Upper Cree Land Management Plan 2016-26

Galloway Forest District

UPPER CREE

Land Management Plan

Approval date:

Plan Reference No: FDP

Plan Approval Date: 01 April 2016

Plan Expiry Date: 31 March 2026

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

CSM 6 Appendix 1
FOREST ENTERPRISE – Application for Forest Design Plan Approvals
Forest Enterprise – Property

Forest District:	GALLOWAY FD
Woodland or property name:	UPPER CREE
Nearest town, village or locality:	NEWTON STEWART
OS Grid reference:	NX336848
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 ……..…… Signed ……
Forest District Manager Conservator

District **GALLOWAY FD**…… Conservancy ……

Date **……**…… **Date of Approval:** ……

Date approval ends: ……

*delete as appropriate

Upper Cree Land Management Plan 2016-26

EIA Determination form if required

Contents

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) Upper Cree Land Management Plan Brief
vi) The UK Forestry Standard, Forestry Commission Guidelines and the UK Woodland Assurance Scheme (UKWAS)
vii) Assessment of felling and restock proposals within catchments at risk and failing

Summary of Proposals:

Water quality in the R Cree catchment is the main objective for this Land Management Plan. Sustainable timber production sympathetic to the significant demands of landscape and biodiversity is also important.

1.0 Introduction:

1.1 Setting and context

Part of Galloway Forest District that is based in Newton Stewart, Upper Cree is a large scale linear plantation that lies some 20.0km due north of Newton Stewart. The block, totalling some 5199.0ha, is particularly visible in near and mid distance view from the C46w minor county road from Glentrool village to Straiton to the east of the plan area and the A712 Newton Stewart to Girvan road that splits the plan to the south.

The block adjoins areas of open hill and agricultural land to the north and south but in the main is surrounded by private sector woodland and other FES plantation, White Clauchrie, Shalloch and Glencaird Hill to the west and east. The River Cree also forms part of the western boundary.

An integral part of the Galloway Forest Park the block also lies within the larger Western Southern Uplands ESA.

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

1.2 History of plan

Upper Cree LMP comprises three former design plan units from the 1980s, Drumjohn, Rowantree and Girvan Road that were ultimately amalgamated in 2005 to form a larger catchment scale unit covering the Upper River Cree catchment.

The great majority of the LMP unit was acquired in the 1940s. Interestingly part of Loch Moan was not acquired at this time. It seems possible that there was no intent in the 1940 title to retain part of the Loch however possible confusion over whether the County and Estate boundary followed the centre line of Loch Moan rather than the north shore line may have arisen. That part of the loch would have remained as part of the original Estate of Galloway.

Additional purchases in the late 1950s, in 1975 and in 1983 of land to the south complete the area (see table below).

Acquisition date	**Deed No**	**Title**	**Seller**
April 1940	11147	Glentrool	Earl of Galloway
Aug 1945	11148	Cassillis & Culzean Estate	Cassillis & Culzean Estate Ltd

Feb 1959	11161	Cassillis & Culzean Estate	Cassillis & Culzean Estate
July 1975	11182	Arniemean & Drumavaird	WS Lang
Dec 1975	11184	Drumlamford Estate	Exec. of late RS Beale
Dec 1983	11216	Drumlamford Estate	JC Saunders & CAR Beale

Afforestation began in the late 1940s / early 1950s and continued to the 1970s as areas south of the R Cree were acquired. Little of the first rotation crops remain. The area was heavily harvested in the 1980s and 1990s bequeathing large swathes of second rotation conifer crop.

Although this large scale plan links to other FES plantation to the east and west, it stands comfortably as a separate land management plan unit for conservation and water quality considerations associated with the upper R Cree catchment.

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 (particularly along public roads)	The plan area has been extensively harvested providing opportunities for alternative species restock and enhanced views into the block from both the Straiton road and the A714.
Increase area of broadleaf and open space to enhance conservation	Over the previous plan period significant areas of open space and broadleaf have been created around Loch Moan and along the principal riparian areas. Ongoing clearfell will provide further opportunities for large scale broadleaf habitat network creation.
Improve riparian zones particularly around Loch Moan and along significant 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 Loch Moan and along the principal riparian areas. Working in partnership with Cree Valley Community Woodlands Trust removal of natural conifer regeneration has also taken place.
Maintain suitable habitat for Red Squirrel conservation	Although not a stronghold site for the species, small seeded broadleaf planting and continued conifer restock will ensure that the block remains advantageous towards the species.
Improve landscape impact along northern boundary of plan / create moorland fringe on plantation margins to improve Black Grouse habitat	Several coupes along the northern boundary have been restocked taking a greater account of land form and incorporating elements of woodland fringe creation.
Improve internal amenity and develop area for public recreation	Views in and around both of the SAMs have been enhanced however the block is a low priority for further Recreation development

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**
Cared for; 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 Cree catchment and improve feeding and spawning conditions for fish Contribute to Scotland's landscape through the management of views from the A714 and other minor roads through the plan area Manage heritage features within block according to FES Archaeological guidelines Increase area of mature woodland and species diversity for habitat enhancement	high
Productive; Promote sustainable timber supply through revised felling plan and restocking plans Implement modest scale road building / road maintenance programme required to service proposed operations coupes Increase area of broadleaf woodland creation, including native species for biodiversity Create a more diverse age structure for the forest.	high
Accessible; Improve Galloway Forest Park welcome corridor	medium
Climate change; Increase carbon sequestration on site through bog restoration work in deep peat areas and establishment of new broadleaf peatland edge woodland rather than conifer plantation.	medium

3.0 Background Description

3.1 Physical site factors

3.1.1 Geology Soils and landform

Most of the afforested area comprises sedimentary greywackes and shales of the Ordivician period that have been obscured by large quantities of coarse and generally indurated glacial deposits of boulder till material.
Poorly draining podzols, peaty gleys and blanket peat soils dominate the area generally resulting in a monoculture of shallow rooting spruce conifer with a high risk of windthrow.
Altitude ranges from 90m in the south rising up to Craigenreoch 552m to the far north. Craigenreoch is part of an east west line of open hill tops that includes Cairn Hill 481m, Pinbreck Hill 549m and Polmaddie Hill 544m that slope with a southerly aspect down to the main forested area. Terrain within this forested area is gently undulating with occasional smaller hills the most significant being Suie Hill, Shiel Hill, Brecklach Hill, Corrafecklock Hill and the highest Garwhall Hill at 340m.
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

The heavily forested R Cree catchment has suffered from issues such as surface water acidification, the management of riparian over shading, siltation risk and poor site drainage. Whilst the main watercourses are the Polmaddie and Cairnfore burns to the north of Loch Moan, the Butter Burn and Black Burn that drain to the Water of Minnoch to the east and the Laniewee Burn, Creebank Burn and Sprit Strand that drain directly south to the R Cree, all tributaries and drains in this catchment are important regardless of their scale. Several open water bodies are also located within the block; the largest is Loch Moan, the source of the R Cree and the principal water feature in the plan area but there are also four smaller lochs, Cairnfore Loch, Loch Dow, Loch Arroch and Dalnaw Loch.
With regard to River Basin Management Plan considerations the R Cree 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 1600mm, compared to the district range of 1000 – 2000mm, and falls mainly during the winter months October to February.

