



Moray and Aberdeenshire Forest District

Midmar

Forest Design Plan



Plan Reference No: FDP 25

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.



# Midmar Woods Forest Design Plan 2014-23

## FOREST ENTERPRISE - Application for Forest Design Plan Approvals in Scotland

### Forest Enterprise – Property

Forest District:	Moray & Aberdeenshire FD
Woodland or property name:	Midmar
Nearest town, village or locality:	Echt
OS Grid reference:	NJ 717 054

### Areas for approval

	Conifer	Broadleaf
Clear felling	60 ha	
Selective felling		
Restocking	77 ha	11 ha
New planting (complete appendix 4)	None	None

1. I apply for Forest Design Plan approval\*/~~amendment approval~~\* for the property described above and in the enclosed Forest Design Plan.
2. \* I apply for an opinion under the terms of the Environmental Impact Assessment (Forestry) (Scotland) Regulations 1999 for ~~afforestation\*~~ /~~deforestation\*~~ / roads\* / quarries\* as detailed in my application.
3. I confirm that the initial scoping of the plan was carried out with FC staff on:
4. I confirm that the proposals contained in this plan comply with the UK Forestry Standard.
5. I confirm that the scoping, carried out and documented in the Consultation Record attached, incorporated those stakeholders which the FC agreed must be included.
6. I confirm that consultation and scoping has been carried out with all relevant stakeholders over the content of the of the design plan. Consideration of all of the issues raised by stakeholders has been included in the process of plan preparation and the outcome recorded on the attached consultation record. I confirm that we have informed all stakeholders about the extent to which we have been able to address their concerns and, where it has not been possible to fully address their concerns, we have reminded them of the opportunity to make further comment during the public consultation process.
7. I undertake to obtain any permissions necessary for the implementation of the approved Plan.

Signed:  
District:  
Date:

Signed conservator:  
Conservancy:  
**Date of Approval:**  
**Date approval ends:**

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## Forest Design Plan Summary

This plan is a review of Forestry Commission Scotland's (FCS) management of Midmar forest.

The purpose of the plan is to set out management objectives and prescriptions for the forest for the next ten years in detail, and in more broad terms for the following twenty years, which will fulfil the requirements of the UK Woodland Assurance Scheme (UKWAS).

The main priority for this woodland is the production of a sustainable timber crop while at the same time maximising its biodiversity value. Areas not considered for commercial management include permanent woodland and open habitats.

A proportion of the plan area has been selected for Low Impact Silviculture System (LISS) management due to the suitable species, soil types and the proliferation of advanced regeneration.

The presence of Dothistroma Needle Blight (DNB) within the block has influenced the timing of the fellings and the subsequent restock species.

Areas of the highest biodiversity value have been identified and will be retained and managed in a network of natural reserves open space and broadleaf planting.

## 1.0 Introduction

Refer to Map 1: Location.

### 1.1 Setting and context

Midmar Forest is located in the Echt and Midmar parishes, approximately 4 km west of the village of Echt in Aberdeenshire. The forest covers an area of 572ha located on the foothills of the Hill of Fare, lying between Greymore Hill (394m) and Craigour Hill (406m). A small, distinct block north of the main forested area at Bogindhu was sold during the period this plan. The remaining woods cover an elevation range of 100m to 450m above sea level, with a northerly aspect.

Midmar is a fairly diverse mixed conifer plantation with Sitka spruce and pines the main species covering around 60% of the area. Almost 45% of Midmar was historically wooded.

The forest is being managed using both clearfell and Low Impact Silvicultural Systems (LISS) with additional Long Term Retentions (LTR) and Natural Reserves (NR). Currently non-clearfell management covers around 123 ha of the area most of which was introduced in the previous plan.



Midmar seen from the B9119.

## 2.0 Analysis of previous plans

The currently approved plan for Midmar was approved in 2003.

The main objectives stated in existing plan are included in the table below, along with the progress made to date on their achievement and how they will be carried forward into the new plan.

<b>Theme</b>	<b>Priority</b> (in current approved plan)	<b>Objective</b> (in current approved plan)	<b>Progress to date</b> 1: Nominal progress 2: Some progress 3: Progress as per FDP	<b>Proposed action (in this plan)</b>
Climate change	Not considered	Restock with species appropriate to the site and climatic conditions	3: Sites replanted with the species approved in the current FDP	Continue to use the ESC decision support system to guide the selection of species appropriate to the potential future climatic conditions of the sites. Restock with as wide a diversity of species as the site (climate and soil) conditions will allow
		Increase the area of the plan managed by systems other than clearfell and replanting	3: Areas identified as LISS recorded in FDP GIS layer. Operations, such as thinning, undertaken where scheduled	Reassess areas designated as LISS in approved FDP to ensure the crops and sites are still suitable for this method of management. Reclassify any that are not suitable. Look for opportunities to bring other areas of suitable crops into LISS management.
Timber	Medium	Maximise the production of the timber in the plan area	3: Coupes identified in FDP has been felled as per plan	Timber production will be a high priority objective in the new plan. As wide a range of species as site conditions allow will be used in the restocking to diversity the FDP species makeup.
		Select restock species to match site conditions and favour commercially productive species	3: Coupes identified in FDP have been restocked as per plan	Species for restocks to be selected with the help of ESC. A diverse range of suitable productive species to be considered. This is to include broadleaves on suitable sites
Business development	High	Felling coupes to be scaled and shaped to	3: Felling coupes identified in FDP for	Enhancing how the FDP area fits with the landform and surrounding landscape will



