Galloway Forest District

Pencloe

Land Management Plan

Approval date: ***

Plan Reference No: FDP 95

Plan Approval Date: *****

Plan Expiry Date: ******

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

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

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CSM 6 Appendix 1

FOREST ENTERPRISE – Application for Forest Design Plan Approvals

Forest Enterprise – Property

Forest District:	GALLOWAY FD
Woodland or property name:	PENCLOE
Nearest town, village or locality:	NEW CUMNOCK
OS Grid reference:	NS 6033 0633
Local Authority district/unitary Authority	EAST AYRSHIRE

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

I confirm that the scoping, carried out and documented in the Consultation Record attached, incorporated those stakeholders which the FC agreed must be included. Where it has not been possible to resolve specific issues associated with the plan to the satisfaction of consultees, this is highlighted in the Consultation Record.

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

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

Signed ……..... Signed .....

Forest District Manager Conservator

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

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

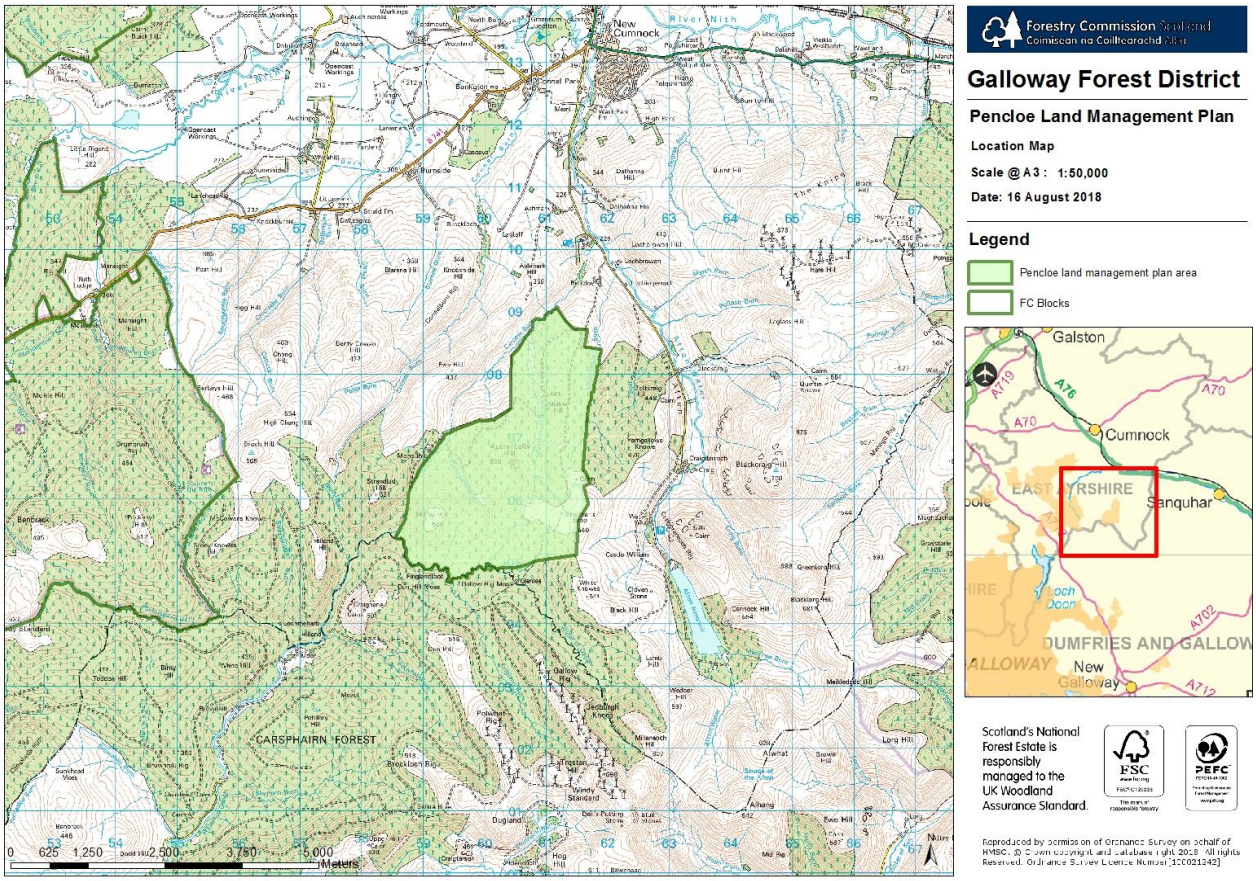
Date approval ends: .....

*delete as appropriate

EIA Determination form if required

Contents

1.0 Summary of Proposals



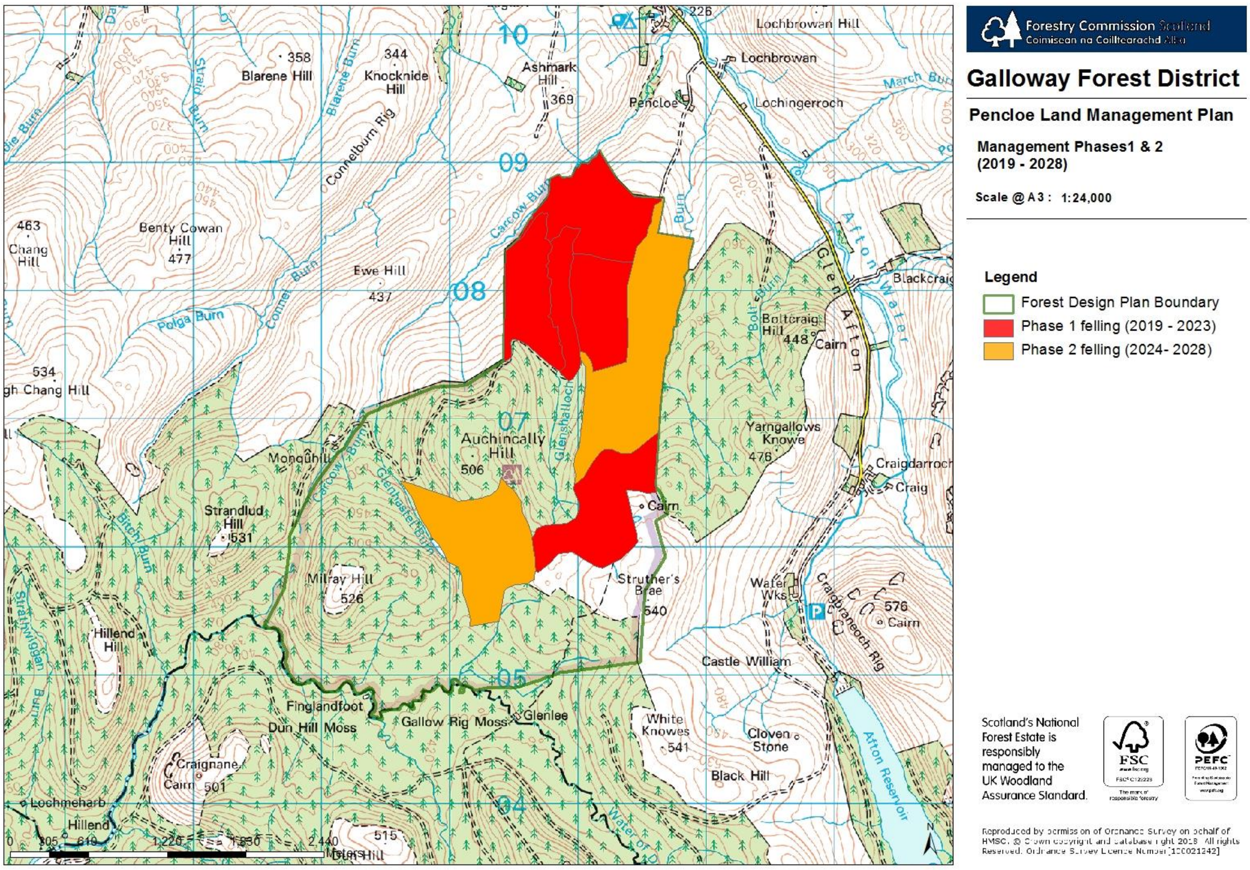
Pencloe Land Management Plan area

Pencloe forest block is located around 5 km south of the settlement of New Cumnock, Easy Ayrshire. At around 824 ha, this modest size plantation is comprised almost entirely of mature, even-aged Sitka spruce planted in the early 1970s, which has suffered from extensive windthrow over recent years. Around 16% of the land holding is open space, including open hilltops, riparian corridors, and around 40 ha of rough grazing. The forest is FSC certified and the management will seek at all times to meet the UK Woodland Assurance Standard.

