

Tay Forest District

Montreathmont

Land Management Plan



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Summary of Proposals:

Timber production

A key feature of Montreathmont is good growth rates in Scots pine and Sitka spruce with yield class ranging between 4 and 24. The forest structure is diverse and is composed of established stands of Scots pine which in most cases are classified as continuous cover forestry, pure stands of spruce and areas where birch regeneration is becoming the dominant species. Under this current forest plan, timber production is primarily focused on thinning rather than large scale clearfell. A programme of first thinning has already started under the previous plan and this will continue. In coupes where regeneration is beginning to dominate the understorey of pine stands, there is recognition that spruce and birch should be viewed as a component of the main crop and be allowed to develop and be marketed as an interim cash crop during thinning.

Recreation

The forest is used regularly by small numbers of local people who use forest entrances as a starting point for their activities. Currently there is no requirement to develop facilities beyond present levels other than to apply visitor zone principles at entrances to create an open and inviting area to park.

Biodiversity

The forest serves as an important habitat for red squirrel. In addition it is locally important for relatively common woodland flora and fauna which are locally rare on account of large scale agriculture which dominates the surrounding landscape.

There is also a recently discovered population of nightjar (*Caprimulgus europaeus*, UKBAP red conservation status) in the east Angus area.

A large part of the forest is located on wet soils but has a series of watercourses that were converted to linear drains in the past – both for drainage within the forest but also as important parts of a wider drainage network for neighbours. The challenge is to maintain the latter aspect while allowing them to provide biodiversity interest – particularly as they are part of River South Esk (SAC) catchment.

The main priority for enhancing biodiversity during this period of the plan will be habitat expansion through natural processes and opportunistic exposure of quality features through harvesting activities. A recent example of this process in operation was to open stands of alder woodland which had previously been surrounded by dense spruce cover. We will also seek

advice on how to benefit the population of nightjar in east Angus through habitat management and/or expansion

Landscape

On account of its low lying position, Montreathmont is not particularly visible in terms of location from population centres and consequently is not considered to have a high profile in relation to visual impact. With only a small number of clearfells scheduled over this current plan period, little change will take place to the forest structure which would constitute a major alteration to internal and external views.

1.0 Introduction:

1.1 Setting and context

The forest of Montreathmont is located in a region which is heavily influenced by agriculture and has limited woodland cover.

Planting started in the 1920s and reached a peak in the 1960s. The forest covers 997ha and is notable for its good quality Scots pine stands of which most are classified as continuous cover and worked under an irregular shelterwood scheme. There are strong levels of birch and spruce regeneration punctuating restock sites as well as forming an understorey in established pine stands.

With good internal roads and close proximity to markets. The forest is well placed to serve as productive woodland producing high quality timber. Timber from Montreathmont is regularly sold by means of long term standing sale contract or as individual parcels placed on the open market.

Owing to a high water table, windblow has been a recurring problem which has prompted plan amendments in the past. Early thinning interventions are planned in an effort to improve crop stability as well as enhance silvicultural quality. From a harvesting perspective, there is an increased emphasis on thinning and in particular continuous cover forestry rather than clearfell.

The management of the Forestry Commission Scotland's national forest estate is guided by Scottish Forestry Strategy (SFS) 2006, which sets out seven key themes:-

- **Climate change**
- **Timber**
- **Business development**
- **Community development**
- **Access & Health**
- **Environmental quality**
- **Biodiversity**

Table 1. Relevant issues under the SFS and Tay Forest District Key Themes

SFS Key Themes	Relevant issues identified for Montreathmont FDP
Climate Change	Opportunities for contributing towards national targets for renewable energy via woodfuel.
Timber	Continue to grow quality timber sustainably.
Business Development	Through tourism, timber harvesting, woodland establishment and maintenance. Consider landscape value with regard to woodlands and tourism.
Community Development	Encourage communities who wish to become more involved in the management of, or outputs from, their local forest
Access & Health	Formal and informal access routes.
Environmental Quality	Continue to work with local archaeologists and Historic Scotland to protect the ancient monuments in our care.
Biodiversity	Continue to expand the area of native woodland and open "bogland/heathland". Work with SNH to protect and enhance the scheduled and locally important sites in our care (River South Esk SAC). Work with local RSPB, Angus bird group and other relevant partners to develop a planned approach to priority species conservation.

1.2 History of plan

This forest plan is the successor to the November 2004 – 2014 plan which was written by beat forester John Spittal. The previous plan was produced in a different format to this current version which provides more detail across a number of areas. There has very much been an evolution in forest plans with a growing recognition to wider land management which reflects the work undertaken by the Forestry Commission as it takes forward existing and new policies produced by the Scottish Government.

2.0 Analysis of previous plan

2.1 Analysis from previous plan

One of the major differences between the old a new plan is the level of detail in mapping which reflects improvements in technology and data capture which were not previously available.

In 2005, an application for a plan amendment was made in response to windblow which occurred in several locations but was not significant in terms of the wider forest. Since this amendment there have been other minor windblow occurrences not requiring notification.

