

Eriff & Bellsbank Forest Design Plan 2018-28

Galloway Forest District

ERIFF & BELLSBANK

Land Management Plan

Approval date:

Plan Reference No: FDP 89

Plan Approval Date:

Plan Expiry Date:

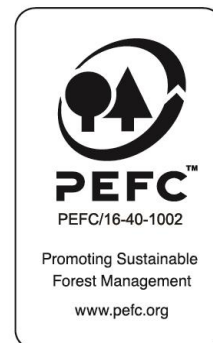
Eriff & Bellsbank Forest Design Plan 2018-28

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



Eriff & Bellsbank Forest Design Plan 2018-28

CSM 6 Appendix 1

FOREST ENTERPRISE – Application for Forest Design Plan Approvals

Forest Enterprise – Property

Forest District:	GALLOWAY FD
Woodland or property name:	ERIFF & BELLSBANK
Nearest town, village or locality:	DALMELLINGTON
OS Grid reference:	NS 490 010
Local Authority district/unitary Authority	EAST AYRSHIRE

I apply for Forest Design Plan approval*/~~amendment approval~~* for the property described above and in the enclosed Forest Design 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
Forest District Manager

Signed
Conservator

District **GALLOWAY FD**.....

Conservancy

Date

Date of Approval:

Date approval ends:

*delete as appropriate

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EIA Determination form if required

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List of support documents (Maps)

- Map 1 - Analysis and concept map
- Map 2 - Features map
- Map 3 - Soils map
- Map 4 - Management map
- Map 5 - Future Habitats and Species map

List of Appendices

- i) Forest Design Plan consultation record
- ii) Tolerance table
- iii) Ground-truthed heritage sites
- iv) Coupe details for clearfell and establishment
- v) Eriff & Bellsbank Design Plan Brief
- vi) Assessment of felling and restock proposals within catchments at risk and failing
- vii) The UK Forestry Standard, Forestry Commission Guidelines and the UK Woodland Assurance Scheme (UKWAS)

Summary of Proposals

The main objectives of the plan are:

- Sustainable timber production sympathetic to the significant demands of environmental quality, landscape and biodiversity;
- Improve water quality and reduce flood risk;
- Visual and biodiversity enhancement through increased age and species diversity, particularly broadleaf expansion.

1.0 Introduction

1.1 Setting and context

Eriff and Bellsbank are two adjacent but separate plantation blocks located to the south of Dalmellington, East Ayrshire. The Bellsbank block occupies an area of around 222 ha between Bellsbank estate (a suburb of Dalmellington) and the A713 Castle Douglas – Ayr trunk road. Its southern section is bisected by the U759 Loch Doon road, a frequently used recreational route to access Loch Doon, and thus highly visible in the near view. The Eriff block (c.266 ha) lies a further 750 m south of Bellsbank, the two blocks separated by open hummocky rough grazing. Eriff extends down to the north-eastern edge of Loch Doon and has significant frontage to the Roundhouse Café visitor centre and Loch Doon road. The block encompasses one of the northern gateways to the Galloway Forest Park, and lies within the larger Western Southern Uplands ESA.

This plan is a revised submission of an earlier plan approved in 2006.

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1.2 History of plan

Afforestation of the Eriff block took place between 1967 and 1970, and between 1971 and 1977 at Bellsbank.

This moderate scale plan is relatively detached from other FES plantation and stands comfortably as a separate design plan unit for water quality and conservation considerations.

Acquisition date	Deed Ref	Title	Seller
Jul 1965	9260	ERIFF (PT)	MRS M T MOFFAT & OTHERS
May 1970	9264	BELLSBANK (PT)	MR J CAMPBELL&MR W W MCCUBBIN
Sep 1971	9267	CRAIGENGILLAN ESTATE (PT)	CRAIGENGILLAN ESTATE CO LTD

2.0 Analysis of previous plan

2.1 Analysis from previous plan

Objectives from the previous plan were as follows:

Objectives	Assessment of Objectives during plan period
Primary objectives	
Commercial softwood timber production in forest core.	Clearfelling has continued in both the plantation blocks over the previous design plan period, with 85.2 ha clearfelled over the previous plan period.
Restructuring of even aged plantation to create a diverse age structure between coupes to benefit habitat and visual diversity.	Currently 43% first rotation stock remains. Restocking has included a more diverse mix of species, with some Long-term retention, deadwood, and Natural Reserve.
Increase area of broadleaves, Scots pine, and open space to enhance conservation value of area.	The creation of broadleaf and open space areas increased over the period of the previous plan by 5 ha and 21 ha respectively. SP stock has remained comparable (+0.5 ha) over the period. With increased larch felling taking place due to <i>Phytophthora ramorum</i> infestation, greater opportunities exist for further broadleaf habitat creation and increased SP planting.
Engage with local community and work with them to achieve their aspirations.	The FES Community Projects Manager has continued to engage with local community throughout the period of the last FDP. A new circular recreation track was constructed in the Bellsbank block, and liaison with key figures in the community has resulted in a much-reduced incidence of malicious fire setting.
Secondary objectives	
Red squirrel conservation.	The plan area has been deemed to be not a core area for red squirrel; therefore no specific measures have been implemented for their conservation. Both red and grey squirrel populations remain very low in the block.
Riparian zone improvements to contribute to improving habitat for salmonids.	Coupe 89502 has been felled and replanted as LTR adjacent to unnamed watercourse that joins the R Doon. The riparian zone along the Muck Water has remained much the same.

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<p>Sympathetically landscape area in accordance with scale of landform and distance from which forest is viewed.</p>	<p>There has been moderate changes within the design plan area to increase openness and species diversity around key viewpoints, including clearfell and replanting with (mainly) MB in coupes 89034 and 89502 adjacent to the public road at Bellsbank.</p>
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3.0 Background Description

3.1 Physical site factors

3.1.1 Geology, soils and landform

The majority of the plan area lies within the general area of sedimentary wackes, mudstones and shales formed under deep sea conditions over the Ordovician period. To the northern section of Bellsbank the bedrock geology changes to conglomerates and sandstones of the Lanark group formed during the Devonian and Silurian periods. Superficial geology is predominantly glacial till formed during glacial activity over the Quaternary period.

Poorly draining soils dominate the block (Fig.1): surface water and peaty gleys (~57%), and ironpans (~12%). Free-draining typical and upland brown earths cover around 16%, occurring mainly on the western slopes of Bellsbank. Isolated pockets of peat occur throughout where localised geomorphology has been conducive to formation (in total, around 10% of the plan area); however, continuous areas of peatland are absent.

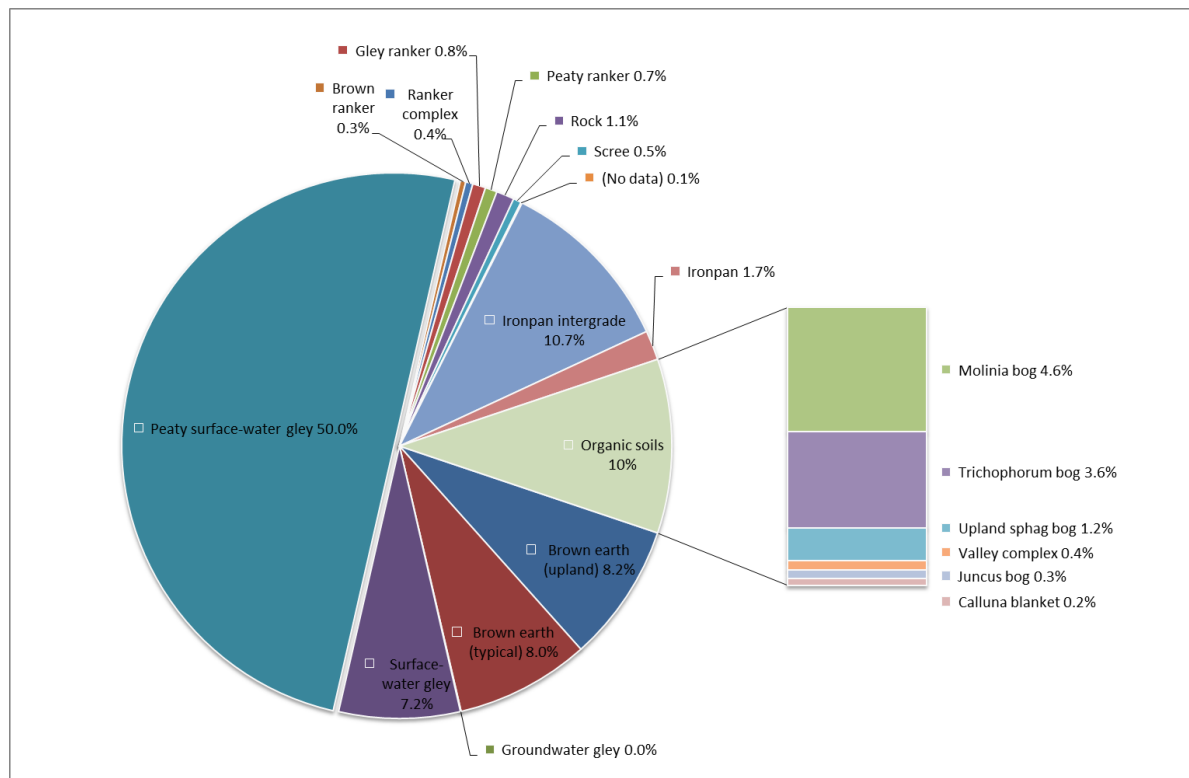


Figure 1. Soils composition by area in LMP unit.

