Galloway Forest District

QUEENS WAY

Land Management Plan

Approval date:

Plan Reference No: FDP

Plan Approval Date: 01 July 2018

Plan Expiry Date: 30 June 2028

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:	QUEENS WAY
Nearest town, village or locality:	NEWTON STEWART
OS Grid reference:	NX480710
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

Queens Way Land Management Plan 2018-28

EIA Determination form if required

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v) Queens Way Land Management Plan Brief
vi) The UK Forestry Standard, Forestry Commission Guidelines and the UK Woodland Assurance Scheme (UKWAS)

Summary of Proposals:

The main management objectives are sustainable timber production sympathetic to the significant demands of Biodiversity (SSSI and Native Woodland), Landscape and Access (external views and recreation facilities) and Environmental Quality (water quality issues).

1.0 Introduction:

1.1 Setting and context

Part of Galloway Forest District that is based in Newton Stewart, the Queens Way is a medium scale plantation totalling some 3331.8ha that is located around 5.0km north east of Newton Stewart.

The block is bounded to the north, east and west by other FES plantation forestry (Kirroughtree, Lamachan, Clatteringshaws and Round Fell land management plans) and to the south by open hill farm land and Cairnsmore of Fleet SSSI and NNR.

The block is highly visible in the near and mid distance view from the A712 public road or “Queens Way” that runs through the plan area centre from Newton Stewart to New Galloway, hence the block name. The plan area also contains significant tracts of open hill ground to the north and south that includes the tops of Drigmorn Hill, Fell of Talnotry and Craignelder.

An integral part of the Galloway Forest Park the block also lies within the larger Western Southern Uplands Environmentally Sensitive Area (ESA).

This plan is a revised submission of an earlier forest design plan approved in 2002.

1.2 History of plan

Although land acquisition initially began during the 1930s and continued until the late 1970s, the vast majority of the plan area was acquired in 1950 (see table below).

Progressive felling over the years has accounted for much of the early plantings.

Acquisition date	**Deed No**	**Title**	**Seller**
Apr 1933	10944	Dallash	Duke of Bedford
Apr 1934	10946	Talnotry	Maj.Gen. JHK Stewart
Jan 1950	11150	Part of Galloway Estate	Earl of Galloway
Jun 1962	10970	Corwar Bargaly Estate (pt)	Mr J Cartner
Feb 1977	10977	Loch Dee Estate Craigdews	Trustees of Mr J G Garvie

		Est.	

Whilst the Queens Way block actively links the Kirroughtree and Round Fell blocks, the Land Management Plan area is nevertheless a readily identified self-contained LMP unit for both the Palnure Burn catchment and the scenic value of the A712 thoroughfare.
With approval having expired in 2012 and single year extensions being the order of the day since then, a plan revision is long overdue.

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
Maintain commercial softwood timber production in forest core and diversify the age structure and species composition of the block	Clearfelling has been either in accordance with the initial 2002 approved plan (currently under FCS approved extension), sanitation felling of P ramorum infected Larch or by subsequent FCS approved amendment. Significant clearfelling and restock (generally to the south of the block) with mainly commercial conifer species has taken place with a minimum 7yr age difference (2m height difference) maintained between all coupes. Age structure and species diversity work will continue as the LMP area contributes to the district programme during this 10yr plan period.
Enhance riparian zones along priority watercourses and plantation margins to improve conservation value and the visual and biological diversity of the plan area.	Clearfelling has resulted in significant riparian zone enhancement, particularly along sections of the Corse Burn / Tonderghie Burn, Black Dubs and the Grey Mares Tail Burn, through BL restock and increased open space areas. Operations identified for this 10yr plan will continue to enhance riparian zones.
Manage the visible corridor and improve visual diversity along A712 Queens Way public road through use of Low Impact Harvesting Systems.	Planned felling and large areas of the sanitation felling for *P ramorum* infestation of Larch has seriously impacted on the initially proposed Low Impact Silviculture corridor along the A712. However on a positive note this has frequently been to great landscape benefit identifying potential mature pine retentions and exposing attractive views unseen for many years and also provides opportunity for accelerated species diversity and view maintenance.
Improve the Recreational, Archaeological and Historic amenity value of the area.	Existing facilities are sustainable and have been enhanced by some of the sanitation felling. Recent archaeological exposures will also contribute to greater diversity within the block.

Improve water quality over the site (Forest & Water guidelines)	Removal of productive conifer replaced with woodland fringe to generally below 300m should have a positive impact on local water systems

Whilst these 2002 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**
Productive; Promote and optimise sustainable timber supply through revised felling / thinning plans (modified to accommodate *P ramorum* infestation) and restocking plans Implement modest scale road building / road maintenance programme required to service proposed operations coupes Increase broadleaf woodland creation particularly native species for biodiversity Create a more diverse age structure for the forest.	high
Healthy; Protect water, soil and air by following UKWAS standards and Forest and Water guidelines to improve water quality within the wider R Cree catchment to improve feeding and spawning conditions for fish and other species Increase area of mature woodland and species diversity for habitat enhancement (consider impact of *P Ramorum* within block and the future design of a Larch free forest) Expand area covered by and develop Low Impact Silviculture sytems in block	high
Treasured; Maintain favourable status of Cairnbaber and Talnotry Mine SSSIs through agreed SSSI management plans Improve / enhance key visitor zone sites through species diversity and creation of additional open space	high
Cared for; Block is visually prominent; contribute to Scotland's landscape through the management of views both within(from A712 and Murray's Monument) and outwith the block (to Cairnsmore) internally through revised species choice, open space creation and externally through appropriate coupe shape in the larger scale landscape Restore Dallash PAWS woodland sites and establish new native BL woodland as part of large scale habitat networks throughout the plan area	medium

Manage SAMs as per management plans and other heritage features according to FES Archaeological guidelines	
Accessible; Improve access and provide an enjoyable woodland experience through localised intensive management regimes, improved signage and core facilities (Murray's Monument / Dunkitterick cottage / Old Edinburgh Road / Goat Park) and a maintained road network	medium
Good Value; Maintain tourism based partnership activity in block.	medium

3.0 Background Description

3.1 Physical site factors

3.1.1 Geology Soils and landform

The underlying geology of the area is a mixture of sedimentary and igneous rocks with metamorphic rock at the interface. To the north lies the sedimentary greywackes and shales of the Ordivician and Silurian period whilst to the south there is the intrusive granite of the Cairnsmore of Fleet range. A metamorphic aureole is formed where the two merge.

All around there is evidence of glacial deposition and erosion extensively modifying the area to produce an undulating landscape of moraines and drumlins with distant hill views that create a medium scale landscape.

Altitude ranges from 30m in the valley of the Palnure Burn where it leaves the plan area up to 657m at the summit of Millfore.

The combined result of geology and glaciation has resulted in some fairly poor soil types with impeded drainage. The main soil types are gleys, peaty gleys and flushed deep peats with an assortment of brown earth and podzol type soils in the lower valley slopes where some minimal areas of arable land are found.

The former land use was rough hill grazing and the James Hutton Institute "Land Capability for Forestry" classification for the bulk of the area is F5 and F6 (land with limited and very limited flexibility for growth and management of tree crops).

The poor site types and altitude result in an area with restricted thinning opportunities, limited species choice and the potential for crop stability and windthrow issues.

3.1.2 Water

There are two significant open water bodies, the Black Loch and Loch of the Lowes, and numerous watercourses within the plan area. The most prominent watercourse is the Palnure Burn that runs north east south west through the area and its associated system that feeds the lower R Cree catchment.

Whilst most of the watercourses have Brown trout, the Palnure is also important for Atlantic Salmon and critically Fresh Water Pearl Mussel. Both the Palnure and the Pulbae / Penkiln Burn systems are considered to be important for water quality and they will benefit from proposed increases to the width of riparian zone to provide long term protection against disturbance from future forestry operations and loss of light from conifer canopy closure.

Overall management of water catchment areas is a key environmental issue and we aim to comply with best practice and minimise sediment release

from any forest operations with particular regard to areas associated with the Lead, Nickel and Arsenic heavy metal mines in the block.
In this sensitive acidified catchment, there are only a few sections of the plan area that have forest canopy cover over 300m, to the north and south east at the foothills of Millfore and Cairnsmore respectively. Generally riparian buffer zones in this catchment should be significantly enhanced and with our planned restructuring and reduction in future conifer restocking at elevation this figure is likely to drop further.
The Water Framework Directive identifies morphological alterations and abstraction for water collection, purification and distribution and diffuse source pollution from forestry as pressures.
FES has considered flood risk of peak flows at the exit of the site and also further downstream. Part of the plan area lies within a Potentially Vulnerable Area (PVA), already identified by SEPA, that includes the SEPA Objective Target Area (OTA) Newton Stewart 14/12 where there are known periodic flooding instances. No Natural Flood Management (NFM) works have been identified as actions to manage flooding in this PVA. 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), there is however no additional planting areas planned for this LMP and our well designed and significant riparian buffers will also minimise this effect. 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.
There are private dwellings within or close to the block; details of all known private water supplies are held in a District GIS layer (see constraints map). All work undertaken will comply with the Forests and Water Guidelines (Fifth Edition).