The forest operations detailed in the previous plan have in most cases been completed as planned or are scheduled for the first few years of this new plan.

3.0 Background Description

3.1 Physical site factors

3.1.1 Geology Soils and landform

The solid geology of the area is Old Red Sandstone (Devonian), the rock being mainly conglomerate i.e. pebbles set in a matrix of sandstone. This bedrock comes close to the surface in places in the mid-slopes of the property and emerges as outcropping rock in a few places. It is a rock type of relatively high nitrogen status which generally leads to freely drained soils, with occasional discrete springs (rather than more extensive flushes). The drift geology (overlying glacial material) is glacial till of mixed origin. This occurs on both the upper and lower slopes (but is largely missing on mid-slopes), giving rise to rather deeper, moister and apparently more fertile soils.

The dominant soil types at Montreathmont are surface water gleys which are intermixed with podzolic surface water gleys. In the northern part of the forest, patches of podzolic brown earths can be found

3.1.2 Water

A notable feature of Montreathmonth are its linear drainage channels which were previously more natural water courses and this will be taken into account when considering operational, conservation and neighbours' interests. In addition these channels feed into the South Esk which has a SAC designation and hence adds to the sensitivity of working close to these areas and their periodic maintenance. All work undertaken in Montreathmont will be carried out in accordance with the then current UKFS Forests and Water Guidelines.

3.1.3 Climate

The easterly position of Montreathmont lends to a cool dry climate with less of an oceanic influence than areas further west. Average days of rain per month for 2012 were 12 days of rain/drizzle while temperatures averaged between 19c and 6c across the year.

3.2 Biodiversity and environmental designations

There are no environmental designations within the forest, however a neighbouring SAC (River South Esk) requires care in terms of working in or close to water courses.

The forest is home to a resident population of red squirrel (SAP species), and has locally significant nesting raptors, while a population of nightjar have been identified in the east Angus area. Formerly this forest was suitable Capercaillie habitat (SAP species) but there have no sightings or evidence of their presence for a number of years.

Currently there is no grey squirrel control in Montreathment. FES is a partner in Saving Scotlands Red Squirrels contributing financially and carrying out control in a number of locations. Where and how we carry out control is reviewed regularly with SSRS and could change to include Montreathmont in the future.

There are no scheduled heritage features in Montreathmont; all known features are highlighted on the plans key feature map.

In terms of mitigation measures for protected species, there will be strict adherence to the following guidance during the application this forest plan outputs;

Forest operations & wildlife in Scottish forests; Guidance Note 31 (2006)

Forest operations & birds in Scottish forests; Guidance Note 32 (2006)

Forest operations & Red Squirrels; Guidance Note 33 (2006)

Forest operations & European protected species; Guidance Note 34

Bat Habitat use in Forestry Commission Guidance Note 35a

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Forest operations & great crested newt Scotland; Guidance Note 35b
Forest operations & otters in Scotland, Forestry Commission Guidance Note 35c
Forest operations & wildcats in Scotland; Guidance Note 35d
Forest operations & badger setts; Practice guide 9

All operations will adhere to the UK Forest Standard and associated suite of guidelines. In addition Forest Enterprise is independently audited and holds FSC certification.

Montreathmont FDP area sits within the catchment of the South Esk SAC and as such protection and enhancement of this designated site is recognised as a high priority. Environmental protection is considered at 3 different levels of planning within Tay Forest District with the emphasis changing at each level. All operations that can influence water are undertaken with reference to the latest UK Forestry Standard Guidelines for Forests and Water (FWG) currently in their 5th edition and supporting guidance as listed above in Section 3.2.

District strategic plan – Considers issues across the district at a strategic level and highlights broader principals and direction for management. Mostly looking for positive enhancements through design changes

Land Management Plan – covers a forest block or cluster of blocks in more detail and seeks regulatory approval for proposals over a 10 year period. Will seek to address specific issues and embed design changes.

Work plan – details the working methods for an individual coupe or piece of work. Mainly focused on protective measures.

Specific actions:

Protection and enhancement of the water environment are achieved in a number ways:

- Longer term design changes to enhance the water environment for example introducing greater buffering of watercourses with native woodland. This is a strategy that is being used at Montreathmont with the restocking proposals being set out on the future habitats map.
- Enhance water quality by altering details of forest design to help provide the ecological requirements set out in table 3.1 of the FWG an example at Montreathmont would be drain maintenance.
- Protection via application of the Forests and Water Guidelines (Currently 5th edition but any subsequent revisions will be adopted). FWG will be applied to all forest operations at Montreathmont including felling, restocking, and roads. Where contractors are used adherence to the guidelines forms a contractual obligation. Our adherence to this best practice is also independently audited via UKWAS certification.
- Protection of adjacent designated sites will be achieved through the accurate capture of data in the Montreathmont forest plan and the transfer of key information into work plans

in preparation for delivery on the ground. The forest district will always adopt the precautionary approach through undertaking walk over surveys, clearly defining work zones, applying close onsite supervision and recording any pertinent points.