		be sympathetic to the landscape	landscape reasons completed	continue to be a driver but the priority of this will be reduced in the new plan
		Increase area of LISS to preserve elements of the woodland in the landscape and maintain the distinctive transition to farmland	3: LISS area thinned as required	LISS management and appropriate enlargement will be important in the new plan
		Increase areas of moorland and open space to promote visual diversity and increase naturalness of the landscape	1: Planned coupes not yet reached felling age	There will be less emphasis on moorland expansion in the new plan. Open areas should be used as part of habitat networks for maximum benefit.
Access and health	Low	Identify opportunities to improve parking facilities with the option for a car park	2: Informal parking area enlarged and improved	There will be no provision for any additional car parking facilities in the new FDP
		Maintain existing tracks and paths and identify opportunities to link paths with open space to create longer, circular routes	2: Existing routes maintained but no additional routes created	Informal access will be maintained under the auspices of SOAC. There will be no provision for any additional routes in the new FDP
Environmental quality	High	Use open space and broadleaves to create habitat networks	1: Little progress during plan period as no appropriate coupes felled	This will continue to be a driver in the new plan. All areas adjacent to riparian zones and existing open space will be maintained and, where practical, enhanced and connected
		Protect and enhance all heritage features within the forest	3: All features identified in workplans and appropriately protected	Consult with Aberdeenshire archaeology service to ensure all known features are recorded on FCS GIS Layer

Biodiversity	High	Identify opportunities for restoration to native woodland or enhanced biodiversity management and retention and protection of any semi-natural features in PAWS	3: Some none native conifers have been felled and replanted with SP	Opportunities to improve the biodiversity value of PAWS and buffer zones to be identified
		Identify areas of old growth SP for retention	3: Sites identified and retained	All areas with biodiversity value will be maintained and, where possible, enhanced
		Increase age and species diversity of the forest along with the overall stand structure of wooded areas, to allow expansion of populations of woodland flora and fauna	3: All coupes identified felled and restocked as per plan	All areas with biodiversity value will be maintained and, where possible, enhanced

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## 3.0 Background information

### 3.1 Physical site factors

Refer to Map 2: Key Features.

Geology - According to the British Geological Survey, Geological Map of the UK, the forest design plan area is underlain by one main bedrock type, Leucogranite, which is a light colored granitic rock with almost no dark minerals. This produces soils with medium levels of nitrogen available. Only a small part is concealed by superficial deposits of Diamicton, a sediment that consists of a wide range of nonsorted to poorly sorted particles, i.e. sand or larger size particles that are suspended in a mud matrix, as shown on the map below.

