

Backhill o' Bush Land Management Plan 2016-26

Galloway Forest District

BACKHILL O' BUSH

Land Management Plan

Approval date:

Plan Reference No: FDP

Plan Approval Date: 01 January 2017

Plan Expiry Date: 31 December 2026

Backhill o' Bush Land Management Plan 2016-26

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



Backhill o' Bush Land Management Plan 2016-26

CSM 6 Appendix 1

FOREST ENTERPRISE – Application for Forest Design Plan Approvals Forest Enterprise – Property

Forest District:	GALLOWAY FD
Woodland or property name:	BACKHILL O' BUSH
Nearest town, village or locality:	CARSPHAIRN
OS Grid reference:	NX490800
Local Authority district/unitary Authority	DUMFRIES & GALLOWAY

1. I apply for Forest Design Plan approval*~~/amendment approval*~~ for the property described above and in the enclosed Forest Design Plan.
2. 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.
3. I confirm that the proposals contained in this plan comply with the UK Forestry Standard.
4. I undertake to obtain any permissions necessary for the implementation of the approved Plan.

Signed
Forest District Manager

Signed
Conservator

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

Conservancy

Date

Date of Approval:

Date approval ends:

*delete as appropriate

Backhill o' Bush Land Management Plan 2016-26

EIA Determination form if required

Contents

Summary of Proposals

1.0 Introduction:

- 1.1 Setting and context
- 1.2 History of plan

2.0 Analysis of previous plan

- 2.1 Analysis from previous plan

3.0 Background information

- 3.1 Physical site factors
 - 3.1.1 Geology Soils and landform
 - 3.1.2 Water
 - 3.1.3 Climate
- 3.2 Biodiversity and environmental designations
 - 3.2.1 FCS Biodiversity Programme key species
 - 3.2.2 Scottish Biodiversity List species
- 3.3 The existing forest:
 - 3.3.1 Age structure, species and yield class
 - 3.3.2 Access
 - 3.3.3 LISS potential
- 3.4 Landscape and landuse
 - 3.4.1 Landscape character and value
 - 3.4.2 Visibility
 - 3.4.3 Neighbouring landuse
- 3.5 Social factors
 - 3.5.1 Visitor Zone Recreation
 - 3.5.2 Community
 - 3.5.3 Heritage
 - 3.5.4 Forest Renewables and Utilities
- 3.6 Statutory requirements and key external policies

4.0 Analysis and Concept

- 4.1 Analysis of constraints and opportunities
- 4.2 Concept development

5.0 Land Management Proposals

- 5.1 Forest Stand Management
 - 5.1.1 Clear felling
 - 5.1.2 Thinning

Backhill o' Bush Land Management Plan 2016-26

- 5.1.3 LISS, Long Term Retention and Natural Reserve
- 5.2 Future habitats and species
 - 5.2.1 Bog Habitat restoration (open space)
 - 5.2.2 Woodland fringe / open hilltop
 - 5.2.3 Riparian zones / aquatic zones (open space)
 - 5.2.4 Wetland zones (open space / woodland)
 - 5.2.5 Quarries (open space)
 - 5.2.6 Deadwood / veteran trees
 - 5.2.7 Woodland
- 5.3 Restructuring
- 5.4 PAWS restoration
- 5.5 Deer management
- 5.6 Pathogens, Diseases and Invasive Non native species
- 5.7 Waste on site (including felling waste)
- 5.8 Habitats Regulations Appraisal sites
- 5.9 Tolerances
- 5.10 Critical success factors
- 5.11 Amendments

Support documents: Maps

- Analysis and concept map
- Features map
- Future Habitats and Species map
- Management map
- Visitor Zone map

Appendices:

- i) Land Management Plan Consultation record
- ii) Tolerance table
- iii) Ground Truthed Heritage sites
- iv) Coupe details for clearfell and establishment
- v) Backhill o' Bush Land Management Plan Brief
- vi) Habitats Regulations Appraisal – Merrick Kells
- vii) Assessment of felling and restock proposals within catchments at risk and failing
- viii) The UK Forestry Standard, Forestry Commission Guidelines and the UK Woodland Assurance Scheme (UKWAS)

Summary of Proposals:

Habitat restoration and connectivity is the main objective for this Land Management Plan however water quality in the R Dee catchment and sustainable timber production sympathetic to the demands of large scale landscape are also important.

1.0 Introduction:

1.1 Setting and context

Part of Galloway Forest District that is based in Newton Stewart, Backhill o' Bush is a large scale linear plantation that lies some 27.0km north east of Newton Stewart. The block, totalling some 5152.0ha, adjoins the open hill and other agricultural land of the Rhinns of Kells to the east and to the west by Dungeon Hill, Caignaw and Craiglee (all part of the Merrick Hill range and core Biosphere areas) and also links other FES plantation and private sector woodland, Gala Lane and Clatteringshaws, to the north and south. Whilst the block is particularly visible in near and mid distance view internally from the Southern Upland Way that runs along the forest road south of Loch Dee and from surrounding hill tops, it is relatively invisible from the A714 road that runs well south of the block. In essence it is a remote block and lies in the heart of the main Galloway block.

The block is an integral part of the Galloway Forest Park and also lies within the larger Western Southern Uplands ESA designation.

This plan is a revised submission of an earlier plan approved in 2005.

1.2 History of plan

Most of the Backhill o' Bush LMP was acquired in the 1940s.

Additional purchases in the early 1950s and late 1960s of land to the east and south complete the area (see table below).

Acquisition date	Deed No	Title	Seller
April 1940	11147	Glentrool	Earl of Galloway
Dec 1953	9811	Garraries	Hengrave Estates Ltd
Feb 1967	10977	Loch Dee Estate Craigdews etc.	Trustees Mr JG Jarvie
Jan 1968	10978	Craigencallie	Miss H Drew

A small amount of afforestation began in the late 1950s and continued on into the 1980s as areas around Loch Dee were acquired. The area has been regularly

Backhill o' Bush Land Management Plan 2016-26

harvested since the 1990s leaving a mix of first rotation and second rotation conifer crops.

Although this large scale plan links to other FES plantation to the north and south, it stands comfortably as a separate land management plan unit for conservation considerations.

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
Commercial softwood timber production in forest core. Diversify age structure and species composition of the block through restructuring to benefit habitat and visual diversity.	Approved felling has significantly impacted on the structural composition of the block. A range of coupes both at elevation bordering the open hill ground and from the plantation core have provided significant opportunities to increase structural diversity within the block and to create additional habitat types.
Increase area of broadleaf and open space to enhance conservation value of area.	Over the previous plan period significant areas of open space and broadleaf have been created along the principal riparian areas, areas adjacent to the designated sites and at elevation. Planned clearfell will provide further opportunities for large scale broadleaf habitat network creation.
Improve riparian zones along priority watercourses as identified by Galloway Fisheries Trust. Monitor and improve water quality as per Guidelines	Significant areas of open space and broadleaf have been created around the Black Water of Dee, the White Laggan Burn and Cooran Lane.
Create permanent open corridors to link unplanted hilltops of the Rhinns of Kells and Craigeazle with the lower lying Silver Flowe and Cooran Lane.	During the period of the plan significant areas of conifer plantation have been felled to facilitate the creation of open corridors that link open hill tops with lower lying ground.
Design forest margins to enhance value of adjacent SSSIs and improve continuity between open hill and forest margins	During the period of the plan areas of conifer plantation have been felled adjacent to designated sites allowing improved plantation design on the margins.
Maintain suitable habitat for Red Squirrel conservation.	Area lies adjacent to but outwith the stronghold area for the species. Additional areas of small seeded broadleaf and continued conifer restock will ensure that the block remains advantageous towards the species.
Increase species diversity and views along Southern Upland Way.	Habitats and Species map identifies additional species diversity (mainly broadleaf and SP) around Loch Dee area.

Backhill o' Bush Land Management Plan 2016-26

Whilst these 2005 approved plan objectives have generally been met, they have over the interim period become slightly outdated. Key objectives for the plan (see table below) are now more directly related to the revised brief (see Appendix V).

Themes and objectives	Priority
<p>Healthy;</p> <p>Maintain and where beneficial enhance peatland restoration around Silver Flow and Ellergower Moss area to benefit moorland wildlife and carbon sequestration</p> <p>Increase overall area of broadleaf through permanent riparian network and at elevation as woodland fringe</p> <p>Increase use of Natural regeneration in restock</p> <p>Improve resilience through smaller coupe size and where possible increase the area under LISS</p>	high
<p>Productive;</p> <p>Promote sustainable timber supply within the local / national economy through revised felling plan and restocking plans</p> <p>Implement modest scale road building / road maintenance programme required to service proposed operations coupes</p> <p>Increase area of broadleaf woodland creation, including native species for biodiversity</p> <p>Create a more diverse age structure for the forest.</p>	high
<p>Accessible;</p> <p>Improve / enhance access within block (specifically Southern Upland Way corridor and hill access through existing plantation for walkers)</p>	medium
<p>Cared for;</p> <p>Protect water, soil and air by adhering to UKWAS standards, agreed SSSI management plans, Forest and Water guidelines and Water Framework Directive to maintain and improve water quality in the R Dee catchment</p> <p>Contribute to Scotland's landscape through the management of views both from the internal forest road network and surrounding hill tops</p> <p>Maintain and enhance Black Grouse habitat through creation of Woodland fringe</p> <p>Manage heritage features within block according to FES Archaeological guidelines</p> <p>Increase area of open habitat to link uplands to lo lying valley ground</p>	medium
<p>Treasured;</p> <p>Involve local people / communities through LMP process and partnership working</p>	low

3.0 Background Description

3.1 Physical site factors

3.1.1 Geology Soils and landform

Most of the block lies within the Loch Doon granite intrusion formed in the Old Red Sandstone age. The plantations are sandwiched between the granitic Mullwharchar Ridge to the west and the Rhinns of Kells metamorphic aureole made up of hardened greywacke rocks to the east.