FWG provide a comprehensive framework to cover all aspects of the operations proposed in the Montrathmont FDP. A number of the guidelines have been enshrined as legally binding GBRs but taken in their entirety the FWG provide a level of protection to the water environment substantially above legal requirements.

3.3 The existing forest

3.3.1 Age structure, species and yield class

The forest was established in 1922 and is composed mainly of sitka spruce and scots pine covering 683.41ha. In terms of vulnerability to wind damage, a DAMS scoring of 4 applies to most of Montreathmont giving a wide range of management options

Species	Planting year	Yield Class	Area
DF	1958 - 2000	Class 8 to 14	8.09
EL	1923 - 2008	Class 6 to 14	39.93
GF	1969	Class 14	0.09
HL	1934 - 2013	Class 8 to 12	3.07
JL	1929 - 1989	Class 4 to 10	15.14
LP	1922 - 1992	Class 2 to 10	8.43
MC	1922 - 1974	Class 10 to 18	0.91
NS	1923 - 2007	Class 2 to 20	30.86
SP	1922 - 2013	Class 4 to 14	295.24
SS	1927 - 2007	Class 4 to 24	388.17
AR	1958 - 2005	Class 4 to 6	1.68
BE	1929 - 1958	Class 2 to 6	5.15
BI	1958 - 2006	Class 2 to 6	59.58
CAR	1930 - 1990	Class 2	1.88
MB	1922 - 1990	Class 2 to 6	21.16
OK	1988	Class 4	0.53

3.3.2 Access

There is a good internal forest road network which is composed primarily of Class B roads that are capable of supporting haulage provided regular drainage, grading and rolling are carried out.

In terms of public roads, most of the forest and its orbital block are within easy reach and gives a number of options in terms of transporting timber to local and more distant markets. Timber exits the forest directly onto agreed routes or A roads.

3.3.3 LISS potential

Continuous cover forestry is the dominant management type and presently is found in mature stands of scots pine where mixed understories are emerging to give future options. A future concern in relation to Scots pine stands is the varied emergence of regeneration which in some coupes is absent or competing with spruce or birch. In the interim, continued thinning will manage regeneration within the context of an irregular shelterwood system but ultimately there is a possibility of species succession if Scots pine is not able to regenerate in sufficient numbers. At each forest plan review, individual coupes are assessed for their suitability as continuous cover areas and status changed or maintained depending on the findings from the field.

3.4 Landscape and land use

3.4.1 Landscape character and value

This is predominantly an agricultural landscape with large arable fields, punctuated by small copses and shelterbelts. The landform is gentle and rolling with low lying areas of wetland broken by occasional high points. There is a general feeling of openness set against the distance back drop of the Angus Glens to the north and lower Sidlaws spanning the southern horizon.

In the context of Scottish Natural Heritages landscape character assessment for existing woodland, the following recommendations have been made;

- Adopt a more naturalistic appearance, responding to landform and features such as burns and small valleys;
- Create graded and irregular margins at the top and bottom of slopes, allowing views of upperslopes from within the glen;
- Discourage straight lateral lines – do not plant up to the edge of a land holding where this creates a strong geometric vertical edge;
- Employ more varied species mixes;
- Vary the size of felling coupes;

3.4.2 Visibility

There are no major external viewpoints, although the forest is viewed from the A933 Arbroth to Brechin road, the B9113 and three minor public roads which border the forest at various points. Key view points are shown in the visualisations section of this plan.

3.4.3 Neighbouring landuse

The main landuse surrounding Montreathmont is intensive agriculture using large arable fields to produce potatoes and barley. However, within this landscape there are smaller scale woodland blocks, shelterbelts, open ground and smaller agricultural holdings.

3.5 Social factors

3.5.1 Recreation

The forest is used on a regular basis by members of the public whose main uses are walking, exercising dogs, horse riding and cycling. Presently numbers are small and no conflict has arisen with the current level of informal recreation opportunities. Periodic events also take place in the forest e.g. horse trekking.

3.5.2 Community

The immediate community surrounding the forest is formed of scattered houses and farms. It is over a mile before the first urban centre is encountered at Friockheim, further away still is Forfar which has a locally significant population.

In terms of community engagement, the most effective means of capturing opinion is either onsite or at arranged meetings held at Forfar or Friockheim.

3.5.2 Heritage

There are no scheduled heritage features at Montreathmont and other heritage features are captured on the forest plans key features map.

3.6 Statutory requirements and key external policies

While there are no statutory areas of designated land in the forest, there is a potential to impact on the South Esk SAC which is fed by water courses originating in or close to Montreathmont.

Habitat and species protection measures will be applied as highlighted in Section 3.2 of this plan.