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

3.2 Biodiversity and environmental designations

Bog habitats (UKBAP priority) support numerous flora and fauna species and are generally in decline. Any conservation or restoration and expansion of bog habitat within the plan would therefore make a significant contribution to biodiversity. The creation of open ground and its associated tree removal adjacent to the SSSI could improve groundwater levels essential for mire and bog habitats. Although there are fragmented areas of deep peat adjacent to Loch Moan showing evidence of moss land vegetation the sites are not considered to be priority sites for peatland restoration.

Water quality is a significant environmental factor in the plan area. The high Cree catchment historically supported a healthy Atlantic salmon and trout population that has to an extent declined due to reduced water quality and degraded riparian and instream habitats. Many burns now only support limited Brown trout and European Eel yet still retain good instream habitats that with enhanced riparian treatments could increase the present fish species and in time allow the recovery of Atlantic salmon. Galloway Fisheries Trust (GFT) has played a key role in identifying priority watercourses such as the Cairnfore Burn,

Creebank Burn and the main R Cree for work to address the issues of forest encroachment onto watercourses in the plan. This remedial work should benefit a range of species and will be further developed with the subsequent creation 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. However further downstream, outwith the plan area, there are relict Ancient Semi Natural Wooded areas along the R Cree valley making these upper reach sections of the R Cree potentially high priority sites for restoration to further develop riparian network links.

3.2.1 FCS Biodiversity Programme key species

Red Squirrel is present at low densities in this LMP where links to the Glentrool and other relict Oakwoods are poor, however 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 to 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.

Whilst Upper Cree LMP is not considered to be a core area for Black Grouse, the species is thriving to the east of the plan area at the northern end of the Shalloch LMP and would once have used the area now occupied by this forest plantation. A recent report by the Game and Wildlife Conservation Trust highlights the values of linking Black Grouse populations through forest environments to encourage the use of internal open areas and increase population spread. The open area around Loch Moan is an ideal size, particularly with the proposed BL planting, however the heather areas and open ground to the top of the Fardin and Cairnfore Burns and their associated wider open corridors should also 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 the non peat sites for winter browsing in these areas will develop the habitat network further.

3.2.2 Scottish Biodiversity List Species

Water bodies and existing riparian habitats within the plan area are regularly used by Otters for breeding (there is a known holt at Dalnaw Loch and the Thumb Loop of the R Cree) and for movement into other river systems. Otters have a large territorial range; consequently wide ranges of adjacent connecting land will also be used. Evidence also suggests that good Otter numbers have a natural control effect on invading Mink.

Whilst relatively scarce, Water voles also use these riparian tracts.

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 prepare 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.

Pine Martens favour similar forest habitats as Red Squirrels and have been regularly seen around the area.

Osprey numbers are increasing throughout Galloway and regularly breed within the LMP area.

Green Hairstreak and Large Heath butterflies have been recorded by CVCWT respectively along the banks of part of the Fardin Burn and the open heath habitats near to the Goat Burn. These open areas should be maintained to conserve the populations.

3.3 The existing forest

3.3.1 Age structure, species and yield class

Species / Yield class

Pure Sitka spruce and Sitka spruce and Lodgepole pine crop mixtures dominate the block accounting for around 67% of the plan area. Minor conifer species such as Scots Pine, Norway spruce and Larch account for a lowly 3% with broadleaf providing the remainder of the plantation area, around 5%. This figure for minor conifer species would have been slightly higher however sanitation felling for *P ramorum* infection has resulted in premature removal of much of the larch component of the crop. 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 42.6ha (14.5%) of this has been identified as Native Woodland under the Native Woodland Survey Scotland project however they will form focal points for further broadleaf expansion. Planned additional BL and restocking with non-spruce conifer alternatives to larch should improve species diversity over the period of the plan.

Including open water bodies such as Loch Moan, the open ground to the north of the plan and all felled areas, currently around 24% of the plan area is classified as open space. The area of open space should increase slightly as planned conifer removal for water quality improvement and habitat network enhancement impacts further on 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 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 area (ha)**	**Total area %**
Sitka spruce	3066.4	59.0
Norway spruce	27.7	0.5
Larch spp.	74.5	1.4
LP (Other Pine)	412.7	7.9
Scots Pine	49.8	1.0
Douglas Fir	0.0	0.0
Other conifers	8.5	0.2
Broadleaf	293.5	5.6
Open space (includes felled areas & open water)	1266.1	24.4
Total	**5199.2**	**100.0**

Age Structure

Given the original plantation establishment dates, a dearth of planting during the 1970s and 1980s and the fairly concentrated clearfell associated with first rotation crops (a minimum of 7yr age gaps or a 2m height differential maintained between fell coupes), clearfelling during the previous plan periods appears to have had a minimal effect on restructuring. Establishment and thicket phase crops (around 50%) currently dominate the plan area with maturing high forest only covering around 10% of the area resulting in a relatively poor age class spread (see table below). The additional recent felling of, and as yet not restocked, *P ramorum* infected larch areas has also grievously impacted on current structural diversity. Projected future percentages do however suggest a more even distribution of age class throughout the block.

Age of trees	**Growth stage**	**Percentage of class at given year**	
		2016	**2046**
0 - 10	Establishment	20.1%	14.1%
11 - 20	Thicket	30.0%	2.6%
21 - 40	Pole stage	15.1%	29.0%
41 - 60	Maturing high forest	8.8%	28.2%
61 +	Old high forest	1.7%	1.3%
	Open space / felled areas	24.3%	24.8%
Total		**100.0%**	**100.0%**

Restructuring remains an important consideration throughout the plan area.

3.3.2 Access

Currently the plan area is relatively well roaded and generally accessible for timber haulage. As identified by the Dumfries and Galloway Timber Transport Group Agreed Routes Map west for Timber Haulage, the principal timber haulage routes exit onto the A714 Newton Stewart to Girvan "agreed route" to the south and also to the east along the C46w Bargrennan to Straiton road "consultation route". Use of the internal network by timber traffic is encouraged to avoid Glentrool village and minimise the use of the minor county road to the east. Partnership work through the Strategic Timber Transport Fund (STTF) has previously taken place to the south of the plan area, substantially increasing the length of forest road used for timber transport and therefore reducing the impact of FES and private sector timber haulage on the public road network. Further new forest road construction along with planned maintenance and upgrade of the existing forest road network is still required here to meet the district's forecast timber volume programme for the period of this land management plan.
Around 50% of the planned roads programme for the block is scheduled for construction during the second phase of approval for this plan (see table below).

Period of Proposed Construction	Proposed length of new forest road for construction
2016 to 2020	0m
2021 to 2025	725m
Beyond 2025	800m

A completed application for determination of Prior Approval or Alteration of a Private Way (Forestry) form will be provided to the FCS prior to working being carried out.
Several smaller scale quarries along with proposed / planned forest roads for the plan period and beyond are identified in the suite of DP maps. Most of the stone material required for the planned forest road upgrade and new construction is available via the internal roads network from the Balunton quarry (in the Glencaird block) to the east and the Rowantree quarry (in the Shalloch block) to the north. 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.

3.3.3 LISS potential

Virtually the entire plan area north of Loch Moan along with a broad spine of ground running south from the loch through the centre of the plan has DAMS scores (Detailed Aspect Method of Scoring) of more than 17 leaving little

opportunity 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”.
Opportunities for the expansion of LISS management areas are generally constrained by the poor, boggy site types throughout the plan area however second rotation crops on better site types to the east of the plan may potentially provide opportunities for thinning and future LISS expansion.

