), with the rest being various classifications of bog. The Macaulay "land capability for Forestry" classification for this area is mostly F5 (limited flexibility for growth and management of tree crops).

Figure 9 - Soil type (FC classification) by primary constituent



1.1.2 Water

The minor hill within the block area create a complex hydrology around them, with the North and West Laurieston draining into the River Dee catchment in many different directions, the main internal watercourse is the Kenick Burn flowing from Lochenbreck Loch to Woodhall Loch. Both lochs have shared boundaries with farming and forestry.

South Laurieston and most of Glengap drain via the Anstool Burn and Glengap burn into the Tarff Water Catchment. Loch Whinyeon, a reservoir, also lies adjacent to the plantations on the western boundary. This creates a key constraint for the planting surrounding the reservoir and tributaries.

Disdow wood and the west of Bengray form part of the Fleet catchment, the Barlay Burn is the most significant watercourse in these areas.

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Woodhall loch is designated a SSSI, with a 2014 report by SNH finding the loch in "favourable-maintained" condition. Feedback from SEPA has indicated that this Loch is subject to American Signal Crayfish and decontamination measures may be required where operations cross or are located on a connected watercourse.

Contained within the Glengap forest block, there is a water treatment plant which is responsible for the water supply to Gatehouse and the surrounding communities. This area is leased to a third party with management agreement in place.

The SEPA flooding maps (<http://map.sepa.org.uk/floodmap/map.htm>) shows that a small area in the south west corner of the LMP area is a Potentially Vulnerable Area (PVA). Within this area there is mostly continuous cover forestry for the veteran trees above the gatehouse area, and there is no planned felling within the first 10 years of the plan in the area.

1.1.3 Climate

The south west of Scotland has a predominantly mild windy oceanic climate influenced by the Gulf Stream. Annual rainfall in the block is around 1200mm, compared to the district range of 1000 – 2000mm, and falls mainly during the winter months October to February.

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 Habitat networks will be important.

2.0 Analysis of previous plan

Objectives	Assessment of Objectives during plan period
Commercial softwood timber production in core of forest.	Clearfelling has continued in the older plantation areas. There has been a reduction in coupes size to accommodate Nightjar, which was subject to a separate amendment. Large areas remain under commercial conifer management.
Target environmental improvements where they will add greatest value	Environmental efforts have been applied in the Glen gap forest block, focussing on reduction in coupe size. The habitats for protected species

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	have been maintained and increased where possible. Where long term retentions do not contain larch, all have been retained as per the plan.
Restructuring of even aged plantation to create a diverse age structure between coupes to benefit habitat & visual diversity	This has continued and will be carried on into the next plan. There has been disruption to this with the <i>P.ramorum</i> felling.
Secondary Objectives	
Increase area of broadleaves in selected areas where they will give the greatest environmental & visual benefits	Areas of broadleaves have been achieved by both planting and natural regeneration in areas where they will be of benefit
Improve riparian zoneas along significant watercourses.	Riparian zones have been widened at replanting, with the use of BL where practicable

The 2005 approved plan objectives have generally been met, they have over the interim period become slightly outdated. Key objectives for the plan are now more directly related to the revised brief see section 6.3

Laurieston Land Management Plan 2018 - 2028

Appendix III. Land Management Plan Brief

The main management objectives in this medium scale plan focus on Timber Production, Biodiversity (habitat restoration and the creation of additional transient open space habitat to benefit a range of bird species) and Water quality (for loch Whinyeon and Loch Lochenbreck)

The block lies between Gatehouse of Fleet to the south and Laurieston to the east