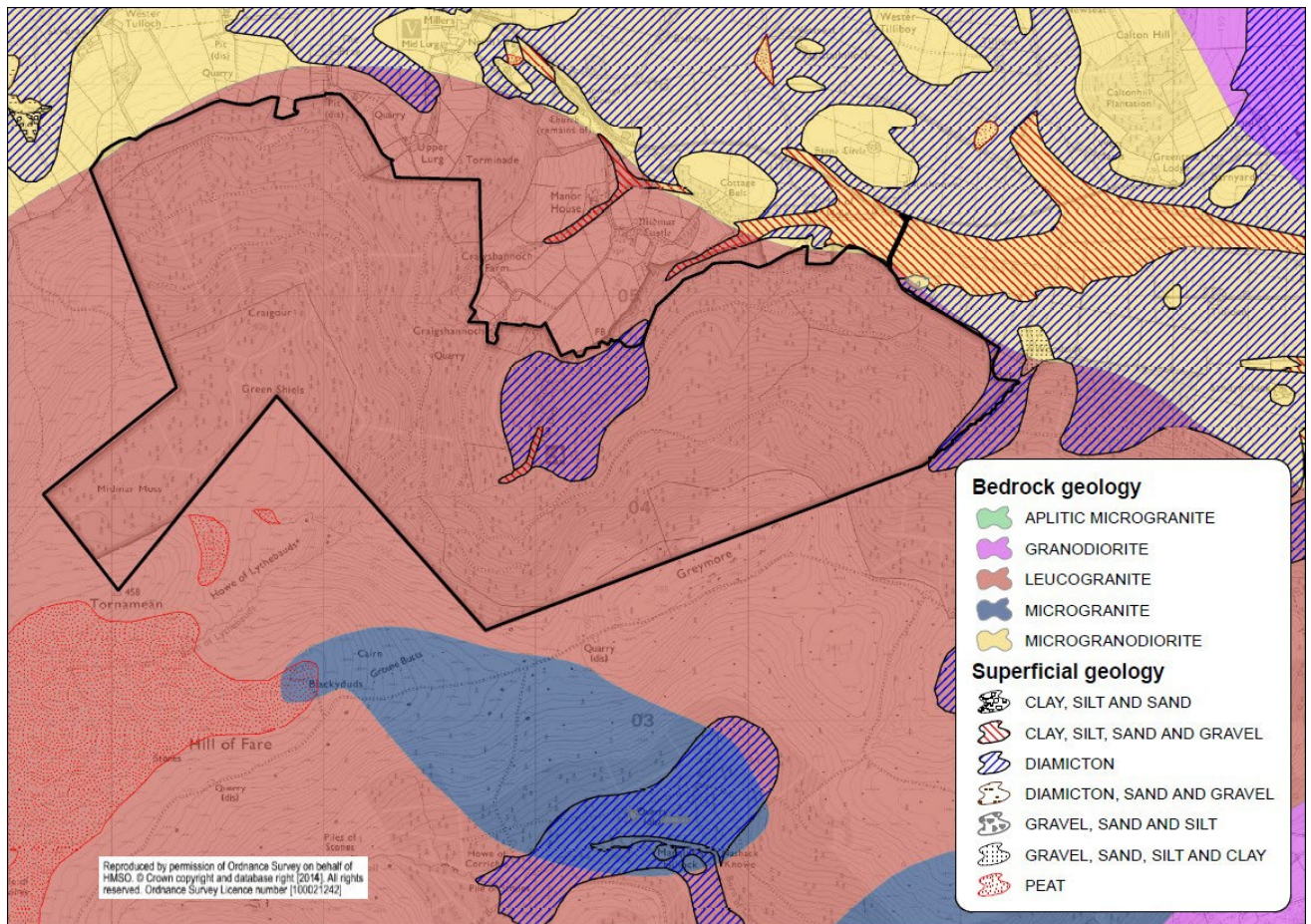


Image 1 Geology

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Soils – the presence of bare bedrock results in shallow soil depths that limit the root penetration.

The majority of soils in the plan area are podzols or podzolic ironpans. They are slightly dry with very poor nutrient levels. They support conifer species but are not fertile enough to grow a good broadleaved crop. The *Juncus effusus* bogs (8c) will provide more nutrients but the moisture regime becomes wet in these areas.