Muckle Eriff Hill (330 m) is the highest point within Eriff plantation and is a dominant, clearly visible feature in the L Doon corridor. Bellsbank plantation covers the plateau between the A713 Ayr road and Bellsbank village, reaching a

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height of 277 m at Pennyarthur Rigg. The lowest elevation across the plan area is around 220 m along the shore of L Doon lower slopes of Bellsbank.

The dominance of poorly-draining soils and exposed elevations has generally resulted in a monoculture of shallow rooting spruce conifer with a high risk of windblow.

The James Hutton Institute "Land Capability for Forestry" classification (previously Macaulay Institute) for the area is F5 with some F6 (land with limited, some very limited, flexibility for growth and management of tree crops).

3.1.2 Water

The LMP falls within the Loch Doon catchment, with around 3.3 km of the Eriff plantation block bordering L Doon itself. L Doon feeds into the River Doon via a dam built in 1935 for the Galloway Hydro-electric scheme, now operated by Scottish Power. Several small unnamed burns and the Eriff Burn feed into L Doon from the Eriff block. The Gaw Glen Burn to the northern border of Eriff feeds into the R Doon, together with several small, unnamed burns from Bellsbank. The R Doon upstream of its convergence with Muck Water has overall moderate ecological status, and a moderate score for acidification based on 2016 SEPA data (<https://www.sepa.org.uk/data-visualisation/water-classification-hub/>).

The steep-sided north-eastern edge of Bellsbank borders the Muck Water, which joins the R Doon further down the catchment past Dalmellington. The Muck Water has a poor overall water classification status (as of 2016), though forestry is not viewed as a contributory factor. Dalmellington is designated a Potentially Vulnerable Area (PVA) by SEPA, and peak flow levels in Dalmellington can be affected by land management in the Muck Water sub-catchment. Approximately 80 ha of Eriff and Bellsbank National Forest Estate is located upstream in this catchment. Flood risk will be a key consideration when reviewing this Land Management Plan. The proposal in this LMP revision will aim to reduce peak flow in Dalmellington, through increasing the area of open space, reducing the area of commercial conifer woodland, restocking with additional broadleaf areas, and well-designed and appropriately sized riparian buffers.

L Doon and Ness Glen through which the R Doon flows directly after the L Doon dam both have biological SSSI designations. L Doon has an important remnant population of Arctic Char, the only remaining native population in south-west Scotland. Other salmonids are common throughout the catchment, and fresh water pearl mussels are present in low numbers in some parts.

The upper Doon catchment is heavily forested and has a legacy of surface water acidification, though L Doon itself has a high acid neutralising capacity.

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Potential pressures on the watercourses within the LMP area are morphological alterations from forest operations, over-shading and diffuse source pollution. Maintaining or improving water quality is a key feature of this LMP revision.

We will therefore comply with best practice and minimise sediment release from any forest operations, with efforts made to create wider aquatic and riparian zones to provide long term protection against disturbance from future forestry operations and loss of light from canopy closure. All work undertaken will comply with the 4th edition of the UK Forestry Standard, and specifically the Forests and Water elements of sustainable forestry management.

Details of all known private water supplies within the block are held in a District GIS layer (see constraints map).

3.1.3 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 Galloway Forest 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 LMP 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.

3.2 Biodiversity and environmental designations

Water quality is a significant environmental factor in the plan area with Loch Doon and Ness Glen on the River Doon having biological SSSI designation.

3.2.1 FCS Biodiversity Programme key species

Red squirrel is present within the block at low densities but the area is not considered to be a 'Red Squirrel Stronghold site'. These areas are designated by the Scottish Government as sites where Red Squirrel populations can be assisted through positive management practices. Retaining mature conifer plantation where appropriate, and increasing Scots pine, Norway spruce and small-seeded broadleaf restock areas will ensure that the block remains relatively advantageous towards Red squirrel. Both Red and Grey squirrels have been recorded in the block in low numbers. No specific measures (e.g. trapping) have been employed to control Grey squirrel other than avoiding large-seeded broadleaves in restock.

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Eriff & Bellsbank LMP is not a core area for the red-listed UKBAP species Black Grouse; however, as they have been recorded within 3 km of the plan area, opportunities exist to improve the woodland boundaries to adjoining open ground to the benefit of the species by establishing additional stands of native broadleaf species such as birch, hawthorn, willow and rowan within a matrix of open ground for winter browsing.

3.2.2 Scottish Biodiversity List Species

Water bodies and existing riparian habitats within the plan area are regularly used by otters for breeding and for movement into other river systems. Otters have a large territorial range; consequently wide ranges of adjacent connecting land will also be used. Evidence also suggests that good otter numbers have a natural control effect on invading mink.

Galloway FD Environment staff may prepare brash piles along water courses where it is considered to be of overall environmental benefit, 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 may also benefit a range of other animal species and provide valuable deadwood habitat. Whilst relatively scarce, water voles also use these riparian tracts.

Positive riparian zone improvements, often exceeding guidelines proposals, such as an increase in BL cover coupled with our aim to keep sections of stream banks permanently vegetated and persisting throughout subsequent rotations, has increased both the availability and connectivity of suitable breeding and feeding habitat for both otters and water voles.

Raptor species use the LMP area and these will continue to be protected during all operations. The osprey nest site will be retained.

3.3 The existing forest

3.3.1 Age structure, species and yield class

Species / Yield class

Species diversity within the block is relatively poor: pure Sitka spruce and Sitka spruce/Lodgepole pine mixtures generally dominate the block accounting for around 67% of the plan area (Table.1 and Fig.2). Of the remaining plantation area, around 12.3% comprises a mix of minor conifer species (Scots pine, Douglas fir and larch) and 2.7% broadleaf; however, much of the larch component will be lost due to *P ramorum* sanitation felling. Species diversity should quickly improve during the period of the revised plan as restocking

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commences with non-Sitka spruce conifer alternatives to the larch, and BL species.

Just less than 18% of the plan area is currently classified as open space. Comprising a mix of open ground, and a more significant although transient area of felled plantation, the area of open space slightly increases over the period of the plan eventually stabilising at around 30%.

Yield class across the block is generally good, with spruce crops ranging from YC10 or 12 on the wetter peaty areas, up to YC20+ on better soils. There is scope for substituting some of the spruce crops with alternative conifer species where site factors (e.g. windblow, soil type) are not a limiting feature.

Table 1. Current species cover

Species in 2017	Total area (ha)	Total area %
Sitka spruce	286.5	58.7
Norway spruce	9.6	2.0
Larch spp.	35.4	7.3
LP (Other pine)	40.7	8.3
Scots pine	2.5	0.5
Douglas fir	8.6	1.8
Other conifers	3.6	0.7
Broadleaf	13.4	2.7
Open space (includes felled areas not yet restocked)	87.4	17.9
Total	487.7	100.0