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	<ul style="list-style-type: none"> Commitment to high quality silviculture and increased use of alternatives to clearfell Stewardship of carbon resources locked up in Estate's trees and soils Adapt to climate change and make woodlands more resilient to pressure Deal with invasive species that threaten habitats and biodiversity 	<ul style="list-style-type: none"> <i>Increase</i> the use of alternatives to clear fell, especially strip shelterwood, which will give a heterogeneous structure to the forest. <i>Improve</i> resilience through smaller coupe size and increased use of woodland managed under LISS, alternative to clearfell and other continuous cover systems where appropriate <i>Increase</i> use of natural regeneration in our restocking <i>Control</i> invasive species as per FES guidelines (specifically <i>R. ponticum</i>) <i>Continue</i> with <i>P. Ramorum</i> management as per district guidance
Productive: provide sustainable economic benefits from the land	<ul style="list-style-type: none"> Contribute to the local economy by maintaining core timber production and providing an appropriate roads infrastructure Consider species diversity and use of mixtures in forest resilience 	<ul style="list-style-type: none"> <i>Meet</i> production forecast commitment through revised felling plan <i>Enhance</i> the productive yield by selecting the correct species for site type restocking in line with district goals for diversity <i>Increase</i> the area within the forest block which is part of the district thinning programme to enhance timber quality and provide a wider range of products <i>Implement</i> road construction / maintenance programme and quarry development required to service proposed harvesting operations
Treasured: a multi-	<ul style="list-style-type: none"> Involve and engage with local people / 	<ul style="list-style-type: none"> Continue to <i>consult</i> with local communities and stakeholders through

Laurieston Land Management Plan 2018 - 2028

purpose resource that sustains livelihoods, improves quality of life and offers involvement and enjoyment	<p>encourage partnership working</p> <ul style="list-style-type: none"> • Create uniquely special places across the Estate • Recognise the Estate as a place for research and development 	<p>Forest panel and Land Management Plan process</p> <ul style="list-style-type: none"> • <i>Incorporate</i> Research and Development into Land Management Plans including monitoring of <i>P. Ramorum</i> and <i>Maintain</i> existing experimental plots within forest block. • <i>Maintain and Enhance</i> views of the forest from Woodhall Loch
Accessible: woodlands that welcome and are open for all	<ul style="list-style-type: none"> • Improve access and enhance existing facilities • Use for health benefits and outdoor learning 	<ul style="list-style-type: none"> • <i>Rationalise</i> the existing paths to allow for a greater variety of paths in conjunction with the neighbouring facilities • <i>Retain</i> access and carpark for Kenick Burn path • <i>Maintain</i> the accessibility for recreational use in Lochenbreck Loch • <i>Enhance</i> the local communities use of Fuffock hill
Cared for: working with landscape and the natural and cultural heritage	<ul style="list-style-type: none"> • Maintain open habitats in good ecological condition • Landscape • Increase area of broadleaf cover in block focussing on creation of habitat networks • Conserve vulnerable species • Safeguard heritage features 	<ul style="list-style-type: none"> • <i>Create</i> additional permanent open habitat between Loch Whinyeon and Kennick burn. • Southern, Eastern and North-Eastern edges block are visually prominent as viewed from surrounding hill tops/open areas; <i>maintain and enhance</i> local landscape through additional species diversity, open space integrated management and revised coupe shapes to better suit landform • <i>Increase</i> area of native BL throughout plan area for added biodiversity, targeting a permanent BL woodland infrastructure along riparian zones (Fuffock Burn, Kenick Burn, Woodhall Loch, Lochenbrek Loch, Loch Whinyeon) • The block is a key habitat for the European Nightjar (BAP species) and one of the main sites nationally for breeding. <i>Enhance</i> the habitat through smaller coupe size and the introduction of strip shelterwood system where possible. • The block is core for Black Grouse (priority species); <i>maintain</i> lek and nesting areas for Black Grouse and <i>enhance</i> habitat through creation of woodland fringe • The block is relatively adjacent to but not part of the priority area for Red squirrel; <i>maintain and enhance</i> area for Red Squirrel (priority species)

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		<ul style="list-style-type: none">• <i>Manage</i> watercourses and private water supplies within DP unit in keeping with UKWAS standards, Water Framework Directive and Forest and Water guidelines to <i>maintain and improve</i> water quality.• <i>Manage</i> minor heritage features as per FES guidelines
Good value	<ul style="list-style-type: none">• Seek diverse range of income streams• Reduce carbon emissions from business activities	<ul style="list-style-type: none">• <i>Facilitate</i> energy infrastructure as required by national policy• <i>Manage</i> resident deer population with wildlife team and

Laurieston Land Management Plan 2018 - 2028

ACHIEVED BY PLAN

HEALTHY

Y Committed to high quality silviculture and increasingly using alternatives to clearfell (LISS): significant area of LISS/ATC in place throughout the block (Concept area 2 – Craigelwhan, Black Hill & Thorny Hill)

Y Committed to dealing with invasive plants that threaten habitats and biodiversity: active *R.ponticum* control ongoing mainly within policy area around Disdow/Fuffock hill

Y Help the estate to adapt to climate change and become more resilient to pressure: Larch management of *P. Ramorum* as part of the agreed sitrict management strategy and operational Deer management plan throughout block in place. Retain seed stands of diverse conifer and broadleaf within the forest block to provide genetic diversity

PRODUCTIVE

Y Supply three million cubic metre of sustainable softwood: design plan contributes to the overall programme for the district and with changes in management should provide a wider variety of products at different time frames.