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 generally above average for the district ranging from 1600 – 2000 and falls mainly during the winter months, October to February. Much of the block is exposed to the west to the prevailing Westerly winds with damaging gales likely during the early part of the year. Winters can be severe and a low cloud base is common.
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

The following designated sites lie adjacent to or within the plan area:
Cairnsmore of Fleet SSSI
Talnotry Mines SSSI
Cairnbaber SSSI
SSSI management plans agreed by Scottish Natural Heritage (SNH) are in place for all of the sites on the NFE
Cairnsmore of Fleet SSSI lies to the south of the plan area and is designated for its natural features; blanket bog and upland assemblage. The current condition of the blanket bog is unfavourable. A key factor relating to this is water management and its impact on water table height, critical for active growth of bog moss (*Sphagnum spp*.). Forest operations site drainage therefore has the potential to significantly impact on the hydrology of the site.
Talnotry Mines SSSI is a site of geological interest encompassing remains of a former nickel mine and its spoil dumps currently in favourable condition. Situated centrally in the plan area and under conifer plantation, the progressive removal of trees and regenerating scrub to entirely expose the site formed the main part of the management plan until felling to remove *P ramorum* infected larch recently took place. The site has been delineated and is in the process of being restocked after discussion and agreement with SNH. The Talnotry mine itself has been cleared of all conifer regeneration.
In a mosaic of open heather moorland, the cliffs of Cairnbaber SSSI lie on the open ground to the extreme north of the LMP area around 100m from the nearest plantation. Notified for the calcareous geology influence on upland habitats and assemblages, the current condition of the site is identified as favourable. The site is out with the Drigmorn agricultural tenancy area but may still be lightly grazed by feral goats and deer both of which are subject to ongoing control.
The plan area also includes Wood of Dallash, a moderate sized site that appears in the NCC *Inventory of Long-established Woodland of semi natural origin* (class 2A) and in the more recent Scottish Natural Heritage directory as *Ancient Woodland*. Whilst all PAWS areas within the district will eventually be restored to native woodland, despite its relative isolation, this is a high priority site for restoration to develop links to other strips of Ancient Semi Natural Wooded areas along the Palnure valley and on into the more extensive Cree Valley Oakwoods network.
There are several Black Grouse hot spots in the Queens Way plan area and, being immediately adjacent to the Lamachan LMP area, is considered part of a strategically important location for Dumfries and Galloway Black Grouse populations and is part of the core area for the species within the district. Lek sites, both current and historical are on record for the upper margins of both the northern and southern boundaries of the plan area. Enhancing the wetter brood rearing areas in the valley floor with scattered broadleaf

planting, increasing the amount of open ground present in the block, creating and strengthening habitat linkages between valley floor and the moorland edge and establishing stands of native broadleaf species such as Birch, Hawthorn, Willow and Rowan for winter browsing adjacent to the woodland edge sites will directly benefit Black Grouse within the LMP area.
There is a presumption in the district against deer fencing with our current deer management carried out by FES staff and contractors. If however deer fencing is subsequently proposed for erection it will be clearly marked for visibility to minimise bird fence collisions (see example at Goat park).
Water quality is a significant environmental factor in the plan area with the greater R Cree catchment identified as being of local importance for breeding salmonid populations and Fresh Water Pearl Mussel. Issues with forest encroachment onto watercourses has already been actioned through conifer clear fell to date, work that will benefit other aquatic species such as Brown trout and European Eel (UKBAP species) and will be further supplemented by our planned creation of additional aquatic and riparian zones improvements, generally in excess of basic guidelines identified in Forest and Water guidelines 5th edition.

3.2.1 FCS Biodiversity Programme key species

A number of upland LBAP priority bird species are associated with the open ground within and the SSSI ground surrounding the plan area. Wide ranging raptors such as Peregrine and Golden Eagle will particularly benefit from the planned creation of open ground corridors linking the lower elevation valley sites to the open ground hill-tops.
Red Squirrel (UKBAP priority species) is present throughout the block at low densities. As the block has, and links externally to, a presence of large seeded broadleaf along the Palnure valley it will inevitably be accessible to Grey squirrel and despite its proximity to it is not considered to be part of our “Red Squirrel Stronghold site” designated by the Scottish Government where Red Squirrel can be helped to survive. Our continued commitment however to Long Term Retentions and conifer plantation with increased areas of Scots Pine, Norway Spruce (currently only around 6.0% of the plantation area) and small seeded Broadleaf restock will ensure that the block remains advantageous towards Red squirrel.

3.2.2 Scottish Biodiversity List Species

Pine Martens favour similar forest habitats as Red Squirrels and have been recorded as present and breeding in areas adjacent to the LMP. Recent increases in sightings and scat observations along with more formal research suggest that the Queens Way LMP may support higher than average numbers of this species within South Scotland. Emerging research is also indicating that Pine Martens preferentially predate on grey squirrels

and the presence of Pine Martens may be an important factor for red squirrel conservation in the long term.

Other upland local biodiversity action plan priority species such as Merlin and Peregrine are associated with the open ground within the design plan and should also benefit from woodland fringe creation / expansion. The Glen of the Bar area has been used in the past by Nightjar. Although there are no recent records, the inclusion of smaller coupes with successional felling dates focussed on this area should provide foraging and nesting habitat opportunities for any future population recovery / expansion.

Otters have large territorial areas. Consequently, wide areas of adjacent and connecting land to water bodies and existing riparian habitats such as the Green Burn and Palnure Burn are regularly used by them for breeding, foraging and movement between river catchment systems. There are recent known records for the Palnure Burn. Positive riparian zone improvements, often exceeding basic guidelines proposals, such as an increase in small seeded BL cover coupled with our aim to keep sections of stream banks permanently vegetated and persisting throughout subsequent rotations will increase both the availability and connectivity of suitable breeding and feeding habitat for Otter and other species. Environment staff in Galloway FD now creates brash piles along water courses, specifically for otters. Built by a contractor, who was given an outline of what was required, these are being used by otters and they provide excellent cover for rearing, resting and breeding. The main benefit for FES is that providing these features greatly reduces the likelihood that otters will create resting places or breeding sites within commercial forest stands. The brash piles are likely to be used by a wide range of animal species and provide valuable deadwood habitat.

Little detail is known about Bat populations and their use of plantation forest however local research has taken place in the nearby Clatteringshaws plan area suggesting that the general area is home to significant populations of a variety of Bat species. Records of Natterers bats exist for the vicinity of Murrays Monument. A series of bat boxes in the area and the maintenance of a matrix of woodland cover and open space should benefit all Bat species.

All proposed operations sites will be surveyed prior to work taking place to identify the presence of all of the above species that may require specific management treatments i.e. locus of resting or breeding places and avoiding breeding seasons.

3.3 The existing forest

3.3.1 Age structure, species and yield class

Species / Yield class

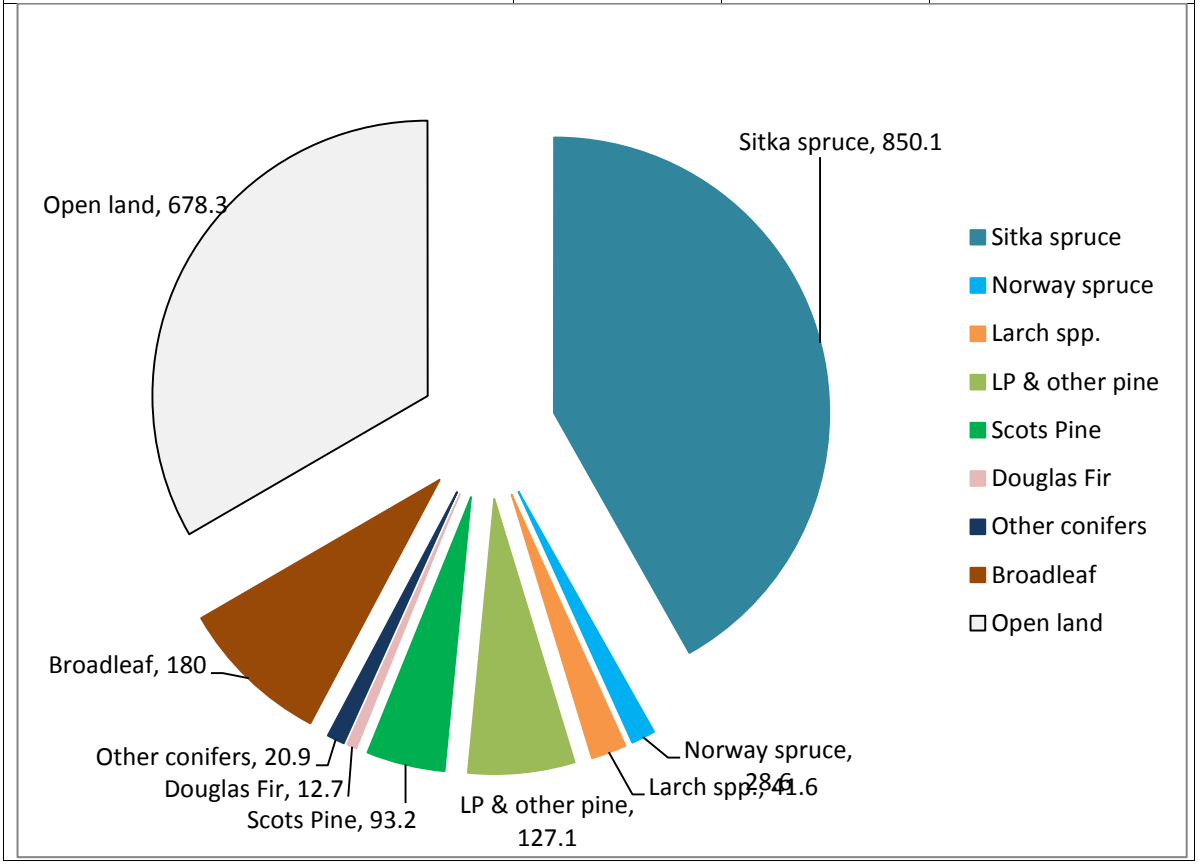
As can be seen on the Plantation / permanent external open ground map, plantation area is deemed to account for 2032.5h, around 61% of the total LMP unit.
Open space is therefore already a key element of diversity throughout this plan with large swathes of the land management plan unit comprising external wild open hilltop and agricultural grazing land along with smaller areas of internal open space, recreation areas and transient clear fell sites all present (breakdown of open ground shown in table below).

Open ground type	Area (ha)
Open hilltop	805.4
Agricultural land	861.6
Recreation (goat park, car park, picnic areas & other	63.7
Felled area	228.7
Open water	9.1
Streamsides Quarries	3.6 5.5
	1977.6

When plantation initially planted above the 300m contour is felled and converted either to planned woodland fringe or not restocked at all and left as open space there may be a modest overall rise in the area of open space within the plan area. A more detailed treatment of open areas is covered under section 5.2 Future Habitats and Species.
Current species diversity within the plan unit is good and already meets the UK Forestry Standard (UKFS). Although pure Sitka Spruce and Sitka Spruce / Pine mixtures dominate on the poorer site types, they only account for around 48% of the plantation area. The minor conifer species, generally located to the more fertile sites, of Norway spruce, Scots Pine, Larch and other conifers (10%) and broadleaf (around 9%) account for the remainder of the planted area.
Only around 26.1ha of the total broadleaf area within the plan is identified as Native Woodland under the Native Woodland Survey Scotland project. Modest improvements to the species diversity of the plan area are anticipated over the period of the plan.