Poorly draining soils dominate the area with Molinia bogs predominately along the valley floor and poorer blanket bogs interspersed with peaty gleys on the lower and mid slopes. Reflecting the high rainfall and coarse glacial till, the various flushed and unflushed peat bogs form around 78% of the forested area with coarse peaty gleys a further 20% and better mineral sites the remainder. The forest area lies in a major glaciated valley running due north south and is a rugged stony landform bounded by imposing hills. The Rhinns of Kells form the eastern side of the valley and comprises a series of tops of which Corserine 814m and Meikle Millyea 746m are the most significant. The western edge of the valley again is a ridge where Mullwharchar 692m, Dungeon Hill 615m, Craignaw 645m and Craiglee 531m dominate. Craigeazle a lesser top at 445m, but prominent due to its position jutting out from Meikle Millyea into the main valley, creates a smaller valley.

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

3.1.2 Water

Drainage of the main valley is south down the Cooran Lane and the Brishie Burn that drains the Long Loch and Round Loch of the Dungeon. To the east of the block numerous burns feed from of the Rhinns of Kells, the more significant being the Downies Burn, March Burn, Cleugh Burn and Curnelloch Burn.

Loch Dee to the south is fed by the White Laggan Burn, the Green Burn and Dargall Lane. The northern boundary of the plan area lies near the Dry Loch, the watershed between the Loch Doon and Black Water of Dee catchments, and to the east of Loch Dee the Loch Trool watershed.

As previously identified several open water bodies lie within the block, all are located mainly in the open ground. Loch Dee is the largest.

In this heavily forested catchment the river systems have suffered from issues such as surface water acidification, the management of riparian over shading, siltation risk and poor site drainage. All of the tributaries and drains in this catchment are therefore important regardless of their scale.

Large tracts of the catchments at risk or failing that cover the plan area, both open ground and plantation, are at elevation. Plantation cover over 300m is

Backhill o' Bush Land Management Plan 2016-26

scheduled to fall as our planned restructuring and reduction in future conifer restocking at elevation progresses.

With regard to River Basin Management Plan considerations the R Dee is currently classified as "moderate". Potential pressures on the watercourse are morphological alterations from forest operations and diffuse source pollution. We therefore aim to comply with best practice and minimise sediment release from any forest operations with efforts made to create wider aquatic and riparian zones (up to 50m) to provide long term protection against disturbance from future forestry operations and loss of light from canopy closure.

FES has considered flood risk of peak flows at the exit of the site and also further downstream. There are no known issues and plan proposals to increase the area of open space, reduce the area of commercial conifer woodland restocked replacing it with additional broadleaf areas both commercial and for biodiversity with well designed and significant sized buffers will minimise any additional effect. It is appreciated that new planting with associated operations of draining and ploughing can give rise to a very slight increase in peak flow (up to 20% at site scale) however there are no new planting proposals in the plan. The significance of the potential increase in peak flow will reduce as more water joins from other tributaries and the peak flow is diluted. Clearly if whole water catchments were being proposed for planting this would require greater examination and consideration.

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

All work undertaken will comply with the Forests and Water Guidelines (Fifth Edition) although in this sensitive acidified catchment riparian buffer zones should be significantly enhanced.

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 2000mm, the top end of 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.

3.2 Biodiversity and environmental designations

Several designated sites are located within the LMP area. Ellergower Moss and Merrick Kells, including Silver Flowe are SSSI sites with complex hydrology where retention of water on the site is critically important. These deep, water-logged peats with semi natural mire habitats are of national and international

Backhill o' Bush Land Management Plan 2016-26

importance. Other designations, SAC, Ramsar and Galloway and Southern Ayrshire Biosphere, and non designations such as SNH's Wild Land initiative also apply to the sites.

Ellergower Moss is one of the few remaining examples of an intact upland raised bog and lies to the south of a series of bogs that constitute the Silver Flowe National Nature Reserve (NNR). The raised bog vegetation is in favourable condition.

Merrick Kells site contains the most important and varied system of patterned blanket bog in Britain and is designated for its blanket bog and upland habitat, breeding bird assemblage and invertebrates. The site also includes Silver Flowe, the most southerly development of oceanic blanket bog vegetation with *Racomitrium* hummock characteristics and one of the best examples of aligned hummock hollow systems in Britain. Most of the Merrick Kells natural features are in a favourable condition.

Bog habitats (UKBAP priority) support numerous flora and fauna species and are generally in decline however there are fragmented areas of deep peat adjacent to these designated sites that show evidence of moss land vegetation. Whilst these sites may not be considered to be priority sites for peatland restoration they nevertheless provide a focus for any conservation or restoration and expansion of bog habitat work that could make a significant contribution to biodiversity. The creation of any additional open ground with its associated tree removal adjacent to designated sites could improve the high water table levels essential for mire and bog habitats

Water quality within the R Dee catchment is an important environmental factor in the plan area. Short term felling and restocking work to address the issues of forest encroachment onto watercourses should benefit a range of species and will be further developed with longer term forest restructuring and the subsequent establishment of aquatic and riparian zones improvements, generally in excess of basic guidelines identified in Forest and Water guidelines 5th edition.

There are no FES PAWS sites or areas of Ancient Semi Natural Woodland within the LMP.

3.2.1 FCS Biodiversity Programme key species

Red Squirrel is present at low densities in this LMP and the area is not considered to be a "Red Squirrel Stronghold site", areas designated by the Scottish Government as sites where Red Squirrel can be assisted to survive through positive management practices. Our continued commitment in the south of the plan area towards restocking with an increased proportion of Scots Pine, Norway Spruce and small seeded Broadleaf and the retention, where possible, of areas of mature conifer plantation will ensure that the block remains relatively advantageous towards Red squirrel.

The block could be considered to be part of the core area for Black Grouse in the district with the species thriving in various parts of the plan. A recent report by the Game and Wildlife Conservation Trust highlights the values of linking Black

Backhill o' Bush Land Management Plan 2016-26

Grouse populations through forest environments to encourage the use of internal open areas and increase population spread. Heather areas and open ground around Craigeazle, Little Millyea and Straverron Hill, particularly with their proposed woodland fringe BL plantings, should provide excellent opportunities to provide additional habitat for the species. The establishment of additional stands of native broadleaf species such as Birch, Hawthorn, Willow and Rowan and Aspen on adjacent sites for winter browsing will further develop the habitat network.

3.2.2 Scottish Biodiversity List Species

Water bodies and existing riparian habitats within the plan area, particularly the Couran Lane, are regularly used by Otters and are important areas for breeding and routes for movement into other river systems such as the Doune and Cree catchments. 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.

Positive riparian zone improvements, often exceeding basic 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 will increase both the availability and connectivity of suitable breeding and feeding habitat for both of these species. Galloway FD Environment staff now also prepares brash piles along water courses, specifically providing excellent cover for rearing, resting and breeding otters. The main benefits for FES is that providing these features greatly reduces the likelihood that otters will create resting places or breeding sites within commercial forest stands and the brash piles are also likely to be used by a wide range of animal species and provide valuable deadwood habitat.

Little detail is known about Bat populations and their use of plantation forest however local research has taken (is taking) place suggesting that the plan area is home to significant populations of a variety of Bat species. A series of bat boxes in and adjacent to the area and the maintenance of a riparian associated matrix of woodland cover and open space should benefit all Bat species.

There are several important nest sites for Schedule 1 raptors within the plan area; at least one has been in occupation since its discovery in the 1930s. The resident breeding raptors and others from neighbouring blocks rely on the extensive open habitats for both breeding and foraging. The proposed creation of additional open space, the creation of enhanced linkages for existing open space and woodland fringe creation using low density broadleaf woodland should significantly enhance the habitat for both the birds and their prey in the longer term

Loch Dee has been the scene of several attempts by Black Throated diver, a rare Schedule 1 bird at its extreme range in Britain, to breed. Restructuring along the southern shore of the loch and positive riparian management will continue to improve the habitat and nesting potential for the species.

Backhill o' Bush Land Management Plan 2016-26

Azure Hawker dragonfly (D&G LBAP species) breeds extensively among the many bogs that exist along the border between Silver Flow and the conifer plantation. Two feral goat hefts impact on the plan area, one group is hefted to the Rhinns o' Kells and the other to White Laggan. Whilst our long term aim is to reduce and maintain numbers at around 50 in each group, population estimates for both groups currently suggest an excess of 100 individuals.

With the designated sites alone covering around 1350ha, significantly more than 15% of the forest management unit will be managed with conservation and the enhancement of biodiversity as major objectives given the scale of these designated sites.

3.3 The existing forest

3.3.1 Age structure, species and yield class

Species / Yield class

A significant percentage of this plan is already classified as open space. Virtually two thirds of the total plan area comprises transient clear felled areas, agricultural land, sections of open water including Loch Dee and both internal and external wild open hilltop as detailed in the table below.

Open ground type	Area (ha)
Open hilltop	2502.3
Felled area	142.9
Agricultural land	616.8
Open water	109.0
Unplanted	37.3
Streamsides	10.3
Quarries	0.9
Recreation other	1.7
	3421.2

There will be a modest increase in the area of open space during the period of this plan when more plantations initially planted above the 300m contour are felled for water quality improvement and habitat network enhancement and not likely to be restocked in the second rotation and as planned woodland fringe creation replaces conifer plantation and impacts less on blanket bog areas. A more detailed treatment of open areas is covered under section 5.2 Future Habitats and Species.

Pure Sitka spruce and Sitka spruce and Lodgepole pine crop mixtures 31.6% of the plan area dominate the plantation area. Minor conifer species such as Scots Pine, Norway spruce and Larch account for a meagre 1.3% with broadleaf providing the remainder of the plantation area, around 0.7%. This figure for

Backhill o' Bush Land Management Plan 2016-26

minor conifer species is slightly reduced due to sanitation felling of some larch for *P ramorum* infection. Accordingly species diversity throughout the block is quite poor (see table below) with limited opportunities to retain appropriate mature conifer.

Broadleaf is generally confined to the riparian and aquatic zones located throughout the block. Only around 0.5ha (1.5%) of existing broadleaf has been identified as Native Woodland under the Native Woodland Survey Scotland project however even this modest area will form a focal point for further broadleaf expansion. Planned additional BL restock and restocking with non-spruce conifer alternatives to larch should improve species diversity over the period of the plan.

Yield class across the block is variable, ranging from low YC values in the spruce crops on deep peat sites and the poorer soils at elevation up to YC16 in the valley bottoms and better site types. Opportunities exist for substituting some of the poorer crops with alternative conifer species better suited to the site such as Scots Pine or further conversion of the area to broadleaf woodland fringe, peatland edge woodland or permanent open space.