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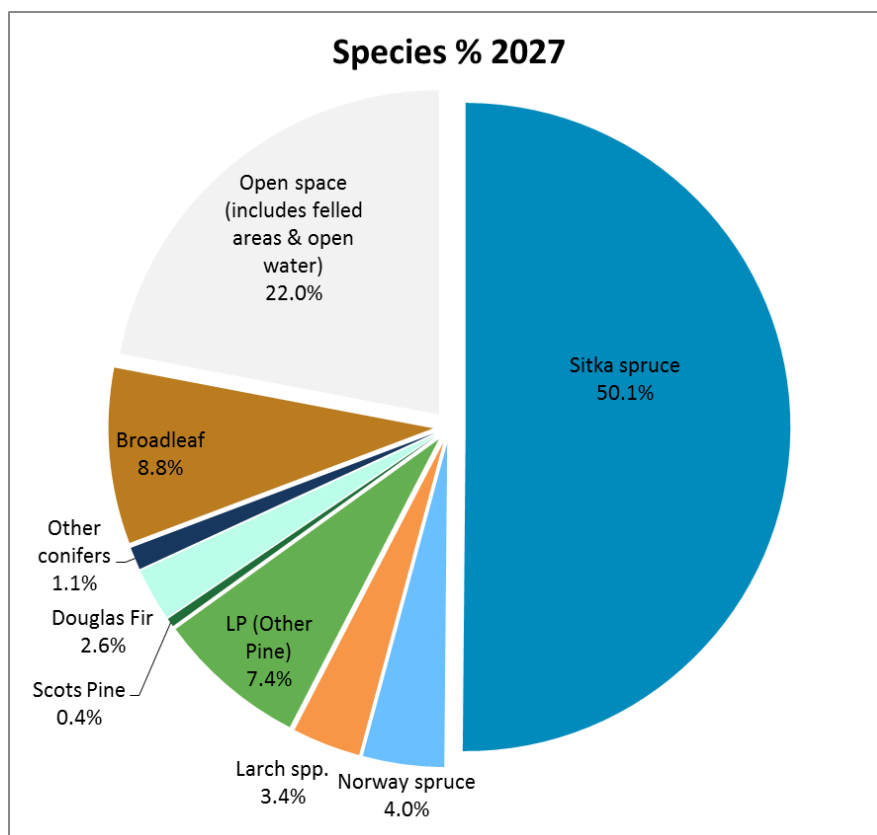
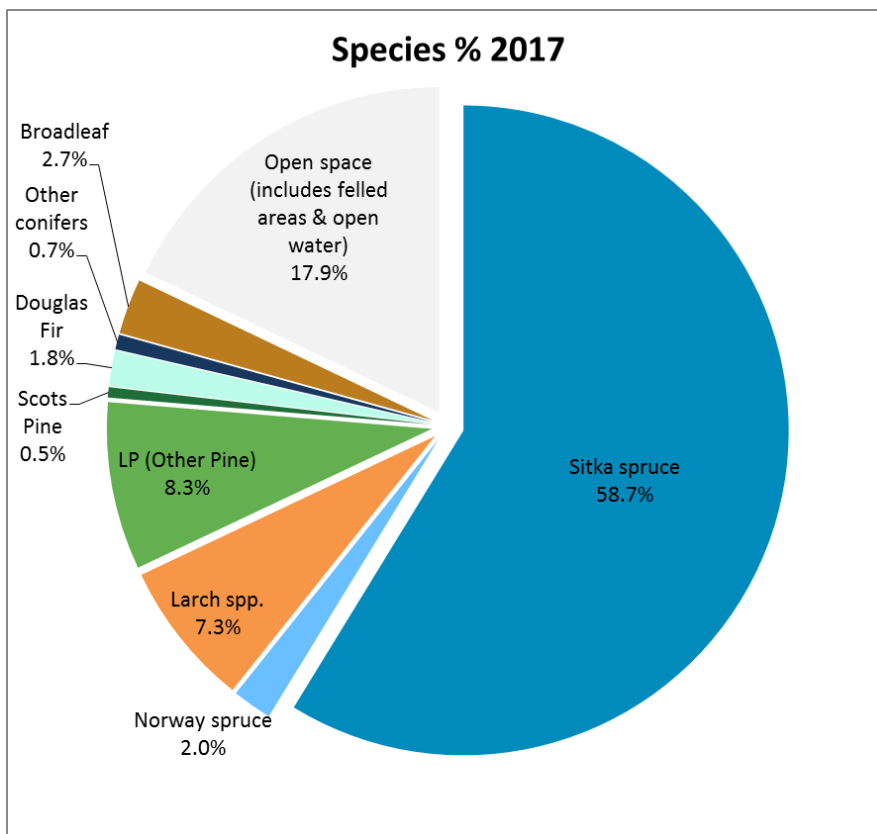


Figure 2. Species composition in existing FDP: 2017 and 2027 (data from FES sub-compartment database)

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Age Structure

Over previous plan periods our felling programme, with the recommended 7yr age gap/2m height differential maintained between fell coupes, extended crop rotation lengths, and the conversion of some first rotation crops from clearfell to Low Impact Silvicultural System (LISS) management, had improved the spatial appearance and structure of the block leaving a relatively diverse age class spread although still skewed in favour of maturing high forest crops (Table.2).

Table 2. Current species cover

Age of trees	Growth stage	Percentage of class at given year	
		2017	2047
0 - 10	Establishment	14.6	7.1
11 - 20	Thicket	22.9	17.9
21 - 40	Pole stage	0.9	26.8
41 - 60	Maturing high forest	43.4	12.2
61 +	Old high forest	0.1	5.9
	Open space / felled areas	17.9	30.0
Total		100%	100%

Sanitation felling of *P ramorum* infected larch areas will present an opportunity to further improve structural diversity to both Eriff and Bellsbank blocks, with increased open space and establishment crop hopefully balanced, in time, by an overall increase in the area managed under LISS. Potential adjacency issues will be dealt with through delayed restocking.

3.3.2 Access

The internal road network is in relatively good condition and is generally accessible for timber haulage; however, additional forest roads will be required to access felling coupes in the revised LMP period due to *P. ramorum* removal (Table.3). Any water crossings on new roads will be guided by Controlled Activities Regulations (CAR) and be passable by otters. The main haulage exit is to the east of Bellsbank onto the A713 Castle Douglas – Ayr trunk road.

Table 3. new road requirements over plan period.

Period of Proposed Construction	Proposed length of new forest road for construction
2018 to 2021	740 m
2022 to 2026	570 m
Beyond 2024	510 m

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A single small quarry, located to the north of the Eriff block, is identified in the suite of LMP maps (Map 2 – features) along with proposed / planned forest roads for the plan period and beyond. The nearest additional stone resource is at Clawfin quarry in the adjacent South Kyle block. Given the high diffuse pollution risk associated with quarry runoff from rainfall derived leaching and direct roadside drain connections to burns, all quarry and drainage arisings should be directed into natural treatment systems and soakaways in accordance with good forestry practice and guidance from SEPA.

To further reduce the impact of timber haulage on the internal forest road network, FES is currently reviewing the application of vehicles fitted with tyre pressure control systems / low ground pressure vehicles on the National Forest Estate. Across the district the requirement to utilise such vehicles will apply to specific catchments/roads (further information is available from the Tread Softly: lower impact vehicles for timber haulage document). The proposed implementation date for this policy falls within the period of this plan, 1 April 2018

3.3.3 LISS potential

LISS is defined as “Use of silvicultural system whereby the forest canopy is maintained at one or more levels without clearfell of areas over 2.0 ha”. Much of the plan area has moderate-to-high DAMS scores (Detailed Aspect Method of Scoring) of 16 to 18, providing limited opportunities for the expansion of future LISS management on the less-exposed lower slopes to the west of Eriff block, and eastern slopes of Bellsbank toward the Muck Water corridor.

3.4 Landscape and land use

3.4.1 Landscape character and value

Loch Doon is one of the most popular tourist attractions to the north of the Galloway FD, and as such attracts a good number of visitors each year. The Eriff & Bellsbank LMP area is somewhat of a ‘northern gateway’ to the Galloway Forest park, with the L Doon road extending down the loch and connecting to the Carrick Forest Drive. The LMP area forms the foreground of a much larger vista of the Southern Uplands and Rugged Granite Uplands.

Under the 1998 Ayrshire Landscape Character Assessment, the LMP area falls into the classification of [Q] Foothills (Qb with forestry), and [J] Upland River Valleys. The Ayrshire foothills form a transition between the Southern Uplands (T) and Rugged Granite Uplands (U) and the more sheltered lowlands and Upland River valleys. The Foothills are a varied landscape character-type, reflecting the relatively minor differences in elevation or exposure. Enclosed pasture on the

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lower elevations gives way to rough or semi-improved grazing with some moorland vegetation, or areas of plantation forestry.

The main issues arising from the assessment of these two linked landscape character types of transition landform and vegetation are:

- Adding diversity to the landscape in subsequent rotations through restructuring for spatial, age and species diversity, exposing and preserving cultural features, and remodelling of geometric landscape patterns to more organic shape structure;
- Coupe sizes that reflect the scale of the landscape;
- Loss of plateau moorland through overall forestry expansion and resultant impact on land use balance;
- Potential wind power development given the landscape sensitivity.

The following key landscape specifics have therefore been addressed in this plan:

- Increasing species and age diversity through increased area of LISS, extended rotation lengths where possible, and increased restock with MB and alternative conifer species in areas of high visibility;
- Restructuring coupe shapes to reduce size and increase organic shapes, reducing large clearfell areas and better tie-in with the landscape;
- Softening boundaries with adjacent open ground with MB/MC within matrices of open space;
- Overall increased area of permanent open ground.

3.4.2 Visibility

Parts of the block are seen through a range of near, mid and long-distant views afforded by the county roads that border or intersect the plan area.

Many visitors to the LMP area concentrate at the viewpoints around the Roundhouse café (Fig.3), over L Doon toward the western edge of Eriff, and at various locations following the public road south down the edge of L Doon. The view toward Eriff changes and expands from viewpoints further down the L Doon public road (Fig.4).



Figure 3. View across Eriff from Roundhouse café.

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Figure 4. View across Eriff from Beoch Farm

Internal views tend to be limited to the forest road and community woodland trail in the Bellsbank plantation block. Currently these areas are quite restricted to near, within-forest views; however, sanitation felling for *P ramorum* infection and planned increases in species diversity and permanent open space will improve internal views greatly.

3.4.3 Neighbouring land use

Upland grazing is the predominant neighbouring land use to the Eriff block, and to the southern border of Bellsbank. Bellsbank also borders the Craigengillan Estate, one of the best examples of a designated Designed Landscape in Southern Scotland, to the west, and common grazing to the northern section.

3.5 Social factors

3.5.1 Visitor zone recreation

The plan area offers only limited potential for improvements to recreation facilities, although the Bellsbank trail is currently well used by the local community and visitors for walking, cycling and horse riding. Sanitation felling of the larch around the Bellsbank trail offers an opportunity to improve both in-forest views, and views out from the trail with restocking of broadleaves and alternative conifer species, although the initial clearfell stages (P1 and P2) will present quite a sudden landscape change.