Current Species 2018	Ha	Area %	Plantation %
Sitka spruce	850.1	25.5	**41.8**
Norway spruce	28.6	0.9	**1.4**
Larch spp.	41.6	1.2	**2.0**
LP (Other Pine)	127.1	3.8	**6.3**
Scots Pine	93.2	2.8	**4.6**
Douglas Fir	12.7	0.4	**0.6**

Other conifers	20.9	0.6	**1.0**
Broadleaf	180.0	5.4	**8.9**
Open land integral to plan (includes internal open space, open water, felled areas etc.)	678.3	20.4	**33.4**
Sub total	**2032.5**	**61.0**	**100.0**
External open land	1299.3	39.0	**-**
Total	**3331.8**	**100.0**	**100.0**



Yield class is variable across the block with spruce crops ranging from YC22 in the fertile sites down to YC 4 poorer crops on deeper peat areas and at elevation. Options available include restocking with alternative conifer species better suited to the site such as Scots Pine or converting the poorer spruce crops to mountain woodland, peatland edge woodland (PEW) or permanent open space.

Age Structure

Restructuring began during previous plan periods so there is already a measure of spatial diversity within the LMP area with all stages of crop growth now represented. The plantation area is around 37% crop under 20 years, 30% over 20yrs and 33% permanent non-plantation open ground. Our proposed revised felling programme, with 8-10yr age gaps or a 2m height differential maintained between felling coupes (and possibly even wider gaps immediately adjacent to Black Grouse areas) will continue to

improve the spatial appearance and structure of the block over the plan period. Where possible extending the rotation length of some of the first rotation crops (mainly Scot Pine and Norway spruce although all species will be considered) and the conversion of some second rotation crops from clearfell to Low Impact Silvicultural System (LISS) management should lead to even longer term improvements in structure and bequeath a more even spread of age classes.

Age of trees	**Growth stage**	**Percentage of class at given year**	
		2018	**2028**
0 - 10	Establishment	21.5%	17.6%
11 - 20	Thicket	15.3%	21.5%
21 - 40	Pole stage	7.2%	15.3%
41 - 60	Maturing high forest	15.5%	16.4%
61 +	Old high forest	7.1%	8.0%
	Open space / felled areas	33.4%	21.2%
Total		**100.0%**	**100.0%**

3.3.2 Access

Access to the unit for timber haulage is generally good with a relatively extensive forest road network currently in place. The section of forest road linking the Risk quarry to the A712 also acts as a main haul route for the Lamachan LMP and other adjacent private sector plantation to the north.
A modest length of new road construction to facilitate access to some virgin first rotation crops and regular road upgrade / maintenance of the existing forest road network will be required during the period of this plan approval.
All of the planned roads programme for the block is currently scheduled for construction during the plan approval period (see table below).

Period of Proposed Construction	Proposed length new road construction
2018 to 2022	0m
2023 to 2027	950m
Beyond 2027	0m

Stone material for forest road upgrade and new construction to service the planned timber harvest will be sourced from the two substantial active quarries in the plan area, the Risk quarry and slightly smaller Corwar quarry. To avoid diffuse pollution arising from rainfall derived leaching, appropriate soakaways are in place.
Both of these quarries are identified in the suite of DP maps along with proposed / planned forest roads for the plan period and beyond.

District policy is to target Irish pipe bridges for removal as they are known barriers to fish migration however there are no such bridges identified within the Queens Way LMP area.

3.3.3 LISS potential

Most of the plan area has low to moderate DAMS scores (Detailed Aspect Method of Scoring) of 17 or less; generally only the open ground leading up towards Drigmorn Hill in the north and Craignelder and Cairnsmore to the south show DAMS scores greater than 17. Despite the opportunities available for thinning and LISS management (Low Impact Silvicultural System) little actual thinning took place across the block and what did occur was restricted solely to the southern section around the Loch of the Lowes.
Over the last 10-15 years programmed and approved clearfelling and the more recent additional sanitation clearfelling for *P ramorum* has created / will continue to create significant areas of second rotation young plantation that should provide opportunities for the future expansion of LISS. LISS is defined as “Use of silvicultural system whereby the forest canopy is maintained at one or more levels without clearfell of areas over 2.0ha”.

3.4 Landscape and land use

3.4.1 Landscape character and value

As previously stated much of the block is highly visible in the near and mid distance view from the A712 public road or “Queens Way” that runs from Newton Stewart to New Galloway through the plan area centre. The rest of the block is less visible from the council road network but can be viewed internally from a variety of vantage points afforded by the forest road network. Restructuring had begun during the previous approved iterations of the Queens Way plan however extensive sanitation felling of larch for *P ramorum* has dramatically impacted on many of the highly visible coupes along the A712 Queens Way opening up views unseen for many years.
The 1994 Dumfries and Galloway landscape assessment categorises the area as Type 18a “Foothills with forest” where typically there is a “dark green blanket of forest covering undulating foothills”.
The main issues arising from the assessment over this character type is

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

In developing this plan design the following key landscape specifics have been addressed:
"Improved forest design should seek to reflect topographic diversity in open space patterns, species mix and coupe pattern"; whilst the relatively large scale relief allows for some larger scale felling coupe design in the plan hinterlands, the main landscape concern remains the use of interconnected patterns of open space linking open hill down into the lower basin areas and the use of alternative species with a greater future reliance on broadleaf and minor conifer species such as Scots Pine and Douglas Fir for restocking.
"Heather and semi natural woodland management in unforested areas should be supported"; there are areas of conifer plantation on blanket bog that is marginal for economic woodland where targeted reduction of the plantation and the creation of native peatland edge woodland is planned. A variety of habitat networks using existing scattered semi natural woodland will be created linking the lower valleys to the slopes and hill summits.
"Forest restructuring should seek to expose and preserve cultural features" and "constituent features of agricultural areas and hill farming should be maintained as an essential feature of this forest dominated landscape"; the area under agricultural land use will not be diminished and all known and discovered heritage features, such as the mines spoil heaps and workings around Dallash, will be buffered in areas of open space.

3.4.2 Neighbouring landuse

The Queens Way block adjoins other FES plantation to the north, east and west. It is only to the south that the plan area mainly bounds with open hill but also to some smaller areas of private plantation forest land.

3.5 Social factors

3.5.1 Visitor Zone Recreation

An important arterial tourist route, the A712 Queens Way and its numerous associated facilities are considered core to the district's Recreation plan and may offer development opportunities for additional or enhanced access. Accordingly much of the block falls into the local FES interactive and passive visitor zones with the trunk road corridor arguably in the Welcome Zone description (see features map). Recreational demands within these zones will impact greatly on our management choice with standard regimes heavily modified to improve the internal and external views associated with the routes and facilities.
The principal facilities are listed in the table below.

Facility	Concept / Opportunity	Constraint	Plan Development

Murray's monument	Enhance backdrop to monument and associated car park location (Grey Mare's Tail) and create then maintain view link to birthplace farmhouse	Small scale car park Recent sanitation felling Existing plantation blocking view	Slowly regenerate open areas between A712 and monument site with broadleaf Fill in surrounds with SP to provide long term backdrop Improve path access and enhance monument base area to provide a better and safer experience
Grey mare's tail car park	Enhance car park surrounds	Small scale car park	Ensure views to the water fall are unobstructed Develop BL tree cover for visual diversity to south side of access path
Murray's birthplace	Enhance birthplace surrounds and create then maintain link view to monument	Plantation blocking view	Recent clearfell has now opened the site up to create the direct view from farmhouse to monument BL restock around immediate vicinity of farmhouse to isolate site from future operations
Glen of the Bar viewpoint	Maintain long distance views to coast	Woodland growth blocking view	Create additional open space and restock with slower growing species to maintain view as long as possible. Restocking along top of valley side will enhance corridor and window effect to Solway coast
Talnotry wild goat park	Maintain in mid term Plans to improve the trail from the quorum may extend in to the goat park.	Animal welfare expenditure	Maintain as an area of open space for Wild Goat recreation experience (see current management plan) Possible additional restock when revised trail alignment takes place for shelter / landscaping

Talnotry event open space	Retain as managed open parkland	Palnure Burn flood zone requires drains management	
Quorum and Eye artworks	Maintain in open and prominent view	Vandalism Operations damage	Maintain the excellent open sites with good access where the artworks are currently located
Loch o the Lowes, Black Loch and Palnure Burn permitted fishing	Improve surrounds and access to aquatic sites	Timings of operations	Increased BL restock and open areas around Loch sites Maintain areas for fishing clear for casting Improve access areas to loch
7 Stanes cycle routes	Enhance plantation forest visible from route	Operations and associated traffic	Continue to manage vegetation and key features Enhance surrounds to future route improvements

3.5.2 Community

Lying between New Galloway and Newton Stewart there are no real local communities associated with the plan area however there are several residential properties within and peripheral to the block (Auchinleck, Craigdews, Dallash, Corwar and Craigdistant).

Local Community Councils were involved in our initial scoping exercise and 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 Monument Management Plans and Condition Surveys respectively. FCS also maintains a programme of detailed measured survey of our most significant sites in order to enhance the national historic environment record and inform conservation management.

Whilst there are no Scheduled Monuments or Category A listed buildings present in the plan area, other archaeological heritage features, settlement remains and sheep pens are present and listed in Appendix III.

The Queens Way block also contains a number of historic metal mines. The mines, ranging in size and complexity down to single isolated shafts, were worked between the mid eighteenth century and the 1920s. Limited archaeological research has been carried out on the mines with the FES database derived from the National Monuments Record and the local authority's Historic Environment Record. However, a full "Historic Mines" survey was carried out in 2013 by local historian John Picken. This survey documented 15 mines shown on local records and added considerably to our knowledge of historic mine sites, their extent and condition. The only mine which is designated is the Talnotry nickel mine, designated as an SSSI. All of the mines however are an important part of the Galloway Forest Park's industrial heritage and should be conserved.

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) or subsequent maps updated following more detailed field survey.

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

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

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

establishment and management operations - and will ensure the continued comprehensive protection of the known archaeological resource.

3.5.4 Forest Renewables and Utilities

At this time there are no renewable developments planned for Queens Way LMP unit however the possibility remains that the area could be subject to future windfarm applications.

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

3.6 Statutory requirements and key external policies

The legal status of the land is purchased.