3.4 Landscape and land use

3.4.1 Landscape character and value

This large scale plan area runs along the Cree valley to the source of the R Cree at Loch Moan and extends northwards up onto a relatively flat plateau landscape. The block does not however constitute a particularly dominant feature in the rolling topography of the landscape.
The 1998 Ayrshire Landscape assessment classifies the areas north of Loch Moan and south of the R Cree as “Plateau moorland with forest”whilst the 1998 Dumfries and Galloway landscape assessment categorises the area south of Loch Moan mainly as type 17a “Plateau with forest”. In both instances “land cover is typified by extensive conifer plantation of even age, colour and texture as yet little modified by redesign”, and where “forests show an exposed and remote character with a lack of elevation to create dark landscapes. The main issues arising from the assessment of these landscape character types of contrasting landform and vegetation are

- adding diversity to the landscape in subsequent rotations
- loss of plateau moorland through overall forestry expansion and resultant impact on land use balance
- the potential for wind power development given the sensitivity of this landscape
- identifying and maintaining archaeological landscapes

The following key landscape specifics have therefore been addressed:
The gentle landform and large scale relief allows for large scale felling coupe design in the plan hinterlands however enhancing the limited 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.
Restructuring of the forest for spatial, age, species and wildlife diversity through the use of Low Impact Silviculture where suitable and smaller coupe size in the lower basin areas should also be progressed.
Maintain any existing unforested “untamed” components of the landscape with a general presumption against large scale extension of existing plantation areas

3.4.2 Visibility

With views constrained by the flat, rolling topography much of the LMP is not particularly visible. Woodland to the east, along the Straiton county road corridor, and to the south along the A714 Girvan Newton Stewart road are however particularly prominent in both near and mid-distant views.
Internal views from the extensive forest road network tend to be less restrictive with increased areas of open space opening up a series of alternative views.

3.4.3 Neighbouring landuse

Upland hill farming persists to the north where the block adjoins open hill and to the south where there are more intimate smaller scale agricultural holdings. To the east and west and parts of the south the block is surrounded by private sector woodland and other FES plantation, White Clauchrie, Shalloch and Glencaird Hill.
Private residences at Rowantree and Corrafeckloch lie within the plan area.

3.5 Social factors

3.5.1 Visitor Zone Recreation

Despite the relative close proximity of a core recreation facility, the Glentrool visitor centre, there is little in the way of formal recreation within the plan area. The only current facility is a short section of the Glentrool green mountain bike route that runs through the eastern corner of the block at the Straiton road near Palgowan farm (see table below).
Whilst there are no current plans for further recreational development in the block within the period of this plan, the minor county road running from Straiton to Glentrool remains strategically important with recent clearfell operations opening up impressive near and distant views into the forest and beyond to the Galloway hills, showcasing the area for visiting tourist traffic.

Facility / visitor zone	**Concept / Opportunity**	**Constraint**	**Plan Development**
Glentrool green mountain bike route	Enhance trail environs	Short section of route (around 1km)	Enhance intimate route surrounding through broadleaf restock and open space
Straiton / Glentrool county road	Enhance the surroundings of important tourist artery through commercial plantation	Maintenance of permanent views Lack of formal facilities e.g. carparks	Provide and maintain sight lines along sections of the route Provide species and age class diversity adjacent to county road

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.

3.5.2 Community

Glentrool village, though it lies outwith the block to the south east, is the largest discernible local community although there are numerous other residential properties (Arnimean, Cairnderry, and Corrafecklock) and other agricultural neighbour interests that are either contained within or directly neighbour the block.

All local Community Councils, Cree Valley Community Council covers the area, are in receipt of the latest version of our local Strategic Plan.

3.5.3 Heritage

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

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

There are several archaeological heritage features, settlement remains and sheep pens present within the block (details are listed in Appendix III). Apart from the two scheduled monuments Cairnderry cairn and Sheuchans cairn, there are no proposals to designate additional assets within the plan area.

Cairnderry chambered cairn SAM is a prehistoric burial cairn. Only the larger boulders from the burial chamber remain visible, most of the stone has been robbed in the past. The view to and from the Goat Burn to the south and west is an important element in the setting of the monument and should be maintained.

Sheuchans cairns SAM is a well preserved burial cairn that lies on the northeast shoulder of Highlandman's Rig suggesting that it may have been originally constructed to be seen from lands immediately to the northeast of the hill. Views to and from the monument in this direction are important in the understanding and appreciation of the feature.

All significant features will be protected and managed following the *Forestry and Archaeology Guidelines* (2011), the FCS policy document *Scotland's Woodlands*

and the Historic Environment (2008) and the supporting *FES Historic Environment Planning Guidelines* (available from the FCS Archaeologist).
Known heritage features are marked on workplans before the start of forestry operations. Machine operators are fully briefed on their responsibilities prior to all sites being worked. The known record is based on features recorded on the 1st edition OS Map (1850).
Felling coupes, access roads and fence lines will be surveyed prior to any work being undertaken to ensure that upstanding historic environment features can be marked and avoided. Historic environment features, including drystane dykes, coming to light during forest operations will be surveyed, recorded, mapped and monitored for inclusion in future versions of the 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.

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 Upper Cree 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 R Cree catchment	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	LISS areas and smaller coupe size where appropriate Maintain conifer restock programme whilst increasing area of BL in subsequent rotations Remove flow peaks from timber production
Biodiversity	Enhance connectivity of aquatic and riparian habitat networks	Isolated nature of lochs Extended restructure period	Increase area of open ground Extend connectivity of internal open space to riparian zones and external open space / woodland fringe
Biodiversity	Enhance Red Squirrel habitat	Low density resident population Lack of appropriate mature conifer crop and subsequent low levels of food source species diversity	Increase minor species and BL restock for species diversity Identify retention areas of mature conifer and generally extend crop rotation lengths throughout plan area
Biodiversity	Enhance Native woodland areas and their connectivity to	Isolated and highly fragmented nature of existing Native woodland	Increase areas of BL restock centred on identified Native woodland sites

	other habitat networks	Extended restructure period	Extend BL woodland / open space connectivity to riparian zones and internal / external open space
Environmental Quality	Enhance views of block from A714 and minor county road	Current poor levels of species diversity	Increase minor species and BL restock for species diversity Develop LISS areas on better site types and reduce coupe size

4.2 Concept development

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

Commercial conifer zone / Core timber production

Large 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. The identification of LISS areas, improved species diversity, including broadleaf restocking, and smaller coupe sizes will maintain timber production and also contribute towards habitat conservation.

Highly visible roadside corridors

Parts of the block to the east and south are highly visible from the Straiton minor county road and the A714 Girvan Newton Stewart road. Whilst a series of fairly uninspiring near distant views prevail, recent clearfelling has opened up alternative long distant views of the surrounding hills unseen for many years. Long term aims are to enhance these views through greater species diversity, both broadleaf and minor conifer and retaining important landscape views.

R Cree riparian zone / floodplain

The R Cree runs north / south along much of the western boundary 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.

Loch Moan and other aquatic habitats

There are several small open water bodies scattered throughout the block providing localised points of biodiversity interest however Loch Moan, the source of the R Cree, is the principal water feature.

Linking these water bodies to other external and internal open space areas or including them within the R Cree riparian corridor through the creation of permanent low density stocking broadleaf woodland habitat will add significant biodiversity value to the plan area.