Species in 2016	Total plan area (ha)	Total area %	Plantation area %
Sitka spruce	1555.3	30.3	59.5
Norway spruce	6.5	0.1	0.2
Larch spp.	35.1	0.7	1.3
LP (Other Pine)	74.0	1.4	2.8
Scots Pine	11.2	0.2	0.4
Douglas Fir	0.0	0.0	0.0
Other conifers	5.8	0.1	0.2
Broadleaf	42.9	0.8	1.6
Open space (includes felled areas & open water)	3421.2	66.4	34.0
Total	5152.0	100.0	-
Plantation area	2617.0	-	100.0

Age Structure

Over the previous plan periods the fairly concentrated clearfell programme associated with first rotation crops (a minimum of 7yr age gaps or a 2m height differential maintained between fell coupes) has initiated restructuring on a large scale. Given the creation of additional open space for conservation however, pole stage and maturing high forest (around 23%) currently dominate the plantation area with old high forest and establishment and thicket only covering around 10%. The resultant age class spread (see table below), currently skewed towards high forest, markedly changes during the period of this plan with establishment and thicket taking over as the dominant age classes however the

Backhill o' Bush Land Management Plan 2016-26

projected future percentages do suggest that ultimately a more even distribution of age class throughout the block is achieved.

Age of trees	Growth stage	Percentage of class at given year	
		2016	2046
0 - 10	Establishment	9.8%	2.8%
11 - 20	Thicket	0.6%	7.4%
21 - 40	Pole stage	3.6%	18.5%
41 - 60	Maturing high forest	19.5%	0.4%
61 +	Old high forest	0.1%	1.2%
	Open space / felled areas	66.4%	69.7%
Total		100.0%	100.0%

Restructuring remains an important consideration throughout the plan area.

3.3.2 Access

Currently the block is accessible for timber haulage using the fairly extensive forest road network, avoiding some of the minor county roads. As all timber haulage ultimately exits south onto the A714 Newton Stewart to New Galloway road that is classified as an "agreed route" on the Dumfries and Galloway Timber Transport Group Agreed Routes Map west for Timber Haulage, the impact of FES timber haulage on the fragile minor public road network is much reduced. Road upgrade of the existing forest road network and supplementary new road construction to facilitate access to some virgin first rotation crops will be required during the period of this plan approval. All of the planned roads programme for the block is scheduled for construction during the period of this plan approval, 35% in phase 1 and 65% in phase two (see table below).

Period of Proposed Construction	Proposed length of new forest road for construction
2017 to 2021	1680m
2022 to 20265	3080m
Beyond 2026	0m

In this plan area the importance of the hydrology of the deep peat areas has to be particularly considered during road construction to ensure that important hydrological units remain intact.

Prior to any construction working being carried out, a completed application for determination of Prior Approval or Alteration of a Private Way (Forestry) form will be sought. A record of such will be provided to the FCS on an annual basis.

Backhill o' Bush Land Management Plan 2016-26

Whilst there are potential operational gains available through the development of a road link north from Backhill o' Bush through to Loch Doon, there are no plans to pursue this development within the period of this land management plan.

A single small quarry, located to the north of the block, is identified in the suite of DP maps along with proposed / planned forest roads for the plan period and beyond. Most of the actual stone material required for these planned forest road upgrades and new construction is available via the internal roads network from the Garraries quarry (in the adjacent Clatteringshaws block) immediately to the east. 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.

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 and the Backhill o' Bush plan area is one such candidate (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

Apart from some crop at elevation to the north east, the remainder of the plantation area has DAMS scores (Detailed Aspect Method of Scoring) of 17 or less suggesting that opportunities exist for the future expansion of LISS management areas. LISS is defined as "Use of silvicultural system whereby the forest canopy is maintained at one or more levels without clearfell of areas over 2.0ha".

In reality the entire plan area is significantly constrained by the poor, boggy site types throughout and there is little scope for LISS management expansion.

3.4 Landscape and land use

3.4.1 Landscape character and value

One of the most remote areas in Dumfries & Galloway this large scale plan area extends the length of the valley floor that rises up the rugged upland slopes of the Rhinns of Kells. These uplands are generally higher than the coastal granite uplands rising up to peaks over 700m such as Meikle Millyea and their scale is generally large with extensive panoramas. Such is their inherent topographic diversity however that smaller scale enclosure is also created.

Under the 1994 Dumfries and Galloway Council Landscape Assessment the plan area is classified as a mix of type 21 "Rugged Granite Uplands" and 21a "Rugged Granite Uplands with Forests". Land cover is typified by massive steeply rising

Backhill o' Bush Land Management Plan 2016-26

rugged peaks and heather covered slopes that contrast with the white granite outcrops and create an exposed almost "highland" landscape. There are also numerous small scale loch water features with dark green monotonous Sitka dominated plantations blanketing the lower slopes.

This upland landscape type is noted and valued for its wild, open and highland nature distinct within the region. It is an area that is sensitive to any human activity and development that would intrude on its distinctive character and part of our overall strategy for the plan area is to conserve this landscape character.

The main landscape issues to be addressed are

- potential loss of "wildland" areas through forestry expansion and the resultant impact on land use balance
- the potential for wind power development given the sensitivity of this landscape
- the growth of active tourism in mountainous area

These key specifics have been addressed in the plan design by:

Preserving the open and wild character of the landscape through the maintenance of any existing unforested "untamed" components of the landscape and having a general presumption against large scale extension of existing plantation areas.

The large scale relief allows for large scale felling coupe design in the plan hinterlands, enhancing the topographical diversity through the greater use of interconnected patterns of open space and the restocking of alternative species with a greater future reliance on broadleaf and minor conifer species such as Scots Pine is appropriate.

Creating an interface between the two landscape types (21 & 21a) through the creation of native woodland fringe as a replacement for conifer plantation at elevation.

3.4.2 Visibility

With views generally constrained by the topography much of the LMP is not externally visible. However internal views from the hill peaks and from the forest road network tend to be far less restrictive opening up a series of impressive panoramic views.

3.4.3 Neighbouring landuse

The plan area shares a boundary to the east with Forrest Glen Estate along the unplanted Rhinns of Kells ridge line but otherwise is surrounded by Forest Enterprise plantation and open ground (Gala Lane, Clatteringshaws, Loch Trool and Lamachan).

Backhill o' Bush Land Management Plan 2016-26

3.5 Social factors

3.5.1 Visitor Zone Recreation

Although there is little in the way of formal recreation within the plan area illegal ATV access is an historic problem in the area with many of the important deer extraction routes destroyed through their continual use.

The only existing facility is the forest road that runs to the south of Loch Dee that supports sections of the Southern Upland Way and the National Cycle Route.

Facility / visitor zone	Concept / Opportunity	Constraint	Plan Development
Section of Southern Upland Way	Enhance immediate trail surroundings	Entire section on forest road Maintenance of permanent views	Maintain and enhance sight lines along route Increase species and age class diversity adjacent to forest road
Off road section of National Cycle Route (Big Country cycle route)	Enhance the surroundings of important route across open ground	Entire section on forest road Maintenance of permanent views	Maintain and enhance sight lines along route Increase species and age class diversity adjacent to forest road
Bothies (White Laggan & Backhill o' Bush bothies)	Enhance immediate surroundings	Vandalism Illegal activity access	Locate bothies within open space

The Recreational demands associated with these areas will impact greatly on our management choice with our standard regimes heavily modified to improve the internal and external views associated with them. Treatments will be developed for each site involving where possible bespoke thinning regimes, additional permanent open space, mature tree retentions and the creation of a seasonal assortment of foliage colours through enhanced species diversity.

There are no current plans for recreational development in the block during the period of this plan.

3.5.2 Community

The block lies to the west of the largest discernible local community. That Community Council, the Royal Burgh of New Galloway and Kells Community Council, is in receipt of the latest version of our local Strategic Plan and was involved in the stakeholder scoping process (see Appendix I).

3.5.3 Heritage

Following *FES Historic Environment Planning Guidance*, this Land Management Plan describes and considers the conservation and management of the historic

Backhill o' Bush Land Management Plan 2016-26

environment. The LMP includes details of all relevant scheduled monuments, listed buildings, designed landscapes and the most significant undesignated features.

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

Whilst there are a raft of archaeological heritage features, settlement remains and sheep pens present within the block (details are listed in Appendix III) there are no historic environment assets of national importance within the plan area. All significant features will be protected and managed following the *Forestry and Archaeology Guidelines* (2011), the FCS policy document *Scotland's Woodlands and the Historic Environment* (2008) and the supporting *FES Historic Environment Planning Guidelines* (available from the FCS Archaeologist). Known heritage features are marked on workplans before the start of forestry operations. Machine operators are fully briefed on their responsibilities prior to all sites being worked. The known record is based on features recorded on the 1st edition OS Map (1850).

Historic Scotland and the Dumfries and Galloway Council archaeology service 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 upstanding 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.

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.

Backhill o' Bush Land Management Plan 2016-26

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

- 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

Currently there are no renewable developments planned for the Backhill o Bush LMP unit however the possibility remains that the area could be subject to future windfarm applications and there is also the possibility that the Zone 1 corridor of the Dumfries and Galloway Strategic Reinforcement Project (scheduled for completion in 2023) could impact on the block.

3.6 Statutory requirements and key external policies

The legal status of the land is purchased.