The Land Management Plan has been prepared to ensure that the Planning and Operations functions will comply with the following legislation and policies:

Biodiversity

- Conservation (Natural Habitats) Amendment (Scotland) Regulations 2007
- Nature Conservation (Scotland) Act 2004
- Wildlife and Natural Environment (Scotland) Act 2011
- Land Reform (Scotland) Act 2003
- Water Environment and Water Services (Scotland) Act 2003
- Water Environment (Controlled Activities) (Scotland) Regulations 2011
- UK Woodland Assurance Standard 2018
- UK Forestry Standard 2017

Climate Change

- United Nations Framework Convention on Climate Change
- Kyoto Protocol
- EC Directive 2003/87/EC
- Climate Change (Scotland) Act 2009

Historic Environment

- Ancient Monuments and Archaeological Areas Act 1979
- Treasure Trove Scotland

- UNESCO World Heritage Convention
- Planning (Listed Buildings and Conservation Areas)(Scotland) Act 1997
- European Convention on the Protection of the Archaeological Heritage Valetta 1992

Forests & People

- Control of Substances Hazardous to Health Regulations 2002
- Equality Act 2012
- Employers Liability (Compulsory Insurance) Act 1969
- Health and Safety at Work Act 1974
- Management of Health and Safety at Work Regulations 1999
- Occupier's Liability (Scotland) Act 1960
- Provision and Use of Work Equipment Regulations 1998
- Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995
- The Highways Act 1980

Soils

- Control of Pesticides Regulations 1986
- Waste Management Licensing Regulations 1994
- European Soil Charter
- Forests and Soil

4.0 Analysis and Concept

4.1 Analysis of constraints and opportunities

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

Factor	Opportunity	Constraint	Concept Development
Timber	Provide planned sustainable timber supply	Landscaping along A712 council road Create / enhance SSSI and Native Woodland habitats	Maintain conifer restock programme whilst increasing BL area in subsequent rotations Remove flow peaks from timber production
Biodiversity	Restore PAWS sites (Wood of Dallash)	Presence of existing valuable mature conifer PAWS remnants unable to provide sufficient natural regeneration through lack of reliable seed source	Increase overall BL area within Palnure Burn valley Enhance existing and create additional BL habitat networks
Biodiversity	Retain / create favourable habitat for Black Grouse	Low levels of species diversity Low levels of Larch crop (*P ramorom* felling)	Develop woodland fringe habitat adjacent to Lek sites (create broadleaf areas as food sources for Black Grouse
Biodiversity	Retain / enhance Red Squirrel habitat	Potential Grey squirrel incursion from neighbouring riparian BL Use of large seeded BL species Lack of mature crop	Increase crop area under NS & SP and small seeded BL to benefit food source for species and for additional block diversity Extend rotation ages and increase plantation area managed under LISS Where possible identify mature SP or NS for LTR
Biodiversity	Improve riparian corridors.	Potential for natural regeneration of conifers in opened up areas.	Create wide riparian corridors (in excess of F&W guideline requirements) during felling and restock operations. Control

			excessive regeneration of SS over extended timescale whilst retaining native broadleaves.
Environmental Quality	Increase area managed under Low Impact Silvicultural Systems(LISS)	Site type and access constraints Lack of appropriate mature conifer crop (*P ramorum* felling)	Extend rotation lengths Increase area managed under alternative to clearfell systems
Environmental Quality	Enhance areas around principal watercourse: Palnure Burn and generally enhance water quality within R Cree water catchment	Presence of old metal mines Moderate levels of species diversity Conifer monocultures planted close to watercourses	Avoid mineworkings vicinity for future operations to minimise possible watercourse contamination Significantly increase open space and species diversity through use of minor conifer (SP & NS) and BL in wider riparian zones within R Cree catchment Increase plantation area managed under LISS
Environmental Quality	Enhance views into block from A712 Queens Way	Moderate levels of species diversity Notional extended period of landscape change (timescale accelerated through tree removal for *P ramorum*)	Claustrophobic feeling to road sections now removed Additional transient and permanent views from council road created Frame features in open space / improve their settings Increase species diversity through use of minor conifer (SP & NS) and BL
Environmental Quality	Enhance areas around recreation and minor heritage features	Operations activity within and around feature	Maintain linked views between features Frame features in open space / improve their settings
Access and Health	Enhance access to enable better and enjoyable visits	Timber production	Increase open space and species diversity Enhance formal recreation through

			cycle/walking trail & facility maintenance and upgrade Provide bespoke treatments within Recreation Visitor zones

4.2 Concept development

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

County road recreation / landscape corridor

A significant section of the block is highly visible from the A712 Queens Way Newton Stewart to New Galloway county road (this zone would also include the Old Edinburgh Road), contains a high density of recreation facilities and residential properties. Restructuring during the last plan period significantly altered views from the road into and through the block although a feeling persisted that still closed in almost claustrophobic sections of the route remained. Sanitation felling of larch for *P ramorum* infection has almost entirely removed these perceptions with the corridor now presenting a series of fairly attractive external views. Further planned use of long term retentions, increased broadleaf restock and the further development of LISS areas should maintain and develop a "Gateway to the Galloway Forest Park" concept and visual experience for passing visitors.

Commercial confer zone / Core timber production

A significant area of well roaded upland spruce conifer plantation will be managed as commercial crop to meet the district programme commitment (albeit compromised by the premature P ramorum felling of Larch). Restructuring has already impacted on structural diversity in the block however opportunities for increasing species diversity, extending rotation length, and generally reducing coupe size will continue to be slightly constrained by site type.

Grazing lease / open ground hilltops zone

Drigmorn Hill, Rig of Auchinleck and Munwhul, prominent features of a significant amount of permanent open space to the north of the plan area are currently subject to a grazing lease and provide a managed land use buffer between wild open high ground and plantation forest. Large scale coupes may be utilised on these upper margins to address landscape issues. One of the objectives for this plan is to maintain permanent open space and create additional woodland fringe areas that will connect open hilltops to the lower lying Palnure Burn valley areas.

Designated SSSI zones

There are three SSSIs associated with the design plan unit; Cairnbaber on the open hill to the north, Talnotry Mines centrally within the plantation and Cairnsmore of Fleet on the edge of the plan area to the south east. These areas will be managed as per agreed management plans with potential for habitat enhancement through conifer removal and the maintenance / creation of additional open space or increased species diversity that will contribute towards the maintenance of their favourable status.

Powerline corridor

Though not particularly visible, the powerline corridor is a relatively angular feature that dominates the northern elevated sections of the LMP landscape. Our planned use of open space and broadleaf restock around its boundary edges will ameliorate / soften its appearance in the landscape and also develop the route as a habitat network link through the block.

Native Woodland zone

There are opportunities to restore a small area of native woodland (Wood of Dallash) and create new linkages from its southern extremities down the Palnure burn valley to the nearby Bargaly Glen native woodland site.

Red Squirrel site

The Queens Way LMP links to the Red Squirrel Stronghold site to the east and Red Squirrel (UKBAP priority species) is present throughout the block at moderate to low densities. Extended rotation lengths in second rotation conifer crops, additional LISS areas, increases in species diversity and the presence of Pine Martens should provide habitat and conditions that are beneficial for the species in the long term.

Goat Park / open ground hilltop

The Goat Park lies to the eastern edge of the plan area immediately adjacent to the A712. There are no plans to create new woodland or revise the current land use status

5.0 Land Management Proposals

5.1 Forest stand management

The Queens Way 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 table summarises the average annual felling and thinning volumes (m3ob) expected for the next 18years (plan period and beyond):

Fell period	Thinning / LISS	Clearfell	Total
2019-2021	3325	19638	22963
2022-2026	2377	13119	15496
2027-2031	2407	6780	9187
2032-2036	2235	1896	4131

Although there is a desire to provide a regular and sustainable supply of timber, there is a significant drop in programme volume in the near future due in part to our recent premature sanitation felling.

5.1.1 Clear felling

Most of the plan area will be managed under a clearfell management type mainly using conventional harvester and forwarder working although some steeper sections will require cable crane work. There is scope for a targeted expansion of the area managed under Low Impact Silvicultural Systems (LISS) particularly targeting alternative species areas and second rotation crops.

19 coupes are scheduled for clearfell during the 10yr period of the plan (350.5ha and around 17% of the plantation area) and they contribute significantly to the district programme (see Appendix IV).

5yr Fell period	Area felled (ha)	Area felled as % of total plantation area
2019-2023	**161.6**	**8.0**
2020-2024	**60.3**	**3.0**
2021-2025	**61.8**	**3.0**
2022-2026	**132.9**	**6.5**
2023-2027	**128.3**	**6.3**
2024-2028	**123.8**	**6.1**

2025-2029	**113.2**	**5.6**
2026-2030	**138.4**	**6.8**
2027-2031	**78.7**	**3.9**
2028-2032	**63.0**	**3.1**

Despite a peak figure within the next 5yr period 2019-2023, the following table confirms that, as per paragraph 3.4.2 in the UK Woodland Assurance Standard (version 4), no more than 25% of the plan area is due to be felled in any five year period within this plan approval period. Because of the large area of open hill area associated with the plan, we have used plantation area and the percentage is still not exceeded.

It is of course important to manage forestry activities in acid sensitive water catchments. Although the LMP does not sit within either an "at risk" or "failing" catchment in extensively (>50%) forested catchments like those present in the Queens Way plan area, measures to reduce the impact of forestry on catchment water quality such as the conversion of conifer stands to broadleaf would always be considered. For conservation and biodiversity considerations efforts have been made

- to extend the felling period between coupes to over 7yrs
- to marry coupe shape better to landform and
- where possible to increase the number of coupes where alternatives to clear fell systems may be appropriate

All proposed operations sites will be surveyed prior to work taking place to identify the presence of species such as Red Squirrel, Otter, Badger and Pine Marten that may require specific management treatments i.e. locating dreys or avoiding breeding seasons.

5.1.2 Thinning

As previously stated only small amounts of thinning previously took place. With much of the plantation now either felled, at pole stage or very mature high forest there is little opportunity for further thinning of current rotation crops.

Second rotation crops in the lower lying, more sheltered areas nearer to the road corridor offer potential to expand the thinnable area of the unit and potentially providing an increase in woodland area that can be managed under less intensive management systems than clearfell.

Carried out on a 7-10yr cycle in accordance with our local policy, crops will generally be thinned to realise the benefits of improved timber quality but to also meet amenity, biodiversity and landscape objectives.