4.0 Analysis and Concept

4.1 Analysis of constraints and opportunities

Factor	Opportunity	Constraint	Concept Development
Alder woodland	Increase area of alder to diversify forest structure and promote greater biodiversity benefit.	Potential constraints to native woodland expansion are deer browsing and competition from more vigorous species such as Sitka spruce which regenerates freely in the forest.	Periodically monitor for spruce regeneration and assess whether levels are influencing alder development.
Windblow	Opportunity to review forest plan proposals for effected coupes and match with what is happening on the ground, i.e. regeneration levels, influence of pathogens Increase in deadwood through snapped stems and higher volume of branchwood on forest floor.	Removing small pockets of windblow can be financially prohibited.	Quantify windblown areas and incorporate with programmed work.
Regeneration of birch and Sitka spruce	Manage significant areas of regeneration through respacing as a cost effective means of establishment and developing continuous cover forestry.	Plotting regeneration can be a time consuming operation both in terms of data capture and recording in the field. Desired species (often planted) can be outcompeted by regenerating species.	Determine on an individual coupe basis whether regeneration is of benefit to long term goals. This may entail management by respacing and thinning or planting in order for preferred species to develop.

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Dothistroma and other forest pathogens	The threat of pathogens like DNB can strengthen the case for early thinning. Promotion of better forest hygiene both internal and external stakeholders.	Advancement of pathogens may entail that the only option left is to clearfell. District timber commitments may be exceeded for certain products if additional volume is produced.	Utilise district monitoring data to determine whether heavy crown thinning and advancing of individual coupe programs is required.
Internal water courses	Increase level of biodiversity in riparian and adjacent land.	Care must be taken to ensure that these provide a reasonable balance between biodiversity and neighbouring interests.	Build this into operational activities and periodic maintenance activities.
Rights of Way	Established access routes which can be used by the public for passive interaction with the forest.	There are health and safety considerations with respect to live operations which require careful planning by the Beat team.	Highlight the presence of rights of way and core paths on risk assessments and contract documents. Plan well in advance of operations starting in order the take all necessary actions.

4.2 Concepts of the plan

The broad concepts of this forest plan are to;

Maximise the potential of continuous cover coupes by addressing issues relating to regeneration by managing understorey development through selective thinning, respacing and allowing sufficient light to penetrate overstorey.

Include coupes or sub-compartments in the forest thinning programme as soon as threshold basal area is attained in order to increase silvicultural value and resistance to windthrow.

Address the development of regeneration in restock sites where species such as birch and Sitka spruce are beginning to dominate. Actions available are to re-space to favour desired species, accept species transition or embark on cleaning to allow planted / favored species to develop.

Ensure that pathogens such as DNB are not allowed to become established by undertaking regular monitoring and swiftly responding to outbreaks by changing priorities in harvesting programmes and applying heavy crown thinning techniques (for DNB).

Expand the coverage of native species and particular alder woodland (wet woodland) which is currently present in small pockets

5.0 Management Proposals

5.1 Forest stand management

5.1.1 Clear felling

During the period of this plan, there are only four relatively small coupes to be clear felled which is typical of a forest where thinning is the main productive activity.

The main trigger for clearfelling is crop stability, clearfelling coupes in this plan were planted between 1968 and 1976 which highlights the point that stability (caused by high water table) rather than age has been the determining factor.

Coupe	Fell Phase	Volume	Felling Ha	Restock area	Restock
33904	Phase 1	2178	3.3	3.3	MB 90%, Open10%
33907		6962	12.5	12.5	SS 50%, EL 30%, SP 20%
33088	Phase 2	2444	4.2	4.2	SP 80%, Bi 20%
33001		10780	24.5	23.5	NS 30%, SP30%,EL20%,Bi10%,Open 10%
Thinning volume	2016 - 2026	24232	Thinable area = 509 ha		Thin cycles range between 5 - 7 years

Phase 1
Phase 2

Harvesting work is split between standing sales, long term contracts and direct production covering thinning and clearfelling. The Montrathmont plan area is well served by agreed timber haulage routes which exit the forest to the south via the B9113 and the A933. Some coupes in the north of the forest exit onto a short stretch of consultation route. Where this is the case the council roads department will be contacted ahead of operations as per normal practice.

There are no adjacency issues with the felling proposed in this plan.

5.1.2 Thinning

There is a strong focus of thinning in Montreathmont which is typically rack and matrix in first / early thinning stands planted between 1985 – 1995 and selective crown thinning in older crops. The forest has a diverse structure in many coupes which lends to a flexible approach to thinning being taken, this is particularly so where natural regeneration is found. To counter DNB by creating greater airflow in the canopies of pine crops “heavy” thinning prescriptions will be applied (that is a marginal thinning

intensity above 0.7 ranging anywhere up to 1.4). All thinning will comply with the legal definition of thinning – canopy cover is maintained so that restocking is not required. The thinning Map indicates potential thinning interventions over the whole forest within the period of this plan. Some crops may receive two interventions.