Y Work with partners to find new ways to harness our natural and cultural heritage and develop the estate's potential for tourism: Local community groups will be consulted on plan.

N Manage at least one quarter of our expanding broadleaf woodlands to produce quality hardwood and fuelwood: increased BL restock is unlikely to be of a productive nature

N Support Scottish Governments woodland expansion programme: block presents limited opportunities for woodland expansion

N Plan to increase the agricultural use of the estate where this is consistent with environmental objectives: block presents limited opportunities for agricultural land use expansion

TREASURED

Y Committed to more unique special places across the estate and delivering benefits to a more diverse range of Scotland's people: Habitat for nightjar is nationally important. Undertake management of a schedule 1 raptor in agreement with neighbouring properties.

Y Recognise the value of the Estate as a place for research and development of best practice: block has potential for LISS development, enhanced thinning regime and contains research plots

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Y Continue to use the Estate as a place for volunteering and gaining employment skills: block has been, and to a degree is still used by community volunteers.

ACCESSIBLE

Y Invest available resources into high quality facilities that encourage and help visitors experience and enjoy the outdoor experience: block presents limited opportunities for facility development, but will focus on retention of trails and facilities which have high utilisation

Y Use estate for health benefits and outdoor learning: block is regularly used by local people for exercise (dog walking, horse riding)

CARED FOR

Y Restore 85% of areas on ASNW to native species: ongoing thinning will contribute towards district restoration targets and plan for PAWS restoration will be agreed

Y Increase BL tree cover from 8% woodland cover to 20%: block will contribute modestly towards district's BL tree cover expansion targets

N Committed to maintaining best open habitats in good ecological condition: Limited open habitats within LMP area, other than the shifting edge habitat as recommended for nightjars

Y Identify particularly vulnerable species for which the NFE is important and take specific conservation action (Black Grouse / Red Squirrel):

The main vulnerable species within the block has been identified as Nightjar and the management practices have been adapted where possible to suit. Although not a priority area, our current intention to maintain Laurieston as a largely productive conifer will not disadvantage the local Red Squirrel population

Y Safeguard archaeological sites through planning and management and recognise special places and features with local cultural meaning: area around Dunragit is an important locus for Archaeology, local heritage features and two SAM sites will be managed accordingly

GOOD VALUE

Y Seek a range of income sources to underpin the cost of managing the Estate and look for ways to achieve best value in delivery of public benefits: block presents some opportunity through facilitation of energy infrastructure, but may have greater drawback than benefits to the block.

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Appendix IV. 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 3 planting seasons after felling.	• Change within species group e.g. evergreen conifers or broadleaves.		• Increase by up to 5% of coupe area	
Approval by exchange of letters and map	Y		• Up to 15% of coupe area	• Between 3 and 5 planting seasons after felling, subject to the wider forest and habitat structure not being significantly compromised.		• Additional felling of trees not agreed in plan. • Departures of > 60m in either direction from centre line of road	• Increase by up to 10% of coupe area • Any reduction in open space of coupe area by planting.	• Up to 5ha

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Approval by formal plan amendment may be required	Y	<ul style="list-style-type: none"> Felling delayed into second or later 5 year period. Advance felling (phase 3 or beyond) into current or 2nd 5 year period. 	<ul style="list-style-type: none"> More than 15% of coupe area. 	<ul style="list-style-type: none"> More than 5 planting seasons after felling, subject to the wider forest and habitat structure not being significantly compromised. 	<ul style="list-style-type: none"> Change from specified native species. Change Between species group. 	<ul style="list-style-type: none"> As above, depending on sensitivity. 	<ul style="list-style-type: none"> In excess of 10% of coupe area. Colonisation of open space agreed as critical. 	<ul style="list-style-type: none"> More than 5ha.
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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