5.1.3 LISS, Long-term Retention and Natural Reserve

Currently there is only a single coupe identified for management under Low Impact Silvicultural Systems (LISS). 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, additional areas of steep ground and second rotation crops on better site types will be targeted for LISS development. On reaching an age when thinning is likely a decision will be taken on whether or not to convert the clearfell coupe to a LISS coupe.

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.

To accommodate an increase in alternative conifer restock such as Scots Pine, around 12% of the plan area has now been identified as Natural Reserve, Minimum Intervention or Long Term Retention.

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

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. As there are sufficient selected Natural Reserves of higher biodiversity value throughout the district, in this block broadleaf areas and isolated conifer blocks provide a focus for Minimum Intervention management.

Under Long-term Retention trees are retained for environmental benefit significantly beyond the age or size generally adopted. Much of the SP areas on steeper slopes fall into this category.

5.2 Future habitats and species

The accompanying Future Habitats and Species map provides detail of our proposed restock species and habitats for Queens Way LMP (see Habitats and Species map).

5.2.1 Open hilltop / Woodland fringe

A feature of the design plan is to maintain and expand the area of open hilltop within the plan area to create more enhanced links between those hilltops and neighbouring open land (Craignelder and other open hill land

associated with Cairnsmore of Fleet SSSI to the south and Drigmorn Hill and Fell of Talnotry to the north) and the lower elevation farmland and river valley ground. Modification of the upper planting margins and highlighting crag areas through broadleaf planting and increased open space to better complement landform will occur.

Mapped areas	Objectives	Implementation
Coupe 15525 Craignelder woodland fringe	• Soften impact of hard plantation edge • Creation of low density BL woodland to develop habitat for priority species such as Black Grouse, headline raptors and their prey species	• Identify coupe as Conifer Natural Reserve below slopes of Craignelder • Retain P1968 mixed conifer species and existing areas of open space • Increase area of potential heather moorland / open space
Coupe 15006 Rig of Auchinleck / Drigmorn Hill woodland fringe	• Soften impact of hard plantation edge • Creation of low density BL woodland to develop habitat for priority species such as Black Grouse, headline raptors and their prey species	• Western edge of coupe (felled 2006 and restocked 2008) identified for open space / low density broadleaf woodland creation as transition between higher elevation open ground and plantation
Various coupes Talnotry Fell woodland fringe	• Soften impact of hard plantation edge • Creation of low density BL woodland to develop habitat for priority species such as Black Grouse, headline raptors and their prey species	• Mix of clearfell coupes • Opportunities to identify small areas for retention and to expand existing areas of potential heather moorland / open ground • Create low density broadleaf woodland transition between higher elevation open ground and plantation

Targeted areas of Native woodland fringe, a transitional zone between the plantation and open hilltop will be encouraged. Native woodland fringe is defined as 20-50% tree cover in a matrix of short vegetation. Always more than 50% (ideally 100%) of the tree species will be native. Regeneration will be closely monitored, assessed as to its suitability and if the density of woodland cover is unacceptably low then restocking would take place or if too dense the conifer regeneration removed as resources allow. Woodland fringe has the potential to provide additional habitat for Black Grouse, a habitat that could potentially be further improved through cattle grazing of sections of the open hill.

5.2.2 Riparian zones & aquatic zones

The plan area includes Wood of Dallash, a moderate sized site that appears in the NCC Inventory of Long-established Woodland of semi natural origin (class 2A) and in the more recent Scottish Natural Heritage directory as Ancient Woodland. Whilst all PAWS areas within the district will eventually be restored to native woodland, despite its relative isolation, this is a high priority site for restoration to develop links to other strips of Ancient Semi Natural Wooded areas along the Palnure valley and on into the more extensive Cree Valley Oakwoods network.

Loch of the Lowes and the Black Loch are the principal still water bodies within the plan area and they are important oases of diverse habitat. The plan identifies the development of significant buffer zones around the loch edges through the removal of excessive shading conifer crop and the creation of additional open space or broadleaf areas.

Linking theses buffer zones to other watercourses >0.5m wide, also subject to riparian zone improvements, and other external and internal open space within the block will create permanent larger habitat networks. Comprising native BL planting and open space to assist in improving water quality, protecting soils, maintain fish stocks and benefitting species that use the habitat, riparian buffer zones will be extended to more than satisfy the demands of UKFS. To complement this planned riparian zone management and to aid water quality improvement, the continued monitoring and management control of conifer natural regeneration in the riparian zone is critical.

Wet woodland is a high focus habitat of the Biosphere and within the river valley systems there are many areas of marsh /mire habitats and other localised wetland areas prone to flooding. Some small areas in this plan are identified as areas of permanent open space and others will be identified by future operations during the plan period. These sites will as far as possible remain unstocked as a benefit to invertebrates and bird life although, if water quality is not diminished, some natural regeneration of native species will be accepted. The plan looks to reinforce this concept through the creation of additional areas of broadleaf and open ground within the river valley system.

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

5.2.3 Grazing tenancy (open space)

Drigmorn is a long established agricultural tenancy let to Mr A Howatson. The land is extensive sheep grazed hard hill and contains a single small storage building.

No change to the current arrangement is envisaged.

5.2.4 Goat Park (currently open space)

There is a current Goat Park management plan.
For the foreseeable future the management intention is to control bracken and maintain the Goat Park as permanent open space.
A potential trail linked to the Quorum feature may provide opportunities for additional small scale enhancement restock and visitor education.

5.2.5 Quarries (open space)

As previously stated the only substantial active quarries in the plan area are the Risk quarry (around 2.0ha) and Corwar quarry (around 0.9ha) and both will remain as permanent open space. The visual impact of the quarries is low; both are only really visible internally from their entrance / egress points on the forest road network. Although there are no existing plans to enlarge either quarry it is conceivable that future quarry expansion may be required. Any quarry development proposals outwith agreed tolerances will be submitted to FCS for approval prior to work taking place (see Tolerance table Appendix II).

5.2.6 Deadwood / Veteran trees

Within the fragmented areas of established broadleaf there are few veteran trees so standing deadwood is at a premium.
All broadleaf areas and their associated woodland ground flora will be retained at time of conifer clearfell to provide focal points for future BL expansion (see local District BL policy document) and over time may ultimately provide a long term source of deadwood.
Dedicated areas for deadwood creation will also rely on identifying around 1% of the conifer plantation as Natural Reserve (from which no timber will be removed) as per our current District Deadwood Management policy (see Features map). In the Queens Way LMP area groups of poorly growing conifer at elevation have been earmarked to satisfy this criteria.

5.2.7 Plantation woodland

Inevitably Sitka spruce will continue to be the main timber species in the commercial conifer dominant areas, both as a pure crop and in mixture with LP, however where site conditions are favourable (previous larch sites) or where landscape considerations prevail (for visual impact and less intensive management regimes over extended rotation length) then other conifer species including NS and SP will be preferred. Our current policy not to restock Larch (driven by our existing and potential future Phytopthora infections) will in all probability result in a relatively Larch free forest.

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

Species	**Area (ha)**	**Plant.**	**Area (ha)**	**Plant.**

	in 2028	Area %	in 2048	Area %
Sitka spruce	685.0	33.7	652.5	32.1
Norway spruce	36.5	1.8	38.6	1.9
Larch spp.	32.5	1.6	30.5	1.5
LP (other pine)	87.5	4.3	71.1	3.5
Scots Pine	144.5	7.1	152.4	7.5
Douglas Fir	28.5	1.4	30.5	1.5
Other Conifers	97.5	4.8	101.6	5.0
Broadleaf	197.0	9.7	223.6	11.0
Open Space	723.5	35.6	731.7	36.0
Total	**2032.5**	**100.0**	**2032.5**	**100.0**

For the 10year approval period of the plan the table reflects a reduction in the area of Sitka spruce, Sika spruce / Lodgepole pine mixtures and larch crops balanced by modest expansions in areas restocked with Scots Pine, Norway spruce, Douglas fir, other conifers and additional broadleaf woodland for species diversity. This trend continues projected out to 2048. The planned increase in Native Broadleaf cover from around 8.9% of plantation area in 2018 to around 11% by the end of the plan period will both enhance the landscape and provide improved woodland habitat to protect soils and improve water quality. All of this broadleaf will be non-commercial restock with a target stocking density of around 1600 stems per hectare (2.5m spacing). Natural regeneration of broadleaf is preferred and achievable over large areas of the Queens Way plan such as the Palnure and Pulbae/ Penkiln Burn valley floors and to the west where willow regeneration is particularly robust however, should the target stocking density figure not be reached active restocking will take place.

The area of internal open space that includes felled areas also increases over time. Open space is focussed towards low level deforestation of plantation at elevation for a positive effect on habitat creation and water quality and throughout riparian zones and their associated linkages out onto the adjacent designated hilltop areas some of which may eventually develop into the transitional zone between habitats that is native woodland fringe. Post clearfelling, there will be no conifer restocking within 20m (and on occasion up to 50m) within the main watercourse riparian zones such as the Palnure Burn. It is expected that some of the riparian zones, designed open ground and broadleaf areas will fill in with natural regeneration of both conifers and broadleaves. Through the delivery of this Land Management Plan (LMP) FES will manage natural regeneration in such a way as to ensure that, where practicable, it does not significantly impose a negative impact upon the objectives of the plan. Natural regeneration will be managed so that any negative impact upon designated, protected or promoted habitats, species, landscapes and catchments within or adjacent to the LMP area is minimised and where possible mitigated. The advice of the Galloway

Fisheries Trust and comments from SEPA will be taken into account when planning management of natural regeneration. All native broadleaves will be retained.
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

For long term benefits towards water quality and habitat creation, block restructuring continues to be a significant objective.
Planned, gradual changes in the spatial appearance and structure of the block carried out under previous plans and accelerated by the recent fairly large-scale felling of infected larch have also provided significant recreation enhancements along the Queens Way roadside corridor to both plantation views and the exposure of distance views to external open ground features. This revised felling plan with planned increases in rotation length of mature conifer species and additional areas of broadleaf should provide not only a greater diversity of habitat for conservation but also provide additional structural and landscape benefits for the block.