5.1.3 LISS

The practise of continuous cover forestry is well suited for a number of coupes in Montreathmont where distinct over and understoreys have been established in pine, spruce and larch stands. Some stands were established as early as 1936 and have good levels of regenerating Scots pine, Norway spruce and birch. This situation is not however present in all coupes with strong levels of spruce regeneration forming an emerging understory and raising the prospect of future species change. Continuing attention is therefore required on managing the forests understory to ensure that Scots pine and other favoured species are both able to regenerate and produce future final crop trees. Regenerating areas are assessed as part of an annual programme of cleaning which takes place across the district. Unwanted species are removed from stands at this stage or allowed to grow for removal during early thinning eg sitka regeneration being allowed to grow until the leaders reach the base of the overstory canopy then removed for pulp leaving a heather free site ideal for natural regeneration of desired species.

The Liss areas are mainly managed on a group shelterwood system with group felling of up to 2ha. However over the life of this plan the emphasis will be on further thinning cycles.

5.2 Future habitats and species

Stands of “mature” conifer, with a mix of species, will maintain habitat suitable for red squirrels (less suitable for grey squirrels). These stands will also retain good, vaccinium dominated, ground flora, suitable habitat for capercaillie if their population recovers. These stands of large conifer are good quality nesting habitat for raptors, particularly goshawk.

Expansion of wet woodland and “alder Carr” will create new areas of significant long-term biodiversity gain.

There will be plans to consider and adapt the planning of open space, particularly temporary openings, through changes in the detail of restocking and fallow periods (typically 4-5 years) in an effort to protect and expand the areas of habitat suitable for nightjar.

As the forest is mainly managed under LISS there is a widespread need to recruit natural regeneration. This will require sustained control of roe deer. The efficacy of culling is regularly monitored by nearest neighbour damage assessment. This provides

for adjustment of culling effort as required. Should natural regeneration fail or come through with undesirable species then underplanting will be considered.

5.3 Restructuring

On account of windthrow events which have occurred over a number of years, the structure of the forest has changed from even aged plantation and into a more diverse format with blocks punctured by restocked areas or emerging pockets of regeneration. This creates a more interesting but challenging forest to manage with smaller average stand size and greater species diversity. Care is required to time operations in such a way as to make best use of both the developing understorey as well as the mature overstorey trees.

5.4 Future management

In terms of future management at Montreathmont, there will be an increasing requirement to manage regenerating species on open ground or under forest canopy to ensure that species, tree quality and stocking density meet future needs.

Plant Health

All forests in Tay FD are regularly monitored for known tree pests and diseases with support available to identify the causes of any problems. Future management will respond to problems as they arise and in line with policies agreed at the time.

Current known threats include DNB, *p.ramorum* and Chalara with the forest currently containing a mix of pines, larches and a small ash component (recorded under MB). DNB is not currently having a direct effect on management proposals other than heavier thinning intensity in Pine stands, although effects will be monitored. *P.ramorum* is likely to have minimal impact on this forest as it is situated outside of management zone 2 and is therefore considered climatically less suitable for the disease.

5.5 Species tables

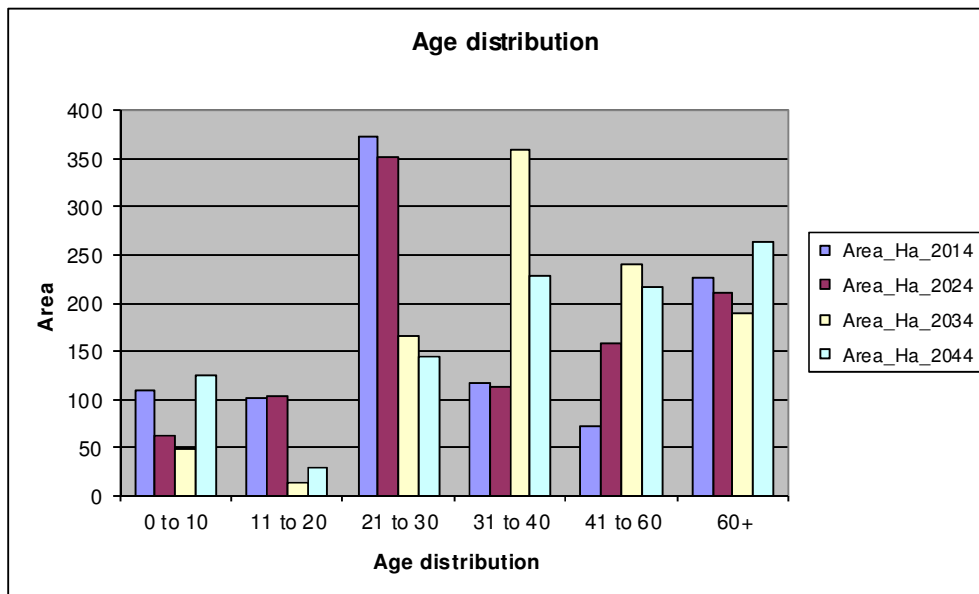
SPECIES	HECTARES 2015		HECTARES 2025		HECTARES 2035	
Open	116.2	12%	120.7	12%	120.7	12%
OK	0.5	0%	1	0%	1	0%
HL/JL/EL	58.1	6%	60	6%	60	6%
MB	21.2	2%	20	2%	16	2%
SS	388.2	39%	344	35%	339	34%
SP	295.9	30%	312	31%	318	32%
BI	59.6	6%	62	6%	64	6%
DF	8.1	1%	8	1%	8	1%
AR	3.6	0%	7	1%	9	1%
BE	5.1	1%	18	2%	18	2%
LP	8.4	1%	8	1%	7	1%
NS	30.8	3%	35	4%	35	4%
TOTAL	995.7	100%	995.7	100%	995.7	100%
MI	4.3	0.4%	4.3	0.4%	4.3	0.4%
NR	1.6	0.2%	1.6	0.2%	1.6	0.2%
LTR	0.5	0.1%	0.5	0.1%	0.5	0.1%
NB	84.9	6.2%	90	9.0%	90	9.0%
Open	116.2	11.7%	120.7	12.1%	120.7	12.1%