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
Environmental Quality	Enhance water quality within the upper R Dee catchment Enhance connectivity of aquatic / riparian areas to other habitat networks	Conifer monoculture planted close to watercourses Poor levels of existing species diversity Extended period of landscape change	Riparian enhancement through increased open space / BL restock Increase species diversity (BL and minor conifer)
Timber	Provide planned sustainable timber supply	Creation / enhance conservation habitats	Maintain conifer restock programme whilst increasing area of BL in subsequent rotations Remove flow peaks from timber production
Biodiversity	Peatland restoration and connections to other external designated sites / hydrological units	Extended restoration period as resources permit Fragmented nature and quality of remnant peatland Permanence of surrounding conifer seed sources	Identify focal priority areas for potential peatland restoration that have areas of deep peat, are generally flat and wet and have remnant bog species on site Create sanitised zone buffer that will be less likely to seed onto designated site
Biodiversity	Enhance open ground connectivity for moorland bird guild	Extended restructure period	Create additional permanent open ground corridor and extend connectivity of internal open space to external open space / woodland fringe
Biodiversity	Enhance Red Squirrel habitat	Not a Red Squirrel Stronghold site	Increase minor species and BL restock for

Backhill o' Bush Land Management Plan 2016-26

		Low density resident population Lack of appropriate mature conifer crop (low levels of food source & species diversity)	species diversity Identify retention areas of mature conifer where appropriate and generally extend crop rotation lengths throughout plan area
Biodiversity	Enhance Black Grouse habitat	Low level resident population	Increase BL restock, targeted on Black Grouse locations, for additional species diversity and food / shelter source Identify localised boggy areas as open space
Biodiversity	Enhance Native woodland areas and their connectivity to other habitat networks	Isolated and highly fragmented nature of existing Native woodland Extended restructure period	Increase areas of BL restock centred on identified Native woodland sites Extend BL woodland / open space connectivity to riparian zones and internal / external open space

4.2 Concept development

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

Open hill ground

Open ground, often of designation status, comprises a significant part of the plan area but is abruptly bounded and separated by conifer plantation. The maintenance of this wild area and where possible enhancement of the overall ground habitat for a variety of species, including Black Grouse, is paramount.

R Dee riparian zone / floodplain

The Black Water of Dee, fed by the Cooran Lane, runs through the south of the plan area. Improved water quality within the catchment and the creation of a major habitat network centred on the development of this riparian corridor are critical success factors in the plan. Opportunities will be taken to go beyond the basic proposals of the legal drivers and voluntary codes i.e. the UK Forestry Standard (UKFS) the Forest and Water Guidelines (FWG) and the UK Woodland Assurance Standard (UKWAS) to fully open up this important riparian corridor.

Backhill o' Bush Land Management Plan 2016-26

Loch Dee and other open water aquatic habitats

There are several small open water bodies scattered throughout the block providing localised points of biodiversity interest however Loch Dee is the principal water feature.

Maintaining these water bodies within external / open space areas or including them within areas of permanent low density stocking broadleaf woodland habitat will add significant biodiversity value to the plan area.

Commercial conifer zone / Core timber production

Large uniform swathes of upland spruce and mixed conifer plantation within the land management plan unit will continue to be managed as commercial crop to meet the district programme commitments. Improved species diversity, including an increase in broadleaf restocking will maintain timber production and also contribute towards habitat conservation.

Woodland fringe buffer

Large sections of conifer, often poorly growing at elevation, will be removed and replaced with open space or low density woodland fringe.

Ellergower Moss / Knowe

Initially considered suitable for peatland restoration that would potentially link the two designated sites, Ellergower Moss and Silver Flowe, the area has now been identified as more suitable for the creation of Peatland Edge Woodland given the poor peat depths as evidenced by a recent peat depth probe exercise.

Raptor corridor

Continue creation of a permanent open corridor to the north of the plan area through conifer removal and the creation of open space and low density woodland fringe habitat to benefit raptors and their prey species and to provide direct open ground linkage between open hill tops.

Forest road/ Southern Upland Way recreation corridor

Large tracts of the block are highly visible from the forest road to the south of Loch Dee. A series of dramatic near and distant views have been revealed along the route as clearfelling has opened up the block. Long term aims are to permanently retain these views and enhance them through greater species diversity, both broadleaf and minor conifer restock.

5.0 Land Management Proposals

5.1 Forest stand management

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

The accompanying Management map provides details of our coupe management proposals and the following tables summarise the average annual felling and thinning volumes (m3ob) expected for the next 10years (plan period) and a breakdown of management types :

Table 1

Management Type	Area (ha)
Clearfell	2220.0
Group Shelterwood	0.0
Minimum Intervention	93.6
Natural Reserve	0.0
Long Term Retention	9.4
Other/Open land	2829.0

Table 2

Fell period	Thinning / LISS	Clearfell	Total
2017-2021	0	21677	21677
2022-2026	0	20917	20917
2027-2031	0	13756	13756
2032-2036	0	12186	12186
2037-2041	0	8792	8792

Most of the coupes (over 70%) planned for clearfell in the previous plan period were harvested. Given the need to maintain some semblance of structural diversity and the scale of planned felling to date, efforts have been made to reduce the scale of felling during and beyond the period of this plan.

As far as possible the timber volume programme for this block has been smoothed to provide a regular and sustainable supply of timber to the market.

5.1.1 Clear felling

Virtually the entire plantation area (around 96%) will be managed under a clearfell management type using conventional harvester and forwarder working with only a modest area (around 4%) managed under alternative management types.

Backhill o' Bush Land Management Plan 2016-26

The reduced number of coupes (19 coupes, around 16.3 % by area) proposed for clearfell during the 10yr period of this plan still however contribute quite substantially to the district programme (see Appendix IV).

The following table generally confirms that, as per the UK Forestry Standard (third edition), no more than 10% of the plan area is due to be felled in any five year period within this plan approval period.

5yr Fell period	Area felled (ha)	Area felled as % of total plan area
2017-2021	300.8	5.8
2018-2022	339.1	6.6
2019-2023	402.0	7.8
2020-2024	552.5	10.7
2021-2025	454.9	8.8
2022-2026	332.6	6.5
2023-2027	305.3	5.9
2024-2028	235.0	4.6
2025-2029	124.0	2.4
2026-2030	172.8	3.4

It is of course important to manage forestry activities in acid sensitive water catchments and within this Land Management Plan area there are three catchments that have been identified as being either "at risk" or "failing".

Calculations have been prepared and are included at Appendix VII.

Planned operations within the three catchments satisfy both the felled area threshold and the area of closed canopy forest >15yrs needing to be less than 30% of the catchment in 15 years' time threshold and will not have an adverse impact in respect to surface water acidification.

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.

5.1.2 Thinning

There are no thinning coupes currently identified for the block, thinning is generally constrained by the restrictive site types and it is certain that in most instances it is too late to thin first rotation crop in this LMP area without the onset of early windthrow.

5.1.3 LISS, Long-term Retention and Natural Reserve

None of the LMP area is currently managed under a Low Impact Silvicultural System (LISS) and whilst LISS can contribute to the protection and improvement of soil quality, water quality and biodiversity through reducing soil erosion and

Backhill o' Bush Land Management Plan 2016-26

the creation of suspended solids in water, opportunities for the development of LISS are severely restricted by a lack of improved site types.

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 broadleaf Natural Reserves of higher biodiversity value throughout the district there is limited potential for identifying small areas of conifer as Natural Reserve within this LMP area.

Minimum intervention has management with no systematic felling or restocking although operations such as fencing, control of exotics and pests, safety work and trail maintenance are permitted. In this plan around 1.8% of the plantation area, mainly broadleaf areas, will provide the focus for Minimum Intervention management.

Under Long-term Retention trees are retained for environmental benefit significantly beyond the age or size generally adopted. A small area of Long Term retention has been identified within the plan adjacent to Loch Dee.

5.2 Future habitats and species

The accompanying Future Habitats and Species map provides detail of our proposed restock species and habitats for Backhill o' Bush LMP.

5.2.1 Bog habitat restoration (open space)

The UK Forestry Standard and the Scottish Government's policy on Control of Woodland Removal presume that sites will be restocked following clearfell. The UK Forestry Standard also requires managers to minimise soil disturbance, particularly on organic (peaty) soils with a general requirement to consider the potential impacts of soil disturbance when planning operations involving cultivation, harvesting, drainage and road construction. Since the FC Forests and Peatland Habitats Guidelines Note was published in 2000, the importance of trees in mitigating climate change has become more important with supplementary guidance (FC Scotland practice guide: Deciding future management options for afforested deep peatland) produced in 2015 to support the original note. This additional guidance offers a decision making framework based on the likely carbon storage or release from different management options on deep peats.

Three restocking options are now available

1. where the site is a priority for habitat restoration on ecological grounds, conventional restocking will not be required
2. where the site is not a priority for restoration and is likely to support tree growth of Yield Class 8 or above for Sitka spruce, conventional restocking should be undertaken
3. where the site is not a priority for restoration to open peatland and is unlikely to support tree growth of Yield Class 8 or above for Sitka spruce, the appropriate action will usually be to create peatland woodland edge.

Backhill o' Bush Land Management Plan 2016-26

Under the FES strategy for Lowland Raised bog and Intermediate bog on the National Forest Estate in Scotland 2012-2022, there are environmental and conservation considerations for areas within the plan where there will be a presumption against commercial restocking in the second rotation. FES bogs with existing canopy woodland have enormous potential to improve towards open bogs if successfully restored and accordingly represent significant conservation opportunities.

As a result of recommendation 5 from this strategy "Initiate further lowland raised bog and intermediate bog restoration work on other plantation sites which are ecologically suitable for restoration" and the decision framework from the FCS guidance the following table identifies an area prioritised for bog restoration according to its perceived habitat value.

Area	Objective	Benefits / positive factors	Implementation
<p>Priority sites for habitat restoration</p> <p>Although there are fragmented areas of deep peat near to Silver Flowe and Ellergower Moss that show some evidence of moss land vegetation and there are other scattered sites across the LMP, these areas are not considered to be priority sites for peatland restoration</p>			
<p>Sites currently not a priority for restoration; either poor tree growth resulting in peatland edge woodland, permanent open space or conventional restocking undertaken</p>			
Coupes at Ellergower Knowe	<ul style="list-style-type: none"> Restore peat areas to peatland edge low density woodland 	<ul style="list-style-type: none"> Conserve existing moss land vegetation Reduce risk of transpiration and lowering of water table by conifers immediately adjacent to designated sites Ellergowe Moss and Silver Flowe meet UKWAS UKBAP priority habitats requirements Contribution to reducing acidification of Black Water of Dee catchment 	<ul style="list-style-type: none"> Construct forest road access with due regard to conservation of existing hydrological units Clearfell coupes 58042 (consider removing as much brash as possible from sites) Block drains (possibly with brash) to speed up re-wetting of bog surface and restore water table Monitor occurrence of regeneration at 5yr intervals and assess impact on resulting habitat (planned BL restock where

Backhill o' Bush Land Management Plan 2016-26

			regeneration is limited)
--	--	--	--------------------------

5.2.2 Woodland fringe / open hilltop

It is generally accepted that the treeline in this plan is too high for landscape and forestry considerations. A feature of this Land Management plan is therefore a pulling down the hill of the plantation edge coupled with the creation of low density woodland fringe at elevation to the east towards Corserine, Milldown and Straverron Hill, centrally on Craigeazle and to the west towards Dungeon Hill.