More could be made of the visitor experience to the Loch Doon area through improvements to near and mid-distance views of the forest seen from the Loch Doon road. The entrance to the forest from the A713 is currently quite 'gloomy' and unassuming, and where an argument could be made that this is merely the entrance to the big 'reveal' of Loch Doon, additional open space and tree species diversity along the route may be more appealing.

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Facility	Concept / Opportunity	Constraint	Plan Development
Bellsbank trail	Enhance internal and external views from trail by creating open space, and improving species diversity	Large scale felling for <i>P ramorum</i> (plant health) and subsequent windblow	P1 and P2 clearfells overlooking Bellsbank will appear harsh, but the objective is conversion to broadleaf woodland and alternative conifer species
Road: entrance from A713 to U759 through Bellsbank	Enhance internal views and make entrance to forest park more welcoming	Relatively short section of route that runs through coupes not due for clearfell within plan period and wayleave	Existing OHL to be dismantled during plan period, with opportunities to increase open space and broadleaf cover

The overhead power line running north-south through Bellsbank plantation is to be dismantled 2018-19 presenting opportunities to harvest currently inaccessible coupes, create additional areas of permanent (non-linear as opposed to the current wayleave) open ground, and restock/planting with alternative conifers/mixed broadleaves.

3.5.2 Community

The communities of Dalmellington and Bellsbank lie to the north and west of the Bellsbank block respectively. Other neighbouring properties include Mossdale Farm and Craigengillan Estate to the east and west of Bellsbank block respectively, and the caravan park at Macnabstone and Beoch Farm that overlook Eriff. Various agricultural holdings border the DP unit.

3.5.3 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

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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, other archaeological heritage features, settlement remains and sheep pens are present and listed in Appendix III. 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).

Historic Scotland and East Ayrshire Council have been consulted as part of the stakeholder consultation process. Felling coupes, access roads and fence lines will be surveyed prior to any work being undertaken to ensure that historic environment features can be marked and avoided. Historic environment features, including drystone dykes, coming to light during forest operations will be surveyed, recorded, mapped and monitored for inclusion in future versions of the Land Management Plan and to demonstrate Forestry Commission Scotland compliance with the UK Forestry Standard.

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). 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.

3.5.4 Forest Renewables and utilities

Forestry Commission Scotland (FCS) 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:

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- 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 FCS objectives.

There are currently no plans to introduce any renewable energy schemes in the plan area.

3.6 Statutory requirements and key external policies

The legal status of the land is purchased.

This forest plan is in accordance with the guidance supplied in:

- UK Forestry Standard and associated Forestry Guidelines
- FCS the role of Scotland's National Forest Estate and strategic directions
- Forest & Woodland Strategies (FWS)
- Design techniques for forest management planning
- Native Woodland Survey of Scotland
- Historic land-use assessment
- Rationale for Woodland Expansion
- Policy on Control of Woodland Removal
- Deciding future management options for afforested deep peatland

4.0 Analysis and Concept

4.1 Analysis of constraints and opportunities

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 & normalised timber supply	Creation / enhancement of conservation habitats Uniformity of age class across forest block.	LISS areas and smaller coupe size Maintain conifer restock programme whilst increasing area of BL in subsequent rotations Remove flow peaks from timber production
Biodiversity	Maintain nesting site and enhance habitat for osprey and other raptors	Clearfell of mature conifer crop	LISS in osprey nest area Increase BL restock for additional species diversity Identify retention areas of mature conifer and extend rotation lengths throughout Identify localised boggy areas as open space
Biodiversity	Maintain red squirrel habitat	Utilising large-seeded BL species as major component in broadleaf mixtures	While not a stronghold area for red squirrels, use of large seeded BL will be limited. Where possible, mature conifer will be retained, preferably within a habitat network.
Biodiversity	Enhance connectivity of aquatic and riparian habitat networks	Isolated nature of lochs Extended restructure period	Increase connectivity of internal open space to riparian zones and external open space / woodland fringe
Environmental Quality	Enhance views of block from A713 and Loch Doon road	Rapid period of landscape change due to <i>P ramorum</i> infection Moderate levels of	Smaller coupe size LISS areas Greater species diversity

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		species diversity	
Environmental Quality	Develop Low Impact Silvicultural Systems on better site types	Site type constraints	Increase area under LISS
Environmental Quality	Enhance water quality within Loch Doon SSSI and R Doon catchments	Conifer monoculture planted close to watercourses Moderate levels of species diversity Extended period of landscape change	Smaller coupe size LISS areas Riparian enhancement through increased open space / BL restock Increase species diversity (BL and minor conifer)
Access and Health	Enhance access and enable communities to enjoy woodlands	Limited current formal recreation in block	Enhance recreation through trail maintenance and keeping Rights of Way open Enhance in-forest experience with increased open space and species diversity

4.2 Concept development

The concept forms the broad framework for the detailed design and is presented graphically in Map 1: Analysis and Concept. A variety of themes, often overlapping, are outlined as follows:

Commercial conifer zone / Core timber production

Spruce and spruce/pine coupes located away from the main public views will continue to be managed as commercial crop to meet the district programme commitments. Better site types will facilitate extending rotation lengths in some conifer crops to allow felling of coupes with larch for *P ramorum* sanitation felling, and restructuring of current wayleave. Increased LISS area will allow for increased species/age diversity. Create opportunities for smaller clearfell coupe sizes.

Landscape/roadside corridors

Parts of the block, from both the A713 and the U759 minor road, are highly visible and currently present a series of fairly attractive views, with potential for improvement. Long-term aims are to further improve the views although this may be somewhat constrained in the short-term by the *P ramorum* sanitation felling required on larch, and subsequent landscape impact. However, greater species diversity in the future, both broadleaf and alternative conifer, and the development of LISS will contribute towards maintaining views and establishing the plan area as the 'Northern Gateway to Galloway Forest Park'.

Water quality zones

Although the plan area lies outwith either catchments designated as 'at risk', or 'acid vulnerable catchments', efforts will be made to improve water quality and soil stability with the R Doon catchment, and prevent contributing to flood risk on the Muck Water. Opportunities will be taken to go beyond the basic proposals of the legal drivers and voluntary codes i.e. the UK Forestry Standard (UKFS 6.7 Forest and Water Guidelines) and the UK Woodland Assurance Standard (UKWAS). The buffer zone along the L Doon shoreline will be improved with additional open space and significant MB expansion. Currently the steep banking adjacent to the Muck Water contains larch that needs to be removed; therefore sensitive felling is required to avoid impacting the watercourse and restock will be native MB.

Community woodlands

The circular trail around the western edge of the Bellsbank woodland block has been a major investment to the benefit of the local community, and is a popular walking, cycling and horse riding trail. This and community-led ventures around the pond area and in-wood structures has resulted in a much-reduced instance in anti-social behaviour and fire starting. Significant larch removal in this area necessitating clearfell, though quite a drastic change in the short-term, presents an opportunity to create a more diverse forest around the community woodlands, improving both in-forest and external views. Re-stocking with MB and alternative

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conifers will create improved connectivity with the adjacent Designed Landscape around Craigengillan estate.

Wildlife

The osprey nest site on the face of Eriff block is a key visitor attraction, with a video link to the nest at the Roundhouse café. Current tree age and species diversity will be retained or improved here, with coupes managed under LISS to both protect the nest site and preserve landscape appeal.

Forest boundaries to the open hill ground to the east of Eriff and south of Bellsbank will be softened with low-density restocking of MB and MC within a matrix of open space to the benefit of black grouse.

Retention of conifer connectivity together with additional mixed conifer and small-seeded broadleaf restock will favour red squirrel over the invasive grey squirrel.

5.0 Land Management Proposals

5.1 Forest stand management

This plan has been designed in accordance with sound silvicultural and environmental principles within the framework outlined by the UK Forestry Standard (UKFS) and the Galloway FD Strategic Plan. Furthermore the criteria given in the UK Woodland Assurance Scheme (UKWAS) will be met.

Table 4 and the accompanying management map (Map 4) provides details of our coupe management proposals and Table 5 summarises the average annual felling and thinning volumes (m³ob) expected for the next 10 years (plan period) and beyond:

Table 4. Management types by area over LMP period.

Management Type	Area (ha)
Clearfell	397.8
Group Shelterwood (LISS)	52.9
Minimum Intervention	1.1
Natural Reserve	1.9
Long Term Retention	11.9
Other/Open land	22.1

Table 5. Timber volumes (m³ob) by felling period.

Fell period	Thinning / LISS	Clearfell	Total
2017-2021	279	7545	7824
2022-2026	22	4629	4651
2027-2031	22	542	564
2032-2036	11	1863	1874
2037-2041	11	1618	1629

Due to the immediate requirement for larch sanitation felling, there will be a peak of commercial harvesting in the first half of the plan period, making it difficult to smooth production to any great extent. This will be compensated for at a district level by other forest blocks where the priority is large-scale commercial timber production.

Although stands have been assessed for stability before extending rotation lengths, a combination of factors such as shallow rooting depth, lack of or sub-optimum thinning, and higher than ideal DAMS scores, may result in some windblow despite thorough evaluation. Where such instances require fell dates to

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be brought forward, due process will be followed as per the tolerance tables (Appendix II) and FCS consulted for amendment approval.