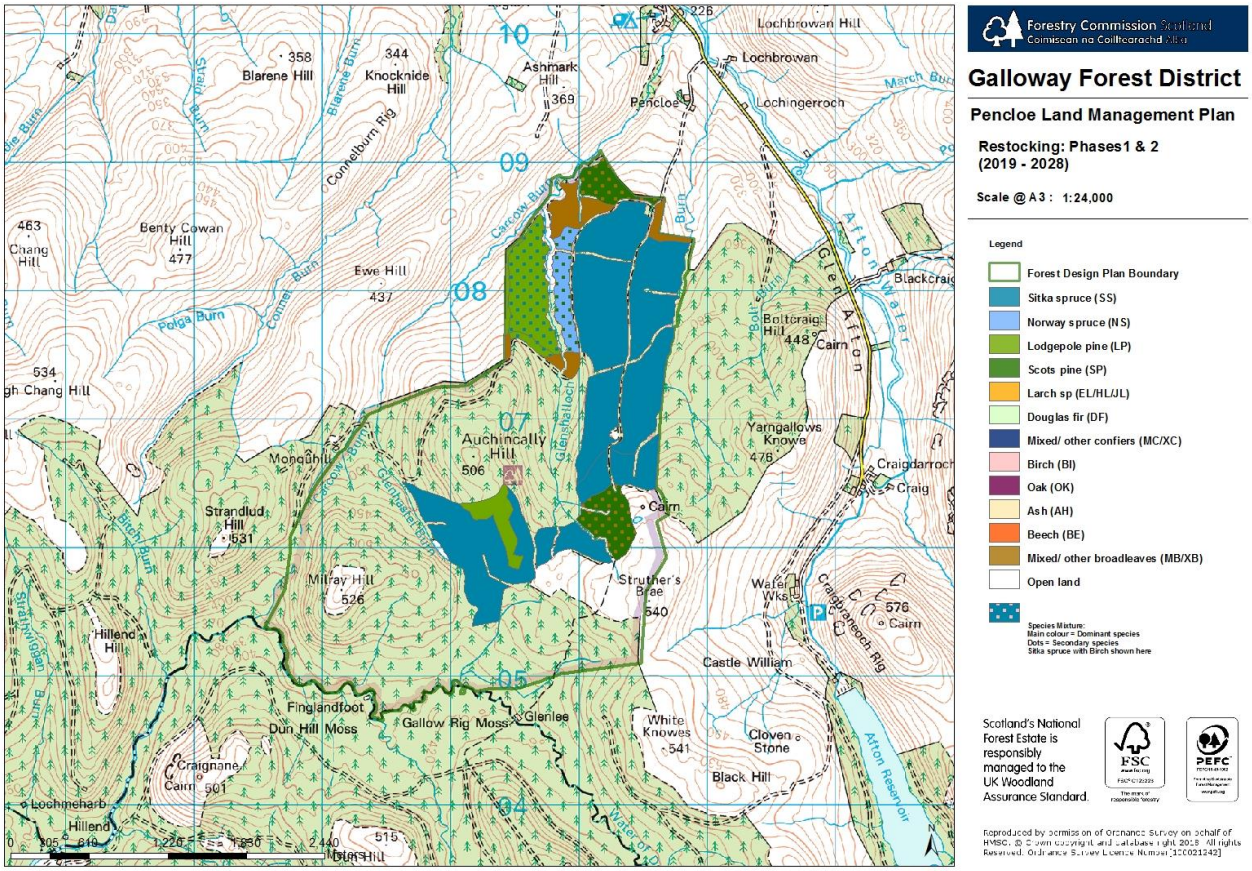
No felling has yet taken place in the block, therefore the key issues in this Land Management Plan (LMP) are timber production, restructuring the plantation area to introduce both age and species diversity, forest road upgrade and construction to allow access to felling coupes, and effective

deer control to promote the establishment of native broadleaves and alternative conifer species.

The plan presents felling and replanting proposals for the next ten years (2018 to 2027) in detail. Forest road upgrade and construction during this period are also detailed. This ten year period is important because it relates to the parts of the LMP that require specific approvals from Forestry Commission Scotland (South Scotland Conservancy). Longer-term management (beyond 2027) of Pencloe forest is also considered in the plan but mainly to indicate the direction of travel and to provide context.



Map showing proposed felling operation occurring in first ten years of plan



Map showing proposed restocking operations in first ten years of plan

Consultation and further information

During the development of this plan we have consulted with the local community and other stakeholders. For further information on the plan please contact:

Ed Turner
Planning Forester

Forest Enterprise Scotland
Galloway Forest District
Creebridge
Newton Stewart
DG8 6AJ

ed.turner@forestry.gsi.gov.uk

+44 (0) 300 067 6800 (switchboard)
+44 (0) 300 067 6771 (direct dial)
+44 (0) 7917 307692 (mobile)

2.0 FCS Regulatory Requirements

This section provides a summary of the elements of the LMP which are regulated by FCS, focussing on relevant operations and activities being carried out over the ten year period of this plan.

2.1 Summary of planned operations

Proposed felling, restock, and infrastructure works are shown on maps M4: Management, M5: Future Habitats & Species, and M6: Road Construction

Table 1: Planned operations over this LMP period

Planned Operations	2018-2027 plan period
Clearfell	293.0 ha
Thinning	0
Restock	282.4 ha
Road construction	1853 m
Road upgrade	8233 m

2.2 Proposed felling in years 2018-2027

Proposed felling phases are shown in map M4: Management

Table 2: Proposed Phase 1 and Phase 2 felling over this plan period (total coupe area)

Proposed felling year	Fell area (ha)	% forest area
2019-23	186.8	22.6
2024-28	144.9	17.6

Table 3: Clearfell details by coupe (ha)

Coupe	**SS**	**NS**	**Open**	**Total**
95001	77.5	0	5.9	83.4
95041	52.0	0	9.5	61.5
95043	41.4	0	9.8	51.2
95044	40.9	0	6.0	46.9
95045	14.6	0.6	3.1	18.3
95046	31.0	0	4.5	35.5
95047	35.0	0	0	35.0
Total	**292.4**	**0.6**	**38.8**	**331.7**

Table 4: Change in age class over plan period (%)

Age of trees	Growth stage	Percentage of class at given year	
		2018	2027
0 - 10	Establishment	0	34.3
11 – 20	Thicket	0	0
21 – 40	Pole stage	0	0
41 - 60	Maturing high forest	84.2	48.5
61 +	Old high forest	0	0
Open	N/A	15.8	17.2

2.3 Proposed thinning in years 2018-2027

No thinning is proposed over the duration of this plan. The block is almost entirely comprised of mature, un-thinned, even-age Sitka spruce.

2.4 Proposed restocking in years 2018-2027

Proposed restocking species is shown on map M5: Future Habitats & Species

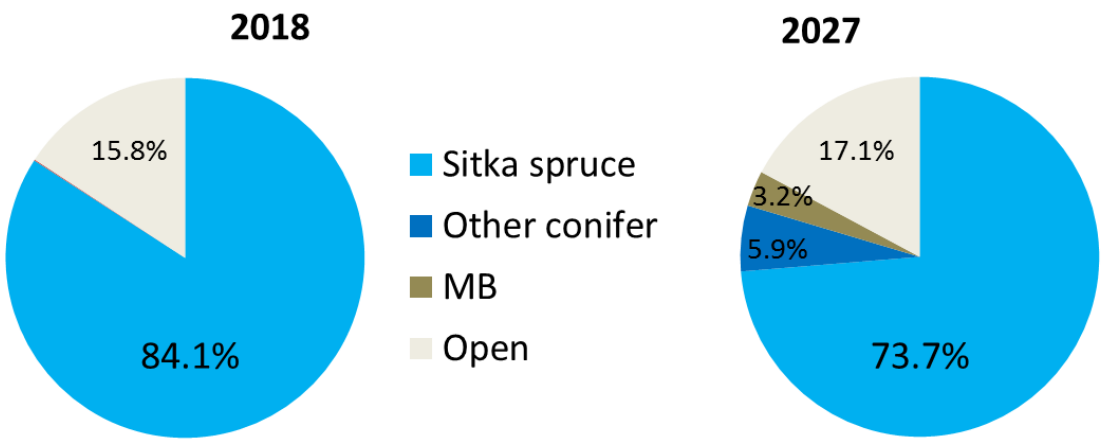
Table 5: Restock details by coupe (ha)