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Appendix V. Archaeology

Designation	Grid Reference	Name	Feature ID	Feature Description	Site Description	Importance	Source	NMR Hyperlink	Area (ha)
Undesignated	NX63 8653	FIELD BANKS ; RIG	GD00 2035	FIELD SYSTEM (S)	Located to a 100m square is an area of rig and furrow cultivation and field banks.	Uncategorised	FCS		1
Undesignated	NX66 5644	CROW WHITS	GD00 1235	FARMSTEAD	A farmstead, comprising one L-shaped roofed building, two unroofed structures and two enclosures is depicted on the 1st edition of the OS 6-inch map (Kirkcudbrightshire 1852, sheet 38).	Regional Importance	FCS	http://canmore.rcahms.gov.uk/en/site/177409/	0.26
Undesignated	NX66 0670	CRAIG HILL	GD00 1280	SHEEPFOLD, STRUCTURE	One unroofed structure and what may be an enclosure aligned N/S annotated 'Old Sheep Ree' is depicted on the 1st edition of the OS 6-inch map (Kirkcudbrightshire	Regional Importance	NMR	http://canmore.rcahms.gov.uk/en/site/177437/	0.06

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					1852, sheet 31)				
Undesignated	NX64 5599	GLENGAP QUARRY	GD00 1766	QUARRY	Site of a quarry.	Local Importance	HER		0.64
Undesignated	NX63 4614	BANKBEN	GD00 0244	CAIRN	A cairn measures 10m from N to S by 9m transversely and up to 1m in height. It is grass and moss covered surmounted by a marker cairn 1.5m in diameter and 1m in height which may account for a depression on the N side.	Regional Importance	HER	http://canmore.rcahms.gov.uk/en/site/64192/	0.02
Undesignated	NX63 8665	SHEEP PEN	GD00 1909	SHEEPFOLD	A small circular sheepfold.	Local Importance	FCS		0.03
Undesignated	NX64 5599	SHEEP PEN	GD00 2036	SHEEPFOLD	A sheepfold of two compartments.	Local Importance	FCS		0.11
Undesignated	NX66 0634	SHEEP PEN	GD00 1908	SHEEPFOLD	A sheepfold of five compartments lying on the W side of a boundary wall.	Local Importance	FCS		0.08
Undesignated	NX66	UPPER	GD00	BURNT	A burnt mound,	Regional	HER	http://canmore	0.01

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esignated	4625	LAIRD MANN OCH	1506	MOUND	measures 4.4m from N to S with a central hollow 2m across. Burnt mound material, revealed by lifting a sod, occupies a semi-circular arc on the E side and is 1.5m thick and up to 0.3m in height.	Importance		.rcahms.gov.uk/en/site/69002/	
Undesignated	NX66 8666	Summ erhill Glenn Field Systems		FIELD SYSTEM	Stone dyke field system as depicted on 1st edition OS 6 -inch map (Kirkcudbrightshire 1852, sheet 38)	Local Importance	FCS		4.88
Undesignated	NX63 4650	LOCH HILL	GD00 1283	ENCLOSURE	An enclosure is depicted on the 1st edition of the OS 6-inch map (Kirkcudbrightshire 1852, sheet 38).	Local Importance	NMR	http://canmore.rcahms.gov.uk/en/site/177442/	0.07
Undesignated	NX65 9675	SHEEP PEN	GD00 2037	SHEEPF OLD	A sheepfold of three compartments.	Local Importance	FCS		0.06
Undesignated	NX65 5667	CAIRN	GD00 1907	CAIRN	Location of a cairn, depicted on current OS maps.	Regional Importance	FCS		0.01

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Undesignated	NX62 5594	HLA Relict Area		Later Prehistoric Settlement and Agriculture	SITE IDENTIFIED BY HLA NO FURTHER INFORMATION AVAILABLE.	Uncategorised			2.35
Undesignated	NX64 5599	SHEEP PEN	GD00 2036	SHEEPFOLD	A sheepfold of two compartments.	Local Importance	FCS		0.11
Undesignated	NX62 5632	DARN GARR OCH	GD00 1285	FARMSTEAD	A farmstead, comprising two roofed buildings, one partially roofed building and one small unroofed structure and an enclosure is depicted on the 1st edition of the OS 6-inch map (Kirkcudbrightshire 1852, sheet 38).	Regional Importance	NMR	http://canmore.rcahms.gov.uk/en/site/177444/	0.46
Undesignated	NX64 6667	WALLED ENCLOSURE	GD00 2038	ENCLOSURE	A square enclosure, probably a plantation enclosure.	Local Importance	FCS		0.83
Undesignated	NX64 8650	LOCHENBRECK	GD00 2039	WELL	A well named by the OS as Lochenbreck well.	Regional Importance	FCS		0.01