5.1.1 Clear felling

Most of the plan area (around 81.6%) will be managed under a clearfell management type using conventional harvester and forwarder working, though motor-manual felling with cable extraction may be required on the steep banking adjacent to the Muck water in Bellsbank plantation. The remaining area will be managed under alternative management types.

A number of coupes (14 coupes, around 35% of the plan area) are scheduled for clearfell during the 10yr period of the plan and they contribute modestly to the district programme (see Appendix IV).

Table 6 confirms that, as per paragraph 3.4.2 in the UK Woodland Assurance Standard (second edition), no more than 25% of the plan area is due to be felled in any five year period within this plan approval period.

Table 6. Percentage of LMP area felled over LMP period.

5yr Fell period	Area felled (ha)	Area felled as % of total FMU area (487.7 ha)
2018-2022	57.6	11.8
2019-2023	27.7	5.7
2020-2024	0	0
2021-2025	0	0
2022-2026	0	0
2023-2027	17.6	3.6
2024-2028	0	0
2025-2029	49.4	10.1
2026-2030	0	0
2027-2031	20.9	4.3

For landscape and biodiversity considerations efforts have been made to:

- extend the felling period between coupes
- reduce the overall size of the remaining clearfell coupes
- increase the area of plantation under LISS

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.

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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 appendix II for 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 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 2 m 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.

When a felling operation has been moved and will deviate from the normal 7 year period, we would look for surrounding crops to be at least 2 m tall where they are commercial conifer crops, and over 1m where they are broadleaves or natural regeneration. The density of natural regeneration will also be considered where it is suppressing ground vegetation to a reasonable extent and it is firmly established without requiring further restocking by planting. Where the surrounding forest is below the minimum height, a site visit will be undertaken and assessment of the wider forest structure carried out to determine an appropriate management of the area.

Further factors in the assessment will include any windblow in adjacent areas that will likely result in felling and proposed areas for development such as quarries, powerlines, roads etc. Where the available data does not present a clear picture of the forest, a site visit will take place to survey the area surrounding the proposed felling and assess the forest structure. This assessment will be recorded along with any supporting evidence, such as photographs, collected and presented at mid-term review.

5.1.2 Thinning

Thinning is currently confined to parts of the Bellsbank plantation due to higher DAMS scores over much of the Eriff block. The thinning program in the coupes to the south of the L Doon road in Bellsbank will continue into an extended rotation, with the next operation scheduled within the next 5yrs. Restructuring of the coupes around Pennyarthur Rig due to larch removal, and to the east of the

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wayleave will necessitate taking these areas out of the thinning program. Second rotation crops offer the best potential to expand the overall thinnable area ultimately resulting in an increased area of the block moving from clearfell towards other less intensive management systems.

Carried out on a 7-10 yr cycle in accordance with our local policy, crops will generally be thinned to realise amenity, biodiversity and landscape objectives with the benefits of improved timber quality mainly restricted to second rotation first thin crops.

5.1.3 LISS, Long-term Retention and Natural Reserve

LISS can contribute to the protection and improvement of soil quality, water quality and biodiversity through reducing soil erosion and the creation of suspended solids in water. Currently, 9.7% of the LMP area is managed under Low Impact Silvicultural Systems (LISS), focused on the western slope of Bellsbank overlooking Craigengillan. However, due to the need to clearfell the significant larch component from these LISS coupes due to the control of *P. ramorum* infection over the next few years, these coupes will now be managed under clearfell-restock Silviculture until second rotation. LISS will be transferred to the coupes surrounding the osprey nest in Eriff, which has significant frontage to the visitor area around the Roundhouse Café, with a net gain of 5.6 ha in area managed under LISS.

Group Shelterwood systems will be the preferred system and should, through regular crown thinning and occasional small-scale clearfells of <2 ha (perhaps centred on windblow), provide areas for either natural regeneration or targeted restock of small seeded native tree and shrub species and contribute towards greater spatial diversity. Group Shelterwood generally encompasses:

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

If there is a management requirement for any coupe >2 ha to be felled then that prescription will be initially agreed with the FCS as per the Tolerance Table in Appendix II. With the move towards LISS management and increased thinning it is inevitable that additional road spurs and a permanent network of coupe access racks will be required. These will be identified and recorded during future plan period operations.

Natural Reserves are predominantly wooded, permanently identified locations of high wildlife interest or potential that is solely managed for high conservation or biodiversity value. As there are sufficient selected Natural Reserves of higher biodiversity value throughout the district only a small area adjacent to the Muck Water has been identified.

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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 this plan a total of 1.1 ha will be managed under Minimum Intervention.

Under Long-term Retention (LTR) trees are retained for environmental benefit significantly beyond the age or size generally adopted. Only around 2.4% of the Eriff & Bellsbank plan has been identified as LTR, mainly in areas adjacent to roads or walking tracks for landscape considerations, therefore stand stability will be an important consideration going forwards.

5.2 Future habitats and species

The accompanying Future Habitats and Species map (Map 5) provides detail of our proposed restock species and habitats for Eriff & Bellsbank LMP.

5.2.1 Woodland fringe

A feature of the design plan is to improve the boundaries between plantation and the adjacent open hill ground, creating a transitional zone of woodland fringe. Native woodland fringe is defined as 20-50% tree cover in a matrix of short vegetation. Always more than 50% of the tree species will be native. Regeneration will be closely monitored, assessed as to its suitability and if the density of woodland cover is unacceptably low then restocking would take place or if too dense the conifer regeneration removed as resources allow. Woodland fringe has the potential to provide additional habitat for black grouse which have been recorded within 3 km of the LMP area.

Block	Objective	Benefits	Implementation
Eriff & Bellsbank	Creation of woodland fringe (additional black grouse habitat)	Enhance habitat for variety of species Increase BL area within forest district	Identify areas for open space/ broadleaf/mixed conifer matrices bordering plantation to higher elevation open ground.

5.2.2 Riparian zones / aquatic zones (open space)

Loch Doon is the key still waterbody that impacts on the plan area and it is an important habitat for fish (especially Arctic char: biological SSSI designation) and wild fowl species. The plan identifies the creation of a significant buffer zone to the western/southern boundary of Eriff along the loch edge, achieved through the removal of conifer crop and the creation of additional open space or broadleaf areas. Linking this buffer to other watercourses >0.5 m wide, also subject to

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riparian zone improvements, and other external and internal open space within the block will create larger habitat networks.

Riparian buffer zones will be extended to more than satisfy the demands of UKFS, comprising native BL planting and open space to assist in improving water quality, protecting soils, maintain fish stocks and benefitting species that use the habitat. To complement this planned riparian zone management and to aid water quality improvement, the continued monitoring and management of conifer natural regeneration in the riparian zone is critical.

5.2.3 Quarries (open space)

The single small quarry to the northern end of Eriff (NS48910192) is identified on the features map (Map 2) and will remain as permanent open space. Future quarrying, without major boundary expansion, may well be required to provide source material for forest road construction and maintenance in the area. Any significant quarry development proposals will be submitted to FCS for approval prior to work taking place (see Tolerance table Appendix II).

5.2.4 Deadwood / veteran trees

Around 3% of the plan area is identified as LTR/minimum intervention/Natural Reserve, and it is envisaged that these areas should provide ample deadwood in standing trees and fallen limbs. Additional deadwood reserve may be identified in the LISS areas containing Corsican pine which are expected to be lost to DNB over time.

5.2.5 Woodland

In the conifer-dominant commercial areas, Sitka spruce will continue to be the main timber species; however, where landscape considerations prevail or where site conditions are favourable DF, NS and SP will be preferred. Our current policy to fell larch to control *P ramorum* infections will result in a loss of larch forest previously beneficial to species such as red squirrel and black grouse. This potential loss will be offset through additional planned restocking of DF, SP, NS and BL and should the restocking embargos be lifted in the future, the reinstatement of some larch crops.

The following table presents the details of our proposed species restock:

Species	Area (ha) in 2028	Total Area %	Area (ha) in 2048	Total Area %
Sitka spruce	237.5	48.7	239.6	49.1
Norway spruce	18.8	3.9	23.3	4.8
Larch spp.	16.1	3.5	8.3	1.8
LP (other pine)	36.9	7.6	25.8	5.3
Scots pine	2.7	0.6	2.2	0.5

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Douglas fir	13.0	2.7	13.1	2.7
Other Conifers	5.0	1.0	6.5	1.3
Broadleaf	44.8	9.2	44.8	9.2
Open Space	112.7	23.1	123.9	25.4

The table reflects, mainly at the expense of the existing Sitka spruce and infected larch crops, expansion of Norway spruce, Douglas fir and other minor conifer species for added species diversity. There is also a marked increase in the proposed area of mainly native small-seeded broadleaf tree cover that will both enhance the landscape and provide improved woodland habitat to protect soils and improve water quality. Target stocking density for non-commercial broadleaf will be a minimum of 1600 stems per hectare (2.5 m spacing) with restocking taking place should the figure not be reached.