Coupe	SS	LP	NS	SP	MB	Open	Total
95001	69.7	0	0	0	2.9	10.8	83.4
95041	45.5	9.7	0	0	0	6.3	61.5
95043	27.2	0	0	7.5	7.5	8.9	51.1
95044	17.8	0	0	4.7	12.6	11.8	46.9
95045	0	0	5.9	5.9	1.6	4.8	18.2
95046	13.8	14.9	0	0	1.6	5.2	35.5
95047	33.6	0	0	0	0	1.4	35.0
Total	207.6	24.6	5.9	18.1	26.2	49.2	**331.7**

Table 6: Species change over plan period

Species breakdown	Area (ha) 2018	% cover 2018	Area (ha) 2027	% cover 2027
Primary species: Sitka spruce	693.5	84.1	607.9	73.7
Other conifer	0.6	0.1	48.7	5.9
Mixed broadleaves	0	0	26.2	3.2
Open space	130.5	15.8	141.7	17.1
Total	824.6	100	824.6	100

Figure 1: Species proportional change over plan period



2.5 Access and roading 2018-2027

All existing roads within the block and the access track from the Afton Road (C90 consultation route) require some degree of surface upgrade. Minor road realignment (353 m) is required on the Monquhill track to reduce the road gradient. A section of new road is required to access Phase 2 coupes within the block over this LMP period. See map 6: Road Construction

Table 7: Roading operation over the plan period

Period of proposed construction	Proposed length for construction	Proposed length for upgrade
2018 to 2022	353 m	8233 m
2023 to 2027	1500 m	0
Beyond 2027	1300 m	0

2.6 Departure from UKFS Guidelines

The LMP seeks to follow the UKFS in all requirements.

A 2m height difference between coupes is achievable across all restock areas: delayed restock or species choice may be required to facilitate this in specific areas.

2.7 Tolerance table

Refer to Appendix III

3.0 EIA Screening Determination for forestry projects

3.1 Proposed deforestation

No deforestation is proposed within the Pencloe LMP unless required by UKFS or for the overriding benefit to the area, for example, riparian protection or enhancement of habitat and biodiversity. The area of permanent open space increases modestly over this LMP period, predominantly around watercourse buffer zones as per requirements and guidelines in UKFS 6.7 Water.

3.2 Proposed forest road works

A total length of 1500 m of new road construction is proposed over the plan period to access Phase 2 and Phase 3 felling coupes, plus a 353 m section to re-route the existing road due to steep gradients. The entire existing road network (7300 m) within the block requires upgrade, plus the access road across the adjacent farm (a further 933 m out-with the block).

There are no site designations impacted by the proposed construction work. Given the licencing thresholds, the topography of the plan area and the modest scale of our proposed road construction work there should be no requirement to apply for a SEPA Construction Site licence.

3.3 Proposed forest quarries

Stone requirements will be met through existing quarries within the block. Permission to extend two quarries in Pencloe was granted by FCS in July 2018 through the Amendment process. No additional quarries are proposed during this LMP period.

3.4 Proposed afforestation

No afforestation on previously unplanted land is proposed during this LMP period.

3.5 Additional regulatory considerations

It should be noted that there is currently a planning application for a windfarm in the Pencloe forest block, currently (at the time of writing) awaiting a final decision from the Scottish Ministers. This LMP has been designed specifically to not take these proposals into account and concentrate on the most suitable management prescriptions for the block in its current form. Should the windfarm be consented, required key-hole felling and infrastructure will be dealt with through the planning process.

Details of the application taken from the Scottish Government Planning and Environmental Appeals Division are as follows:

"Wind farm comprising 19 wind turbines with a blade tip height of up to 125 metres and an installed generated capacity of up to 69.3 Mw, associated crane pads, three permanent meteorological masts, new and upgraded internal access tracks and water course crossing, a substation, control and operations and maintenance facility, two temporary construction compound and temporary site security office.

Inquiry/Hearing sessions were held in this case between 25-27 September and 31 October 2017, and an accompanied site inspection was conducted on 28 September 2017. The final written exchange between the parties was completed on 22 January 2018, and the reporter submitted his report to Scottish Ministers on 2 March 2018."

Full details available at:

http://www.dpea.scotland.gov.uk/CaseDetails.aspx?id=117744

4.0 Introduction

4.1 The existing land holding

Pencloe forest is a modest sized block of 824 ha, located in Glen Afton, East Ayrshire (see map M2: Features). The block lies around 5 km directly south of the settlement of New Cumnock. Currently, the block comprises c.693 ha (84%) of even-aged Sitka spruce planted between 1973 and 1975, with around 130 ha (16%) of open ground, some of which is currently let for grazing.

The entire block is managed under clearfell – restock silviculture, and is suited to timber production as a key objective owing to the exposed and remote nature of the land holding. Poorly draining soils and higher wind hazard scores (DAMS scores > 17) mean that the block is not a suitable location for alternatives to clearfell silviculture such as Continuous Cover Forestry (CCF) or Low-impact Silvilcultural Systems (LISS), as thinning is likely to increase the risk of windthrow.

Forestry operations have been heavily delayed awaiting the approval (or otherwise) of a windfarm within the block, therefore no felling has yet been carried out to the point where the entire block has reached harvesting age, and extensive windthrow is developing. Restructuring is a key objective of this plan, steering the block toward species and age diversity to meet UKFS requirements over second and third rotations.

More detail on the existing physical characteristics and background to the site can be found in Appendix II.

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

4.2 Setting and context

Pencloe lies on the watershed near the head of the Afton Water near new Cumnock, East Ayrshire. The block occupies an elevated position amongst rounded hills, rising to 540 m at Struther's Brae. The forest forms part of a larger plantation area including Carsphairn and Kyle forests, and thus linked to the Galloway Forest Park. The height and remote location of the block means it is not prominent in the landscape within this setting, though the Merrick Fells are visible in the far distance. The forest is bordered by private plantation forestry to east and west, with a lesser border with open hill ground to the north/north-west and south-west, and lies within the larger Western Southern Uplands ESA.

4.3 LMP Presentation

The land holding is considered as a whole in this LMP.

5.0 Plan Objectives

5.1 Issues

The main issues to consider in this LMP are:

- The entire forest stock is mature, even-age first rotation Sitka spruce.
- Nutrient-poor soil, exposure and elevation limit options for species choice and future management.
- Deer numbers are high owing to poor access and thus very limited control measures in the past.
- All internal forest roads are in poor repair and require upgrade to accommodate timber haulage.
- Many coupes are currently not accessible via the existing road network: significant new road building is required.
- Pencloe Windfarm *may* be given approval in the near future, necessitating significant changes to the LMP, which would be executed through the planning consents process.
- A significant part of the block falls within the catchment area for the Afton Water, feeding in to the Nith catchment.

5.2 Key challenges

- Increasing diversity in even-age single species crop.
- Minimising adjacency issues.
- Deer control and improving access for carcass extraction.
- Identifying appropriate restock areas for increasing broadleaf and alternative conifer species to meet UKFS requirements that can be adequately protected.
- Managing potential impacts to the Nith catchment.

5.3 Management objectives

Objective 1: Ensure that the Forest continues to contribute to the District's timber production targets. The plan area is well suited to commercial timber production given the location and setting of the block.

Objective 2: Maximise timber extraction over as few phases as practicable, adhering to UKFS requirements and appropriate catchment management, to minimise future losses to windthrow. The entire forest is comprised of mature, first rotation even-aged Sitka spruce that is now suffering from windthrow. Structuring the forest into larger coupes will allow for effective harvesting and present greater

restructuring opportunities in a shorter timeframe, increasing both species and age diversity.

Objective 3: Restructure of the forest, increasing both age and species diversity toward UKFS requirements. Aiming towards harvesting 40% of the LMP area over period of this plan will allow for significant restructuring, creating self-contained coupes that are resistant to windthrow under a no-thin regime.

Objective 4: Increase deer management over the next ten years to provide a basis to increase opportunities for broadleaves (BL) and soft conifer establishment going forward, as well as improve the quality of the ground vegetation on the open ground. In the longer term, decreased deer numbers will provide opportunities to increase natural BL colonisation in riparian zones, potentially improving both water quality and soil stability.