Block	Objective	Benefits	Implementation
Backhill o' Bush	<ul style="list-style-type: none"> Creation of woodland fringe (potential for Black Grouse habitat) 	<ul style="list-style-type: none"> Enhance hill top habitat for variety of species including Black Grouse Increase area of potential heather moorland / open space Increase BL area within forest district 	<ul style="list-style-type: none"> Identify areas for open space / broadleaf woodland creation as transition between higher elevation open ground and plantation
Backhill o' Bush	<ul style="list-style-type: none"> Creation of permanent open space corridor (potential for development of raptor habitat) 	<ul style="list-style-type: none"> Increase area of potential heather moorland / open space Enhance open ground habitat for variety of species including raptors, Black Grouse and other prey species Contribution to reducing acidification of Black Water of Dee catchment 	<ul style="list-style-type: none"> Corridor of coupes to north of plan area removed over extended timescale Integrity of corridor should be maintained however small scale conifer and broadleaf regeneration will be accepted Identify areas for open space / broadleaf woodland creation as transition between higher elevation open ground and plantation

Backhill o' Bush Land Management Plan 2016-26

Galloway FD generally has a very hard edge to the boundary between plantation and open hill ground. Woodland fringe is identified as a transitional zone between the plantation and open hilltops where modification of the upper planting margins and highlighting crag areas through broadleaf planting and increased open space to better complement landform will take place.

Native woodland fringe is defined as 20-50% tree cover in a matrix of short vegetation where more than 50% (ideally 100%) of the tree species will always be native. Low levels of Sitka spruce and Lodgepole pine regeneration will be accepted. All 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. The creation of this Woodland fringe habitat has the potential to provide excellent additional habitat for Black Grouse, develop links between populations to the north in the Gala Lane LMP, a core priority area for Black Grouse, and remnant populations to the south in the Clatteringshaws LMP and contribute towards an expansion of the core area for the species. These aims should sit comfortably with the aims and objectives of the Southern Scotland Black Grouse Conservation strategy that is currently being prepared.

5.2.3 Riparian zones / aquatic zones (open space)

As previously mentioned along with Loch Dee there are several smaller scale still water areas scattered throughout the block provide localised habitat oases for fish and sensitive wild fowl species. Sitting mainly in the open area, significant buffer zones are already in place around these features removing excessive shading by conifer crop, to help some of the lochs reach favourable status under River Basin Management Plans.

To assist in improving water quality, protecting soils and benefiting species that use the riparian zone, all watercourses >0.5m wide associated within the block will be subject to riparian buffer zone enhancements up to 50m (see table below).

Objective	Benefits / positive factors	Implementation
<ul style="list-style-type: none"> • Enhance aquatic / riparian zone 	<ul style="list-style-type: none"> • Improve water quality through removal of conifer shading • Protect soil through reduced impact of future operations • Enhance / improve habitat for species that use the riparian zone 	<ul style="list-style-type: none"> • Identify aquatic / riparian zone and commit towards no planned restock • Monitor area for natural regeneration incursion • Accept range of habitat options from 100% open space up to 100% broadleaf woodland (conifer woodland area element restricted to 15%) • Where conifer woodland % exceeds 15% figure,

Backhill o' Bush Land Management Plan 2016-26

		canvas advice from appropriate stakeholders and, where resources permit, remove when required to avoid buffer zone loss
--	--	---

At a more detailed level where we continue to promote other natural features such as rock crags and wet hollows areas, increased open space and greater species diversity will persist.

5.2.4 Wetlands zones (open space / woodland)

Wet woodland is a high focus habitat of the Biosphere and there are many areas of marsh /mire habitats and other localised wetland areas prone to flooding within the R Dee valley system. Many are identified in the plan as areas of permanent open space and others will be identified by future operations during the plan period. These sites will as far as possible remain unstocked as a benefit to invertebrates and bird life although, if water quality is not diminished, some natural regeneration of native species will be accepted.

5.2.5 Quarries (open space)

A single quarry is identified on the features map and will remain as permanent open space; Craigtarsan Hill (NX480864). As the large and active Garraries quarry lies close to the plan area, there are no current plans to significantly expand the Craigtarsan quarry however, there may well be a requirement to provide additional source material for forest road construction and maintenance in the area.

Any significant quarry development proposals outwith our agreed tolerances will be submitted to FCS for approval prior to any work taking place (ref.Tolerance table Appendix II).

5.2.6 Deadwood / veteran trees

There is little in the way of established deadwood throughout the block and there are no veteran trees.

In blocks where this is the case, dedicated areas for deadwood creation will rely on identifying around 1% of our conifer plantation as Natural Reserve from which no timber will be removed (see current District Deadwood Management policy and Features map). The Lodgepole Pine and Sitka Spruce retention in coupe 58076 is such an example. Areas like this may well provide focal points for future BL expansion (see local District BL policy document), creating woodland that should in time provide additional sources of deadwood.

The targeted retention of areas of windthrow can potentially provide additional sources of deadwood as well as alternative stand structure.

It should be noted that currently the 1% figure is not wholly met in this LMP.

Backhill o' Bush Land Management Plan 2016-26

5.2.7 Woodland

In the conifer dominant commercial areas Sitka Spruce the main timber species will generally be planted on the better sites. On poorer site types Sitka Spruce and Lodgepole Pine mixture (50%SS/50%LP) will be used to provide improved tree growth, given the reduced nutritional value of the site through peat depth, and to create additional species diversity whilst on some of the more mixed soil types Sitka Spruce and Larch mixtures (70%SS/ 30%JL) have been used. Where landscape considerations prevail or where site conditions are favourable native broadleaf will be preferred. Our current policy not to restock with Larch (driven by current and potential future *P ramorum* infections) will in the long-term result in a loss of Larch forest previously deemed beneficial for Black Grouse and Red Squirrel. This potential loss will hopefully be offset through this additional planned restocking of BL and other minor conifer such as Norway Spruce 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 within the plantation area of the LMP:

Species	Area (ha) in 2026	Total Area %	Area (ha) in 2046	Total Area %
Sitka spruce	1229.6	47.0	1120.8	42.8
Norway spruce	5.7	0.2	24.3	0.9
Larch spp.	26.3	1.0	12.9	0.5
LP (other pine)	67.1	2.6	67.4	2.6
Scots Pine	9.8	0.4	15.8	0.6
Douglas Fir	0.0	0.0	0.0	0.0
Other Conifers	11.6	0.4	12.4	0.5
Broadleaf	242.9	9.3	307.7	11.8
Open Space	1024.0	39.1	1055.7	40.3
Total	2617.0	100.0	2617.0	100.0

Through the period of this plan the table shows the progressive reduction in area of Sitka spruce and the modest expansion of minor conifer species and broadleaf woodland. Essentially focused on accessible controllable habitat networks, the increase in species diversity should significantly enhance the landscape and additionally provide an improved woodland habitat for the protection of soils and improvements to water quality. Target stocking densities for non-commercial broadleaf will be a minimum of 1600stems per hectare (2.5m spacing) with restocking taking place should the figure not be reached through natural regeneration.

Other than an additional source of firewood the block offers little potential for commercially productive broadleaf plantation.

Backhill o' Bush Land Management Plan 2016-26

There is also a rise in the overall area of permanent open space. Open space remains focussed on riparian zones and their linkages into internal and adjacent hilltop areas some of which may eventually develop into native woodland fringe. Post clearfelling there will be no conifer restocking within at least 20m (and on occasion up to 50m) of main watercourses with the riparian zones also benefitting from small areas of additional broadleaf planting. Significant natural regeneration of conifers within these riparian zones will be managed as resources allow avoiding the loss of proposed buffer zone.

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).

5.3 Restructuring

As previously stated 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

Whilst there are no existing FES PAWS sites within the LMP unit, opportunities still remain for large scale broadleaf habitat network creation by breaking up the solid conifer plantation blocks and creating links from the open hill to the lower lying ground.

5.5 Deer management

Current deer management in Backhill o' Bush is deer lease.

Subject to increased areas of younger plantation and effective damage, further management assistance from FES Wildlife Rangers and contract rangers may be required.

Both Roe deer and significant numbers of Red deer inhabit the plan area and over the next 5yrs significant resources will be deployed in an effort to reduce the overall background populations. This action will be vital to ensure that Forest Enterprise Scotland's National Deer Management Strategic objectives are met.

The two Wild goat hefts will also be culled.

New ATV tracks will be implemented along restocked coupes adjacent to open hill areas or along the larger riparian zones. Careful consideration will be given to their absolute need and location. Though none are currently planned, where required, they will be constructed to one of two designated standards.

- Tracks along riparian zones will involve minimal ground disturbance work.
- Those not following riparian zones will involve removing topsoil and levelling the surface with a drain on the top side and will be a maximum of 2m wide.

Backhill o' Bush Land Management Plan 2016-26

No trees will be planted within 5m of the track centre.

Temporary quad bike tracks will also be formed with minimum ground disturbance. They will generally follow old unplanted rides, with levelling to negotiate side slopes and be spaced at approximately 400m intervals. There will be no unplanted margin around these temporary tracks and they will subsequently be subsumed into the plantation as tree canopy closes. Forests and Water guidelines (Fifth edition) will be adhered to during their construction and crossing points will be piped.

Deer glades, typically up to 1.0ha in size, are not shown on the suite of Land Management Plan maps. Precise locations will be identified and inserted at time of restocking when Ranger staff has had the opportunity to fully assess site conditions post clear fell.

5.6 Pathogens, Diseases and Invasive Non native species

Hylobius, the Pine weevil, can cause extensive damage to young conifer crop and is found both in this plan area and throughout the district. As part of the districts chemical minimisation strategy the *Hylobius* Management Support System (HMSS), incorporating the use of billet traps, was previously used to measure *Hylobius* numbers on clearfell sites. Based on several years of monitoring data the district has moved to a standard 3year fallow period. This standard fallow period between felling and re-stocking conforms to our revised tolerance table (Appendix II Tolerance Table).