Post clearfelling, there will be no conifer restocking within 20 m (and on occasion up to 50 m) within the main watercourse riparian zones. It is expected that some of the riparian zones will fill in with natural regeneration of both conifers and broadleaves. At the 5 year mid plan review, an assessment will be made of the extent of this natural regeneration taking in to consideration elevation and the vulnerability of the watercourse to acidification. If there is significant natural regeneration of conifers, discussion will take place with both SEPA and the local Fisheries Trust regarding the importance of removing the conifers within the riparian zone and, if resources allow, the conifers will be removed to the edge of the planted area. All native broadleaves will be retained.

Where species selection differs markedly from the design plan proposals, detailed restock plans will be submitted to FCS for approval prior to work taking place (see Appendix II Tolerance table).

Despite the lack of squirrel stronghold designation, there is a continued commitment to restocking in productive areas with an increased proportion of Norway spruce, small-seeded broadleaf, Scots pine and the retention, where possible, of areas of mature conifer plantation will ensure that the block remains relatively advantageous towards red squirrel.

5.3 Restructuring

Block restructuring remains an important consideration. Whilst our planned clearfell over the period of this plan will continue to gradually alter the spatial appearance and structure of the block, full restructuring will only become apparent during second and subsequent generation crops. Additional areas of minor conifer species and broadleaf restocking and, where possible, the retention of mature conifer species will benefit the internal landscape of the block and add to the overall spatial diversity.

5.4 PAWS restoration

There are no existing FES PAWS sites within the LMP area. Two strips of broadleaf woodland to the western boundaries of Bellsbank within an area marked as 'Bogton Plantation' on the 1:10,000 OS map are suspected non-ancient woodland. These parcels are more likely LEPO woodland (Long Established of Plantation Origin) and will be retained under long-term retention, or protected during the P1 felling phase and surrounding restock will be MB.

5.5 Deer management

This plan will implement the district deer strategy which is developed between our in-house wildlife conservation teams and external stakeholders. This will ensure the best practice of sustainable deer management is implemented district wide in conjunction with achieving national targets. The targets are centred around less than 10% damage impact from deer/herbivores on all tree species.

The Eriff & Bellsbank land management plan area has both red and roe deer present, plus regular intrusion by sheep in the Eriff plantation. There are ongoing issues with large numbers of sheep intruding into many areas of the forest and especially on vulnerable restocking sites. This has a negative impact on ground flora and productive planted sites. FES is attempting to address these issues, especially the significant lengths of porous fencing which has a considerable cost implication. There has also been a new strategy implemented at a national level with involvement from the NFU regarding sheep intrusion into the NFE and a system for reporting sheep intrusions, along with increased staff resources to deal with this issue.

Cull figures fluctuate but predicted culls are based on Deer Population Assessments (DPA) carried out by independent contractors. The aim of current policy is to reduce deer densities from 10-15 deer per km² to 5 deer per km² within the woodland area in order to ensure all tree species including natural regeneration and associated habitats are protected from negative impacts from over grazing.

In addition it is important that the current sheep presence is eliminated from this forest block in order to allow future objectives to be achieved.

Current deer management in the block is carried out by contract rangers as required. Roe deer are the most prevalent deer species present, and owing to the greater disturbance level in the Bellsbank plantation, more common in the Eriff block. New ATV tracks may be required along restocked coupes adjacent to open hill area, but careful consideration will be given to their absolute need and location. Though none are currently planned, where required, they will be constructed by removing topsoil and levelling the surface with a drain on the top

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side and will be a maximum of 2m wide. No trees will be planted within 5m of the track centre and riparian zones will be avoided.

Deer glades, typically up to 1.0ha in size, are not shown on the suite of design plan maps. Precise locations will be identified and inserted at time of restocking when FES Wildlife Rangers are able to assess site conditions post clearfell.

5.6 Pathogens, diseases and invasive species

Phytophthora ramorum infection has been confirmed on larch throughout the district with all infected groups initially felled to comply with the requirements of a Statutory Plant Health Notice (SPHN). A wider management plan was agreed with FCS to prevent hybridisation of the disease which would have likely resulted in a more virulent strain of the disease emerging, further threatening larch populations. Larch within the Eriff & Bellsbank LMP area have been infected and although the plan area lies within the Management Zone, a 10 km buffer up to the northern and eastern boundaries of this zone was introduced in 2017, with all coupes containing infected larch targeted for full or partial felling. This is part of the FES national approach to management of *P Ramorum*. Although not a particularly significant component in previous planned restock, it is likely in this plan that the species will become a negligible component of the local woodland with alternative conifer (not Sitka spruce) and broadleaf woodland contributing more towards the species diversity of the block.

Hylobius abietis also known as pine weevil, can cause extensive damage to young conifer crop and is found in the plan area and throughout the district. As part of the district's chemical minimisation strategy, the *Hylobius* Management Support System (HMSS) was used over a 6-year period to measure *Hylobius* populations on clearfell sites. Using billet traps, an extremely high proportion of the districts conifer restock areas were assessed in this period. Weevil numbers were recorded and used along with other site data to determine the optimum time for site restocking. This more flexible fallow period between felling and restocking may result in restocking not taking place within three years of felling. (Appendix II Tolerance Table).

Dothistroma Needle Blight (DNB) has been identified on Corsican, Lodgepole and Scots pine crops in the district, although at present is only causing mortality in CP. There are small areas containing CP within the LMP area around the L Doon face of Eriff; however, these will be left as part of the LISS coupes and will form part of the deadwood resource should mortality occur. Given the impact on structural and species diversity of the *Phytophthora* infection, Scots pine will remain an important element of planned restock. DNB surveys may in the future become more intensive and its wider presence in the block cannot be ruled out.

Invasive non-native species (INNS) impact the biodiversity of an area directly and are recognised as a significant risk to water environments. There are no

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records of *Rhododendron ponticum*, Japanese Knotweed, Giant Hogweed or Himalayan Balsam; however, monitoring is ongoing and identified species will continue to be treated as per the District's Invasive Species Policy until eradicated.

5.7 Waste on site (including felling waste)

Generally there are no plans to carry out chipping, mulching or spreading of forest waste over the plan area for ecological site improvement; however, some felling to waste of immature larch crops may take place in response to infections of *P. ramorum*. Detailed plans will be submitted to FCS for approval prior to any work taking place.

5.8 Tolerances

Tolerance thresholds for design plan amendments are as per our Tolerance Table (based on CSM6 Appendix 3 and subsequent to local agreement with FCS South Scotland staff) and the *P. ramorum* working tolerance table for larch found in Appendix II

5.9 Critical success factors

- Removal and restructuring of the wayleave through Bellsbank
- Regular interventions in LISS coupes
- Removal of larch and subsequent restock increasing species diversity
- Construction of proposed new roads

5.10 Amendments

To be logged on amendment form

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Appendix I: Land Management Plan Consultation Record

Statutory Consultee	Date contacted	Date response received	Issue raised	Forest District Response
Local community – drop in session held at Bellsbank community centre 16:00 – 19:00 on 30 November 2017	23-30 November 2017 via local radio station (West Sound)	30 November 2017	Three attendees: no specific comments received.	None required
East Ayrshire Council: Karl Doroszenko	30 October 2017	19 December 2017	<ul style="list-style-type: none"> Established Right of Way running through Bellsbank along existing forest road. Should not be disrupted or adversely impacted through forestry activities. Right of Way should not be diverted without statutory process (Policy TC4). Section of potential ancient woodland to southern edge of Bellsbank should not be felled or damaged by adjacent forestry activities (Policy ENV9). Eriff abuts L Doon SSSI (Policy ENV6) – noted that proposed buffer zones in plans provide adequate protection. Water courses should be managed to maintain or 	<p>Any RoW detailed in workplans. Noted in section 4.1 and Appendix IV</p> <p>Area is thought to be LEPO, and will be retained. Addressed in section 5.4</p> <p>A primary aim of the plan is improving water quality – addressed in sections 3.1.2, 4.2, 5.2.2 and 5.2.5</p>

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			improve water quality in R Doon catchment (Policy ENV12)	
SNH Ayr office: Andrew MacGregor	30 October 2017	06 December 2017	<ul style="list-style-type: none"> • Supportive comments generally on increased species and habitat diversity, use of LISS, restructuring and landscape integration of plantation and the enhancement of aquatic and riparian zones throughout the block. • L Doon SSSI and Arctic char population highlighted in relation to surface water acidification. • More explicit detail on species conservation actions requested in plan. 	<p>Addressed in sections 3.1.2, 4.2, 5.2.2 and 5.2.5</p> <p>Addressed in sections 3.2.1, 3.2.2, 4.2 and 5.2.1</p>
Historic Scotland: John Malcolm	30 October 2017	10 November 2017	<ul style="list-style-type: none"> • No designated features – no comment other than referred to Regional Archaeologist 	Noted in LMP text (section 3.5.3) and Map 2: Maintain appropriate buffers around non-scheduled sites, protect features during harvesting, and improve conditions of archaeological features at restock.
SEPA Ayr office: Jonathan Werritty	30 October 2017	13 December 2017	<ul style="list-style-type: none"> • General comments relating to forestry activities. • Demonstrate full compliance with Forest & Water 	Addressed in sections 3.1.2, 3.3.2, 4.2, 5.1, 5.2.5, 5.6, 5.7 and Map 3.