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d		WELL							
Undesignated	NX645650	LOCKE NBRECK	GD001507	BURNT MOUND	A crescentic burnt mound, measures 8.6m from N to S by 7m transversely, opening out to the W, and stands up to 0.75m in height. The S arm of the crescent is the better defined standing 0.3m higher than the rest of the mound.	Regional Importance	NMR	http://canmore.rcahms.gov.uk/en/site/68851/	0.01
Undesignated	NX626594	DALMALIN HILL	GD000457	CAIRNFIELD	At least 22 small cairns measuring between 2m and 6m in diameter and up to 0.5m in height are situated on a slight NW-facing terrace to the N of Dalmalin Hill. Two thirds of the cairns have been disturbed by forestry ploughing.	Regional Importance	NMR	http://canmore.rcahms.gov.uk/en/site/69085/	2.72
Undesignated	NX627591	DALMALIN HILL	GD000211	ROAD(S)	Four main tracks were observed north of Barlay Burn: the mapped (1907) road; a hollow way; a terraced cambered road (the	Local Importance	NMR	http://canmore.rcahms.gov.uk/en/site/64029/	10.82

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					earliest in the sequence) and a higher, partly-hollowed track.				
Undesignated	NX62 2574	WHINNY HILL	GD00 1508	BURNT MOUND	This crescentic burnt mound is set against a steep slope on the E side of the Townhead Burn. It measures 5.5m from NW to SE by 4.8m transversely, opening to the SW, and 0.3m in height. Its SW side has been eroded by the burn.	Regional Importance	NMR	http://canmore.rcahms.gov.uk/en/site/69103/	0.04
Undesignated	NX63 9604	GLENGAP BURN	GD00 0442	ENCLOSURE(S)	A sheepfold of at least three compartments or maybe five compartments is attached to the N side of a boundary dyke.	Local Importance	HER	http://canmore.rcahms.gov.uk/en/site/68930/	0.05
Undesignated	NX64 3604	GLENGAP BURN	GD00 1286	STRUCTURE(S)	One small unroofed structure annotated 'Old Walls' and one small unroofed structure annotated 'Old Sheep Ree' are depicted on the 1st edition of the OS 6-inch map (Kirkcudbrightshire	Regional Importance	NMR	http://canmore.rcahms.gov.uk/en/site/177445/	0.07

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					1852, sheet 38).				
Undesignated	NX658671	BENNAHILL	GD001281	FIELD BOUNDARY	A length of field wall annotated 'Old Fence' is depicted on the 1st edition of the OS 6-inch map (Kirkcudbrightshire 1852, sheet 31).	Local Importance	NMR	http://canmore.rcahms.gov.uk/en/site/177438/	0.47
Undesignated	NX639640	BLACKHILL	GD001287	BOUNDARY DYKE	A boundary dyke annotated 'Old Fence' is depicted on the 1st edition of the OS 6-inch map (Kirkcudbrightshire 1852, sheet 38).	Local Importance	NMR	http://canmore.rcahms.gov.uk/en/site/177450/	1.98
Undesignated	NX620575	WHINNYHILL	GD001509	BURNT MOUND	This crescentic shaped burnt mound is situated towards the N end of the Townhead Burn; it measures 9.8m from NNE to SSW by 7.6m transversely, opening out to the ESE, and up to 0.8m in height.	Regional Importance	NMR	http://canmore.rcahms.gov.uk/en/site/69146/	0.24
Undesignated	NX646638	BLACKHILL	GD001284	ENCLOSURE	A circular enclosure is depicted on the 1st edition of the OS 6-inch map (Kirkcudbrightshire 1852, sheet 38).	Local Importance	NMR	http://canmore.rcahms.gov.uk/en/site/177443/	0.03
Undesignated	NX65	SLOGA	GD00	FIELD	One unroofed structure	Local	NMR	http://canmore.rcahms.gov.uk/en/site/177443/	5.69