5.4 Deer Management

Estimated Deer Population survey work carried out suggests an overall woodland density of 10.2 deer per 100.0ha across the Forest District. Figures fluctuate across Land Management Plan areas but do give a strong indication of culling requirements in order to deliver Forest Enterprise Scotland's National Deer Management Strategic objectives that include <10% impact on all commercial crops. With significant numbers of Roe deer and some Red deer present in the Queens Way plan area, significant resources will be deployed in an effort to reduce the overall background population over the period of the plan to deliver our restocking targets.
With a presumption against fencing, current deer management in the Queens Way block is carried out by FES Wildlife Rangers with assistance from contract rangers. Cull requirements and available resource will be reviewed on an annual basis in order to remain proactive towards protecting vulnerable areas of the Land Management plan area.
Several new ATV tracks will be implemented along restocked coupes adjacent to open hill areas or along the larger riparian zones. These tracks are extremely important from both a Health and Safety and operational perspective. ATV tracks provide a safe walking platform for deer management staff during stalking operations which may be during daytime or dusk/darkness. The tracks also allow more straight forward and safer carcass extraction via ATV when required.
ATV tracks must be given careful consideration regarding their absolute need and location.

When 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 (5th 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 design 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 taking into account the location and protection of vulnerable tree species.

5.5 Pathogens, Diseases and Invasive Non native species

Invasive non-native species (INNS) can impact directly on many environmental aspects of an area and are specifically recognised as a significant risk to water environments potentially causing problems for communities who rely on rivers and lochs for their livelihoods.
There are no records of Japanese Knotweed, Giant Hogweed and Himalayan Balsam for the block however small pockets of *Rhododendron ponticum* are present. Monitoring is ongoing and identified species will continue to be treated as per the District's INNS Policy.
The block is actively monitored and trapped for Grey squirrel incursion when resources allow.
Dothistroma Needle Blight (DNB) has been identified on Corsican and Scots Pine crops in the district, although at present is only causing mortality in CP. Although there is little evidence of DNB within the Queens Way land management plan area the pathogen has been identified in adjacent forest design blocks and its wider presence in the block cannot be ruled out. Given the impact on structural and species diversity of the block by the recent *Phytopthora* infection, Scots Pine will play an important element in planned restock so future DNB surveys may increase in intensity.
Hylobius, the Pine weevil, can cause extensive damage to young conifer crop and is found both in this plan area and throughout the district. As part of the districts chemical minimisation strategy, the *Hylobius* Management Support System (HMSS) is used to measure *Hylobius* numbers on clearfell

sites. Using billet traps virtually all of the districts conifer restock areas are assessed. Weevil numbers are recorded and used along with other site data to determine the optimum time for site restocking. This more flexible fallow period between felling and re-stocking may result in restocking not taking place within two years of felling. (Appendix II Tolerance Table).
Phytopthora ramorum infection has been confirmed on Larch throughout the district. Infected areas were initially felled to comply with the requirements of a Statutory Plant Health Notice (SPHN) but are now treated under a "management zone" agreement. Large swathes of both pole stage and mature larch within the Queens Way plan area has been infected. Planned restocking in the block will, in the foreseeable future, avoid the use of larch with other minor conifer (not Sitka spruce) and broadleaf woodland contributing more towards the species diversity of the block.
Heterobasidion annosum is not endemic in the block. Stump treatment with urea after felling will however be required in the areas of poorer site types.
There is no record of Ash dieback *Chalara fraxinea* present in the LMP area. FCS published a Chalara Action Plan for Scotland in 2013 that will be followed should a future outbreak be identified.

5.6 Waste on site (including felling to recycle)

Commercial felling operations generate felling debris in the form of brash and lop / top. Unless being recovered for biomass production, this material is generally left on site for soil protection, nutrient cycling and site amelioration. Generally there are no plans to carry out chipping, mulching or spreading of forest waste over the plan area for ecological site improvement however in response to the potential infection of *P ramorum* in immature larch crops, some small scale felling to recycle and chipping trials with the product removed from site for wood fuel may take place. Detailed plans will be submitted to FCS and SEPA for approval prior to any work taking place (see Appendix II Tolerance table).

5.7 Habitats Regulations Appraisal sites

Cairnsmore of Fleet Special Site of Scientific Interest (SSSI) borders the plan area to the south and west but there are no SAC sites impacted on by the plan area. A Habitats Regulations Appraisal is not therefore required.

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

- Persistence of a viable Fresh Water Pearl Mussel population

- Construction of proposed new roads

5.10 Amendments

To be logged on amendment form

Appendix I: Forest Design Plan Consultation Record

Statutory Consultee	Date contacted	Date response received	Issue raised	Forest District Response
D&G Council Planning: Adrian Pringle (Landscape Architect)	06 May 2013 by letter	18 July 2013	• Site specific treatments regarding landscaping along Queens Way (A712 corridor)	• Comments incorporated within design and identified within specific Recreation area treatments
D&G Council Planning: Andrew Nicholson (Historic Environment)	06 May 2013 by letter	14 June 2013	• Site gazetteer showing Historic Environment Records (HER) provided • Follow Forestry & Archaeology guidelines • Feedback to Council when ground checks take place	• Gazetteer notes used for Appendix III • Comments noted in DP text (section 3.5.3)
SNH Newton Stewart office: Jonathan Hudson	06 May 2013 by letter	07 June 2013	• Welcomes proposed species and habitat diversity increases • Water quality issues related to Pulbae and Palnure Burns • Increased use of LISS systems are good for woodland biodiversity • Raised species specific recommendations for Otter, Red Squirrel, Black Grouse, Bats and Badgers • Need for a deer management strategy • Welcome expansion of access for all facilities	• Comments noted in DP text (section 3.1, 3.2, 3.5, 5.1, 5.2 & 5.6)
Saving Scotland's Red	06 May 2013	31.May.20	• Noted proposed greater conifer	• Comments noted in DP text (section

Squirrels: Heinz Traut	by letter	13	and BL diversity • Consider Red squirrel conservation in block although not stronghold site • Recommend use of Red squirrel favourable broadleaf and avoid corridor creation for Greys	3.2)
Cree Valley Community Woodland Trust: Linda Moorhouse	06 May 2013 by letter	31.May.2013	• Wider buffer zones for Palnure Burn complex to benefit water quality in the R Cree catchment • Additional BL restock in riparian zones	• Comments noted in DP text (sections 3.2, 4.0 & 5.2)
SEPA: John Gorman; Newton Stewart office	06 May 2013 by letter	22.May 2013	• Welcomed increase in BL species, improved habitat linkage use of LISS and water quality improvement aims • Specific mention of need to avoid disturbance around old lead and arsenic mines to minimise contamination of main watercourse • Standard River Basin Management planning and management of riparian comments stressing need to conform to Water Environment (controlled activities) (Scotland) Regulations 2011)and also adherence to Forests and Water 5th edition guidelines) • protection of wetlands	• Comments noted in DP text (sections 2.1, 3.1, 4.1, 5.1, 5.2, & 5.8)
RSPB: Julia Gallagher	06 May 2013 by letter	20 May 2013	• Welcomes Black Grouse habitat creation and increased open space and BL restock	• Noted in DP text (sections 2.1, 3.2, 4.1 & 5.2)

			• Supports riparian enhancement particularly along Corse Burn • Raised species specific recommendations for Nightjar, Merlin, Peregrine and Black Grouse	
Historic Scotland: John Raven	06 May 2013 by letter	20 May 2013	• No designated features within DP boundary • Consult locally for unscheduled archaeology	• Noted in DP text (section 3.5)
FCS Dumfries office: John MacBeth	06 May 2013 by letter	No reply received	•	•
UPM Tilhill: Glen Heggs	06 May 2013 by letter	No reply received	•	•
Scottish Woodlands: Patrick Higgins	06 May 2013 by letter	No reply received	•	•
D&G Council Access officer: Jo Mercer	06 May 2013 by letter	No reply received	•	•
Galloway Fisheries Trust: Jamie Ribbens	06 May 2013 by letter	No reply received	•	•
Rosemary Green;IUCN Otter Specialist Group	06 May 2013 by letter	No reply received	•	•
Scottish Wildlife Trust; Gill Smart	06 May 2013 by letter	No reply received	•	•
Biosphere; Pip Tabor	06 May 2013 by letter	No reply received	•	•
Visit Scotland: Paula McDonald	06 May 2013 by letter	No reply received	•	•
Cree Valley Community Council; Richard Kay	06 May 2013 by letter	No reply received	•	•

Appendix II: Tolerance Tables

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

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

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

3) Tolerance Table:

	Maps Required (Y/N)	Adjustment to felling period *	Adjustment to felling coupe boundaries **	Timing of Restocking	Changes to Restocking species	Changes to road lines	Designed open ground ** ***	Windblow Clearance ****
FC Approval normally not required	N	Fell date can be moved within 5 year period where separation or other constraints are met	Up to 10% of coupe area	Up to 3 planting seasons after felling	Change within species group e.g. evergreen conifers or broadleaves		Increase by up to 5% of coupe area	
Approval by exchange of letters and map	Y		Up to 15% of coupe area	Between 3 and 5 planting seasons after felling, subject to the wider forest and habitat structure not being significantly		Additional felling of trees not agreed in plan. Departures of > 60m in either direction from centre line of road	Increase by up to 10% of coupe area Any reduction in open space of coupe	Up to 5ha

				compromised			area by planting	
Approval by formal plan amendment may be required	Y	Felling delayed into second or later 5 year period Advance felling (phase 3 or beyond) into current or 2nd 5 year period	More than 15% of coupe area	More than 5 planting seasons after felling, subject to the wider forest and habitat structure not being significantly compromised	Change from specified native species Change Between species group	As above, depending on sensitivity	In excess of 10% of coupe area Colonisation of open space agreed as critical	More than 5ha

NOTES:

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

** No more than 1ha, without consultation with FCS, where the location is defined as 'sensitive' within the Environmental Impact Assessment (Forestry) 1999 Regulations (EIA)

*** Tolerance subject to an overriding maximum 20% open space

**** Where windblow occurs FCS should be informed of extent prior to clearance and consulted on where clearance of any standing trees is required