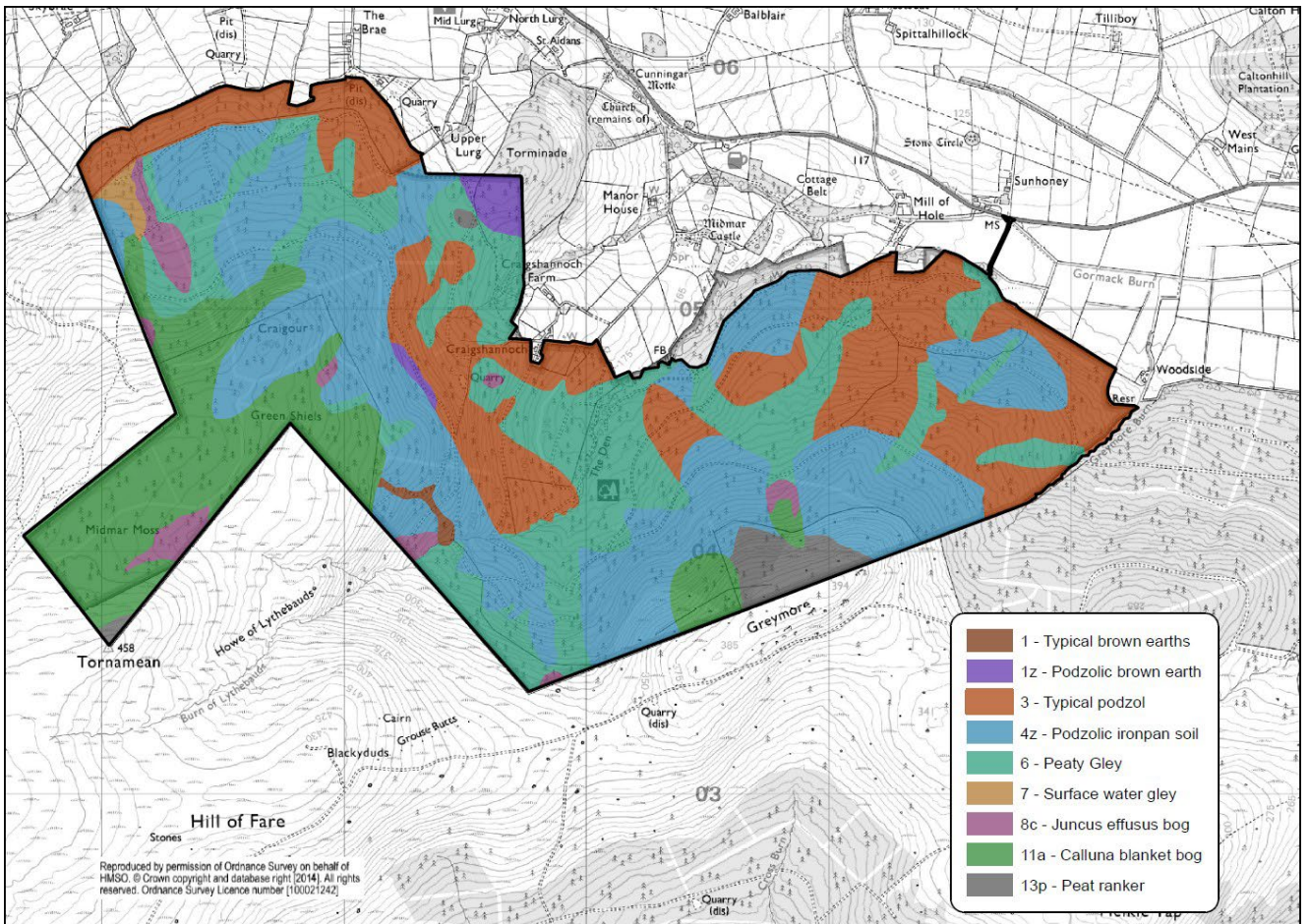


Image 2 Soils

Topography - The main block is situated on the north-east facing slopes. The elevation of the design plan area runs from about 100 meters to approximately 450 meters approaching Tornamean. The lower slopes are quite sheltered but higher up the hill the wind hazard reaches values of 4. That affects thinning options and puts emphasis on the effect of felling operations on the adjacent stands.

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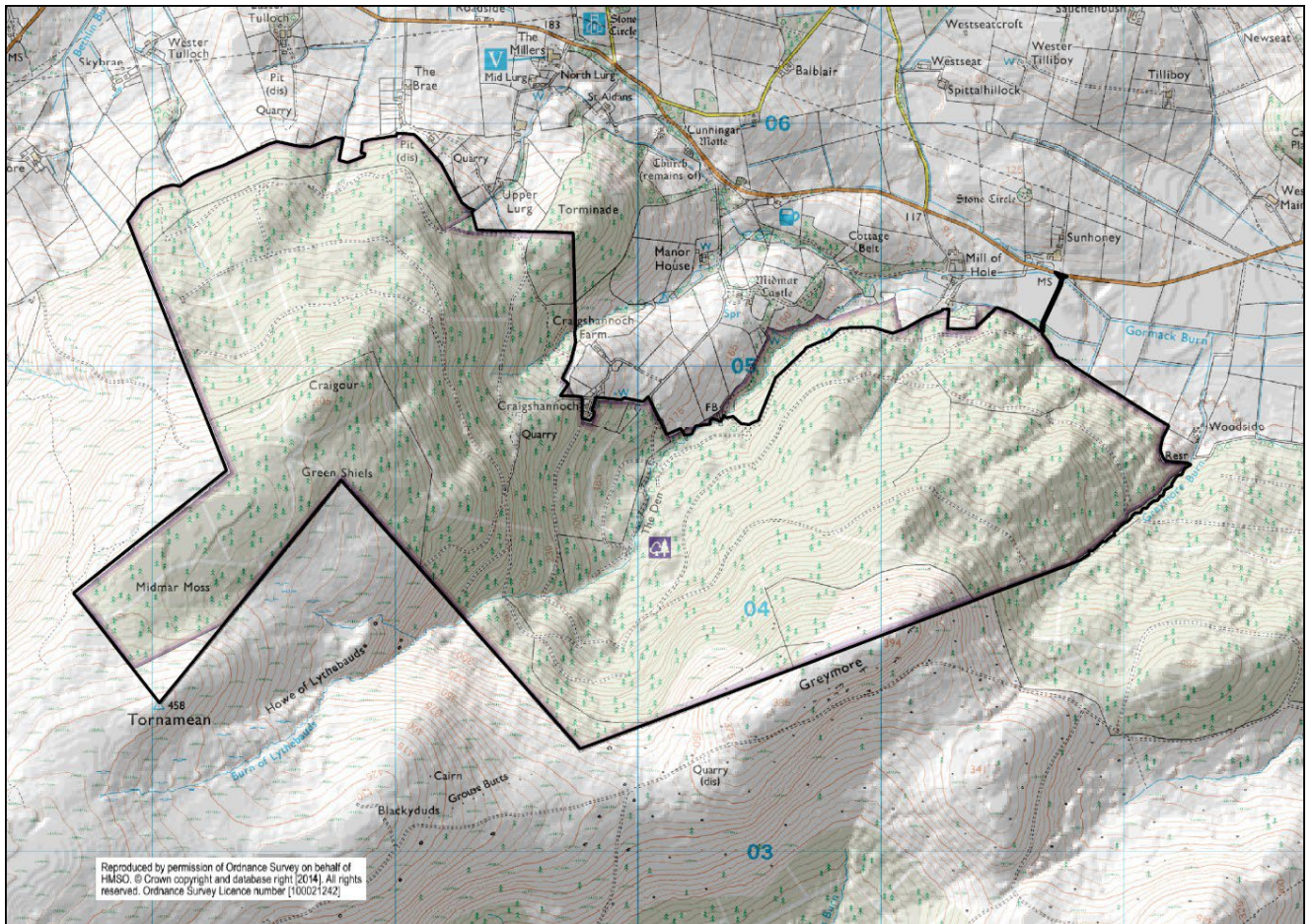