NB Native broadleaves

Notes on species table:

- The Mixed Broadleaf (MB) percentage declines as crops are increasingly identified by species.
- Larch spp are included on a business as usual basis but may need to be substituted / felled early depending on eastwards progression of p.ramorum.
- Natural reserves are currently under review district wide. A selection of the best sites will be agreed and published later in 2016.
- Beech increases through natural regeneration in the understory. To be managed for firewood thinnings.

5.6 Age structure



5.7 Management of open land

Open land is currently scarce within Montreathmont. A relatively subtle increase in the area of open ground will improve habitat for nightjar. It is likely that the best areas will be heathy in nature but they will probably required continued periodic intervention to prevent their “natural” progression to woodland through regeneration, particularly of birch and Sitka spruce. The open ground within the forest is mainly rides. As individual areas are small and distributed throughout the forest open ground is not shown on the maps. Where clearfell does take place a fallow period of up to 5 years allows for increased transient open space within the forest.

5.8 PAWS restoration

There are no areas of PAWS or ancient woodland in Montreathmont Forest.

5.9 Deer management

The forests of Montreathmont, Polmood and Ardovie cover some 993ha. The only species of deer present is roe. All three woods are surrounded by agricultural land and mixed woods. Much of this land is also used for mixed sporting interests and with only stock fences, there is medium to high movement of deer across boundaries.

The overall plan will be to continue to monitor deer populations and trends by dung counts, using culls to reduce population densities to less than 10/100ha. In addition, we will monitor impact of deer on young restocking, areas of natural regeneration and important habitats. There is no Deer Management Group in the area but close collaboration exists between FCS and local Angus land-owners.

The Forest District maintains a protection plan for all its forest blocks as a mechanism for identifying browsing management issues at both strategic and operational level. The plan deals with both exclusion (fencing) and removal (culling). Feeding into the plan is captured data from cull records, boundary fence condition, browsing impacts, and estimated deer population figures within forest blocks and on neighbouring land. This information is collected by local staff and external bodies to give a holistic view of deer dynamics effecting individual forest blocks.

If deer pressure is found to be impacting on restocking success or regeneration success the favoured initial response will be to increase deer control activity. Individual protection may be used on broadleaves to secure establishment and subsequently removed. Deer fencing is not currently anticipated in Montreathmont although rabbit fencing has been required in the past and could be used again if the local rabbit population increases.

5.10 Critical success factors

The main challenge to the current plan concept is further occurrences of windthrow which depending on scale can impact on coupe sequencing and significant loss of upper canopy trees. Contributing to this problem is Montreathmonth's inherently wet soils and poor drainage. With commitment to early thinning and keeping main drains open some crop stability should be possible, however for some coupes clearfell may ultimately be the only option.

Progression of DNB in Tay Forest District has fortunately been restricted to Tentsmuir & Ladybank and not on the devastating scale seen further north where large areas of pine have had to be clearfelled. There is however no room for complacency given the impact that DNB could have on Montreathmont and therefore the ongoing programme of in-house surveys will be maintained.

There are no deer fences at Montreathmont which places the responsibility of crop protection solely on the shoulders of the local wildlife ranger and contracted pest controllers. To the credit of those involved, damage to crops is currently limited and there is a clear need to continue investing in protection measures on an annual basis to maintain the upper hand. Previously however, rabbit fences have been used when population levels have been high and this measure might be adopted again if required in the future.

The arterial drainage ditches which serve the forest and also form key riparian corridors must be kept open through both forest design and ground work to ensure that sufficient water flow is maintained.