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). The Backhill o' Bush LMP area has been affected to the south where areas of pole stage larch have been recently removed. Although not a particularly significant component in previous planned restock, it is certain that in the future the species will become a negligible component of the local woodland with other minor conifer (not Sitka spruce) and broadleaf woodland contributing more towards the species diversity of the block. Invasive non-native species (INNS) impact the geology of an area directly and are recognised as a significant risk to water environments. There are no records of Japanese Knotweed, Giant Hogweed and Himalayan Balsam in the block however *Rhododendron ponticum* is present on some of the small islands in Loch Dee. Limited in its ability to spread by its island location, management options for its control are nevertheless limited by our fleet capability.

Monitoring is ongoing and identified species will continue to be treated as per the District's Invasive Species Policy.

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. Occasional felling to waste may however take place where the removal of natural regeneration is required to maintain the integrity of riparian zones.

Backhill o' Bush Land Management Plan 2016-26

SEPA will be consulted (reference their guidance on "Management of Forestry Waste 2013) and detailed action plans will be submitted to FCS for approval prior to any work taking place.

Old and redundant fences will be removed rather than left in place as a nuisance to wildlife .

5.8 Habitats Regulations Appraisal Sites

The Merrick Kells Special Area of Conservation (SAC) site lies partially within the LMP area.

Its status means that the requirements of the Conservation (Natural Habitats etc.) Regulations 1994 as amended (the "Habitats Regulations") apply. Where forestry operations are likely to have a significant effect on that site then an appraisal of the implications for conservation interests for which the area has been designated is required.

See appendix VI for Habitats Regulations Appraisal for Merrick Kells SAC.

5.9 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

5.10 Critical Success Factors

- Creation of significant additional area of open space / habitat restoration
- Improved water quality within the R Dee catchment and the creation of a major habitat network centred on this riparian corridor
- Completion of essential planned forest road network
- Increased broadleaf woodland creation

5.11 Amendments

To be logged on amendment form

Backhill o' Bush Land Management Plan 2016-26

Appendix I: Land Management Plan Consultation Record

Statutory Consultee	Date contacted	Date response received	Issue raised	Forest District Response
Galloway and Southern Ayrshire Biosphere: Ed Forrest	02 June 2016	02 July 2016	<ul style="list-style-type: none"> • Biosphere objectives of support and enhancement of high focus habitats and species and improvements to habitat connectivity • 	<ul style="list-style-type: none"> • Noted in text (sections 3.2 4.0, 5.2, 5.8 & Appendix VI)
SNH Newton Stewart office: Callum Sinclair	02 June 2016	30 June 2016	<ul style="list-style-type: none"> • Protected areas and need for Habitats Regulations Appraisal • Water quality in the R Dee catchment • Protected species 	<ul style="list-style-type: none"> • Noted in text (sections 3.2.1, 3.2.2, 3.3, 4.0, 4.2, 5.1.3, 5.2.3, 5.10 & Appendix VI)
Rosemary Green: IUCN Otter Specialist Group	02 June 2016	22 June 2016	<ul style="list-style-type: none"> • Otter movement through Couran Lane 	<ul style="list-style-type: none"> • Noted in text (section 3.2.2)
RSPB Crossmichael: Julia Gallagher	02 June 2016	20 June 2016	<ul style="list-style-type: none"> • Full support for raptor corridor • Welcome objectives to maintain open ground and enhance habitat through woodland fringe creation for benefit of Black Grouse • Welcome objectives for connectivity of designated sites • Request to minimise planting density of Peatland Edge Woodland around Ellergower Moss • For all comments the management /removal of conifer natural regeneration is considered paramount 	<ul style="list-style-type: none"> • Noted in text (sections 3.2.1 & 5.2.2)
Historic Scotland: John Malcolm	02 June 2016	13.June.2016	<ul style="list-style-type: none"> • No nationally important assets present 	<ul style="list-style-type: none"> • Noted in text (section 3.5.3)

Backhill o' Bush Land Management Plan 2016-26

			<ul style="list-style-type: none"> • Local council archaeologist details provided 	
SEPA: John Gorman; Newton Stewart office	02 June 2016	09 June 2016	•	•
FCS South Scotland Conservancy: Dumfries office	02 June 2016	No comment received	•	•
Dumfries & Galloway Regional Council: Simon Fieldhouse	02 June 2016	No comment received	•	•
Galloway Fisheries Trust: Jamie Ribbens	02 June 2016	No comment received	•	•
CONFOR: Jamie Farquhar	02 June 2016	No comment received	•	•
Saving Scotland's Red Squirrels: Heinz Traut	02 June 2016	No comment received	•	•
Visit Scotland: Paula McDonald	02 June 2016	No comment received	•	•
Royal Burgh of New Galloway and Kells Community Council: Sharon Fishwick	02 June 2016	No comment received	•	•
SUSTRANS: Jack Hunt	02 June 2016	No comment received	•	•

Backhill o' Bush Land Management Plan 2016-26

Appendix II: Tolerance Tables

- 1) Adjacency issues will normally be dealt with through delayed felling ie 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 ie 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 that wider forest and habitat structure is not being significantly compromised. Such evidence must be presented at 5 year review.

	Maps required	Adjustment to felling period *	Adjustment to felling coupe boundaries **	Timing of restocking	Change to restocking species	Change to roadlines	Designed open ground	Windblow clearance
FC Approval not normally required	N	Fell date can be moved within 5yr 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 broadleaf.		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 5.0ha
Approval by formal plan amendment may be required	Y	Felling delayed into second or later 5yr period. Advance felling (phase 3 or	More than 15% of coupe area	More than 5 planting seasons after felling, subject to the wider forest and	Change from specified native species. Change	As above depending on sensitivity.	In excess of 10% of coupe area Colonisation of open	More than 5.0ha

Backhill o' Bush Land Management Plan 2016-26

		beyond) into current or 2 nd 5yr period.		habitat structure not being significantly compromised	between species groups.		space agreed as critical.	
--	--	---	--	---	-------------------------	--	---------------------------	--

Notes

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

** No more than 1.0ha, 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

Backhill o' Bush Land Management Plan 2016-26

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

Backhill o' Bush Land Management Plan 2016-26

Appendix III: Ground Truthed Heritage sites

SITE	GRID	LAST VISIT	COMMENT
Hunt Ha,	NX480859	19.05.16	Old Hunting lodge situated in area of open space. Maintain feature in area of open space.
Sheep pen	NX481862	19.05.16	Circular enclosure just below forest road. Well preserved, substantial turf topped 5' wall cairn in area of permanent open space. Maintain feature in area of permanent open space.
Aircraft wreckage	NX485863	-	Scattered debris, most obviously an engine. Not located; site associated with permanent area of open space bordering P1965 conifer plantation. Maintain in area of open space.
Sheep pen	NX497846	19.05.16	Sheep pen. Maintain in area of open space / broadleaf woodland.
Sheep pen	NX494851	19.05.16	Rectangular sheep pen by forest road in poor condition. Maintain in area of open space / broadleaf woodland.
Sheep pen	NX489853	19.05.16	Sheep pen adjacent to forest road. Maintain in area of open space / broadleaf woodland.
Open wall sheep pen	NX484851	19.05.16	Sheep pen adjacent to forest road. Maintain in area of open space / broadleaf woodland.
Sheep pen	NX494793	19.05.16	Circular (1.5m high and 12m diameter) sheep pen adjacent to forest road. Entrance and smaller enclosure to south side onto road. In very good condition. Maintain in area of open space.

Backhill o' Bush Land Management Plan 2016-26

Downies shiel	NX484845	19.05.16	Two roomed house with walls in area of open space lying south of Downies Burn. Maintain in area of open space / broadleaf woodland.
Backhill o' Bush bothy	NX481843	-	House maintained as bothy in forest clearing. Maintain in area of open space.
Ruined house	NX461789	-	Low walls adjacent to west end of Loch Dee in area of open space. Maintain in area of open space.
Sheep pen	NX461784	10.09.15	Circular sheep pen on open moor near forest road above Loch Dee. Maintain in area of open space.
White Laggan house	NX466775	-	House maintained as bothy overlooking White Laggan burn. Maintain in area of open space / broadleaf woodland.
Black Laggan enclosures	NX469777	-	Ruined farmhouse and associated sheep pens adjacent to Black Laggan burn. Maintain in area of open space / broadleaf woodland.
Hughie's wa's	NX481786	-	Circular sheep pen with crowbar stuck in wall. In good condition within P1973 spruce plantation. Maintain in area of open space.
Headed stone	NX486783	-	Not located. Maintain in area of open space.
Cairn	NX489783	-	Cairn on open hill. In good condition. Maintain in area of open space.
Sheep pen	NX471783	-	. Maintain location as open space.
Boundary Stone	NX471846	-	Not located; site located in open hill ground. Maintain location as open space.

Backhill o' Bush Land Management Plan 2016-26

Sheep pen	NX482840	-	Pen adjacent to Green Strand watercourse. Maintain location as open space.
Carson's Stone	NX490828	-	Not located; natural stone on Craigeazle, origin unknown. Maintain in area of open space.
Walled field and sheep pen	NX499826	19.05.16	Stone wall encloses rectangular field with sheep pen to eastern wall. Field unplanted and currently within area of open space. Maintain in area of open space.
Sheep pen	NX496826	-	Well preserved sheep pen near Cleugh Burn. Maintain in area of open space / broadleaf woodland.
Low Cornarroch	NX469812	-	Collapsed sheep pens adjacent to Cornarroch Strand. Maintain in area of open space.
Backhill of Garrary	NX497810	19.05.16	Ruined farmhouse, enclosed field opposite Davy's Holm and associated sheep pens adjacent to Curnelloch Burn. Maintain in area of open space.
McWhanns stone	NX492803	19.05.16	Angular, split boulder in open space immediately adjacent to forest road. McWhann was executed as a Covenanter and is buried in New Galloway. Maintain in area of open space.
Craiglee trig point	NX462801	-	Not visited; OS cement pillar on summit of Craiglee. Maintain location as open space.
Sheep pen	NX500812	21.06.17	Circular sheepfold with two outshot walls. Included in area of open space at 2015 restock.
Loch Dee promontory	NX472789	-	Not visited; Mesolithic flint tools discovery on southern shoreline (Regional significance). Location is shoreline maintained open space.
Neolithic burial cairn (not confirmed)	NX474817	-	Not visited; Site on open ground near to Couran Lane; "isolated cairn of three large upright stones forming forecourt façade and a spread of stones including kerbing showing original extent of monument". Location is open hill open space.