Scheduled Ancient Monument sites

There are two Scheduled Ancient Monument sites within the plan area; Sheuchans Cairn and Cairnderry Cairn, both are managed under the Forest District Monument Management Plan. The surrounding areas for both sites will be enhanced through additional open space creation.

Recreation Core

Upper Cree LMP is not considered a core recreation area for the district. However improving visual and species diversity along the Straiton / Glentrool county road to the east, at the A714 Girvan / Newton Stewart welcome to the Galloway Forest Park zone and around the residential properties within and on the edges of the Land Management plan area are additional plan objectives.

5.0 Land Management Proposals

5.1 Forest stand management

The Upper Cree 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	4840.0
Group Shelterwood	0.0
Minimum Intervention	127.2
Natural Reserve	8.0
Long Term Retention	0.0
Other/Open land	224.0

Table 2

Fell period	**Thinning / LISS**	**Clearfell**	**Total**
2017-2021	61	50466	50527
2022-2026	187	6805	6992
2027-2031	302	8739	9041
2032-2036	228	22053	22281
2037-2041	171	20161	20332

Allowing for reduced availability of timber in the second and third felling periods (mainly due to the current significant area of young crop), 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

Most of the plan area (around 93%) will be managed under a clearfell management type using conventional harvester and forwarder working with only a modest area managed under alternative management types.

A number of coupes (27 coupes, around 5.5 % by area) are scheduled for clearfell during the 10yr period of the plan and they contribute quite substantially to the district programme (see Appendix IV).

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

5yr Fell period	Area felled (ha)	Area felled as % of total plantation area
2017-2021	**503.1**	**9.7**
2018-2022	**261.4**	**5.0**
2019-2023	**272.1**	**5.2**
2020-2024	**283.3**	**5.4**
2021-2025	**146.5**	**2.8**
2022-2026	**62.0**	**1.2**
2023-2027	**104.0**	**2.0**
2024-2028	**126.7**	**2.4**
2025-2029	**81.6**	**1.6**
2026-2030	**81.6**	**1.6**

It is of course important to manage forestry activities in acid sensitive water catchments and within this Land Management Plan area there are several that have been identified as being either “at risk” or “failing”.
Subject to favourable water chemistry status, there is a district commitment towards our proposed felling and restocking for these catchments. Calculations have been prepared and are included at Appendix VII.
All of the identified catchments satisfy the felled area threshold but fail to meet that of closed canopy forest >15yrs needing to be less than 30% of the catchment in 15 years’ time. There is little up to date water chemistry data available for the area and until we have access to more recent data we intend to:

- Commit not to restock any areas felled during the period of this plan
- In discussion with SEPA commit to the collection of water samples on identified watercourses in 2017 and
- Revise restocking proposals through plan amendment according to resulting critical load calculation

In extensively (>50%) forested catchments like those present in the Upper Cree plan area, additional measures to reduce the impact of forestry such as the conversion of conifer stands to broadleaf will be more closely considered.
For conservation and biodiversity considerations efforts have been made

- to extend the felling period between coupes
- to reduce the overall size of the remaining clearfell coupes

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

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. It is however likely that LISS management will take place in the plan area during subsequent rotations. During the period of this plan modest opportunities to thin crops to the east around the Arroch Hill area have already been identified. Carried out on a 7-10yr cycle in accordance with our local policy, crops will generally be thinned to realise amenity, biodiversity and landscape objectives and to improve timber quality. These second rotation crops offer potential to expand the overall thinnable area of the plan area ultimately resulting in increased areas moving from clearfell to other less intensive management systems.

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) however as LISS can contribute to the protection and improvement of soil quality, water quality and biodiversity through reducing soil erosion and the creation of suspended solids in water, then additional areas adjacent to the main watercourses and where site types are better will be targeted for LISS development.

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

Group Shelterwood generally encompasses:

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

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

Should the potential thinning area increase, additional road spurs and a permanent network of coupe access racks may be required. If required they will be identified and recorded during future plan period operations.

Natural Reserves are predominantly wooded, permanently identified locations of high wildlife interest or potential that is solely managed for high conservation or biodiversity value. As there are sufficient selected broadleaf Natural Reserves of higher biodiversity value throughout the district only small areas of conifer Natural Reserve have been identified.

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 2.4% of the plantation

area, mainly broadleaf areas, provides the focus for Minimum Intervention management.
Under Long-term Retention trees are retained for environmental benefit significantly beyond the age or size generally adopted. No areas of Long Term retention have been identified.

5.2 Future habitats and species

The accompanying Future Habitats and Species map provides detail of our proposed restock species and habitats for Upper Cree FDP.

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 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.

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
Priority sites for habitat restoration Although there are fragmented areas of deep peat adjacent to Loch Moan showing evidence of moss land vegetation and other scattered sites across the LMP, the areas are not considered to be priority sites for peatland restoration			
Sites currently not a priority for restoration; either poor tree growth resulting in peatland edge woodland, permanent open space or conventional restocking undertaken			
Coupes around Loch Moan.	• Restore deep peat areas to peatland edge low density woodland • Conventional conifer restock on non deep peat sites	• Conserve existing moss land vegetation • Reduce risk of transpiration and lowering of water table by conifers immediately adjacent to Loch Moan • meet UKWAS UKBAP priority habitats requirements	• Clearfell coupes 4061, 4063 & 4078 (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 regeneration is limited)
Blanket Bog at Rowantree (NX332894)	• Maintain as area of open ground	• Conserve existing moss land vegetation • meet UKWAS UKBAP priority habitats requirements	• Monitor occurrence of regeneration at 5yr intervals and assess impact on priority habitat
Intermediate bog areas at Lairds Knowe (N307826) and Knapps (NX335884)	• Maintain as area of open ground	• Conserve existing moss land vegetation • meet UKWAS UKBAP priority habitats requirements	• Monitor occurrence of regeneration at 5yr intervals and assess impact on priority habitat

5.2.2 Woodland fringe / open hilltop

A feature of this Land Management plan is the proposed creation of woodland fringe to the far north of the block below Pinbreck Hill and Polmaddie Hill.

Block	Objective	Benefits	Implementation
Upper Cree	• Creation of woodland fringe (additional Black Grouse habitat)	• 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	• Identify areas for open space / broadleaf woodland creation as transition between higher elevation open ground and plantation

Woodland fringe is 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. Regeneration will be closely monitored, assessed as to its suitability and if the density of woodland cover is unacceptably low then restocking would take place or if too dense the conifer regeneration removed as resources allow.

Woodland fringe has the potential to provide excellent additional habitat for Black Grouse. The creation of this habitat here, developing links between remnant Black Grouse populations in the western moors at Glen App and other populations on the Changue hills through to those using the upper reaches of the Cree valley, 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 Moan several smaller scale still water areas scattered throughout the block provide localised habitat oases for fish and sensitive wild fowl species. Significant buffer zones are required around these features to remove excessive shading by conifer crop, to help some of the lochs reach favourable status under River Basin Management Plans and by linking them together with the major riparian systems and other external and internal open space, to also create larger scale habitat networks across the plan area.

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
• Enhance aquatic / riparian zone	• 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	• 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, 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)

As part of the R Cree valley system there are areas of marsh /mire habitats and other localised wetland areas prone to flooding. Many, like the area around Shiggeland Loch, are identified in the plan as areas of permanent open space or low density broadleaf planting to complement their local habitats. 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)

Three quarries are identified on the features map and will remain as permanent open space; Aroch Hill (NX363841), Arnimean (NX301794) and the Grazing strip quarry (NX348845). Inevitably future quarrying will be required to provide source material for forest road construction and maintenance in the area although at present no significant quarry boundary expansion is planned.