Appendix I: Forest Design Plan Scoping Record

Statutory Consultee	Date contacted	Date response recieved	Issue raised	Forest District Response
Historic Scotland	28 th November 2014	8 th December	No issues	Response noted by Forest District
SNH	27 th November 2014	27 th November 2014	You've the bases covered for us: connectivity with the River S Esk SAC and potential for pollution (sediment, oils, fuels etc.) Mitigate so there is no Likely Significant Effect and you're done	Forest District will safeguard SAC through a combination of following Forest & Water Guidelines and undertaking pre-operations checks to produce working protocols for each individual scheduled operation
PKC	27 th November 2014	27 th November 2014	Details passed to Angus Officer Fred Connachr	No response received from PKC on scoping information
SEPA	29 th October 2014	5 th November 2014	No comment at present but will make a more detailed response during consultation phase	Response noted by Forest District
RSPB	29 th October 2014	5 th November 2014	Response by e-mail There are two rare breeding birds in this wood and I believe that Graeme is aware of these and management and surveys will be undertaken accordingly, is that correct Graeme?	Claire, pre-operations checks and a work plan will be in place for all felling/thin/restock op's undertaken on the back of the plan. Mitigation will be in place for the species you refer to, and any others relevant to each individual site as per Guidance Note 32, EPS Guidance and any other guidance relevant to the operations planned. Douglas, will discuss with you this week in terms of long term management, but I don't foresee any

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				major issues.
Comments from Public Meeting held on 4 th March 2014				
P Stewart	4 th March 2014		Liked plan for its clarity. Requested copy of Analysis map.	Copy of Analysis sent 12 th March 2014
R Young	4 th March 2014		Liked; The fact that the community has been consulted. Wanted to see; if there could be greater maintenance of paths. Are there funds to improve access/parking in a central position?	No formal FCS paths at Montreathmont, FCS will keep rights of way and core paths clear of fallen trees. FCS are considering additional carparking subject to external funding from the Community Council
J Hair	4 th March 2014		Liked; tree plan- please remember red squirrels! Wanted to see; join up tracks for walking, please put up No motorbike signs.	We refer to European Protected Species. Guidance when undertaking forest operations. Where appropriate and where opportunities arise FCS will clear trees to allow easier walking. Behavioural signage has been installed as of March 2014
B Batson	4 th March 2014		Liked; retention of mixed planting and the existing bird hide.	
B Brocklehurst	4 th March 2014		Liked; present plan & future plans are acceptable. Very pleased you are also aware of endangered bird species	
L Bagnall	4 th March 2014		Liked; the plan	Where appropriate and

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			<p>Comments;</p> <p>Because some of the old rights of way have been left off when present pathways were adopted. The path network is in some areas not very joined up. Could this be improved on?.</p> <p>When Phase 3 felling is done, could the re-planting in section next to Pitkenney School be set back to improve visibility on the road (from Brechin direction).</p>	<p>where opportunities arise FCS will clear trees to allow easier walking.</p> <p>We will amend plan to reflect desire for sight line improved at Pitkenney School.</p>
P Bagnol	4 th March 2014		<p>I would like clarification as to who owns the road between Framedrum and Pitkenney School. This road is an important access route into Montreathmont to avoid the very busy main road. The use of this route is being blocked by some residents as the road is maintained as a private road.</p>	<p>Access rights apply to non-motorised access on road linking Framedrum and Pitkenney.</p>
S McGowan	4 th March 2014		<p>Clarify who owns the road Framedrum and Pitkenney School.</p>	<p>Check deeds</p>
H Jackson	4 th March 2014		<p>Aberlemno Community Council get many people who object to the young people who ride motor bikes on the roads and paths in the forest.</p>	<p>FCS does not provide specialist areas for motor cyclists due to the complicated planning restrictions.</p> <p>FCS will manage anti-social behaviour using signage and encouraging</p>

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			Is it possible that an area could be kept for bikes and other areas reserved for dog walkers?	locals to report matters to the police.
D Russell	4 th March 2014		<p>I like that there is a plan and the opportunity to comment.</p> <p>Would like to see;</p> <p>Need to deal with litter & dog mess</p> <p>West of Pinegrove – Brechin Road, more connected routes to give circular walks</p> <p>Separate area for motor bikes to prevent co-usage</p>	<p>FSC routinely remove rubbish from forest entrances and use behavioural signage to raise awareness of responsible access.</p> <p>Where appropriate and where opportunities arise FCS will clear trees to allow easier walking.</p>
I Sword	4 th March 2014		Liked; mixed replanting	
F Conacher	4 th March 2014		<p>Liked; nearly complete holistic view achieved. Well presented.</p> <p>Would like to see;</p> <p>Please include some carparking for visitors. It has been noted that access to forest entrances are often blocked by visitor cars.</p>	FCS are considering additional carparking subject to external funding from the Community Council
B Mc Curley	4 th March 2014		<p>Liked;</p> <p>The overall management plan is very beneficial to all aspects both commercial & public recreation pursuits & the variety of tree species is catering for a wide range of</p>	

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			bird species.	
D & M Hudson	4 th March 2014		Plan as expected, no problems	
T Deacon	4 th March 2014		Liked, Management of trees. Positive future for the forest.Continue with responsible access to the forest.	
A Symens	4 th March 2014		Liked; long term plans, beyond 2044 Would like to see; Provision of signs for litter & dog mess, with bins provided. Nearly all entrances have litter dropped by vehicles –makes walking unpleasant.	FSC routinely remove rubbish from forest entrances and use behavioural signage to raise awareness of responsible access.