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			<p>guidelines 5th edition</p> <ul style="list-style-type: none"> • Protect watercourses through drainage management and minimising pollution risk • Enhance water quality within R Doon catchment • Reduce flood risk • Compliance with CAR regulations. • Statement on waste • Statement on invasive species 	
IUCN Otter Specialist Group: Rosemary Green	30 October 2017	06 December 2017	<ul style="list-style-type: none"> • Generally supportive comments • Any water crossings on new roads should be passable by otters • Large-seeded BL should be avoided to discourage grey squirrel 	<p>Addressed in section 3.3.2</p> <p>Addressed in sections 3.2.1, 4.2 and 5.2.5</p>
Craigengillan Estate: Mark Gibson	30 October 2017	27 November 2017 09 February 2018	<p>Personal meeting attended during consultation period:</p> <ul style="list-style-type: none"> • Generally supportive of proposals • Keen to see increased species diversity and better tie-in to Craigengillan landscape <p>Comments received via email outwith consultation</p>	<p>Plans to improve species diversity, landscape value and tie-in to adjacent Designed Landscape, plus rationale for clearfelling are addressed in sections 4.2, 3.4.3, 3.5.1 and 5.6</p>

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			period: <ul style="list-style-type: none"> • Objection to <i>P. ramorum</i> larch clearfell plans over Bellsbank hillside overlooking Craigengillan estate (coupes 89019 & 89028) for visual landscape reasons 	
Saving Scotland's Red Squirrels (SWT): Alexa Seagrave	30 October 2017	22 November 2017	<ul style="list-style-type: none"> • Very supportive of plan proposals • Questioned whether specific grey squirrel control will be implemented 	Red squirrel conservation measures addressed in sections 3.2.1, 4.1, 4.2 and 5.2.5
FCS South Scotland Conservancy: Dumfries office	30 October 2017	No comment received		
CONFOR: Jamie Farquhar	30 October 2017	No comment received		
Ayrshire Rivers Trust: Stuart Brabbs	30 October 2017	No comment received		
RSPB Glasgow: Zoe Clelland	30 October 2017	No comment received		
Visit Scotland: Paula McDonald	19 December 2013	No comment received		

Appendix II: Tolerance Tables

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	<ul style="list-style-type: none"> Fell date can be moved within 5 year period where separation or other constraints are met. 	<ul style="list-style-type: none"> Up to 10% of coupe area. 	<ul style="list-style-type: none"> Up to 3 planting seasons after felling. 	<ul style="list-style-type: none"> Change within species group e.g. evergreen conifers or broadleaves. 		<ul style="list-style-type: none"> Increase by up to 5% of coupe area 	
Approval by exchange of letters and map	Y		<ul style="list-style-type: none"> Up to 15% of coupe area 	<ul style="list-style-type: none"> Between 3 and 5 planting seasons after felling, subject to the wider forest and habitat structure not being significantly compromised. 		<ul style="list-style-type: none"> Additional felling of trees not agreed in plan. Departures of > 60m in either direction from centre line of road 	<ul style="list-style-type: none"> Increase by up to 10% of coupe area Any reduction in open space of coupe area by planting. 	<ul style="list-style-type: none"> 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*

TABLE OF WORKING TOLERANCES SPECIFIC TO LARCH WITH THE INFECTED ZONE

	Adjustment to felling period *	Adjustment to felling coupe boundaries	Timing of restocking	Changes to Species	Changes to road lines
FC Approval normally not required	Fell date for all larch can be moved and also directly associated other species	Larch areas can be treated as approved coupes. Other conifers directly associated with larch being felled, may also be removed up to an equivalent of 20% of the area occupied by the larch or 5 ha, whichever is greater	To be undertaken within the overall plan approval period	Replacement as per the agreed restock plan, but where this is not specified or is larch this may be replaced with either another diverse conifer (not SS) or Broadleaves.	
Approval normally by exchange of letters and map. In some circumstances Approval by formal plan amendment may be required		Removal of areas of other species in excess of the limits identified above.	Restocking proposals outwith the plan approval period	Restocking proposals for other species which do not meet the tolerances identified above.	New roadlines or tracks directly necessary to allow the extraction of larch material

Appendix III: Ground-truthed Heritage sites

SITE	GRID	COMMENT
PENNYARTHUR RIG	NS485038	A cairn of earth and stones measuring 13.0m in diameter and 1.2 m high. A dry stone windbreak for sheep surmounts it, possibly constructed from the cairn.
SHEEP PEN	NS492038	A sheep pen, annotated as 'Sheep Ree' on the 1st edition of the OS 6-inch map (Ayrshire 1859, sheet lii).
SHEEP PEN	NS490036	A rectilinear sheep pen.
BUBBLY CAIRN	NS490035	The remains of a large cairn, now level with the ground, in which human remains were found when the stones were removed to build dykes.
HLA RELICT AREA	NS489031	18th Century-Present Rectilinear Fields and Farms - enclosure. Site identified by HLA - no further information available.
HLA RELICT AREA	NS488031	18th-19th Century Plantation Enclosure. Site identified by HLA - no further information available.
HLA RELICT AREA	NS486047	18th Century-Present Rectilinear Fields and Farms. Site identified by HLA - no further information available.
SHEEP PENS	NS489002	Rectangular shaped sheep pens. Annotated as 'Sheep Rees' on the 1st edition of the OS 6-inch map (Ayrshire 1859, sheet liii).
MUCKLE ERIFF	NS492006	A farmstead comprising one unroofed long building of three compartments is depicted on the 1st edition of the OS 6-inch map (Ayrshire 1859, sheet liii).

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HLA RELICT AREA	NS491002	Medieval/Post-medieval Sheep Enclosures. Site identified by HLA - no further information available.
ERIFF BURN	NS493003	A farmstead comprising two unroofed buildings, a field-system, which is partly marked by pecked lines, and a two compartment enclosure re depicted on the 1st edition of the OS 6-inch map (Ayrshire 1859, sheet liii).
CAIRN	NS492003	A circular cairn.
CAIRN	NS490016	A circular cairn.

Appendix IV: Coupe details for clearfell and establishment

Clearfell (ha)

Coupe	SS	NS	Larch	SP	LP	Other con.	BL	Open space	Total
89001	19.2	1.2	3.9	0	3.1	0	0	3.5	30.9
89002	9.4	0.6	1.2	0.2	0.8	0	0	0.7	12.8
89009	10.0	0	0	0	7.0	0	0	0.6	17.6
89019	16.9	0	6.1	0	0	0.2	0	0.7	23.9
89020	12.7	0	1.6	0	0	0	0.3	2.4	17
89022	18.8	0	1.0	0	0	0	0	1.1	20.9
89026	1.6	0	0	0	0	0	0	0.2	1.9
89028	35.0	0	0	0	0	0	0	1.6	36.6
89029	3.2	0.8	1.0	0	0	0	0	0.5	5.5
89033	2.2	0	0.8	0	0	0	0	0.3	3.3
89501	0	0.2	0.9	0	0.2	0	0	1.4	2.8
Total	139	4	17	0.2	11.2	0.9	0.4	17.7	173.2

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Restock (ha)

Coupe	SS	NS	Larch	SP	LP	Other con.	BL	Open space	Total
89001	19.9	0	0	0	2.4	0	2.8	5.8	30.9
89002	9.3	0	0	0	0.1	0.4	0.2	2.8	12.8
89009	10.2	0	0	0	4.1	0.3	1.0	2.0	17.6
89019	8.4	2.7	0	0	0	3.5	9.4	0	24
89020	11.6	0.1	0	0	0.5	0	2.8	2.0	17
89022	0	0.4	0	0	0	0	0.8	19.8	21
89026	0	0	0	0	0	0	0.9	0.9	1.8
89028	29.4	3.8	0	0	0	0	3.0	0.4	36.6
89029	0	0	0	0	0	0.4	3.9	1.2	5.5
89033	0	0	0	0	0	0	3.3	0	3.3
89501	0	0	0	0	0	0	1.1	1.7	2.8
Total	91.9	7	0	0.6	7.8	4.6	30.3	48.7	173.2

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Notes on coupe work schedule

89001	Coupe adjacent to L Doon and contains larch; additional open space and BL restock to loch edge, for water quality, habitat improvement, visual and species diversity.
89002	SS matrix with open space bordering open ground to east. Requires extension of existing forest road to reach coupe. Restock SS, with MB/MC in matrix of open ground to adjacent open ground for habitat network creation.
89009	SS/LP matrix accessed from forest road. Restock mainly SS/LP mix, with some pure LP due to soils. MB and MC/MB in matrix of open ground to east of coupe bordering adjacent open ground for habitat network creation/black grouse.
89019	SS/larch mix to fell for P ramorum infection. Restock mainly MB and alternative conifers. All existing BL to be retained. Bellsbank public trail runs through the coupe. New road spur required. Coupe would be suitable for thinning and LISS management following restock.
89020	SS/JL. Access from existing forest road. Brash track across wayleave required to access steep banking down toward Muck Water and A713 public road. Banking identified as MB restock in matrix of open ground for riparian habitat and water quality. Boundary to south restock MB/MC with open ground for habitat creation (black grouse).
89022	Mainly SS with some JL. Not visually prominent. SS restock with boundary to south restock MB/MC with open ground for black grouse.
89026	Small coupe adjacent to public road: BL and open space for visual and species diversity
89028	Larger hilltop SS coupe; restock SS, with MB to southern border for visual and water quality, and NS to southwest around Bellsbank trail to increase species diversity/visual appeal.
89029	SS/NS to west of Muck Water and north of public road: BL and open space to open up entrance to Galloway Forest Park, riparian corridor and species diversity.