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 although there are no veteran trees, there are isolated fragments of mature broadleaf trees, such as the Ash at Fardin, which may in time provide small pockets of deadwood.

In this block 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). Coupe 03503 is such an example. Areas like this and the mature Ash at Fardin will provide focal points for future BL expansion (see local District BL policy document), creating woodland that should in time provide additional sources of deadwood. It should be noted that currently the 1% figure is not wholly met in this LMP.

5.2.7 Woodland

In the conifer dominant commercial areas Sitka spruce will continue to be the main timber species however, where landscape considerations prevail or where site conditions are favourable NS and SP will also 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 additional planned restocking of SP, NS, other minor conifer and BL and should the restocking embargos be lifted in the future, the reinstatement of some Larch crops.

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

Species	**Area (ha) in 2026**	**Total Area %**	**Area (ha) in 2046**	**Total Area %**
Sitka spruce	2962.7	57.0	2829.7	54.4
Norway spruce	39.9	0.8	45.9	0.9
Larch spp.	67.0	1.3	61.6	1.2
LP (other pine)	406.2	7.8	465.3	8.9
Scots Pine	62.3	1.2	68.7	1.3
Douglas Fir	6.5	0.1	19.4	0.4
Other Conifers	10.6	0.2	13.3	0.3
Broadleaf	355.0	6.8	392.6	7.6
Open Space	1289.0	24.8	1302.7	25.0
Total	5199.2	100.0	**5199.2**	**100.0**

Through the period of this plan and beyond the table shows the progressive reduction in area of Sitka spruce and the modest expansion of Scots Pine, other minor conifer species and broadleaf woodland. This increased 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. The block offers little potential for commercial broadleaf plantation.

There is also a slight 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 habitat network creation creating links from this plantation to external blocks of adjacent Ancient Semi Natural woodland and LEPO to the south west at Drumlamford and to the south down the R Cree valley.

5.5 Deer management

Current deer management in the Upper Cree is carried out by FES Wildlife Rangers with assistance from contract rangers as 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 population. This action will be vital to ensure that Forest Enterprise Scotland's National Deer Management Strategic objectives are met.

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.

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 district's chemical minimisation strategy, the *Hylobius* Management Support System (HMSS) was used over a 6-year period to measure *Hylobius* populations on clearfell sites. Using billet traps virtually all of the districts conifer restock areas were assessed in this period. Weevil numbers were recorded and used along with other site data to determine the optimum time for site restocking. This more flexible fallow period between felling and re-stocking may result in restocking not taking place within two years of felling. (Appendix II Tolerance Table).

Phytopthora 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 Upper Cree LMP area has been particularly affected to the south where significant areas of pole stage larch have been recently removed. Although not a particularly significant component in previous planned restock, it is likely in this plan that the species will become a negligible component of the local woodland with 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 Rhododendron ponticum, Japanese Knotweed, Giant Hogweed and Himalayan

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

5.7 Waste on site (including felling waste)

Generally there are no plans to carry out chipping, mulching or spreading of forest waste over the plan area for ecological site improvement. Occasional felling to waste may however take place where the removal of natural regeneration is required to maintain the integrity of riparian zones.
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.

5.8 Tolerances

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

5.9 Critical Success Factors

- Development of the R Cree riparian corridor
-

5.10 Amendments

To be logged on amendment form

Appendix I: Land Management Plan Consultation Record

Statutory Consultee	Date contacted	Date response received	Issue raised	Forest District Response
Galloway Fisheries Trust: Jamie Ribbens	02 July 2015	07 September 2015	• Consider peatland restoration around Loch Moan and Upper Cree • Consider riparian zone widths in excess of FWG particularly named burns and Water of Minnoch feeder streams to the east • Ensure drainage ditches do not run directly into main watercourses (block them)	• Noted in LMP text (section 3.1.2 & 3.2)
Historic Scotland: John Malcolm	02 July 2015	27 July 2015	• 2 SAM sites identified with suggestions for view enhancements at restock	• Noted in LMP text (section 3.5 & appendix III)
RSPB Crossmichael: Julia Gallagher	02 July 2015	24 July 2015	• Support proposed habitat enhancements for Black Grouse • Question the objective of increasing BL around Loch Moan and deep peat areas • Need for pre-fell survey work to protect breeding raptors identified	• Comments noted in LMP text (sections 3.2, 5.1 & 5.2)
Cree Valley Community Woodland Trust: Peter Robinson	02 July 2015	23 July 2015	• Conifer regeneration in riparian and woodland fringe areas	• Comments noted in LMP text (sections 3.1, 3.2 & 5.2)

			• Species specific information • Riparian buffer comments	
Rosemary Green; IUCN Otter Specialist Group	02 July 2015	20 July 2015	• Various notes on mammal records for area	• Noted in DP text (section 3.2)
SEPA: John Gorman; Newton Stewart office	02 July 2015	15 July 2015	• Identified importance of exceeding guideline recommendations for water quality and watercourse management considerations in R Cree catchment • management of natural regeneration • management of forestry waste • drainage management and pollution protection • protection of private water supplies	• Comments noted in DP text (sections 3.1, 3.2 & 5.7)
Land Ownership Scotland	26 June 2015	14 July 2015	• Ownership resolution	• Noted in DP text (section 1.2)
SNH Newton Stewart office: Stuart Graham	02 July 2015	No comment received	•	•
FCS South Scotland Conservancy: Dumfries office	02 July 2015	No comment received	•	•
Dumfries & Galloway Regional Council: Simon Fieldhouse	02 July 2015	No comment received	•	•
CONFOR: Jamie Farquhar	02 July 2015 by email	No comment received	•	•
Saving Scotland's Red Squirrels: Heinz Traut	02 July 2015	No comment received	•	•
Visit Scotland: Paula	02 July 2015	No comment	•	•

McDonald		received		
Cree Valley Community Council : Morag MacIlwraith	02 July 2015	No comment received	•	•
Scottish Woodlands : Alastair Menarry	02 July 2015	No comment received	•	•
UPM Tilhill: GlennHeggs	02 July 2015	No comment received	•	•

Appendix II: Tolerance Tables

	Adjustment to felling period	Adjustment to felling coupe boundaries	Timing of restocking	Change to species	Change to roadlines	Designed open space
FC Approval not normally required	Fell date can be moved within 5yr period where separation or other constraints are met.	1.0ha or 10% of coupe area - whichever is less.	At year 3 after felling. Restocking within 2yrs +/- of year 3.	Change within species group e.g. evergreen conifers; broadleaf.		Location of temporary open space e.g. Deer glades if still within overall Open space design. Increase by 0.5ha or 5% of area - whichever is less
Approval by exchange of letters and map		1.0ha to 5ha or 10% of coupe area - whichever is less			Additional felling of trees not agreed in plan. Departures of >60m in either direction from centre line of road.	Increase of 0.5 to 2ha or 10% - whichever is less. Any reduction in open space.
Approval by formal plan amendment may be required	Felling delayed into second or later 5yr period. Advance felling into current or 2nd 5yr period.	>5ha or 10% of coupe area	If timing of restocking is outwith the period above.	Change from specified native species. Change between species groups.	As above depending on sensitivity.	More than 2ha or 10%. Any reduction in open space in sensitive areas. Colonisation of open space agreed as

						critical.