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 Name	HER ref.	OS grid reference	Site type	Comment
Talnotry / Glen of the Bar	MDG12763	NX478703	Copper mine	Series of 1890s mineworkings associated with the prospection and exploitation of a unique copper-nickel mineral deposit
Murray's birthplace	MDG12769	NX502717	Commemorative monument	Ruins marking birthplace of Alexander Murray; significant walled structure in fair condition currently in area of open space and visible from county road **Maintain in area of open space.**
Millfore	MDG13047	NX471749	Aircraft	Crash site of Liberator bomber14 Sept 1942
Dallash	MDG14920	NX468696	Sheep fold, Enclosure	Enclosure / sheepfold, noted as sheep ree, attached to boundary dyke shown on the first edition OSmap 1953
Wood of Dallash	MDG14934	NX472697	Farmstead	Farmstead of two unroofed buildings shown on first edition OS map 1853
Wood of Dallash	MDG14935	NX470698	Farmstead	What may be farmstead, comprising one unroofed building of two compartments annotated "Ruins" and one enclosure shown on first edition OS map 1853
Dallash	MDG14936	NX469689	Building	Single unroofed building annotated "Shed" shown on first edition OS map 1853
Louran Burn	MDG14938	NX490687	Shieling; Hut	What may be two unroofed shieling-huts annotated "Old Walls" shown on first edition OS map 1853
The Rig Cowar	MDG14939	NX477700	Structure	Single unroofed structure annotated "Ree" attached to some field walls shown on first edition OS map 1853
Louran Rig	MDG14940	NX490690	Sheep fold	Small enclosure annotated "Old Sheep Ree" shown on first edition OS map 1853

Dallash, Bargaly Glen	MDG14948	NX466684	Field system	Large field system annotated “Old Fence” shown on first edition OS map 1853
Craigdistant	MDG14949	NX461683	Field system, Structure	Two unroofed structures and a field system annotated “Old Fence” shown on first edition OS map 1853
Pulbae Burn	MDG15218	NX456719	Farmstead	Remains of a building, probably small farmstead, shown as ruins on the first edition OSmap 1953; still visible on recent aerial photographs in a clearing in forestry plantation
Glen of the Bar	MDG15227	NX479706	Shieling; Enclosure; Hut	What may be three unroofed shieling-huts annotated “Old Walls” and one enclosure shown on first edition OS map 1853
Drigmorn	MDG15251	NX462723	Field; Farmstead	Farmstead, comprising one partially roofed, one unroofed building and four enclosures and a field annotated “Old Fence”and one enclosure shown on first edition OS map 1853
Poultrybuie burn	MDG15252	NX493791	Field system; Farmstead; Corn drying kiln	Farmstead in ruins, of one unroofed building and one enclosure, one unroofrd structure noted as “Old Kilns (Corn) and a field system shown on first edition OS map 1853 Small kiln in fair condition with trees within and around. **Maintain in area of open space.**
Well burn of Talnotry	MDG15253	NX484720	Building	Single unroofed building annotated “Shed (in ruins)” shown on first edition OS map 1853. Building may have been usedin connection with mining activity in area.
Fell of Talnotry	MDG15254	NX485723	Shieling; Hut	What may be single unroofed shieling-hut annotated “Old Walls” shown on first edition OS map 1853
Green Burn, Drigmorn Hill	MDG15255	NX470732	Shieling; Hut	What may be three unroofed shieling-huts annotated “Ruins” shown on first edition OS map

				1853
Drigmorn	MDG15256	NX463730	Shieling; Enclosure; Hut	Remains of a number of small enclosures on southern flank of Drigmorn Hill shown on first edition OS map 1853 and still clearly visible on recent aerial photographs
Drigmorn	MDG15257	NX483722	Sheep fold	Two unroofed structures each annotated “Old sheep ree” shown on first edition OS map 1853
Grey Mares Tail, GFP	MDG15258	NX490726	Enclosure	Enclosure noted “Old walls” shown on first edition OS map 1853
Auchinleck Loch	MDG15259	NX472722	Enclosure	Enclosure noted “Old walls” shown on first edition OS map 1853
Wee Gairy, Craignelder	MDG15260	NX488709	Enclosure	Enclosure noted “Old walls” shown on first edition OS map 1853
Rig of Auchinleck	MDG15261	NX478733	Enclosure	Enclosure noted “Old walls” shown on first edition OS map 1853
Drigmorn	MDG15262	NX465728	Enclosure	Enclosure shown at this location on first edition OS map 1853
Drigmorn	MDG15263	NX462726	Field system	Possible pre-improvement field system annotated “Old fences” and late Improvement field shown on first edition OS map 1853
Wild Goat park, Craigdews Hill	MDG15264	NX494722	Enclosure	Two enclosures annotated “Old fence” and a length of wall are shown on first edition OS map 1853
Black Dubs, Poultrybuie Hill	MDG15285	NX487741	Sheep fold; Structure	Four unroofed structures, three of which are annotated “Sheep Ree” shown on first edition OS map 1853
Drigmorn Hill	MDG15286	NX466738	Shieling; Enclosure; Hut	What may be single unroofed shieling-hut annotated “Ruin” and one enclosure shown on first edition OS map 1853
Black Dubs, Poultrybuie Hill	MDG15287	NX487738	Sheep fold; Building	What may be single unroofed building of two compartments annotated “Ruin” and one unroofed structure annotated “Old Sheep Ree”

				shown on first edition OS map 1853
Drigmorn Hill	MDG15288	NX475740	Structure	Small unroofed structure annotated “Old Walls” shown on first edition OS map 1853
Tonderghie Glen	MDG15289	NX497741	Sheep fold	Small unroofed structure annotated “Sheep Ree” shown on first edition OS map 1853
Pulnee Burn	MDG15291	NX460750	Farmstead	Remains clearly visible on recent aerial photograph. Appears that three compartment sheep-fold has been built over ruined farmhouse shown on first edition OS map 1853, incorporating south east wall of one of its buildings and presumably tumbled masonry for its construction
Pulnee Burn	MDG15295	NX461751	Enclosure	Enclosures annotated “Old fence” shown on first edition OS map 1853
Pulnee Burn	MDG15296	NX461751	Building	Single unroofed building annotated “Ruin” shown on first edition OS map 1853
Tonderghie Bridge	MDG15610	NX503726	Enclosure	Large enclosure or field annotated “Old fence” shown on first edition OS map 1853
Dunkitterick Cottage	MDG15611	NX502717	Enclosure	Two conjoined enclosures annotated “Old fences” shown on first edition OS map 1853
Dunkitterick Cottage	MDG15612	NX504715	Enclosure	Enclosures annotated “Old fence” shown on first edition OS map 1853
Murrays Monument	MDG18872	NX488718	Building	Listed building; highly visible and oft visited inscribed rugged granite obelisk monument; in good condition currently in area of permanent open space. **Maintain in area of open space.**
Louran Burn	MDG23010	NX494687	Shieling	Oval structure, 4m x 2.5m, constructed from granite boulderswith internal boulder wall. Reduced to foundations except north wall 1.2m high
Talnotry / Glen o	MDG25994	NX480702	Arsenic mine	A small mine worked in the 1890s by the Palnure

the Bar				United Exploration Co.(same minining syndicate that worked the adjacent Talnotry nickel mine)
Grey Mares tail 2	MDG26097	NX491726	Mine	Series of lead or copper workings on both sides of the burn probably made by the Kirkcudbrightshire Mining Co. around 1848
Black Loch	MDG26098	NX494727	Mine	Trial workings for lead or copper at base of south facing hill slope between Grey Mare's Tail burn and Tonderghie Burn probably made by the Kirkcudbrightshire Mining Co. around 1848
Pulnee Burn	MDG26099	NX461724	Building; corn drying kiln	Remains of a building shown as a ruin on the first edition OS map of 1853 are still visible on recent aerial photographs though the adjacent kiln is not
Talnotrie / Talnotry; Glen of the Bar	MDG3205	NX487717	Hut circle; building; findspot	A hoard of fine metalwork, coins, scrap metal and other raw materials used in fine metalworking was salvaged from a cottar's peat fire in 1912, a small quantity of silver having already been melted in the fire. The peat had been cut from a moss on the NW flank of Cairnsmore of Fleet where hut platforms and boundary dykes were subsequently noted.No other objects were found in the peat cut. The coins put the deposition of this hoard in the early or mid 870s
Drigmorn	MDG3206	NX463721	Findspot	Middle Bronze Age axe (class III)of Kirkless type found in a peat moss at Drigmorn donated to NMAS by Sir H Maxwell in 1904
Craighandle / Well burn of Talnotry	MDG26094	NX482717	Lead mine ?	Small trial working east of the Well Burn of Talnotry. Probably made by Kirkcudbrightshire Mining Company around 1848
Garmel	MDG26095	NX483721	Mine	An "old shaft" is marked on the 1st and 2nd editions of the OS 6inch to mile map. Site now lies within dense plantation on north side of forestry track.

Grey Mare's Tail 1	MDG26096	NX490724	Mine	Small trial working for lead or copper. Probably made by Kirkcudbrightshire Mining Company around 1848
Cairns Dallash, Bargaly Glen	MDG13153	NX472693	Lead mine	This lead mine is located on a tributary of the Palnure Burn around 100m N of Dallash. A level was driven NW along the vein and a shaft dug to an unknown depth. A few tons of lead are said to have been produced but no details of the workings or their history are known.
Eye (artwork)	-	NX495728	artwork	Conical artwork structure; in good condition in area of open ground adjacent to Black Loch. **Maintain in area of open space.**
Quorum (artwork)	-	NX492725	artwork	Carved stone heads set into sheep pen complex; in good condition in area of open space. **Maintain 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
15004	9.8	-	-	-	3.1	-	-	1.0	13.9
15007	7.0	-	-	-	4.5	-	-	1.6	13.1
15009	6.0	-	-	-	5.0	-	0.7	2.4	14.1
15010	10.8	0.2	-	0.5	2.5	-	-	2.0	16.0
15011	7.0	-	0.4	-	4.0	0.2	-	0.9	12.5
15014	16.5	-	0.2	-	5.0	0.8	-	2.8	25.3
15019	4.0	0.5	-	-	-	-	-	2.7	7.2
15038	9.5	1.7	-	-	1.5	-	-	0.8	13.5
15050	11.5	-	-	0.5	-	-	-	2.3	14.3
15062	0.8	1.7	0.3	1.6	-	-	0.8	-	5.2
15065	11.9	-	-	-	6.0	-	-	1.1	19.0
15078	4.0	-	-	-	2.5	-	-	-	6.5
15085	38.0	-	-	-	12.0	1.0	-	4.5	55.5
15087	41.0	-	-	4.0	-	-	-	0.8	45.8
15107	7.0	-	2.2	-	-	-	-	-	9.2
15108	3.1	-	-	-	-	-	1.4	-	4.5
15113	6.8	0.3	0.3	-	0.4	0.2	-	0.3	8.3
15121	17.5	-	-	-	8.5	-	-	1.7	27.7
15198	15.0	0.5	4.5	2.0	-	-	-	-	22.0