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esignated	4675	RIE	1279	SYSTEM, SHEEPF OLD	annotated 'Sheep Ree' and a field-system annotated 'Old Fences' are depicted on the 1st edition of the OS 6-inch map (Kirkcudbrightshire 1852, sheet 31).	Importance		.rcahms.gov.uk/en/site/177436/	
Undesignated	NX66 0658	KENWICK HILL	GD00 1236	FARMSTEAD, FIELD SYSTEM	A farmstead annotated 'in ruins', comprising four unroofed buildings and one enclosure, and a field-system annotated 'Old Fences' are depicted on the 1st edition of the OS 6-inch map (Kirkcudbrightshire 1852, sheet 38).	Regional Importance	NMR	http://canmore.rcahms.gov.uk/en/site/177413/	5.6
Undesignated	NX66 0658	KENWICK HILL	GD00 1236	FARMSTEAD, FIELD SYSTEM	A farmstead annotated 'in ruins', comprising four unroofed buildings and one enclosure, and a field-system annotated 'Old Fences' are depicted on the 1st edition of the OS 6-inch map (Kirkcudbrightshire 1852, sheet 38).	Regional Importance	NMR	http://canmore.rcahms.gov.uk/en/site/177413/	1.93
Undesignated	NX67	CRAIG	GD00	FARMSTEAD	A farmstead, comprising	Regional	HER	http://canmore.rcahms.gov.uk/en/site/177413/	0.16

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esignated	3649	CROFT	1576	EAD	one partially roofed building, one unroofed building annotated 'Ruin' and one enclosure is depicted on the 1st edition of the OS 6-inch map (Kirkcudbrightshire 1852, sheet 38).	Importance		.rcahms.gov.uk/en/site/177408/	
Undesignated	NX64 1668	SLOGARIE BURN	GD00 1282	ENCLOSURE(S)	Two enclosures annotated 'Old Fence' and 'Track of Fence', one of which is adjacent to a later plantation enclosure are depicted on the 1st edition of the OS 6-inch map (Kirkcudbrightshire 1852, sheet 31).	Local Importance	FCS	http://canmore.rcahms.gov.uk/en/site/177441/	1.67
Undesignated	NX66 3662	KENWICK HILL	GD00 1238	FIELD SYSTEM	A large field annotated 'Old Fence' is depicted on the 1st edition of the OS 6-inch map (Kirkcudbrightshire 1852, sheet 38).	Local Importance	NMR	http://canmore.rcahms.gov.uk/en/site/177415/	4.56
Undesignated	NX67 5645	RETREAT WOOD	GD00 1575	FARMSTEAD	A farmstead, comprising two unroofed buildings and one enclosure is depicted on the 1st edition of the OS 6-inch	Regional Importance	NMR	http://canmore.rcahms.gov.uk/en/site/177407/	0.08

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					map (Kirkcudbrightshire 1852, sheet 38).				
Undesignated	NX64 5599	RED NICK, FORE HILL OF GLENGAP	GD00 1232	FIELD SYSTEM, HEAD DYKE	Lengths of head-dyke annotated 'Old Fence' and one enclosure or field are depicted on the 1st edition of the OS 6-inch map (Kirkcudbrightshire 1852, sheet 44).	Local Importance	NMR	http://canmore.rcahms.gov.uk/en/site/177389/	1.22
Undesignated	NX65 2592	GLENGAP	GD00 1511	CUP MARKED STONE	Three cup-marks are visible on a stone that has been built into the wall immediately on the E side of the front door of Glengap House, and centred 0.9m above the threshold.	Regional Importance	HER	http://canmore.rcahms.gov.uk/en/site/69076/	0.02
Undesignated	NX65 0586	GLENGAP BRIDGE	GD00 1233	BUILDING	A single unroofed building of two compartments annotated 'Ruins' is depicted on the 1st edition of the OS 6-inch map (Kirkcudbrightshire 1852, sheet 44).	Regional Importance	NMR	http://canmore.rcahms.gov.uk/en/site/177392/	0.02
Undesignated	NX64 8586	FUFFOCK	GD00 1234	STRUCTURE	A single unroofed L-shaped structure of two	Regional Importance	NMR	http://canmore.rcahms.gov.uk	0.02