Notes

- Felling sequence must not compromise UKFS e.g. Adjacency. At mid term review detail of felling progress and impact will be reviewed against UKFS.
- Where windblow occurs, FCS should be informed of extent prior to clearance and consulted on clearance of standing trees.
- Tolerances subject to an overriding maximum of 20% open ground.
- Within the text of the Forest Design Plan it must clearly state how the plan will address the issue of adjacency with a statement to the effect that:
- **EITHER Any adjacency issues will be dealt with through delay restocking, ie a coupe will not be restocked until all surrounding crops are at least 2m tall**
- **OR Any adjacency issues will be dealt with through delay felling, ie a coupe will not be felled until all surrounding crops are at least 2m tall.**

TABLE OF WORKING TOLERANCES SPECIFIC TO LARCH WITH THE INFECTED ZONE

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

Appendix III: Ground Truthed Heritage sites

SITE	PHOTO	GRID	LAST VISIT	COMMENT
Cairnderry chambered cairn SAM	Yes	NX316799	15.07.15	Remnant large boulders in open space area adjacent to forest road. **Maintain feature in area of open space / broadleaf woodland retaining views to Goat Burn (manage as per SAM management plan).**
Sheuchans Cairn	Yes	NX338839	19.02.16	Sizeable cairn in area of permanent open space now fully exposed since clearfell of the surrounding coupe. In fair to good condition. **Maintain feature in area of permanent open space retaining views to northeast (manage as per SAM management plan).**
Cairn group	No	NX293783	-	Not located; site already associated with area of defined open space surrounded by P1987 conifer. **Maintain in area of open space.**
Sheep pen (near Halfmerk)	No	NX300798	-	Site associated with open space. **Maintain in area of open space / broadleaf woodland.**
Halfmerk	No	NX302797	-	Site associated with area of open space. **Maintain in area of open space**.
Halfmerk Hill cairn	No	NX306800	-	Not located; site associated with area of open space. **Maintain in area of open space**.
Dornal Hill sheep pen	No	NX305792	-	Site associated with existing area of open space adjacent to forest road. **Maintain in area of open space**.
Dornal Hill enclosure	No	NX305794	-	Site associated with area of open space. **Maintain in area of open space / broadleaf woodland**.

Sheep pen	No	NX307782	-	Two compartment sheep pen; not located. **Maintain in area of open space / broadleaf woodland.**
Sheil Hill sheep pen	No	NX307816	-	Sheep pen in P2008 larch crop. **Maintain in area of open space.**
Cairn group (near Fauld Carnahan Isle)	No	NX308795	-	Not located; site surrounded by P1987 conifer. **Maintain in area of open space / broadleaf woodland.**
Fauld Carnahan sheep pen	No	NX310798	-	Sheep pen in open space / broadleaf woodland adjacent to R Cree. **Maintain in area of open space / broadleaf woodland.**
Low Muldown ruins and stones	No	NX311805	-	Not identified; site located within with area of open space. **Maintain location as open space**.
High Muldown, field system and sheep ree	No	NX311808	-	Not identified; site located within recent felled area. **Maintain location as open space**.
Cloy Rig sheepfold (north of Corrafeckloch)	Yes	NX330814	19.02.16	Site located within area of open space. **Maintain location as open space**.
Drumjohn ruined farmhouse	Yes	NX322832	19.02.16	Ruined farmhouse remains (both gable ends intact) located in significant area of open space. **Maintain in area of open space.**
Sheep pen (nr. Drumjohn)	Yes	NX323833	19.02.16	Site associated with farmhouse and connected to forest road to west by moderate to poor condition dyke. Pens currently within area of open space. **Maintain in area of open space**.
Cross shaped sheep shelter	Yes	NX325826	19.02.16	Sheep shelter in good condition in shape of cross, visible from forest road, located in area of open space. **Maintain in area of open space / broadleaf woodland.**
Creebank Burn sheepfold	No	NX337813	-	Site associated with area of open space. **Maintain in area of open space.**

Fardin sheepfold	Yes	NX334870	19.02.16	Several compartmented pens under P1986 Larch crop. Moderate condition. **Maintain in area of open space.**
Fardin ruined house and pens / field system	Yes	NX330865	19.02.16	Low level ruined farmhouse remains separate from sheep pen and field dykes, all clearly visible from forest road. Currently located in area of open space. Farmhouse reduced to stone pile for safety considerations during 1990s. **Maintain location in area of open space.**
Small wall	No	NX342841	-	Small length of wall associated with area of open space **Maintain in area of open space.**
Garwhal End cairn	No	NX350842	-	Not located; within P1999 spruce plantation. **Note location**
Underwater causeway	No	NX349855	-	Submerged causeway of irregular stones linking Black Island to mainshore at narrowest crossing point. Assumed man-made and possible indication of human occupation of island. **Location noted**
Ruined walls and standing stone	No	NX350859	-	Ruined walls (may have been Monastery) present on White Island, only accessible by boat. **Location noted**
Suie Hill trig point	No	NX357856	-	Site located within area of open space. **Maintain location as open space**.
Cairnfore cairn	Yes	NX365871	19.02.16	Cairn in prominent position with views down valley. Located within area of open space although conifer regeneration is encroaching. Associated three compartmented pens to north west. **Maintain location in area of open space.**
Rowantree enclosures	No	NX351893	-	Small sheep pen, the last remnant of series of dry stone walls presumed ploughed up during early 1960s planting. Site currently associated with area of open space / BL. **Maintain in area of open space / broadleaf**

				woodland.
Enclosure	No	NX334894	-	Small enclosure currently associated with open space. **Maintain location in area of open space.**
1m diameter stone enclosure	No	NX331900	-	Very small enclosure on forest ride (open space). **Maintain location in area of open space.**
Walls	No	NX326884	-	Not located; walls currently associated with open space. **Maintain location in area of open space.**

Appendix IV: Coupe details for clearfell and establishment

Clearfell

Coupe	SS	NS	Larch	SP	LP	Other con.	BL	Open space	Total
03014	3.9				1.3			1.2	6.4
03032	12.3	1.9	-	-	12.3	-	-	-	26.5
03036	29.8	-	-	-	2.2	-	-	-	32.0
03037	27.7	-	-	-	11.6	-	-	-	39.3
03039	34.9	-	-	-	10.6	-	-	-	45.5
03047	6.5	0.7	-	-	5.0	-	-	-	12.2
03054	6.0	-	1.0	-	4.0	-	-	-	11.0
04019	79.4	-	-	-	11.4	-	-	2.4	93.2
04021	19.3	-	-	-	2.9	-	-	0.6	22.8
04034	2.1	0.8	0.9	-	-	-	-	-	3.8
04041	6.0	0.4	-	-	0.2	-	-	2.1	8.7
04044	6.5	-	-	-	-	-	0.5	1.1	8.1
04046	38.0	-	1.0	-	-	-	-	2.1	41.1
04061	16.7		-	-	9.2	-	-	5.0	30.9
04063	5.6	-	-	-	0.8	-	-	1.2	7.6
04070	15.8	-	-	-	2.2	-	-	3.0	21.0
04071	14.0	-	-	-	1.4	-	-	0.5	15.9