Backhill o' Bush Land Management Plan 2016-26

Appendix IV: Coupe details for clearfell and establishment

Clearfell

Coupe	SS	NS	Larch	SP	LP	Other con.	BL	Open space	Total
58008	26.5	-	0.1	-	-	-	-	4.0	30.6
58009	44.9	-	-	-	17.4	-	-	0.5	62.8
58012	52.0	-	-	-	-	-	-	3.4	55.4
58016	34.9	-	-	-	-	-	-	-	34.9
58020	20.7	-	-	-	-	-	-	0.8	21.5
58021	69.0	-	-	-	-	-	-	3.0	72.0
58025	45.8	-	-	-	3.0	-	-	4.2	53.0
58031	9.5	-	-	-	-	-	-	7.3	16.8
58033	34.4	-	1.6	-	-	-	5.2	7.5	48.7
58042	97.5	-	-	-	-	-	-	25.7	123.2
58043	20.5	-	-	-	1.1	-	-	1.5	23.1
58044	10.6	-	0.7	-	-	-	-	0.6	11.9
58048	35.4	-	1.1	-	-	-	-	5.5	42.0
58059	73.5	-	-	-	-	-	-	12.5	86.0
58061	27.4	-	-	-	5.4	-	-	0.4	33.2
58062	42.0	-	4.0	-	-	-	-	16.1	62.1
58073	34.0	-	-	-	-	-	-	1.7	35.7

Backhill o' Bush Land Management Plan 2016-26

58079	6.3			1.2					7.5
58082	19.6			0.8				1.0	21.4
Total	704.5	0.0	7.5	2.0	26.9	0.0	5.2	95.7	841.8
<i>percent</i>	83.7	0.0	0.9	0.2	3.2	0.0	0.6	11.4	100.0

Restock

Coupe	SS	NS	Larch	SP	LP	Other con.	BL	Open space	Total
58008	17.9	-	-	-	-	-	11.6	1.1	30.6
58009	18.6	-	-	-	-	-	17.7	26.5	62.8
58012	18.7	-	-	-	-	-	21.2	15.5	55.4
58016	30.9	-	-	-	-	-	-	4.0	34.9
58020	19.7	-	-	-	-	-	-	1.8	21.5
58021	56.7	-	-	-	-	-	3.7	11.6	72.0
58025	9.8	-	-	-	9.9	-	19.0	14.3	53.0
58031	8.5	-	-	-	-	-	-	8.3	16.8
58033	28.4	-	1.0	-	-	-	5.0	14.3	48.7
58042	-	-	-	-	-	-	106.4	16.8	123.2
58043	17.4	-	-	-	-	-	0.3	5.4	23.1
58044	-	-	-	-	-	-	9.4	2.5	11.9
58048	28.2	-	-	-	-	-	-	13.8	42.0
58059	40.6	-	-	-	-	7.3	14.5	23.6	86.0

Backhill o' Bush Land Management Plan 2016-26

58061	9.7	-	-	-	9.7	-	5.0	8.8	33.2
58062	45.7	-	-	-	-	-	6.9	9.5	62.1
58073	32.0	-	-	-	-	-	-	3.7	35.7
58079	-	-	-	-	-	3.4	3.5	0.6	7.5
58082	4.0	-	-	0.7	-	-	12.2	4.5	21.4
Total	386.8	0.0	1.0	0.7	19.6	10.7	236.4	186.6	841.8
<i>percent</i>	46.0	0.0	0.1	0.1	2.3	1.3	28.0	22.2	100.0

Notes on coupe work schedule

58008	Coupe at elevation adjacent to west of permanent corridor; SS with small areas of BL and open space (woodland fringe) for species diversity and contribution to corridor
58009	Coupe to south end of permanent corridor; SS with significant area of BL and open space (woodland fringe) for species diversity, connectivity of open ground to Round Loch of the Dungeon and contribution to corridor
58012	Coupe at elevation adjacent to east of permanent corridor; SS with significant area of BL and open space (woodland fringe) for species diversity and contribution to corridor
58016	SS matrix with open space targeted along Downie's Burn riparian zone for habitat creation
58020	SS matrix with open space targeted towards Green Strand riparian zone for habitat creation
58021	SS matrix with open space targeted to minor watercourse and forest road to west
58025	Coupe adjacent to Curnelloch Burn and Black Water of Dee; SS/LP matrix to forest road with open space and BL restock targeted to watercourses and other open space
58031	Coupe to east of White Hill and adjacent to Loch Dee; BL restock for species diversity and landscape
58033	Coupe at Black Laggan and adjacent to Loch Dee; SS matrix with open ground and BL restock for species diversity and landscape
58042	Ellergower Knowe not suitable for Peatland restoration; establish BL (Peatland Edge

Backhill o' Bush Land Management Plan 2016-26

	Woodland) adjacent to designated sites
58043	Coupe lies between Craigeazle and Merrick Kells SSI; SS matrix with open space connectivity from open hill to designated site
58044	Coupe adjacent to Black Water of Dee; BL restock for species diversity and development of riparian habitat network
58048	Coupe lies adjacent to and west of Little Millyea open hill; SS matrix with open space connectivity from open hill to designated site
58059	Coupe lies adjacent to and west of Milldown open hill; SS matrix with open space and BL (woodland fringe) targeted to open hill and riparian corridors
58061	Coupe lies to north of Dry Loch; SS matrix with open space and BL (woodland fringe) targeted to Gala Lane riparian corridor and open hill ground to west
58062	Coupe on west face of Cairngarroch; SS matrix with BL and open space targeted towards upper hill slopes
58073	Coupe on east face of Craigeazle; SS matrix with open space targeted to open hill interface and Cleugh Burn riparian zone
58079	Coupe adjacent to and south of Loch Dee; BL / Mixed conifer matrix for landscape and species diversity
58082	Coupe adjacent to and south of Loch Dee; BL (peatland edge woodland) and SS /mixed BL matrix for landscape and species diversity

Appendix V. Backhill o' Bush Land Management Plan Brief

A BRIEF FOR BACKHILL O' BUSH LMP

The main management objectives in this large scale plan focus on Conservation (habitat restoration and the creation of additional permanent open space habitat to benefit a range of bird species), Water quality (within R Dee catchment) and Timber production.

The block lies some 20.0km northwest of New Galloway, Dumfries & Galloway.

Key Strategic directions from role of Scotland's National Estate	Local District Strategic Plan Objectives	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 (limited in this LMP area) • 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>Prioritise and maintain</i> peatland restoration programme to benefit carbon sequestration (specifically areas around Silver Flow and Ellergower Moss) • <i>Increase</i> area of broadleaf woodland fringe at elevation and <i>establish / maintain</i> a permanent woodland infrastructure along riparian zones (Cooran Lane, Green Burn, Downies Burn, Minnaul Burn and R Dee) • Improve resilience through smaller coupe size and increased use of woodland managed under LISS (limited potential may be entirely restricted to lower lying areas around Loch Dee) and other reduced impact management • <i>Increase</i> use of natural regeneration in our restocking • <i>Control</i> invasive species as per FES guidelines (specifically <i>R. ponticum</i> on R Dee islands)
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 roads infrastructure 	<ul style="list-style-type: none"> • <i>Meet</i> production forecast commitment through revised felling plan • <i>Implement</i> road construction / maintenance programme required to service proposed harvesting operations
Treasured: a multi-purpose resource that sustains livelihoods, improves quality of life and offers involvement and enjoyment	<ul style="list-style-type: none"> • Involve and engage with local people / encourage partnership working • Create uniquely special places across the Estate • Recognise the Estate as a place for research and development 	<ul style="list-style-type: none"> • Continue to <i>consult</i> with local communities and stakeholders through Forest panel and Land Management Plan process • <i>Incorporate</i> Research and Development into Land Management Plans

Backhill o' Bush Land Management Plan 2016-26

<p>Accessible: woodlands that welcome and are open for all</p>	<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>Retain and improve</i> access to block (specifically access for hill walkers through existing / future plantation to open hill tops and along Southern Upland Way corridor)
<p>Cared for: working with landscape and the natural and cultural heritage</p>	<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>Maintain</i> peatland restoration programme to benefit carbon sequestration and benefit moorland wildlife (specifically area around Silver Flow and Ellergower Moss) • <i>Create</i> additional permanent open habitat connecting open ground in the Rhinns of Kell through to Craigeazle and out to the east to benefit moorland wildlife dispersal • Block is visually prominent as viewed from surrounding hill tops; <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 (Cooran Lane, Green Burn, Downies Burn, Minnaul Burn and R Dee) • 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) • 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 • Water quality in the R Dee catchment is important; <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 within the R Dee catchment • <i>Manage</i> minor heritage features as per FES guidelines
<p>Good value</p>	<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 offer deer leases over plan area

Backhill o' Bush Land Management Plan 2016-26

ACHIEVED BY PLAN

HEALTHY

Y/N Committed to high quality silviculture and increasingly using alternatives to clearfell (LISS): [limited opportunities in commercial plantation for LISS expansion but planned expansion of BL areas will increase area managed under Minimum Intervention](#)

Y/N Carbon stewardship: [ongoing maintenance / enhancement of deep peatland areas and the potential for further carbon storage or release from alternative management options on deep peats will promote active stewardship](#)

Y/N Help the estate to adapt to climate change and make woodlands more resilient to pressure: [alternatives to clearfell and greater species diversity will assist resilience throughout the block](#)

Y/N Committed to dealing with invasive plants that threaten habitats and biodiversity: [invasive species controlled as per FES guidelines but severe restrictions on control on L Dee islands](#)

PRODUCTIVE

Y Maintain core timber production: [LMP felling programme gradually reduces over time but continue to modestly contribute to the overall district programme](#)

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/N Engage / involve local communities and encourage partnerships: [continue to consult through LMP process](#)

Y Commitment towards more unique special places across the Estate: [landscape scale peatland / conservation area and proposed peatland edge woodland / woodland fringe developments will enhance the special sense of place](#)

Y Recognise the value of the Estate as a place for research and development of best practice: [block has significant potential for peatland research](#)

ACCESSIBLE

Y/N Improve access and use estate for health benefits and outdoor learning: [block has some capacity through Southern Upland Way route and hill walking access](#)