Objective 5: Improve water quality and alleviate peak flows from the block to maintain good ecological status of Afton Water and ameliorate the Water of Deugh ecological status through extending riparian zone buffers, planting or promoting recolonization of native broadleaves, and following all best practices and guidance during forestry works. Liaise with statutory bodies over catchment management and Natural Flood Management (NFM).

6.0 Analysis and concept

6.1 Analysis

The following table details the objectives, opportunities and constraints that have determined the design concept for the Pencloe LMP.

Table 8: Analysis and concept

Objective	Opportunities	Constraints	Concept
Restructuring	Current even-age structure of the mature forest presents a 'blank canvass' to begin age and species restructuring, and start designing-in future resilience in coupe structure and species choice.	Even-age mature forest requires harvesting in as short a time-frame as possible to minimise further windthrow and maximising commercial value of current crop.	Large coupe sizes to maximise timber extraction and restructuring. Restock and ride design to build resilience and offer choices in future coupe structuring over subsequent rotations.
Commercial timber production	Provide planned sustainable & normalised timber supply.	Uniformity of age class across forest block. Creation / enhancement of conservation habitats.	Large coupe sizes will result in some timber peaks but offer better restructuring opportunities and smoother supply going forward. Maintain core conifer restock programme whilst increasing area of BL in subsequent rotations.
Deer control to increase opportunities for BL and soft conifer establishment to meet UKFS requirements	Effective deer control could lead to an expansion of natural broadleaf colonisation, especially in riparian corridors, and increased flora diversity on open ground for a relatively low cost/ ha. Link the timing of deer control effort to the timing of browsing-sensitive restock. Clearfell areas will create open areas to allow deer control.	High cost implications. Neighbouring properties may have differing objectives and may be affected by reduced deer numbers. Public access can constrain deer control.	Larger felling coupes facilitate deer control and make restock areas less sensitive to deer damage. Group restock species sensitive to deer browsing into areas where deer control can be targeted. (cont.)

Catchment management and peak flows	Make a positive contribution to moderation of peak flows to the Nith Catchment.	Loss of productive conifer area to open space and/or non-productive broadleaves. Natural regen of conifers in riparian buffers Deer browsing of BLs	Improve riparian corridors through increased buffer zones with open space, native broadleaves planting/recolonization. Effective deer control. Monitor conifer regen at review and control if resources allow.
Water Quality	Maintain current good WQ status of Afton Water. Make a positive contribution to improving WQ status of Water of Deugh.	Conifer monoculture planted close to watercourses. Current lack of tree species diversity. Extended period of landscape change.	Larger coupe sizes to effect greater impact on age/species diversity. Riparian enhancement through increased open space / BL restock. Increase species diversity toward UKFS requirements (BL and minor conifer).
Wildlife – red squirrel	Maintain red squirrel habitat and connectivity	Utilising large-seeded BL species as major component in broadleaf mixtures.	While not a stronghold area for red squirrels, use of large seeded BL will be avoided. Felling order will not isolate squirrel population.
Wildlife – black grouse	Soften woodland boundaries with adjacent open ground to improve habitat for black grouse with low density restock.	Areas difficult to reach for deer control to minimise browsing of alternative conifer/BL	Target areas of BL/SP where control can be maintained, otherwise reduce density of LP planting to create more open buffer with adjacent open ground. (cont.)

Wildlife - otter	Enhance connectivity of aquatic and riparian habitat networks, allowing/encouraging migration between catchments and increasing genetic diversity in D&G/Ayrshire.	Disturbance during felling works and extended restructure period. Natural regen of conifers in riparian buffers	Increase connectivity of internal open space to riparian zones and external open space / woodland fringe Monitor conifer regen at review and control if resources allow.
Access and Health	Enhance access and enable communities to enjoy woodlands	No current formal recreation in block; mature single species high forest offers few internal or external views.	Keep Rights of Way open and accessible. Enhance in-forest experience with increased open space and species diversity. Introduce signage as appropriate as forest structure becomes more attractive.

6.2 Concept

The concept forms the broad framework for the detailed design and is presented graphically in Map M1: Analysis and Concept. A variety of themes, often overlapping, are outlined as follows:

Restructuring

The entire timber crop (83% of the block) is mature, even-aged Sitka spruce, which has suffered from extensive windthrow in recent years. Clearing current, and minimising the risk of future windthrow is one of the highest priorities in this block. Coupe structure will reflect the need to maximise timber extraction and start the process of restructuring the forest to increase age and species diversity over the ten year plan period, whilst building in options for smaller, more resilient coupes over future plan periods/rotations.

Commercial timber production

Nutrient-poor soils, the elevated, exposed nature of the site and low visibility within the landscape means that Pencloe forest block is very suited to Sitka spruce as a commercial timber crop, verified through ESC

(Ecological Site Classification tool) analysis. Spruce and spruce/pine coupes located away from the main public views will continue to be managed as commercial crop to meet the district programme commitments. Better site types will facilitate the introduction of alternative conifer species to increase the diversity of the forest, aiming toward compliance with UKFS in the second and third rotations.

Catchment management

A number of water courses which have their source within the block feed ultimately into the River Nith catchment. Pencloe is located upstream of New Cumnock, Kirkconnel and Dumfries SEPA-designated Objective Target Areas (OTA), and within local Flood Prevention Scheme study with Natural Flood Management. Although the Pencloe forest covers a comparatively small area of the Nith catchment, flood risk and moderation of peak flows will be a key consideration in the LMP.

Water quality zones

The Afton Water has a good ecological rating by SEPA, and harbours a strong population of salmonids, whereas the Water of Deugh currently has a poor ecological status. Therefore maintaining and improving water quality in these watercourses is a key consideration of this plan, through improving riparian corridors within the block, and following regulatory requirements and good practice guidelines during all forestry operations.

Deer management

Currently the forest structure presents very few open areas for deer control. Maximising Phase 1 felling with larger coupes will result in a significant area of temporary open space prior to restock, creating opportunities to reduce deer densities to FES Galloway FD strategy targets, and thus facilitating establishment of native broadleaves and alternative conifer species during restocking and subsequent regeneration of native species.

Wildlife

Forest boundaries to adjacent open hill ground will be softened with low-density restocking of Sitka/Lodgepole and mixed broadleaf/Scots pine within a matrix of open space to the benefit of black grouse.

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

7.0 Long Term Land Management Plan Proposals

7.1 Management

The Pencloe LMP has been designed in accordance with sound silvicultural and environmental principles within the framework outlined by the UK Forestry Standard (4th Edition), the UK Woodland Assurance Standard (version 4.0) and the Galloway FD Strategic Plan.

The accompanying Management map (map M4) provides details of our coupe management proposals and the following table summarises average annual felling and thinning volumes (m^3obs) expected for the next 10 years (plan period) and beyond (note: there is a seven year separation between adjacent fell coupes to achieve 2m restock height before felling, hence no P4 coupes):

Table 9: Projected felling and thinning volumes 2019-2043 (m^3 obs)

Felling phase	Fell period	Thinning / LISS	Clearfell	Total
1	2019-2023	0	79816	79816
2	2024-2028	0	64004	64004
3	2029-2033	0	84951	84951
4	2034-2038	0	0	0
5	2039-2043	0	63290	63290

7.1.1 Clear Felling

The plan area will be managed under a clearfell management type using conventional harvester and forwarder working. A number of coupes (7 coupes, around 40% of the plan area) are scheduled for clearfell during the 10yr period of the plan and they contribute significantly to the district programme.

Clearfelling provides more flexibility for restructuring. Large coupes can be restructured with more diverse species and new internal windfirm boundaries to provide an enhanced landscape in the second rotation and more coupe options. Larger clearfells also offer an enhanced area for deer control and thus the potential to establish deer-sensitive species and reducing the need for physical barrier protection.

7.1.2 Thinning

No thinning is proposed for the Pencloe block owing to the high wind exposure in most areas. Norway spruce restock coupes (see map M5) in less-exposed areas may be thinnable, however, this is currently economically unviable but will be reassessed at the next LMP review.

7.1.3 Continuous Cover Forestry (CCF)/ LISS

No opportunities to manage current or future crops within the LMP area as CCF have been identified owing to the high wind exposure in most areas. Commitments to 'alternatives to clearfell' will be met in other blocks with more suitable site characteristics within the district.