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nated		BURN			compartments annotated 'Hay Ree' is depicted on the 1st edition of the OS 6-inch map (Kirkcudbrightshire 1852, sheet 44).			/en/site/177395/	
Undesignated	NX644582	FUFFOCK BURN	GD001231	STRUCTURE	A single unroofed structure attached to a field wall is depicted on the 1st edition of the OS 6-inch map (Kirkcudbrightshire 1852, sheet 44).	Regional Importance	NMR	http://canmore.rcahms.gov.uk/en/site/177388/	0.01
Undesignated	NX641582	FUFFOCK HILL	GD001230	FARMSTEAD	A farmstead annotated 'in ruins', comprising three unroofed buildings and one enclosure is depicted on the 1st edition of the OS 6-inch map (Kirkcudbrightshire 1852, sheet 44).	Regional Importance	FCS	http://canmore.rcahms.gov.uk/en/site/177387/	0.85
Undesignated	NX639604	GLENGAP BURN	GD000442	ENCLOSURE(S)	A sheepfold of at least three compartments or maybe five compartments is attached to the N side of a boundary dyke.	Local Importance	HER	http://canmore.rcahms.gov.uk/en/site/68930/	0.05
Und	NX64	GLENG	GD00	STRUCT	One small unroofed	Regional	NMR	http://canmore	0.07

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esignated	3604	AP BURN	1286	URE(S)	structure annotated 'Old Walls' and one small unroofed structure annotated 'Old Sheep Ree' are depicted on the 1st edition of the OS 6-inch map (Kirkcudbrightshire 1852, sheet 38).	Importance		.rcahms.gov.uk/en/site/177445/	
Undesignated	NX633588	FUFFOCK HILL, GLENGAP FOREST	GD001764	COMMEMORATIVE MONUMENT	A memorial stone to a sheepdog was re-discovered by William McMoran of Miefield, Twynholm, on the north-west flank of Fuffock Hill. It was erected by a famous shepherd, G.Caig, to his dog, Meg, on 2/8/1905.	Uncategorised	HER		1
Undesignated	NX656676	Nether Crae Field System		FIELD SYSTEM	Drystone wall field system as depicted on the 1st edition of the OS 6-inch map (Kirkcudbrightshire 1852, sheet 31)	Local Importance	FCS		4.24
Undesignated	NX670648	Cullenoch Field		FIELD SYSTEM	Drystone dykes marking field system and woofland boundaries as	Local Importance	FCS		2.52

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d		system			depicted in the 1st edition OS 6-inch map (Kirkcudbrightshire 1852, sheet 38)				
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Appendix VI. Notes on coupe felling

Notes on coupe work schedule

56118	Large hillside coupe with shared boundary to private productive forestry on the other side. Also shares a boundary with a new natural reserve area containing deadwood. Some areas starting to windblow, however a wildlife constraint may complicate the timing of operations. This is a self-contained coupe which will be replanted and probably subject to a no thin regime due to access and exposure. Replant with SS to maintain high productive capacity in the coupe. There may be natural regeneration of SS, which should be left if non-disruptive to restocking operations and in large enough areas to warrant respacing operations at appropriate junctures.
56007	Small areas of HL allow for replacement with BL. Possible regeneration of the from surrounding BL will be accepted, otherwise utilise a mix of BL, reselecting the surrounding stands. Any standing BL will be left.
56081	Removal of the remaining unstable coupe. Extensively affected by windblow, the coupe requires removal and redesign. Restock with SS and leave large riparian corridor.
56169	Removal of SS, JL and WH to facilitate PAWS restoration. Will be restocked with suitable NBL/DF.
56161	Removal of mature, rotation age Sitka. Will be restocked with a mixture of SP, BL and a small area of Sitka. Where there is natural regeneration of SS, this will be retained where it does not adversely affect the growth of the SP & BL.
56123	Removal of mature, rotation age SS, to be replaced with a combination of OS and SS. This will allow for greater protection for the surrounding

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	watercourses and provide a better coupe shape for the edge of the forest.
56111	Removal of coupe containing a failed nurse mix of p60 LP/SS & SS/JL. To be replaced by a BL and SS coupe.