15515	12.0	1.0	-	13.2	-	-	-	23.0	49.2
total	**239.2**	**5.9**	**7.9**	**21.8**	**55.0**	**2.2**	**2.9**	**47.9**	**382.8**

Restock

Coupe	SS	NS	Larch	SP	LP	Other con.	BL	Open space	Total
15004	5.4	-	-	-	5.4	-	1.9	1.2	13.9
15007	2.8	-	-	0.8	2.8	-	2.6	4.1	13.1
15009	4.5	-	-	0.9	4.4	-	1.0	3.3	14.1
15010	6.0	-	-	-	6.0	-	0.5	3.5	16.0
15011	4.7	4.7	-	-	-	-	2.6	0.5	12.5
15014	20.2	-	-	1.3	-	1.3	0.6	1.9	25.3
15019	0.4	0.5	0.3	6.0	-	-	-	-	7.2
15038	7.5	4.3	-	-	-	-	0.5	1.2	13.5
15050	-	-	-	-	-	11.7	2.2	0.4	14.3
15062	-	2.0	-	2.2	-	-	1.0	-	5.2
15065	7.0	-	-	-	7.0	-	2.2	2.8	19.0
15078	1.2	-	-	1.2	-	-	3.6	0.5	6.5
15085	-	-	-	-	-	46.9	1.0	7.6	55.5
15087	-	-	-	-	-	38.0	-	7.8	45.8
15107	-	-	-	9.2	-	-	-	-	9.2
15108	-	-	-	-	-	-	4.5	-	4.5
15113	-	3.8	-	-	-	3.8	-	0.7	8.3
15121	25.0	-	-	-	-	-	-	2.7	27.7
15198	5.2	-	-	5.2	-	-	11.6	0.0	22.0

15515	2.1	0.9	-	42.8	-	1.2	-	2.2	49.2
total	**92.0**	**16.2**	**0.3**	**69.6**	**25.6**	**102.9**	**35.8**	**40.4**	**382.8**

Notes on coupe work schedule

15004	Coupe at elevation bounded by open hill to west; SS/LP matrix with BL and open space for visual and species diversity to west and north Corse Burn riparian zone.
15007	Coupe at elevation bounded by open hill to west; SS/LP matrix with SP, BL and open space for visual and species diversity within Grey Mare's Tail Burn riparian zone.
15009	Coupe at elevation bounded by Poultrybuie Hill open ground to east; SS/LP matrix pulled down hill with BL targeted to Black Dubh Burn riparian zone and SP to new upper coupe margin for landscaping and visual and species diversity.
15010	Coupe split by Grey Mare's Tail burn bounded by open hill ground to west and utility corridor to north; SS/LP matrix with BL and additional open space for visual and species diversity along Grey Mare's Tail riparian zone and utility corridor.
15011	Coupe with forest road to south and utility corridor to north; SS and SS/LP matrix with open space and BL targeted to road corridor, Kiln Strand riparian zone and utility corridor for visual and species diversity.
15014	Coupe lies above Black Loch; SS matrix with SP and other conifer targeted to loch backdrop with BL and open space for visual and species diversity along Grey Mare's Tail riparian zone to west.
15019	Coupe at elevation bounded by Fell of Talnotry open ground to north; NS possible retention at roadside and SP matrix down towards forest road to south with open space to new upper coupe margin for landscaping and visual diversity.
15038	Coupe lies to east of Drumlawhinnie Loch and bounded by Loch of Lowes Strand to north; mainly SS matrix with NS, BL and open space targeted to riparian and aquatic zones for species diversity and landscaping.
15050	Coupe with Edinburgh Road to north; brown earth site DF matrix with BL and open space for species and visual diversity along recreationwalking/cycling route
15062	Notional LISS coupe lies within Palnure Burn valley adjacent to ASNW zone; mix of NS, SP and BL for species diversity and possible expansion of ASNW.
15065	Coupe split by Loch Strand with forest road and utility corridor to north; SS/LP matrix to

	south with BL and open ground targeted to riparian zone and utility and road corridors.
15078	Coupe within Palnure Burn valley, highly visible from Queens Way; significant area of BL targeted to riparian zone with SS/LP towards forest road and plantation core.
15085	Large scale coupe bounded by Loran Burn to south; other conifer matrix with BL and open ground targeted to riparian zones
15087	Coupe at elevation bounded by open hill and Louran Burn to south and east; mixed conifer matrix with open space for visual diversity within Louran Burn riparian zone.
15107	Coupe within Palnure Burn valley between forest roads; significant area of SP targeted for species diversity and extended rotation length within Palnure Burn riparian zone.
15108	Coupe adjacent to 15107 and lies between forest road and Palnure Burn; significant area of BL targeted for species diversity ultimately becoming LISS coupe within Palnure Burn riparian zone.
15113	Coupe lies on north side of Old Edinburgh Road, west of Drumlawhinnie Loch; mainly DF/NS for species diversity on good site type with open space targeted to forest road / coupe edges and BL interface to east.
15121	Coupe at elevation bounded by Crochan Burn to south and to east extending into area of Natural Reserve; SS matrix with open space to coupe edges and Crochan Burn riparian zone.
15198	Coupe within Palnure Burn valley between burn and main road A712; significant areas of BL targeted for species diversity towards main road and Palnure Burn riparian zone with remainder SS/SP mixture for diversity and potential extended rotation future crop.
15515	Highly visible large scale coupe south of Queens Way containing Glen o' Bar view site; significant area of SP for future long term rotation length crop and less ground disturbance with small area of SS and NS LISS in sheltered valley floor.

Appendix V. Queens Way Land Management Plan Brief

Main management objectives focus on Timber production, Biodiversity (SSSI & Native woodland), Environmental Quality (water quality,landscape and heritage features) and Access interest (Recreation features) in this large scale linear DP unit.
The block lies some 6km north east of Newton Stewart, Dumfries & Galloway.

Key Strategic Directions from Role of Scotland's National Estate	Local District Strategic Plan Priorities	Actions / Prescriptions
Productive: provide sustainable economic benefits from the land	• Contribute to local economy by maintaining core timber production • Expand area of productive broadleaf and diversify timber markets • Increase agricultural use of the estate • Provide employment in rural areas	• *Meet* production forecast commitment through revised felling plan, LISS and significant thinning plan (focus on highly visible strip between Old Edinburgh Road and A712 and A712 corridor • *Optimise* commercial conifer potential through Ecological Site Classification based restock • *Increase* area of BL, both native species for biodiversity and where possible faster growing commercial species (Sycamore and Oak) • *Implement* small scale road building / road maintenance programme required to service proposed clearfell / thin coupes
Healthy: good environmental and silvicultural condition in a changing climate	• Commitment to high quality silviculture and increased use of alternatives to clearfell • Adapt to climate change and make woodlands more resilient to pressure • Deal with invasive species that threaten habitats and biodiversity • Stewardship of carbon resources in estate's trees and soils	• *Increase* area of woodland managed under LISS particularly highly visible areas around along Queens Way A712 corridor • *Increase* area of broadleaf woodland and *establish* a wider range of conifer and broadleaf species diversity and use of natural regeneration in our restocking • Improve resiliance through use of Alternatives to clearfell and smaller coupe size • *Control* invasive species as per FES guidelines (specifically R. ponticum)
Cared for: working with	• Protect water, soil and air quality • Improve / restore status and condition	• *Manage* watercourses and private water supplies within DP unit in keeping with UKWAS standards and Forest and Water guidelines

landscape and the natural and cultural heritage	of Ancient Woodland sites • Expand / enhance broadleaf cover and areas of Native Woodland • Landscape • Maintain open habitats in good condition • Priority species conservation (Black Grouse) • Safeguard minor heritage features	to maintain and improve water quality within R Cree catchment (Palnure Burn and tributaries) • *Restore* PAWS site in Wood of Dallash and enhance southern boundary to adjacent Bargaly Glen native woodland site • *Protect* existing deadwood habitats and focus native BL expansion to maximise opportunities for Habitat Network creation on areas where biodiversity impact is greatest • *Increase* area of mature woodland for landscape and habitat diversity • In consultation with SNH *manage* Talnotry Mines SSSI according to agreed SSSI management plans to maintain / achieve favourable status • Landscape intimate surrounds to neighbour residential areas and prominent heritage features (Craigdews & Craigdistant, Murrays Monument & Birthplace) to maintain linked views • *Maintain / enhance* views into block from western section of A712 Queens Way (Newton Stewart to New Galloway road) • *Maintain* lek and nesting areas for Black Grouse and enhance habitat through creation of woodland fringe • Increase area of mature woodland for landscape and habitat diversity • *Manage* heritage features according to FES Archaeological guidelines
Accessible: woodlands that welcome and are open for all	• Maintain / enhance existing trails and cycle networks • Improve access and/or invest in new facilities • Use for health benefits and outdoor learning	• Retain and enhance access and views to existing core paths and other pedestrian and cycle trail networks(7 Stanes and trails associated with Murray's Monument), develop core recreation facilities (Loch o' the Lowes angling, Glen o' the Bar, Goat Park, Murray's Birthplace, Murray's Monument, artworks) within plan area to provide a varied and enjoyable "must see" aspect of woodland experience and destination for visitors and local communities • Conserve and enhance iconic localised settings and views (scenic waterfalls / rocky gorges / heritage features e.g. Grey Mares Tail) through intensive management of Visitor Zone areas • Maintain FES signage to woodland for easy access

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 • Place for research and development	• Engage local communities / neighbours in LMP process through Galloway Forest Forum / Stakeholder consultation / Glenkens Arts projects •
Good value	• Seek diverse range of income streams • Reduce carbon emissions from business activities	• Contribute towards rural development through partnership working within Biosphere buffer & Dark Skies park zones • Consider small scale land sales (with associated infrastructure e.g. Corwar) as business development opportunities

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

All of the operations in Queens Way 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 Design 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.

The Queens Way Land Management Plan will be included in this audit process.