7.1.3 Restructuring

Restructuring proposals are included on maps M4 (management) and M5 (future habitats and species). The following (Fig.2) indicates the change in age-class structure of the forest 2018 to 2047 in ten year intervals:

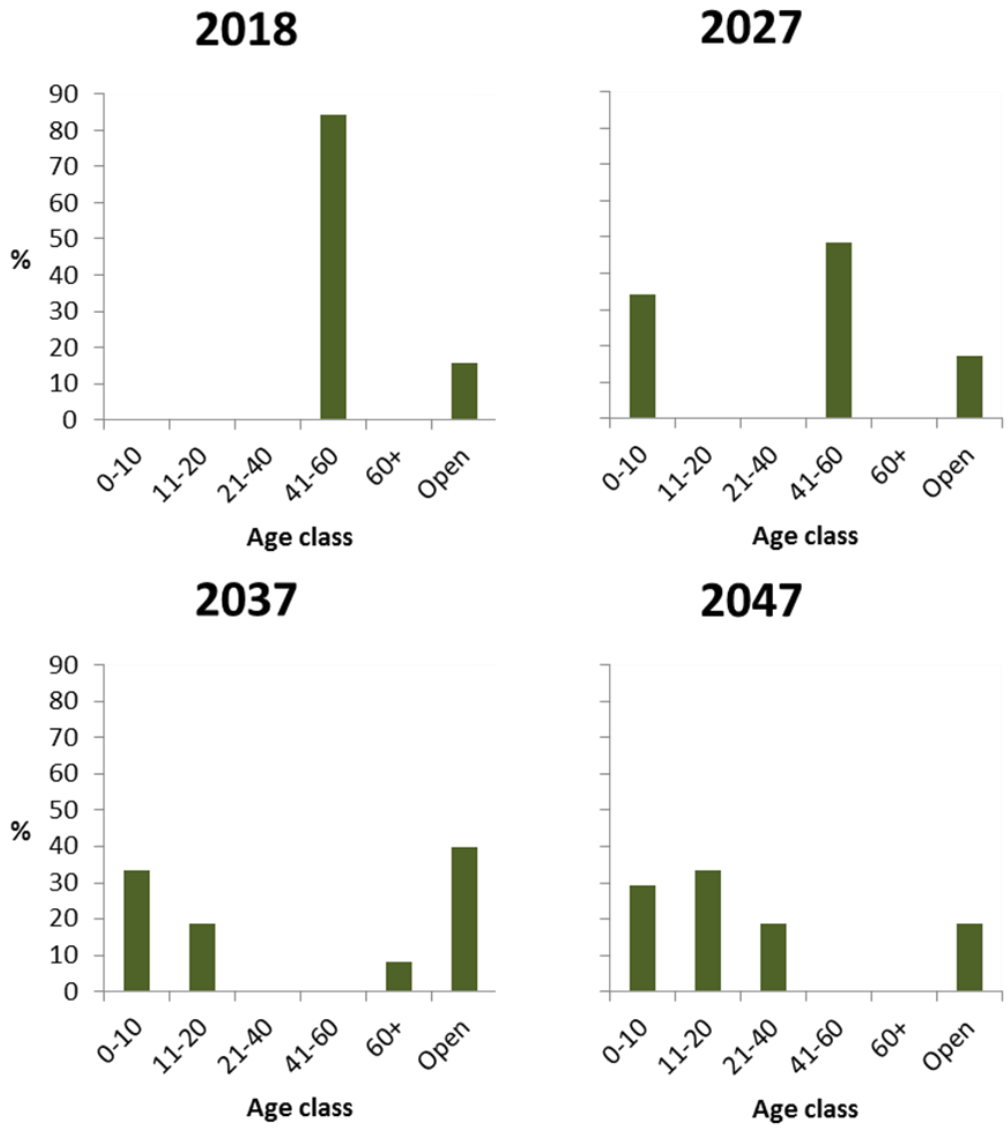


Figure 2: Age class structure 2018 - 2047

7.2 Restocking proposals, future habitats and species

The accompanying Future Habitats and Species map (Map M5) provides detail of our proposed restock species and habitats for Pencloe LMP.

The following table shows the proposed change to area by species at current, 10 and year 20 intervals:

Table 10: Species by area (ha) 2018-2037

Species breakdown	Area 2018	Area 2027	Area 2037
Primary species: Sitka spruce	693.5 *(84.1%)*	607.9 *(73.7%)*	403.6 *(48.9%)*
Other conifer	0.6 *(0.1%)*	48.7 *(5.9%)*	62.1 *(7.5%)*
Mixed broadleaves	0 *(0%)*	26.2 (*3.2%)*	30.6 *(3.7%)*
Open space	130.5 *(15.8%)*	141.7 *(17.1%)*	328.3 *(39.8%)*

7.3 Open land

7.3.1 Open ground

Open ground in the plan is concentrated around the currently grazed land at Struther's Brae and the hilltop of Milray Hill. Grazing is expected to continue at Struther's Brae; however, if this ceases to be the case, the area could be a candidate site for peatland restoration or peatland edge woodland creation.

7.3.2 Quarries

Quarry work over the lifetime of the plan will inevitably be required to provide a regular source of material for forest road construction and maintenance in the area. Two active quarries are identified on the features map (M2) and will remain as areas of permanent open space during their active life.

Quarry development proposals will be submitted to FCS for approval prior to any work taking place (see Tolerance table in Appendix III).

8.0 Critical Success Factors

- Forest and access roads upgrading is critical to allow harvesting and timber haulage operations.
- Effective deer control over new clearfell sites will be critical to the establishment of native broadleaves and soft conifer species.
- Establishment of alternative conifer and broadleaves toward achieving UKFS requirements.
- Protection of watercourses during all forestry works.
- Improve riparian zone buffers where required.

9.0 Management Prescriptions

9.1 Forest Management Types

The plan area will be managed under a clearfell management type using conventional harvester and forwarder working. Site type precludes the introduction of LISS or CCF Silviculture.

The presumption is that no felling will take place until the neighbouring restock areas have reached c.2 m height.

9.2 Future Habitats & Species

Sitka spruce will continue to be the main timber species, with Lodgepole pine planted in a 50:50 mix (and therefore compliant with UKFS alternative conifer requirements) where SS yield class has been less favourable; however, where site conditions are suitable Norway spruce and Scots pine will be preferred. Larch species, previously beneficial to priority species such as red squirrel and black grouse currently has a restock embargo owing to extensive *P. ramorum* infection throughout the district; however, should this be lifted in the future, larch could be considered for restock in future revisions.

There is also a marked increase in the proposed area of mainly native small-seeded broadleaf tree cover that will both enhance the landscape and provide improved woodland habitat to protect soils and improve water quality. Target stocking density for non-commercial broadleaf will be a minimum of 1600 stems per hectare (2.5 m spacing) at establishment, with beating up taking place at year five to achieve ≥ 1100 ha^{-1}. The intention is to focus areas of deer sensitive restock species into geographical groupings in order to target elevated levels of deer control during establishment, and these areas will be managed as Minimum Intervention or Natural Reserve into subsequent rotations.

Post clearfelling, there will be no conifer restocking within 20m (and on occasion up to 50m) within the main watercourse riparian zones. It is expected that some of the riparian zones, designed open ground and broadleaf areas will fill in with natural regeneration of both conifers and broadleaves. Through the delivery of this Land Management Plan (LMP) FES will manage natural regeneration in such a way as to ensure that, where practicable, it does not significantly impose a negative impact upon the objectives of the plan. Natural regeneration will be managed so that any negative impact upon designated, protected or promoted habitats, species,

landscapes and catchments within or adjacent to the LMP area is minimised and where possible mitigated. The advice of Fisheries Trusts 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 Tolerance table in Appendix III).

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

9.3 Operational Access

The existing internal road network allows access to all P1 coupes, but requires upgrading (including reduction of steep gradients) to accommodate timber haulage.

Any water crossings on new roads will be guided by Controlled Activities Regulations (CAR) and be passable by otters.

The main haulage exit is the C90 Glen Afton road which is a consultation route; therefore the Ayrshire Roads Alliance and Timber Transport Group will be consulted accordingly. Dialogue with New Cumnock Community Council will be sought to discuss haulage hours and frequency.

New ATV tracks may be required along restocked coupes adjacent to open hill area, but careful consideration will be given to their absolute need and location. Though none are currently planned, where required, they will be constructed by removing topsoil and levelling the surface with a drain on the top side and will be a maximum of 2m wide. No trees will be planted within 5m of the track centre and riparian zones will be avoided.