Image 3 Topology

The site conditions are not favourable for tree growth with the majority of the area identified by James Hutton Institute as land with limited and very limited flexibility for the growth and management of tree crops. Only around 10% of the site is described as having moderate flexibility. This combination of the factors determinates the potential of the site and is crucial for forest planning in the area. Bedrock close to the surface with stony or wet shallow soils with poor nutrients and high bulk density cause the trees to develop shallow, widespread rooting systems. This results in poorer growth and a higher susceptibility to windthrow. The need of careful matching species to the site is essential to ensure a stable tree crop over time.



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## 3.1.2 Water

There are six minor watercourses within the forest block; the main is Gormack Burn that is a tributary of the River Dee, an SAC for Salmon, Freshwater Pearl Mussels and the Otter. The ecological status of the burn was described in 2008 as 'poor' (SEPA) but it is aimed to improve the condition to 'good' by 2015.

The watercourses are of significance for biodiversity in Midmar forming an important part of any habitat corridors within the woodland area. Watercourses with their associated buffer zones are planned to work as natural corridors of riparian zone, open space and broadleaved species. Previous management of the forest has included streamside clearances and planting of broadleaves in riparian zones which will continue to be an objective for this plan period.

There are several water pipelines within the forest that supply neighbouring properties. See the map below.

There are no bodies of open water within the forest.