04078	25.2	1.5	0.7	-	0.3	-	-	0.5	28.2
04097	13.5	0.6	-	0.5	6.5	-	-	0.4	21.5
26003	0.8	-	-	-	-	-	-	-	0.8
26004	6.2	0.5	-	-	-	-	-	3.0	9.7
26015	8.5	0.8	0.4	-	-	-	-	0.7	10.4
26029	11.0	-	-	-	0.7	0.5	-	0.4	12.6
26039	4.4	-	-	-	11.2	-	-	0.5	16.1
26041	4.4	1.8	-	-	-	-	-	-	6.2
26046	42.8	-	1.3	-	-	-	-	0.5	44.6
26050	23.0	-	-	-	-	-	-	1.9	24.9
total	**465.3**	**9.0**	**5.3**	**0.5**	**92.8**	**0.5**	**0.5**	**27.1**	**601.0**

Restock

Coupe	SS	NS	Larch	SP	LP	Other con.	BL	Open space	Total
03014	2.6	-	-	-	2.5	-	0.4	0.9	6.4
03032	19.5	-	-	0.6	-	-	-	6.4	26.5
03036	21.7	-	-	-	-	-	3.0	7.3	32.0
03037	17.0	-	-	-	17.0	-	-	5.3	39.3
03039	18.3	-	-	-	18.3	-	-	8.9	45.5
03047	9.1	-	-	-	-	-	0.5	2.6	12.2
03054	8.0	-	-	-	-	-	0.5	2.5	11.0

04019	23.7	10.0	-	11.3	23.7	-	-	24.5	93.2
04021	14.3	-	-	-	5.4	1.1	-	2.0	22.8
04034	-	-	1.5	-	-	-	2.3	-	3.8
04041	5.1	-	-	-	-	-	1.5	2.1	8.7
04044	-	-	-	-	-	-	6.4	1.7	8.1
04046	12.1	7.0	-	-	12.1	-	3.7	6.2	41.1
04061	4.0	2.0	-	-	4.0	-	10.2	10.7	30.9
04063	-	-	-	-	-	-	4.2	3.4	7.6
04070	7.9	-	-	-	7.9	-	2.2	3.0	21.0
04071	5.7	-	-	-	5.7	-	2.0	2.5	15.9
04078	11.9	-	-	-	-	-	6.2	10.1	28.2
04097	13.5	0.6	-	0.5	6.5	-	-	0.4	21.5
26003	-	-	-	-	-	-	0.6	0.2	0.8
26004	2.6	0.5	-	-	-	5.3	-	1.3	9.7
26015	6.0	0.5	-	-	-	-	1.5	2.4	10.4
26029	7.9	-	-	-	0.7	2.6	-	1.4	12.6
26039	7.0	-	-	-	7.0	-	-	2.1	16.1
26041	3.3	-	-	-	-	-	1.1	1.8	6.2
26046	35.8	-	-	-	-	-	3.0	5.8	44.6
26050	17.6	-	-	-	-	-	0.6	6.7	24.9
total	**274.6**	**20.6**	**1.5**	**12.4**	**110.8**	**9.0**	**49.9**	**122.2**	**601.0**

Notes on coupe work schedule

03014	Coupe adjacent to Straiton road; SS/LP mixture with small areas of BL and open space for visual and species diversity
03032	SS matrix with open space focussed around watercourse to west
03036	SS matrix with open space and BL restock targeted to minor watercourses east and west and forest road to south
03037	SS/LP mixture matrix with open space targeted along Cairnfore Burn riparian zone for habitat creation
03039	SS/LP mixture matrix with open space targeted for habitat creation along Cairnfore Burn riparian zone
03047	SS matrix with open space and BL restock targeted to minor watercourse and forest road to east and west
03054	SS matrix with open space and BL restock targeted to minor watercourse and forest road to west and north
04019	SS/LP mixture matrix with open space targeted for habitat creation along Corrafeckloch Hill ridge top
04021	Mainly SS or SS/LP matrix with additional minor species, open space targeted to coupe edge
04034	Small coupe adjacent to Straiton road and minor watercourse; BL and JL
04041	Small coupe adjacent to R Cree; SS matrix with BL and open space targeted to R Cree and Laniewee Burn riparian zones
04044	Small coupe adjacent to Straiton road; BL for visual and species diversity
04046	SS/LP mixture matrix with open space targeted along Laniewee Burn and minor watercourse riparian zones for habitat creation
04061	Coupe adjacent to Loch Moan; significant area of BL and open space targeted to poor soils around loch
04063	Coupe adjacent to Loch Moan; significant area of BL and open space targeted to poor soils around loch
04070	Coupe to north side of agricultural land and Corrafeckloch; significant area of BL and open space targeted to agricultural land boundary

04071	Coupe to west side of agricultural land and Corrafeckloch; significant area of BL and open space targeted to agricultural land boundary
04078	Coupe to north of Loch Moan; significant area of BL and open space targeted towards loch aquatic edge
04097	SS/LP mixture matrix with open space targeted along Laniewee Burn and minor watercourse riparian zones for habitat creation
26003	Very small sliver coupe adjacent to forest road; BL and open space
26004	DF, NS & SS with open space to coupe edge
26015	Small coupe adjacent to Straiton road; BL, NS and open space to roadside for visual and species diversity
26029	Coupe adjacent to R Cree; SS matrix with open space targeted to R Cree riparian zone
26039	Coupe adjacent to Straiton road; SS matrix with BL and open space to roadside for visual and species diversity
26041	SS and BL with open space to coupe edge
26046	SS matrix with open space and BL targeted to forest road and boundary edge to open ground
26050	SS matrix with open space and BL targeted to forest road

Appendix V. Upper Cree Land Management Plan Brief

A BRIEF FOR UPPER CREE LMP

Main management objectives in this large scale plan focus on Water quality (within the R Cree catchment) and Timber production.

The block lies some 20.0km northwest of Newton Stewart, 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	• Commitment to high quality silviculture and increased use of alternatives to clearfell • Stewardship of carbon resources locked up in Estate's trees and soils • Adapt to climate change and make woodlands more resilient to pressure • Deal with invasive species that threaten habitats and biodiversity	• *Increase* the area of broadleaf woodland to *establish / maintain* a permanent woodland infrastructure along riparian zones (Creebank Burn, Cairnfore Burn, Fardin Burn and R Cree) • *Implement* National deep peat restocking / restoration policy and increase the overall area of peatland restoration within the district (potential sites around Loch Moan / R Cree) • *Improve* resiliance through increased use of woodland managed under LISS (restricted to lower lying areas associated with R Cree) and smaller coupe size • *Increase* use of natural regeneration in our restocking • *Control* invasive species as per FES guidelines (specifically R ponticum and American Mink)
Productive: provide sustainable economic benefits from the land	• Contribute to the local economy by maintaining core timber production and roads infrastructure	• *Meet* production forecast commitment through revised felling plan • *Implement* 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	• Involve and engage with local people / encourage partnership working • Recognise the Estate as a place for volunteering, research and development	• Continue to *consult* with local communities and stakeholders through Forest panel and Land Management Plan process and work with third sector partners such as Cree Valley Community Woodland in their restocking project along the Upper Cree • *Incorporate* Research and Development into Land Management Plans • *Incorporate* the Biosphere buffer & Dark Skies park zones objectives into plan
Accessible: woodlands that welcome and are open for all	• Improve access and enhance existing facilities • Use for health benefits and outdoor	• *Retain and improve* access to block specifically access for hill walkers through existing / future plantation to open hill tops and heritage features and access to fishing and the principal forest recreation facilities