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89033	JL/SS to west of Muck Water, steeply banked; restock MB habitat creation and water quality/riparian zone protection.
89501	JL/NS to fell for larch sanitation clearance. Steep-sided gully into Gaw Glen Burn may require motor-manual felling and cable extraction. Restock with MB/open ground matrix for riparian zone protection.

Appendix V. Eriff & Bellsbank Design Plan Brief

A BRIEF FOR ERIFF & BELLSBANK LMP

The main management objectives in this medium scale plan unit focus on core Timber production, Native Broadleaf expansion, Water Quality & Flood Attenuation, and medium-scale Landscape views.

The block lies c.5 km south of Dalmellington, East Ayrshire

Key Strategic Directions from Role of Scotland's National Estate	Local District Strategic Plan Priorities	Actions / Prescriptions
<p>Healthy: good environmental and silvicultural condition in a changing climate</p>	<ul style="list-style-type: none"> • 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 in estate's trees and soils 	<ul style="list-style-type: none"> • <i>Increase</i> area of woodland managed under LISS to <i>improve</i> resilience and visual aspect, particularly highly visible roadside corridors and areas around L. Doon shores • <i>Improve</i> resilience through reduction in coupe size (target <20 ha) • <i>Increase</i> area of broadleaf woodland and <i>establish</i> a wider range of conifer and broadleaf species diversity • <i>Control</i> invasive species as per FES guidelines • <i>Manage</i> watercourses in keeping with UKWAS standards and Forest and Water guidelines to maintain and improve water quality within R Doon catchment: Dalmellington is designated a Potentially Vulnerable Area (PVA) by SEPA. ~80ha of Bellsbank falls within the Muck Water sub-catchment. Flood risk will be a key consideration in the LMP with an aim to reduce peak flow in Dalmellington.
<p>Productive: provide sustainable economic benefits from the land</p>	<ul style="list-style-type: none"> • Contribute to local economy by maintaining core timber production • Expand area of productive broadleaf and diversify timber markets • Provide work in rural areas 	<ul style="list-style-type: none"> • <i>Review</i> production forecast commitment through revised felling/thinning plan (modify to accommodate <i>P. ramorum</i> felling) • <i>Manage</i> productive zones with correct species choice for site • <i>Implement</i> road construction programme required to service harvesting operations
<p>Treasured: a multi-purpose resource that sustains livelihoods, improves quality of life and offers involvement and enjoyment</p>	<ul style="list-style-type: none"> • Involve and engage with local people / encourage partnership working • Create more uniquely special places across the Estate • Place for research and 	<ul style="list-style-type: none"> • Continue to <i>engage</i> with local community (drop-in meetings and other) within LMP process • <i>Recognise</i> LMP area as the 'northern gateway to Galloway Forest Park' • <i>Improve</i> and <i>enhance</i> recreational resource for local community by improving within-forest views from

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	development	<p>Bellsbank circular walking/riding trail</p> <ul style="list-style-type: none"> • <i>Engage</i> with SEPA on long-term catchment management for Dalmellington PVA
Accessible: woodlands that welcome and are open for all	<ul style="list-style-type: none"> • Improve access and enhance existing or invest in new facilities • WIAT programme • Use for health benefits and outdoor learning 	<ul style="list-style-type: none"> • Continue to <i>work</i> with local communities to ensure access and recreational facilities will be managed to correspond with the visitor demand and modern expectations (Bellsbank WIAT) • <i>Retain and improve</i> views across L. Doon and osprey viewing area to encourage repeat visits and <i>provide</i> a 'must see' destination for visitors and local communities.
Cared for: working with nature and respecting landscapes, natural and cultural heritage	<ul style="list-style-type: none"> • Expand / enhance area of Native woodland • Increase area of broadleaf cover • Landscape • Maintain open habitats in good ecological condition • Priority species conservation (Red Squirrel & Black Grouse) • Safeguard heritage features 	<ul style="list-style-type: none"> • <i>Enhance</i> small areas of BL in Bellsbank and <i>link</i> to adjacent designed landscape; <i>increase</i> area of Native Woodland planting within LMP area • Block is visually prominent in the near and mid-distance from the U759 Loch Doon road; <i>maintain and enhance</i> medium-scale landscape through additional species diversity, open space integrated management, revised coupe shapes to better suit landform and greater use of LISS • Although not a core site, maintain area for Red Squirrel (priority species) • <i>Manage</i> minor heritage features as per FES guidelines
Good value: effective and efficient delivery of public benefits	<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>Continue</i> to monitor and manage sustainable deer population over LMP area through sporting leases • <i>Maintain</i> visitor numbers for local businesses (Café, caravan park) and forest drive

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ACHIEVED BY PLAN

HEALTHY

Y Committed to high quality silviculture and increasingly using alternatives to clearfell (LISS): [increased area of the plan will be LISS under group shelterwood. Further potential to western edge of Bellsbank following second rotation restock.](#)

Y Committed to dealing with invasive plants that threaten habitats and biodiversity: [LMP area will continue to be monitored for invasive species, with removal actioned where required.](#)

Y/N Help the estate to adapt to climate change and become more resilient to pressure: [Ongoing proactive control of *P. ramorum*, alternative species restocking and an operational deer and sheep management plan for block in place.](#)

PRODUCTIVE

Y Supply three million cubic metre of sustainable softwood: [felling programme will continue to contribute to the overall district programme.](#)

N Manage at least one quarter of our expanding broadleaf woodlands to produce quality hardwood and fuelwood: [plan area has limited potential to contribute towards this figure with increased BL restocking principally for biodiversity and landscape considerations.](#)

Y Work with partners to find new ways to harness our natural and cultural heritage and develop the estate's potential for tourism: [continue to develop tourism facilities where they will meet the expectations of the visitors to the block area.](#)

N Support Scottish Governments woodland expansion programme: [there are no opportunities for new planting within the LMP area.](#)

N Plan to increase the agricultural use of the estate where this is consistent with environmental objectives: [block has no opportunities for agricultural land use expansion.](#)

TREASURED

Y Recognise the value of the Estate as a place for research and development of best practice: [engage with stakeholders on Dalmellington flood risk PVA.](#)

Y Committed to more unique special places across the estate and delivering benefits to a more diverse range of Scotland's people: [increasing woodland diversity and woodland fringe creation will deliver additional habitat diversity, plus enhance the visitor experience to the area with improved views from public roads and within forest.](#)

Y Continue to use the Estate as a place for volunteering and gaining employment skills: [block has previously been used by volunteers during construction of Bellsbank trail, with machine certification training for local young adults to gain employment skills.](#)

ACCESSIBLE

Y/N Invest available resources into high quality facilities that encourage and help visitors experience and enjoy the outdoor experience: [block presents limited opportunities for development](#)

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Y Use estate for health benefits and outdoor learning: **Bellsbank trail is well-used by local community for walking, cycling and horse riding.**

CARED FOR

Y Restore 85% of areas on ASNW to native species: **small areas of native woodland will be retained under LTR.**

Y Increase BL tree cover from 8% woodland cover to 20%: **projected BL cover will increase in this LMP area.**

Y Identify particularly vulnerable species for which the NFE is important and take specific conservation action (Black Grouse / Red Squirrel): **not a priority area for either of these species, though proposed woodland fringe and open space creation should potentially benefit these species.**

Y Safeguard archaeological sites through planning and management and recognise special places and features with local cultural meaning: **heritage features will be identified and managed accordingly.**

Y Committed to maintaining best open habitats in good ecological condition: **open habitats will be focused around riparian zones where conifer regeneration will be controlled.**

GOOD VALUE

Y/N 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: **limited opportunities to diversify income with tourism, recreation and a moderate amount of timber; however, attracting greater numbers of visitors to the area will benefit local businesses.**

Appendix VI: Assessment of felling and restock proposals within catchments at risk and failing

Eriff & Bellsbank plantation lies out with any catchment at risk or failing. No further analysis required.

Appendix VII: The UK Forestry Standard, Forestry Commission Guidelines and the UK Woodland Assurance Scheme (UKWAS)

All of the operations in Eriff & Bellsbank plantation will be carried out in accordance with the UK Forestry Standard and its supporting publications. In particular the following documents are relevant:

- Forests and Water Guidelines (5th edition)
- Forest and Nature Conservation Guidelines
- Forest and Archaeology Guidelines
- Forest and Soil Guidelines
- Forest Practice Guide - Forest Land Management Planning
- Galloway FD Deadwood Management Policy
- Galloway FD Deer Management Strategy Plan
- In line with Forest Enterprise policy, Galloway FD has undergone a management audit that is part of the process leading to certification under UKWAS. Membership of the scheme indicates that the District's forests and management practices have been found to be sustainable both in terms of silviculture and environmental impact. Membership of the scheme is conditional on periodic audit and consistent attainment of audit standards.
- Eriff & Bellsbank Land Management Plan will be included in this audit process.