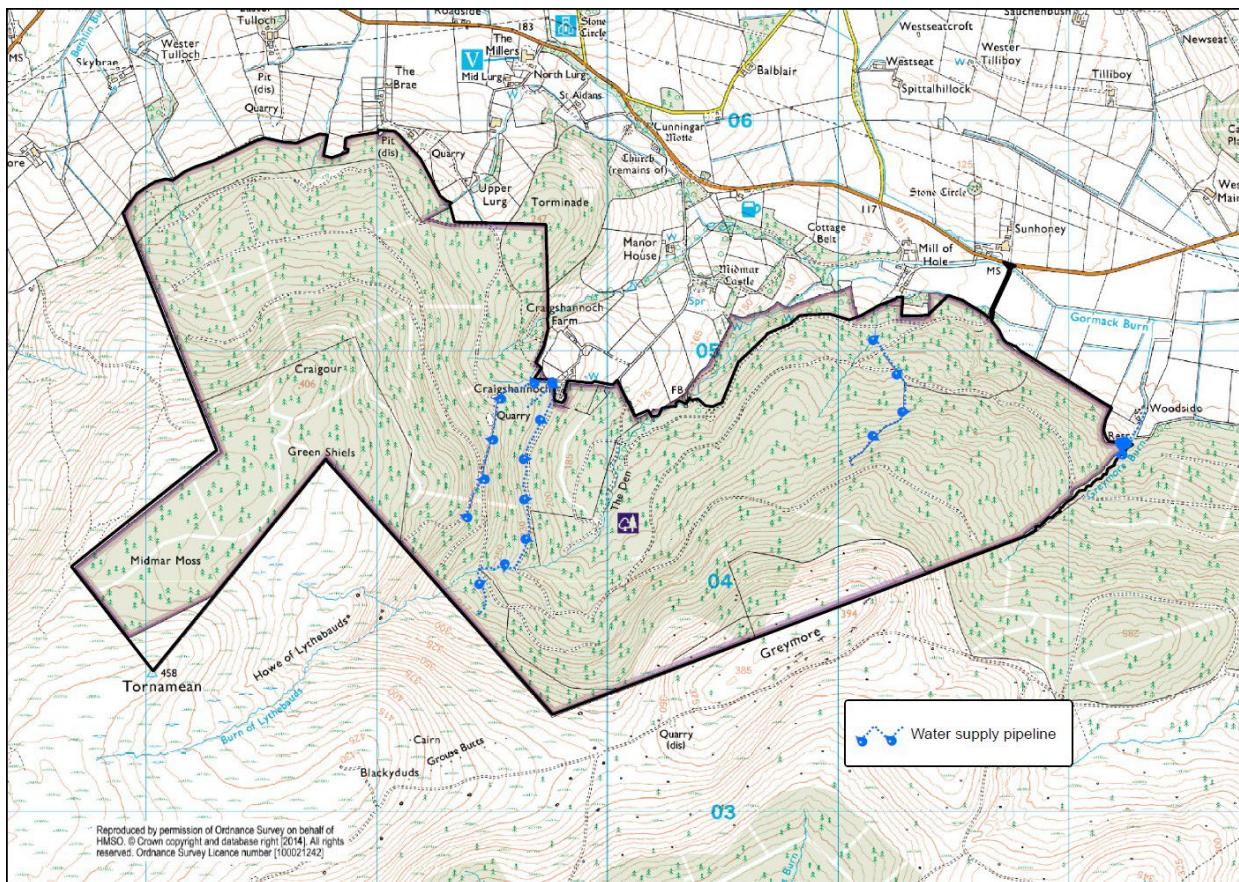


Image 4 Known water supply pipes

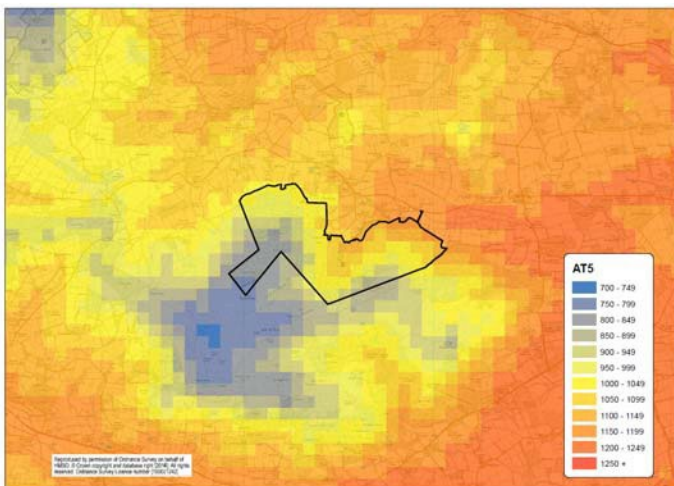
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## 3.1.3 Climate

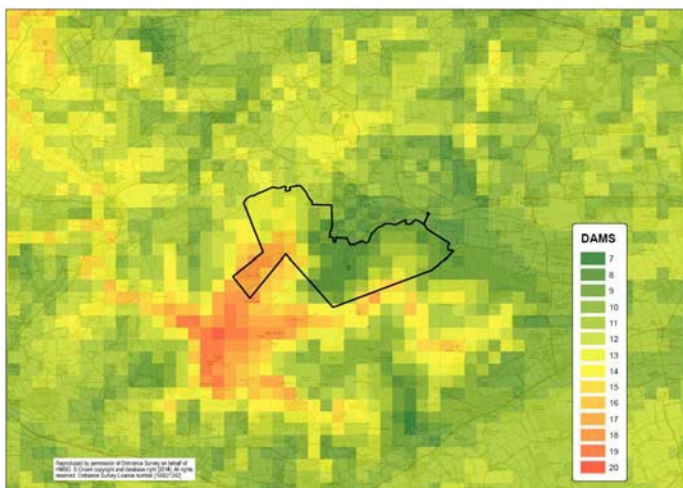
The climate data for the design plan area is obtained from the Ecological Site Classification system (ESC).

The results of interrogating this system gave the following data for the centre of main block.

AT5	DAMS	MD
1097.2	8.0	108.5



**AT5** is the accumulated total of the day-degrees above the growth threshold temperature of 5°, which provides a convenient measure of summer warmth. The results for AT5 place these blocks in the “cool” zone.



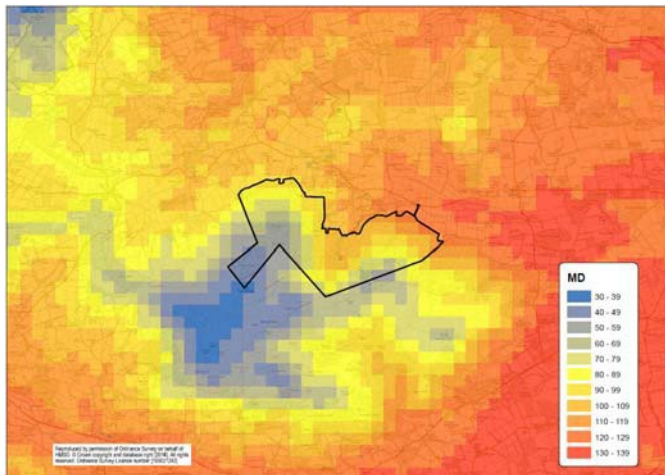
**DAMS** is the Detailed Aspect Method of Scoring. This represents the amount of physically damaging wind that forest stands experience in the year.

The range of DAMS is from 3 to 36 and windiness is the most likely limiting factor to tree growth at higher elevations in Britain. A score above 16 is associated with exposed sites while anything

below 12 is considered sheltered. The relatively low scores in Midmar show its high potential for thinning for most of block which is essential for growing good quality timber crops either by clearfell or LISS management.

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**MD** is the Moisture Deficit for the area. Moisture deficit reflects the balance between potential evaporation and rainfall and therefore emphasises the dryness of the growing season (rather than the wetness of the winter or whole year). These results place the blocks in the “moist” zone.