9.4 Deer Management

Deer management will be carried out in line with the district strategy for deer control, 'Galloway Forest District Deer Management Strategy Plan 2014'. Cull figures fluctuate but predicted culls are based on Deer Population Assessments (DPA) carried out by independent contractors. The

aim of current policy is to reduce deer densities from 10-15 deer per km^2 to 5 deer per km^2 within the woodland area in order to ensure all tree species including natural regeneration and associated habitats are protected from negative impacts from over grazing.

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

9.5 Management of Open Ground

The majority of permanent open ground shall be managed for the purpose of a) protecting watercourses and b) enhancing biodiversity value. Buffer zones along watercourses significantly increase the linear extent of edge habitats, which are often of high biodiversity value[1]. Effective deer control will be a critical success factor in allowing native broadleaf colonisation and improve ground flora diversity.

9.6 Public Access & Core Paths

Whilst there appears to be little public use of the tracks or paths in the Pencloe block, free access is encouraged in line with FES national policy.

There are no Core Paths within or adjacent to the site. A single Public Right of Way runs up the main access track from Pencloe Farm, which continues as a ride to access the Carsphairn Forest directly south of Pencloe. This RoW will be maintained throughout the life of the LMP. Path closures will be minimised and diversions used only to protect public safety where harvesting or engineering works dictate, in which case ample signage will be displayed.

9.7 Heritage Features

Designated historic environment features are recorded in the Designated Historic Assets Register (maintained by the FCS Archaeologist). Scheduled monuments and listed buildings are managed within a programme of individual Monument Management Plans and Condition Surveys respectively. FCS also maintains a programme of detailed measured survey

[1] Ries L., Fletcher R. J., Battin J., and Sisk T. D.. 2004. Ecological responses to habitat edges: mechanisms, models, and variability explained. Annu. Rev. Ecol. Evol. Syst. 35:491–522.

of our most significant sites in order to enhance the national historic environment record and inform conservation management.

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

Known heritage features are marked on workplans before the start of forestry operations. Machine operators are fully briefed on their responsibilities prior to all sites being worked. The known record is based on features recorded on the 1st edition OS Map (1850). At planting and restocking, historic features will be removed from ground disturbing operations with opportunities to enhance the setting of important sites considered on a case-by-case basis (such as the views to and from a significant designated site).

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

Appendix I: Land Management Plan Consultation Record

Statutory Consultee	Date contacted	Date response received	Issue raised	Forest District Response
Local community – drop in session held at New Cumnock Town Hall 15:00 – 19:00 on 01 August 2018	10.07.18	Attended by representatives of the Community Councils and Development groups. Comments raised at drop in event; 01.08.18	• Questions raised on volume of timber removal and associated transport: how many trucks per week? • Public access: could FES do anything to encourage more access to Pencloe? Linkage into Carsphairn forest?	The C90 is a consultation route, therefore dialogue with Ayrshire Roads Alliance will determine final haulage plans. Local CC to be consulted. See 9.3 Operational Access Access addressed in Appendix II/3.6.1 Recreation
SNH - Strathclyde & Ayrshire Fiona Findlay	14.06.18	20.06.18	• SNH do not intend to offer formal comment on this proposal as it falls below the FCS – SNH concordat for forestry related casework.	Noted – no further response required.
East Ayrshire Council	14.06.18		• Established Right of Way should not be disrupted or adversely impacted through forestry activities. Right of Way should not be diverted without statutory process (Policy TC4).	Any RoW detailed in workplans. Addressed in section 9.6 Public Access & Core Paths.

			• Areas of blanket bog should be protected for carbon storage and sequestration. • Open areas of acid grassland habitat should be preserved where identified as they are threatened habitats. • Site lies within the Western Southern Uplands sensitive landscape. • Local nature conservation site 'Afton Uplands' is adjacent (and partially intrudes) Pencloe forest bock to the south-east. Areas of particular interest provided though none are within LMP area. • Potential flood risk, though EAC acknowledges the benefits of woodland in mitigating risk. • Seek advice from Ayrshire Roads Alliance regarding roads and access. • Notified of Pencloe Windfarm planning application decision pending decision from SG.	Addressed in II/3.1.1 Geology, Landform and Soils. Addressed in 9.5 Management of Open Ground. Addressed in II/3.5.1 Landscape Character. Noted, but no further action required. Addressed in 6.1/6.2 Analysis and Concept. Addressed in 9.3 Operational Access. FES aware and noted in 3.5

Historic Environment Scotland	14.06.18	27.06.18	• No designated features – no comment other than referred to Regional Archaeologist	Noted – no further response required.
SEPA Judith Montford	14.06.18	12.07.18	• General comments relating to forestry activities. • Demonstrate full compliance with UKFS on Felling and replanting; new supporting infrastructure; carbon balance and impacts on peat; impacts on wetlands; use of waste on site; pollution prevention and environmental management. • Consider flood risk from operations and opportunities to ameliorate flood risk and water quality.	All points addressed in sections: 5.3 Objectives 6.1 Analysis & concept 7.1 Management II/3.1.1 Geology, soils & landform II/3.1.2 Water
IUCN Otter Specialist Group Rosemary Green	14.06.18	25.06.18	• Otters may use the watercourses through the forest, and there is evidence of migration (gene flow) between Solway and Ayrshire catchments. • Otters thrive best in riparian corridors with a mix of broadleaves	Addressed in II/3.4.2 Water quality and riparian zone improvements are key objectives in the plan (see 5.3 Objectives)

Nith District Salmon Fisheries Board Jim Henderson	14.06.18	05.07.18	• Advised salmonids present in Afton Water and Carcow Burn. • NDSFB pleased to see riparian fringes of watercourses within Pencloe forest are highlighted within documentation and should be given special protection. These areas are improved by the inclusion of broad leaf species or alternatively utilise these as open space.	Noted – water quality and riparian zone improvements are key objectives in the plan (see 5.3 Objectives)
Red Squirrels in South Scotland Stephanie Johnstone	14.06.18	12.07.18	• Pleased that red squirrel has been identified as a priority species in the plan. • Advice given on felling and habitat retention, and restock species choice.	Addressed in 6.1 and 6.2 (Analysis and concept of plan design) and Appendix II/3.4.2
New Cumnock community council	20.06.18	01.08.18	Comments received at drop in (see above)	
Improving New Cumnock	20.06.18	01.08.18	Comments received at drop in (see above)	
Development Trust	20.06.18	01.08.18	Comments received at drop in (see above)	
Community Action Plan group - New Cumnock	20.06.18	No response received		
Forestry Commission Scotland	14.06.18	No response received		

CONFOR Jamie Farquhar	14.06.18	No response received		
RSPB Zoe Clelland	14.06.18	No response received		
Ayrshire Rivers Trust Stuart Brabbs	14.06.18	No response received		
Galloway & Southern Ayrshire Biosphere	14.06.18	No response received		
Glen Afton Community Group	14.06.18	No response received		
Visit Scotland	14.06.18	No response received		

Appendix II: Supporting Information

II/1.0 The existing forest and land

II/1.1 History of the land holding

Afforestation of the Pencloe block took place between 1973 and 1975.

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

Acquisition date	**Deed Ref**	**Title**	**Seller**
Sep 1970	1016	PENCLOE (PT)	THE BANK OF SCOTLAND & R BROWN
Nov 1972	1104	ASKMARK FARM (PT)	MESSRS D M & J GUILD
Mar 1973	1112	MONQUHILL/ASHMARK EXCHANGE	MR W D DALZIEL

II/2.0 Analysis of previous plan

II/2.1 Aims of previous plan and achievements

Objectives from the previous plan were as follows; however, it should be noted that no timber extraction has been carried out in the block over the previous plan period.

Objectives	Assessment of Objectives during plan period
Primary objectives	
To maintain a timber supply for the Scottish wood using industry	No felling has taken place.
To increase the benefits of the area to wildlife by increasing age and species diversity and developing a Forest Habitat Network based on the watercourse corridors and hilltops	Not met. No work has been carried out
To protect water quality and the physical integrity of streams	Met by default. No work has been carried out

To improve the internal and external views of the forest	Not met. No work has been carried out
To improve the recreation benefit of the forest and preserve features of archaeological interest	Not met. No work has been carried out

These 2006 approved plan objectives have generally not been met owing to the delay of felling in anticipation of a windfarm development within the block, which is yet to be realised.