	learning	• *Enhance and improve* this key welcome corridor to Galloway Forest Park through additional structural and species diversity and through additional interpretation and increased car parking capacity • *Continue to liaise* with Ministry of Defence over area usage within Galloway Training Area
Cared for: working with landscape and the natural and cultural heritage	• Maintain open habitats in good ecological condition • Landscape • Increase area of broadleaf cover in block • Conserve vulnerable species • Safeguard heritage features	• Block is visually prominent; *maintain and enhance* local landscape through additional species diversity, open space integrated management and revised coupe shapes to better suit landform • *Increase* area of native BL throughout plan area for added biodiversity, targeting a permanent BL woodland infrastructure along riparian zones (Creebank Burn, Cairnfore Burn, Fardin Burn and R Cree) • Although the block is not part of the priority area for Red squirrel, the species is present throughout; *maintain and enhance* area for Red Squirrel (priority species) through retentions and increased use of alternative conifer species to Sitka Spruce • Adjacent to but not part of the core area for Black Grouse (priority species), the species is using some of the larger clearfell sites; *enhance* habitat for Black Grouse through creation of additional open space and broadleaf areas (woodland fringe and / or Peatland Edge Woodland) • The R Cree catchment is important in water quality terms and also for the Atlantic Salmon; *manage* watercourses and private water supplies within LMP unit to exceed the UKWAS standards, the Water Framework Directive and the Forest and Water guidelines to *maintain and improve* water quality within the R Cree catchment • Loch Moan is important for breeding birds; enhance the aquatic and riparian habitat through the creation of additional BL woodland (Peatland Edge Woodland) and open space • *Manage* SAMs (Cairnderry Chambered Cairn and Sheuchans Chambered Cairn) and all other minor heritage features as per FES guidelines
Good value	• Seek diverse range of income streams • Reduce carbon emissions from business activities	• *Continue* to offer deer leases over plan area

ACHIEVED BY PLAN

HEALTHY

Y / N Committed to high quality silviculture and increasingly using alternatives to clearfell (LISS): limited opportunities for LISS expansion (eastern section of block)

Y / N Committed to dealing with invasive plants that threaten habitats and biodiversity: none currently identified within block

Y / N Help the estate to adapt to climate change and become more resilient to pressure: Ongoing proactive control of P ramorum, alternative species restocking and an operational Deer management plan for block in place

PRODUCTIVE

Y Supply three million cubic metre of sustainable softwood: LMP felling programme is reducing throughout period of plan but will continue to modestly contribute to the overall district programme

Y / N Manage at least one quarter of our expanding broadleaf woodlands to produce quality hardwood and fuelwood: plan has limited potential to contribute towards this figure with increased BL restocking principally for biodiversity and landscape considerations

Y / N Work with partners to find new ways to harness our natural and cultural heritage and develop the estate's potential for tourism: limited benefits with LMP falling outwith core district recreation area

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

Y / 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 Recognise the value of the Estate as a place for research and development of best practice: block has potential for further flood management development in the R Cree catchment

Y / N Committed to more unique special places across the estate and delivering benefits to a more diverse range of Scotland's people: peatland edge woodland and woodland fringe creation will deliver additional habitat diversity

Y Continue to use the Estate as a place for volunteering and gaining employment skills: block has previously been used by volunteers (Cree Valley Community Woodlands)

ACCESSIBLE

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

Y / n Use estate for health benefits and outdoor learning: block has moderate capacity as part of the green mountain bike route

CARED FOR

Y Restore 85% of areas on ASNW to native species: block has limited potential to improve district restoration targets

Y / N Increase BL tree cover from 8% woodland cover to 20%: projected BL cover will have limited potential to contribute towards district's BL tree cover expansion targets through additional restock / natural regeneration

Y Identify particularly vulnerable species for which the NFE is important and take specific conservation action (Black Grouse / Red Squirrel): not a priority area for either of these species 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: SAM sites and local heritage features will be managed accordingly

Y Committed to maintaining best open habitats in good ecological condition: block presents opportunities for open habitat management around Loch Moan and open ground to north

GOOD VALUE

Y / N Seek a range of income sources to underpin the cost of managing the Estate and look for ways to achieve best value in delivery of public benefits: block presents limited opportunities for income from sources other than timber

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

All of the operations in Upper Cree 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.

Upper Cree Land Management Plan will be included in this audit process.

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

Although the Upper Cree LMP impacts on 7 catchments at risk / failing most of the plan area lies within two catchments; Upper Cree 31 and Upper Cree 32 (see detail below). Catchments 92 and 93, previously identified in the White Clauchrie plan, present situations similar to these Upper Cree catchments. Areas of closed canopy forest are also not projected to be less than 30% of the catchments in 15yrs time.

Upper Cree31 catchment at risk / failing catchment

The total area of this water catchment centred on Loch Moan within the Upper Cree LMP area is 1434.5ha. The catchment is principally 1412.7ha* of FES land with an additional area of Loch Moan 21.8ha that is privately owned. See below for base catchment area detail as at 22 February 2016.

Open ground area (FES land)	387.5ha
Plantation area (FES land)	1025.2ha
Total catchment area (FES land)	1412.7ha*
20% of catchment (FES land)	282.6ha
30% of catchment (FES land)	423.9ha

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	**90.1**	6.4%
2017-19	**44.6**	3.2%
2018-20	**64.3**	4.6%

2019-21	**88.5**	6.3%
2020-22	**88.5**	6.3%
2021-23	**30.7**	2.2%
2022-24	**39.3**	2.8%
2023-25	**39.3**	2.8%
2024-26	**39.3**	2.8%
2025-27	**0.0**	0.0%

The area of closed canopy conifer forest (age > 15years) needs to be less than 30% of catchment in 15 years' time i.e. 423.9ha. **The table below confirms that this is not 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 800.2ha 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	1025.2ha
Proposed felled area between 2016 -2030 (15yrs)	225.0ha
Notional plantation area in 15yrs time > 15yrs age	**800.2ha**

Upper Cree32 catchment at risk / failing catchment

The total area of this sizeable water catchment straddling the A714 and covering the southern section of the Upper Cree LMP area is 2664.5ha. Only 1791.5ha* of the catchment comprises FES land with the remainder a mix of agricultural open ground and private conifer plantation. Calculations are based solely on available FES data, see below for base catchment area detail as at 22 February 2016.

Open ground area (FES land)	426.3ha
Plantation area (FES	1365.2ha

land)	
Total catchment area (FES land)	1791.5ha*
20% of catchment (FES land)	532.9ha
30% of catchment (FES land)	799.4ha

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.

5yr Fell period	Currently proposed felled areas (ha)	Proposed fell area as % of catchment area
2017-19	**188.9**	7.1%
2018-20	**92.5**	3.5%
2019-21	**130.2**	4.9%
2020-22	**130.2**	4.9%
2021-23	**83.6**	3.1%
2022-24	**30.7**	1.2%
2023-25	**30.7**	1.2%
2024-26	**9.7**	0.4%
2025-27	**48.0**	1.8%
2026-28	**48.0**	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. 799.4ha. **The table below confirms that this is not 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 967.5ha 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 FES plantation area within catchment	1365.2ha
Proposed felled area between 2017 -2031 (15yrs)	397.7ha
Notional plantation area in 15yrs time > 15yrs age	**967.5ha**