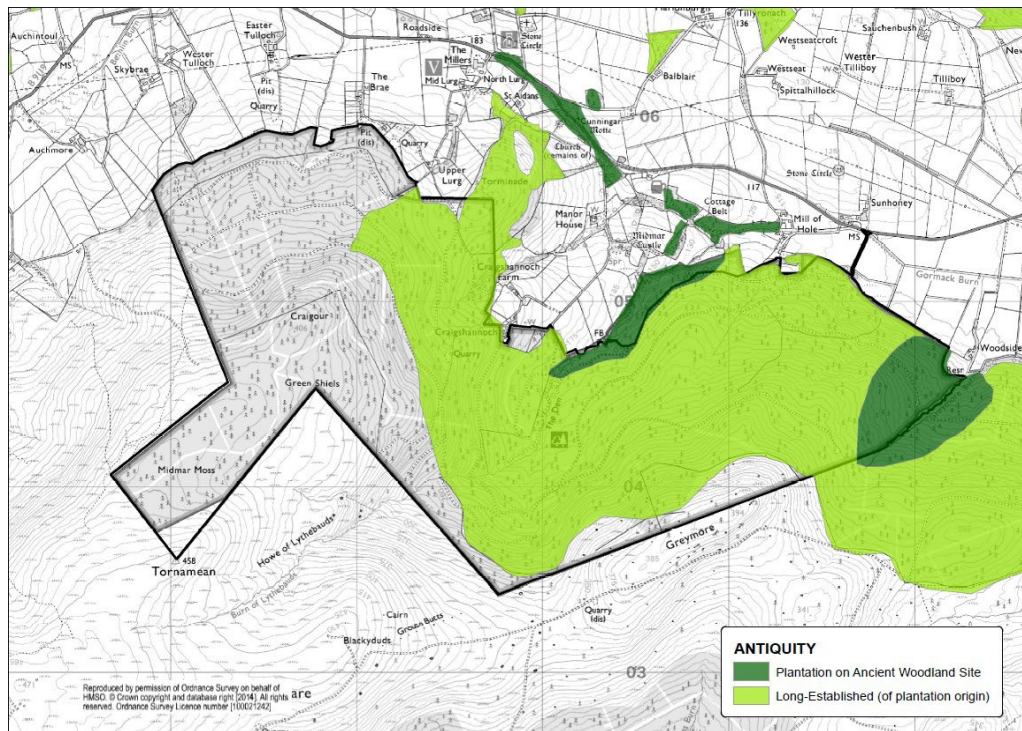
These results will be used to help assist in the choice of tree species for restocking in this FDP. Each tree species has tolerances for these and other factors and they can be used to identify species suitable for the site conditions.

Further information on these criteria and the application of ESC can be found in Forestry Commission Bulletin 124 - An Ecological Site Classification for Forestry in Great Britain.

## 3.2 Biodiversity and environmental designations

Approx half of the plan area (297 ha) is classified by Scottish Natural Heritage as Long-Established Woodlands of plantation origin (LEPO) which suggests they were originally planted before 1860. See map below. There are two areas of around 25 ha identified as Plantation on Ancient Woodland Site (PAWS). The process of PAWS restoration has already started which includes supporting and planting of native species and monitoring the sites condition and it's natural regeneration.

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In addition to several other UKBAP species the Red Squirrel present in the wood. This is one of the six key species identified in the FCS Biodiversity Action Plan. Therefore good forest design and operational practice will be undertaken to benefit red squirrels. This will include the planning of the forest structure and composition to benefit red squirrels and also planning forest operations to minimise damage to red squirrel dreys and populations, including survey work to locate dreys prior to felling.

There are a number of badger setts within the block that will be protected during operations.

## 3.3 The existing forest

### 3.3.1 Age structure, species and yield class

#### i. Age Structure

Mature high forest makes up the largest proportion of the plan area. (See picture below) A large percentage of open ground includes felled areas that are due for restocking. Designed open ground is around 10 %.

The spread of successional stages across the block leaves some space for improvement. That might be achieved by careful design of felling coupes combined with choosing appropriate felling cycle. Aiming to achieve equal proportions of age stages is not realistically achievable. It should rather be treated as a guide for long term management of a diverse and sustainable forest cover.