II/2.2 How previous plan relates to today's objectives

Over the interim period these objectives have become slightly outdated. Key objectives for the plan (see section 5.0 above) are now more directly related to the revised brief (see Appendix IV).

II/3.0 Background information

II/3.1 Physical site factors

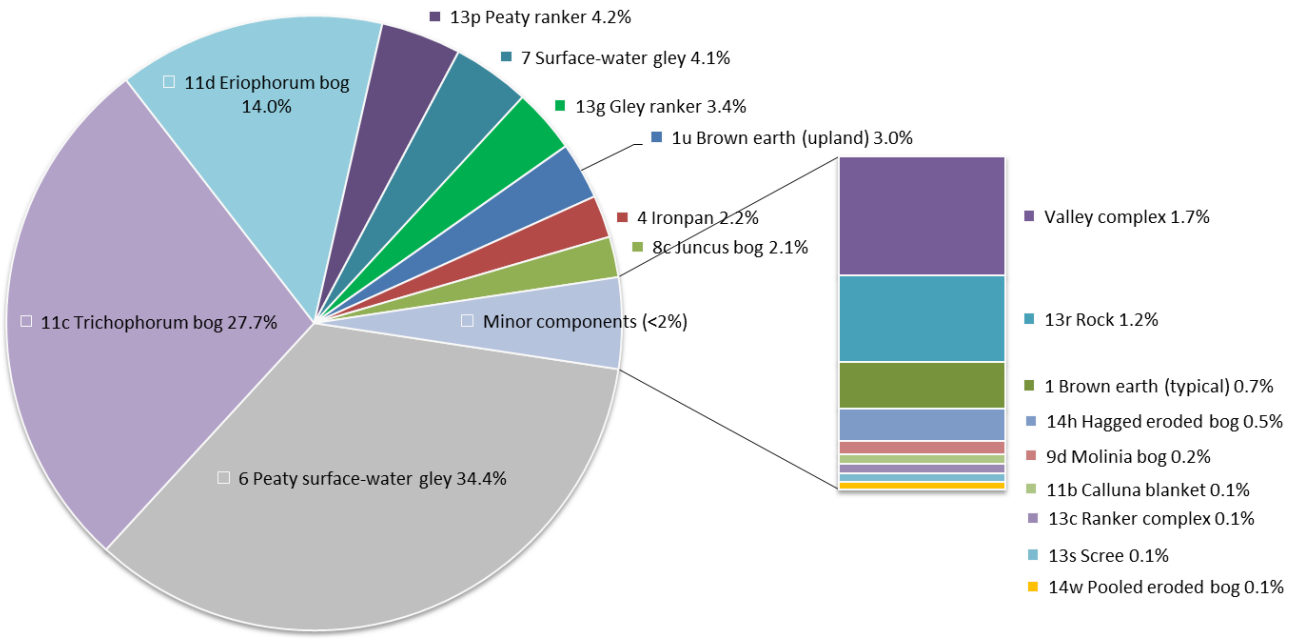
3.1.1 Geology Soils and landform

The plan area lies within the general area of sedimentary wackes formed under deep sea conditions over the Ordovician period. Superficial geology is predominantly glacial till and peat formed over the Quaternary period.

Poorly draining surface-water gley and peat soils dominate the block (see Fig.3 below).

Data from a peat depth survey (2626 points) conducted on behalf of Pencloe Wind Energy Ltd was kindly made available to FES. Points were interpolated using the IDW (inverse distance weighting) model in ArcGIS.10, and although such models provide an indication only (survey points were numerous around potential turbine base sites, and up to 200 m spacing elsewhere), around 50% of the Pencloe forest soils potentially fall in to the deep peat (>50 cm) classification. Where existing SS stock has achieved GYC 8 or above, these areas will be restocked as per FCS guidance in 'Deciding future management options for afforested deep peatland (Forestry Commission, 2015)'. Where poor growth has occurred, these areas will either not be replanted, or planted with broadleaves to create peatland edge woodland in line with the FCS guidance above.

Figure 3: breakdown of soil types in Pencloe forest



3.1.2 Water

A number of small named and unnamed burns have their source within the block, feeding into either the Afton Water or Water of Deugh catchments.

FES manages a significant proportion of the forestry upstream of New Cumnock and to avoid exacerbating peak flow, felling in the Pencloe block will be phased to avoid significant canopy loss and to retain benefits of evapotranspiration. The proportions of forestry (in total) above Kirkconnel and Dumfries are 21% and 20% respectively.

Natural Flood Management (NFM) was considered as part of the Kirkconnel Flood Protection Scheme study in 2015 but there are no obvious requirements for NFM measures beyond normal UKFS Forest and Water guidelines. It is noted that the Nith catchment was part of a RBMP pilot project in 2013 but again, there are no obvious requirements for NFM relating to the NFE; however, clearly, as an agency of Scottish Government,

FES would welcome involvement in any multi agency approach to NFM in the catchment.

Although the plan area lies outwith either catchments designated as 'at risk', or 'acid vulnerable catchments', efforts will be made to improve water quality and soil stability within the R Nith and Water of Deugh catchments, and prevent contributing to flood risk on the Afton Water. Opportunities will be taken to go beyond the basic proposals of the legal drivers and voluntary codes i.e. the UK Forestry Standard (UKFS 6.7 Forest and Water Guidelines) and the UK Woodland Assurance Standard (UKWAS version 4.0). Buffer zones of at least 20 m of open space (or planted with native mixed broadleaves where these can be protected) will be observed for all watercourses within the block. The buffer zone along the Glenshalloch Burn will be improved with additional open space (up to 50 m buffer) and significant MB expansion to the northern edge of the block (also improving views toward the only visible edge of the block).

Pencloe forest lies outwith any catchments at risk or failing, therefore no further analysis with regard to the FCS 'Managing forests in acid sensitive catchments' guidance is required.

There are no private water supplies recorded in the Pencloe forest area.

3.1.3 Climate

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

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

II/3.2 The existing forest

3.2.1 Age structure, species and yield class

The entire block is almost exclusively even-aged Sitka spruce, planted 1973-1975. General Yield Class of the SS crop ranges from 6 to 18, with a mean of 12 and standard deviation of 4.3. Poorer growth performance tends

to be concentrated along the ridge of Auchincally Hill, whereas the northern section of the block has produced trees of good form and yield class in the first rotation.

3.2.2 Access

The internal road network, having not been utilised for any forestry works such as harvesting or thinning to date, is currently unsuitable for timber haulage and requires upgrading. Additional roading is required to access coupes to the south-western sections of the block.

3.2.3 LISS potential

LISS is defined as "Use of silvicultural system whereby the forest canopy is maintained at one or more levels without clearfell of areas over 2.0 ha". Much of the plan area has moderate-to-high DAMS scores (Detailed Aspect Method of Scoring) of >16, providing limited opportunities for the introduction of future LISS management.

3.2.4 Thinning potential

In the few areas where DAMS scores would suggest thinning may be possible, it is unlikely that this would be economically viable; however, this will be assessed as and when restock coupes reach first thinnings age based on economics and site objectives at that time in future plan revisions.

II/3.3 Land Use

3.3.1 Agricultural land

The open ground (c.41 ha) around Struther's Brae is currently let as rough sheep grazing.

3.3.2 Neighbouring landuse

The Pencloe block is bordered by open hill rough grazing pasture to the north and north-west and at Struther's Brae to the east. The rest of the forest border (c.60%) abuts privately owned commercial forest plantation.

II/3.4 Biodiversity and environmental designations

3.4.1 Designations

There are no environmental designations (e.g. SSSI, SAC) within or adjacent to the LMP area.

3.4.2 Habitats and species

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

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

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

Galloway FD Environment staff may prepare brash piles along water courses where it is considered to be of overall environmental benefit, providing excellent cover for rearing, resting and breeding otters. The main benefits for FES is that providing these features greatly reduces the likelihood that otters will create resting places or breeding sites within commercial forest stands, and the brash piles may also benefit a range of other animal species and provide valuable deadwood habitat. Whilst relatively scarce, water voles also use these riparian tracts.

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

Raptor and bat species use the LMP area and these will continue to be protected during all operations.

3.4.3 Riparian habitat

There are several minor watercourses within the LMP area that ultimately feed into either the Afton Water or Water of Deugh. Improvement of riparian zones is a key objective of this plan (see section 5).