CARED FOR

Y Committed to maintaining best open habitats in good ecological condition: [block presents opportunities for enhanced open habitat management around Craigeazle and open ground of Merrick Kells designated site to east and west](#)

Y/N Increase BL tree cover: [additional planned BL areas \(through additional restock / natural regeneration\) will contribute towards district's BL woodland cover expansion targets](#)

Backhill o' Bush Land Management Plan 2016-26

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 Red squirrel however proposed woodland fringe and open space creation should potentially benefit both populations](#)

Y Safeguard archaeological sites through planning and management and recognise special places and features with local cultural meaning: [local heritage features will be managed accordingly](#)

GOOD VALUE

N Seek a range of income streams: [block presents limited opportunities for income from sources other than timber](#)

Appendix VI: Habitats Regulations Appraisals

Merrick Kells SAC

Qualifying Interests	
Common Name	Scientific Name
Blanket Bogs	Blanket Bog
Depressions on peat substrates of the Rhynchosporion.	Depressions on Peat Substrates.
European Dry Heaths.	Dry Heaths.
Lutra lutra.	Otter.
Natural dysotrophic lakes and ponds.	Acid peat- stained lakes and ponds.
Northern Atlantic wet heaths with Erica tetralix.	Wet heathland with Cross Leaved Heath.
Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoëto-Nanojuncetea.	Clear-water lakes or lochs with aquatic vegetation and poor to moderate nutrient levels.
Siliceous alpine and boreal grasslands	Montane Acid Grasslands.
Siliceous rocky slopes with chasmophytic vegetation.	Plants in crevices on acid rocks.
Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani.)	Acidic Scree

The **conservation objectives for the Merrick Kells SAC** are to avoid deterioration of the qualifying habitats and species listed above and ensure that the integrity of the site is maintained and the site makes an appropriate contribution to achieving favourable conservation status for each of the qualifying features and to ensure the following are maintained in the long term;

- Extent of the habitat on site.
- Distribution of the habitat within the site.
- Structure and function of the habitat.
- Processes supporting the habitat.
- Distribution of typical species of the habitat.
- Viability of typical species as components of the habitat.
- No significant disturbance of typical species of the habitat.

The **potential impacts** and **controls of impacts** of operations associated with Backhill o' Bush land management plan on the Merrick Kells Natura site are as follows;

Potential Impact.	Control of Impact
Forest operations. Ongoing forest operations will include felling and extraction of timber, timber haulage,	<ul style="list-style-type: none"> • There will be no forest operations or traffic within the SAC area other than current levels of access by Rangers on quad bikes for the

Backhill o' Bush Land Management Plan 2016-26

<p>restocking, fencing, culling of deer and goats.</p>	<p>purposes of deer control and monitoring.</p> <ul style="list-style-type: none"> • All trees will be felled away from the SAC area and brash concentrated in trackways off the SAC site. • Close adherence to Forest & Water Guidelines will ensure care in respect of Otters whose habitat straddles the boundaries of the SAC. (The presumption in Galloway is that Otter are highly likely to occupy or use any watercourse.) The pre-felling workplan process checks for this species and recommends appropriate safeguards.
<p>Regeneration of trees. Regeneration of conifer and broadleaved trees onto the SAC site.</p>	<ul style="list-style-type: none"> • Any areas of regeneration will be monitored and mapped and removed from the SAC site.
<p>Grazing. There is no grazing of Cattle or Sheep within or adjacent to the Backhill o' Bush area.</p>	<ul style="list-style-type: none"> • Wild grazing by deer and goats occurs within the wider area and deer cross from the forest and onto the open ground. Their numbers are assessed on a regular basis and controlled by annual culls.
<p>Public Access. The public is encouraged to access the area for the purposes of quiet recreation which might potentially lead to problems with trampling, erosion, over-fishing and disturbance to wildlife.</p>	<ul style="list-style-type: none"> • Members of the public are expected to following the Scottish Outdoor Access Code and act responsibly. • The impacts of visitors are routinely monitored to identify areas of erosion or trampling. There is no current evidence of significant damage to the Natura site or increased likelihood of this occurring given the likely scale of visitor increase. • Larger events are controlled via the Forest District permission system. • Other than official access on quad bikes, all other forms of motor vehicle access are forbidden. Gates have been installed to help reduce illegal motorised access. • Mountain Biking is channelled onto forest roads outwith the SAC area.

Backhill o' Bush Land Management Plan 2016-26

Conclusions.

The proposed Forest Operations contained in the Backhill o' Bush land management plan will not adversely affect the integrity of these SAC sites.

The land management plan text and supporting documents set out a range of work that should enhance the wider biodiversity of the SAC site and wider area.

Backhill o' Bush Land Management Plan 2016-26

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

The Backhill o' Bush LMP impacts on 3 catchments at risk / failing. The catchment identified as Clatteringshaws 653 includes the south eastern area of Backhill o' Bush with the catchments identified as Backhill o' Bush 581 and Backhill o' Bush 582 accounting for the rump of the plan area to the north and west.

Backhill o' Bush 581 catchment at risk / failing catchment

The total area of this water catchment is 1586.2ha. The catchment falls entirely on FES land and is centred on Loch Dee. There is a significant area of open hill ground to the north and west of Loch Dee associated with the catchment, all on FES land. See below for base catchment area detail as at 20 November 2015.

Open ground area (FES land)	1311.3ha
Plantation area (FES land)	274.9ha
Total catchment area (FES land)	1586.2ha
20% of catchment (FES land)	317.2ha
30% of catchment (FES land)	465.8ha

The felled area within the catchment in any 3 year period needs to be less than 20% of the catchment. The table below based on the planned coupe felling programme confirms that this is the case.

5yr Fell period	Currently proposed felled areas (ha)	Proposed fell area as % of catchment area
2016-18	28.2	1.8%
2017-19	42.9	2.7%
2018-20	14.7	0.9%
2019-21	14.7	0.9%
2020-22	49.3	3.1%
2021-23	49.3	3.1%
2022-24	101.1	6.4%
2023-25	51.8	3.3%
2024-26	115.5	7.3%
2025-27	63.7	4.0%

Backhill o' Bush Land Management Plan 2016-26

The area of closed canopy conifer forest (age > 15years) needs to be less than 30% of catchment in 15 years' time i.e. 465.8ha. The table below confirms that this is the case.

In the table the proposed fell area for the next 15yrs within the catchment is subtracted from the current plantation area in the catchment to give a notional area of 11.1ha of plantation within the catchment over 15yrs age (assumes that felled areas will be restocked within 2-3yrs of felling subject to planned restock and Hylobius Management Support System).

Current plantation area within catchment	274.9ha
Proposed felled area between 2016 -2030 (15yrs)	263.7ha
Notional plantation area in 15yrs time > 15yrs age	11.1ha

Backhill o' Bush 582 catchment at risk / failing catchment

The total area of this water catchment centred on Cooran Lane and draining to the R Dee is 2367.0ha, entirely on FES land. There is a significant area of open hill ground, Merrick Kells SSSI, to the west of the plantation area within the catchment. See below for base catchment area detail as at 19 November 2015.

Open ground area (FES land)	1454.9ha
Plantation area (FES land)	912.1ha
Total catchment area (FES land)	2367.0ha
20% of catchment (FES land)	473.4ha
30% of catchment (FES land)	710.1ha

The felled area within the catchment in any 3 year period needs to be less than 20% of the catchment. The table below based on the planned coupe felling programme confirms that this is the case.

5yr Fell period	Currently proposed felled areas (ha)	Proposed fell area as % of catchment area
2016-18	93.0	3.9%

Backhill o' Bush Land Management Plan 2016-26

2017-19	62.5	2.6%
2018-20	164.9	7.0%
2019-21	293.0	12.4%
2020-22	293.0	12.4%
2021-23	222.8	9.4%
2022-24	145.0	6.1%
2023-25	145.0	6.1%
2024-26	73.4	3.1%
2025-27	42.3	1.8%

The area of closed canopy conifer forest (age > 15years) needs to be less than 30% of catchment in 15 years' time i.e. 710.1ha. The table below confirms that this is the case.

In the table the proposed fell area for the next 15yrs within the catchment is subtracted from the current plantation area in the catchment to give a notional area of 290.2ha of plantation within the catchment over 15yrs age (assumes that felled areas will be restocked within 2-3yrs of felling subject to planned restock and Hylobius Management Support System).

Current plantation area within catchment	912.1ha
Proposed felled area between 2016 -2030 (15yrs)	621.9ha
Notional plantation area in 15yrs time > 15yrs age	290.2ha

Clatteringshaws653 catchment at risk / failing catchment

This catchment straddles both the Clatteringshaws and Backhill o' Bush LMP areas. See below for base catchment area detail as at 09 November 2015.

Open ground area	1391.0ha
Plantation area	1106.6ha
Total catchment area	2497.6ha
20% of catchment	499.6ha
30% of catchment	749.4ha

The felled area within the catchment in any 3 year period needs to be less than 20% of the catchment. The table below based on the planned coupe felling programme confirms that this is the case.

Backhill o' Bush Land Management Plan 2016-26

5yr Fell period	Currently proposed felled areas (ha)	Proposed fell area as % of catchment area
2016-18	197.3	7.9%
2017-19	251.1	10.1%
2018-20	99.5	4.0%
2019-21	145.3	5.8%
2020-22	215.1	8.6%
2021-23	233.1	9.3%
2022-24	192.0	7.7%
2023-25	88.2	3.5%
2024-26	116.3	4.7%
2025-27	92.1	3.7%

The area of closed canopy conifer forest (age > 15years) needs to be less than 30% of catchment in 15 years' time i.e. 749.4ha. The table below confirms that under the current LMP proposals this is the case.

In the table the proposed fell area for the next 15yrs within the catchment is subtracted from the current plantation area in the catchment to give a notional area of ha of plantation within the catchment over 15yrs age (assumes that felled areas will be restocked within 2-3yrs of felling subject to planned restock and Hylobius Management Support System).

Current plantation area within catchment	1106.6ha
Proposed felled area between 2016 -2030 (15yrs)	766.0ha
Notional plantation area in 15yrs time > 15yrs age	340.6ha

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

All of the operations in Backhill o' Bush 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 pending)
- 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.

Backhill o' Bush Land Management Plan will be included in this audit process.