Appendix II: Forest Design Plan Final consultancy feedback

Statutory Consultee	Date contacted	Date response recieved	Issue raised	Forest District Response
RSPB	30 th October 2015	4 th December 2015	Specific locational references to nightjar.	References made more general.
Infrastructure Services Aberdeenshire Council	30 th October 2015	4 th November 2015	Missing boundary stone.	Boundary stone now marked as a heritage features point and included in the key features map. GIS database updated accordingly
Angus council	30 th October 2015	6 th November 2015	Commitment needed in the LMP to submit a traffic management plan to Angus Council Roads prior to haulage of any timber from the forest.	LMP text amended to consult the council roads department prior the use of the consultation route.

Appendix III: Tolerance Table

	Adjustment to felling coupe boundaries	Timing of restocking	Change to species	Windthrow response
FC Approval not normally required	0.5ha or 5% of coupe – whichever is less	Variation of less than 2 planting seasons from standard restock year, 4 years post-felling	Change within species group, e.g. conifers: native broadleaves	Up to 1.0ha
Approval by exchange of letters and map	0.5ha to 2.0ha or 10% of coupe – which ever is first		Greater than 15% species change	1.0ha to 5.0ha – if mainly windblown trees between 5.0ha to 10ha in areas of low sensitivity.
Approval by formal plan amendment	Greater than 2.0ha or 10% of coupe	Variation of greater than 2 planting seasons from standard restock year, 4 years post-felling	Increased native woodland component. Increase in native broadleaves and open/bog restoration	Greater than 5.0ha in areas of medium to high sensitivity

Appendix IV. Design Plan Brief

FOREST PLAN BRIEF 2013

Montreathmont

The sustainable and efficient management of these forests will be driven by the identification of an appropriate balance between environmental issues, people's interests and economic productivity. The attached draft Strategic Plan identifies a zonation of management priorities for some of the key issues within these broad categories - conservation, landscape, recreation and timber production.

In comparison with other Forestry Commission forests in Scotland, the following classification gives a wider context to the value of these forests:

CATEGORY	RELATIVE VALUE
<p>Conservation and heritage</p>	<p>The forest serves as important habitat for red squirrel (FC Key species).</p> <p>In terms of forest diversity there are areas of alder which add value to the forest.</p> <p>The land surrounding the forest is mainly agricultural which makes Montreathmont locally significant for woodland flora and fauna within this part of Angus.</p> <p>Open heathy (often ephemeral) habitats will be important to nightjar</p> <p>Medium / high priority on account of red squirrels and nightjar</p>
<p>Landscape</p>	<p>Montreathmont is viewed from the A933 running between Arbroath and Brechin but otherwise there are no significant viewpoints directly affecting the forest.</p> <p>The forest sits on relatively low ground and is adjacent to arable land and a fragmented network of shelterbelts apart from Montreathmont Moor which is a forest of notable scale.</p> <p>Low priority owing to lack of visibility from key viewpoints and low lying position.</p>
<p>Recreation</p>	<p>The forest is regularly used by the public for informal use and is focused mainly on walkers and a growing number of cyclists.</p> <p>Low priority</p>
<p>Timber production</p>	<p>The forest has the advantage of having good access and is close to timber markets.</p> <p>While having the potential to grow quality pine and spruce, high water tables and gleyed soils entail that windblow is an ever present hazard.</p> <p>High priority based on access and growth potential for commercial crops</p>

Key features

Overhead powerlines and water main

Conservation and heritage issues

Forest is adjacent with South Esk SAC which entails a burden on the FC in terms of maintaining key forest drains feedings into the river.

Active population of red squirrel

Capper have not been observed in recent years despite the forest holding suitable habitat

A breeding population of nightjar has been recently identified in east Angus.

Landscape issues

Potential impact of windblow on internal and external views.

Recreation issues

In terms of recreation, use is mainly restricted to local users who consist of walkers, cyclists and horse riders.

There is a core path running through part of the forest.

Timber production issues

Forest is susceptible to windblow on account of soil type and there are sporadic occurrences found through out the forest.

There are a significant number of coupes where Sitka spruce regeneration prevails below mature scots pine and places a major constraint on future pine restocking for both clearfell and CCF regimes.

A number of coupes should be thinned on account of crop development, from observation many pure sitka spruce stands have fallen into heather check while mixed crops are fairing better.

Through recent monitoring, occurrences of Dothistroma needle blight have been detected within Montreathmont. To counter the spread of the disease, crown thinning across all thinnable coupes will be applied in order to increase air flow at canopy level and so remove favourable conditions for dothistroma.

Forest protection

There is a resident roe deer population in the forest which through control appears not to impact on restock sites. A regular programme of rabbit control is undertaken within the forest, this is done mainly by poisoning as opposed to fencing and shooting.