Afton Water is a river in the River Nith catchment of the Solway Tweed river basin district. The water body has been designated by SEPA as a heavily modified water body on account of physical alterations that cannot be addressed without a significant impact on water storage for public drinking water. It has been classified by SEPA as having 'good' overall ecological status and has a good population of salmonids.

The Water of Deugh is a river in the River Dee (Solway) catchment of the Solway Tweed river basin district. The water body has been designated as a heavily modified water body on account of physical alterations that cannot be addressed without a significant impact on water storage for hydroelectricity generation. It has been classified by SEPA as having 'poor' overall ecological status.

3.4.4 Invasive species

Invasive non-native species (INNS) impact the biodiversity of an area directly and are recognised as a significant risk to water environments. There are no records of *Rhododendron ponticum*, Japanese Knotweed, Giant Hogweed or Himalayan Balsam in the Pencloe block; however, monitoring is ongoing and identified species will continue to be treated as per the District's Invasive Species Policy.

3.4.5 Pests and diseases

Phytopthora ramorum infection has been confirmed on larch throughout the district with all infected groups initially felled to comply with the requirements of a Statutory Plant Health Notice (SPHN). A wider management plan was agreed with FCS to prevent hybridisation of the disease which would have likely resulted in a more virulent strain of the disease emerging, further threatening larch populations. PR infection in a small number of Sitka spruce trees within the western section of the Pencloe block was confirmed in early 2018 after signs of infection were noticed during a routine aerial plant health survey in 2017. The pathology of this outbreak is currently with Forest Research, but currently it is believed this is an isolated incident occurring on trees already under stress.

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

Dothistroma Needle Blight (DNB) has been identified on Corsican, Lodgepole and Scots pine crops in the district, although at present is only causing mortality in CP. There are currently no pine species within the Pencloe block; however, the proposed restock includes a significant proportion of Lodgepole pine and a smaller number of Scots pine to increase species diversity toward UKFS requirements. Therefore presence of DNB in the block over future years cannot be ruled out.

II/3.5 Landscape

3.5.1 Landscape character

Under the 1998 Ayrshire Landscape Character Assessment, the LMP area falls into the classification of Southern Upland with forestry [Tb]. Described as 'bold upland areas with a character very different to the lower moorlands and hills to the north and west', characterised by steep smooth slopes rising to rounded summits, but with a considerable cover of plantation forest.

The main issues arising from the assessment of this character type of landform and vegetation are:

- Adding diversity to the landscape in subsequent rotations through restructuring for spatial, age and species diversity, exposing and preserving cultural features, and remodelling of geometric landscape patterns to more organic shape structure;
- Creating (or allowing through natural regeneration) better broadleaf-to-conifer transition from valley floor to upland plantation;

- Protect existing areas of large-scale open ground and target new conifer planting to areas already dominated by forest or 'blander' landscapes to preserve land use balance;
- Potential wind power development affecting key skylines.

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

- Increasing species and age diversity through increased restock with MB and alternative conifer species;
- Restructuring coupe shapes to increase organic shapes, and increase future coupe shape options to better tie-in with the landscape;
- Softening boundaries with adjacent open ground with MB/MC within matrices of open space;
- Overall increased area of permanent open ground.

3.5.2 Landscape designations

Pencloe forest bock is not located within a nationally designated landscape or Wild Land Area. Its characteristics are typical of the wider landscape with commercial plantations. It falls within the locally designated Glenmuir and Glen Afton Sensitive Landscape Area, though the block is mostly not visible from Glen Afton, and forestry operations will not adversely affect the nature of the glen.

3.5.2 Visibility

There are a limited number of residential properties dotted along the Glen Afton road, though few have views of the Pencloe block. The northern edge of the block is visible at times from the C90 Glen Afton road.

The Glenafton Park static caravan park is located on the western side of Glen Afton, around 1 km north of the Pencloe block. The static caravans are located in an open area on the side of the hill, and thus have a view of the northern edge of the block. Restock proposals for the P1 coupes in the north of the block (map M5) will introduce greater species and height diversity with mixed broadleaves and Scots pine, significantly improving the view from the caravan park.

II/3.6 Social factors

3.6.1 Recreation

There is little requirement for recreation in the block itself. A public right of way runs up the track past Pencloe farm into the forest block, over Struther's Brae into the adjacent Carsphairn forest. This RoW has been

preserved as a ride in the plantation, but shows little sign of use by the public. A core path follows the Glen Afton road and this valley is well visited by the public; however, the Pencloe block is somewhat isolated from the public road and is not directly accessible, nor particularly visible.

The proposed restock programme will significantly improve internal and external views of the forest, especially along the forest road to Monquhill. Therefore Pencloe forest may begin to see greater visitor numbers in the future, and introducing signage to assist navigation and visibility to the public may be merited.

3.6.2 Community

The closest settlement to the Pencloe block is New Cumnock, around 5 km to the north, and has several active community groups.

3.6.3 Heritage

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

Historic Scotland and East Ayrshire Council have been consulted as part of the stakeholder consultation process. There are no known heritage features within the Pencloe block; however, felling coupes, access roads and fence lines will be surveyed prior to any work being undertaken. Historic environment features (including drystane dykes) discovered during forest operations will be surveyed, recorded, mapped and monitored for inclusion in future versions of the Land Management Plan and to demonstrate compliance with the UK Forestry Standard.

II/3.7 Statutory requirements and key external policies

The legal status of the land is purchased.

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

- UK Forestry Standard (4th Edition)
- FCS the role of Scotland's National Forest Estate and strategic directions
- Forest & Woodland Strategies (FWS)
- Design techniques for forest management planning
- Native Woodland Survey of Scotland
- Historic land-use assessment
- Rationale for Woodland Expansion
- Policy on Control of Woodland Removal
- Deciding future management options for afforested deep peatland
- Managing forests in acid sensitive catchments

Appendix III: Tolerance Table

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

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

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

3) Tolerance Table (next page):

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

The main management objectives in this medium scale plan unit focus on core Timber production, Water Quality & Flood Attenuation, and habitat connectivity.
The block lies c.5 km south of New Cumnock, East Ayrshire

Key Strategic Directions from Role of Scotland's National Estate	***Local District Strategic Plan Priorities***	***Actions / Prescriptions***
Healthy: good environmental and silvicultural condition in a changing climate	• Commitment to high quality silviculture • 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	• *Improve* resilience through revision of coupe shapes • *Establish* a wider range of conifer and broadleaf species diversity in line with UKFS requirements • *Control* invasive species as per FES guidelines • *Manage* watercourses in keeping with UKWAS standards and Forest and Water guidelines to maintain and improve water quality within River Nith catchment. • Pencloe is located upstream of New Cumnock, Kirkconnel and Dumfries SEPA-designated Objective Target Areas (OTA), and within local Flood Prevention Scheme study with Natural Flood Management. Flood risk will be a key consideration in the LMP with an aim to moderate peak flow.
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 • Provide work in rural areas	• *Review* production forecast commitment through revised felling plan to address extensive windblow • *Manage* productive zones with correct species choice for site • *Implement* road upgrade and construction programme required to service harvesting operations.
Treasured: a multi-purpose resource that sustains livelihoods, improves quality of life and	• Involve and engage with local people / encourage partnership working • Create more uniquely special places across the Estate • Place for research and development	• *Engage* with local community (drop-in meetings and other) within LMP process • *Engage* with SEPA and local councils on long-term catchment management OTA and Natural Flood Management.

offers involvement and enjoyment		
Accessible: woodlands that welcome and are open for all	• Improve access and enhance existing or invest in new facilities • Use for health benefits and outdoor learning	• Continue to *work* with local communities to ensure access and existing rights of way are managed to correspond with the visitor demand.
Cared for: working with nature and respecting landscapes, natural and cultural heritage	• Increase area of broadleaf cover • Landscape • Maintain open habitats in good ecological condition • Priority species conservation (Red Squirrel & Black Grouse) • Safeguard heritage features	• *Increase* the broadleaf area, targeting riparian zones and boundaries to adjacent open habitat (with consideration of protection from deer browsing) • *Revise* coupe shapes to better suit landform • *Maintain* area for Red Squirrel (priority species) • *Create* low-density buffers to boundaries with adjacent open grazing for black grouse habitat benefits • *Manage* minor heritage features as per FES guidelines
Good value: effective and efficient delivery of public benefits	• Seek diverse range of income streams • Reduce carbon emissions from business activities	• *Continue* to monitor and manage sustainable deer population over LMP area through sporting leases