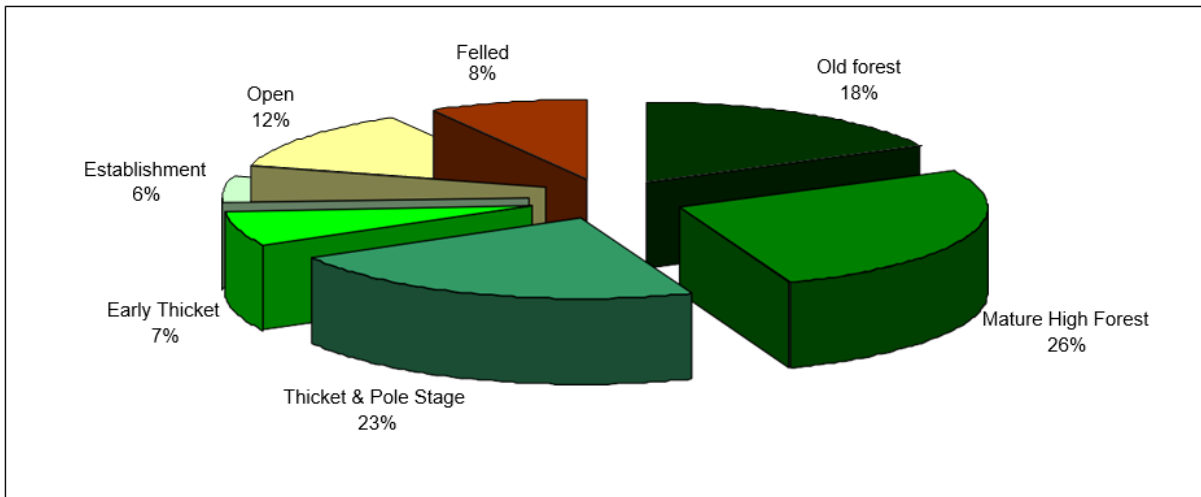


Midmar forest seen from Craigour, looking east.

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Table 1 Current age structure

Ages of Trees (years)	Successional Stage	Area (ha)	%
0 -10	Establishment	31.7	5.5
11 – 20	Early Thicket	40.2	7.0
21 – 40	Thicket & Pole Stage	130.1	22.7
41 – 60	Mature High Forest	152.5	26.8
61+	Old Forest	100.4	17.5
	Felled	46.9	8.2
	Open	70.4	12.3
		572.2	100



## ii. Species

Over a third of the plan area is currently stocked with Sitka spruce. This is due to the policy of planting the species in these types of soil conditions. Larches and Pines accounts for just over 30% of the total forest area. Both species groups currently suffer in UK from fungal diseases so it is expected that the area covered by them will decrease. The aim of this plan will be to maintain the conifer diversity as well as to increase the area of broadleaves.

Tab 2 Current species structure

Species	Area (ha)	%
Sitka spruce	217.2	37
Lodgepole pine	76.9	13
Scots pine	72.6	13
Norway spruce	32.4	6

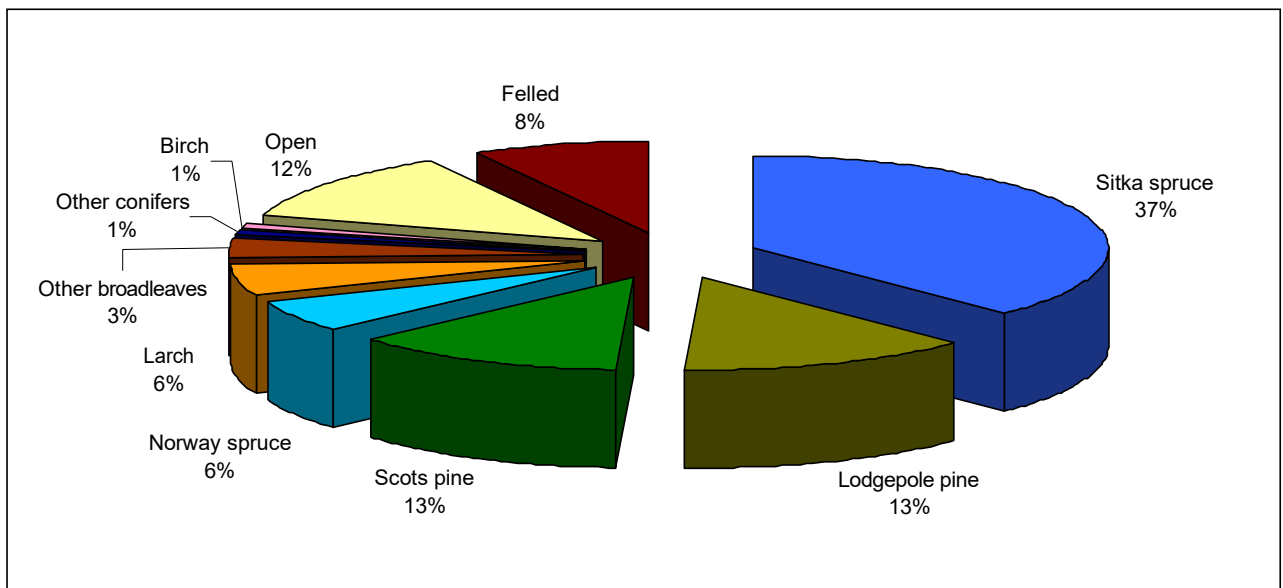
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Larch	32.0	6
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Other broadleaves	19.7	3
Other conifers	6.8	1
Birch	5.0	1
Open	70.4	12
Felled	46.9	8



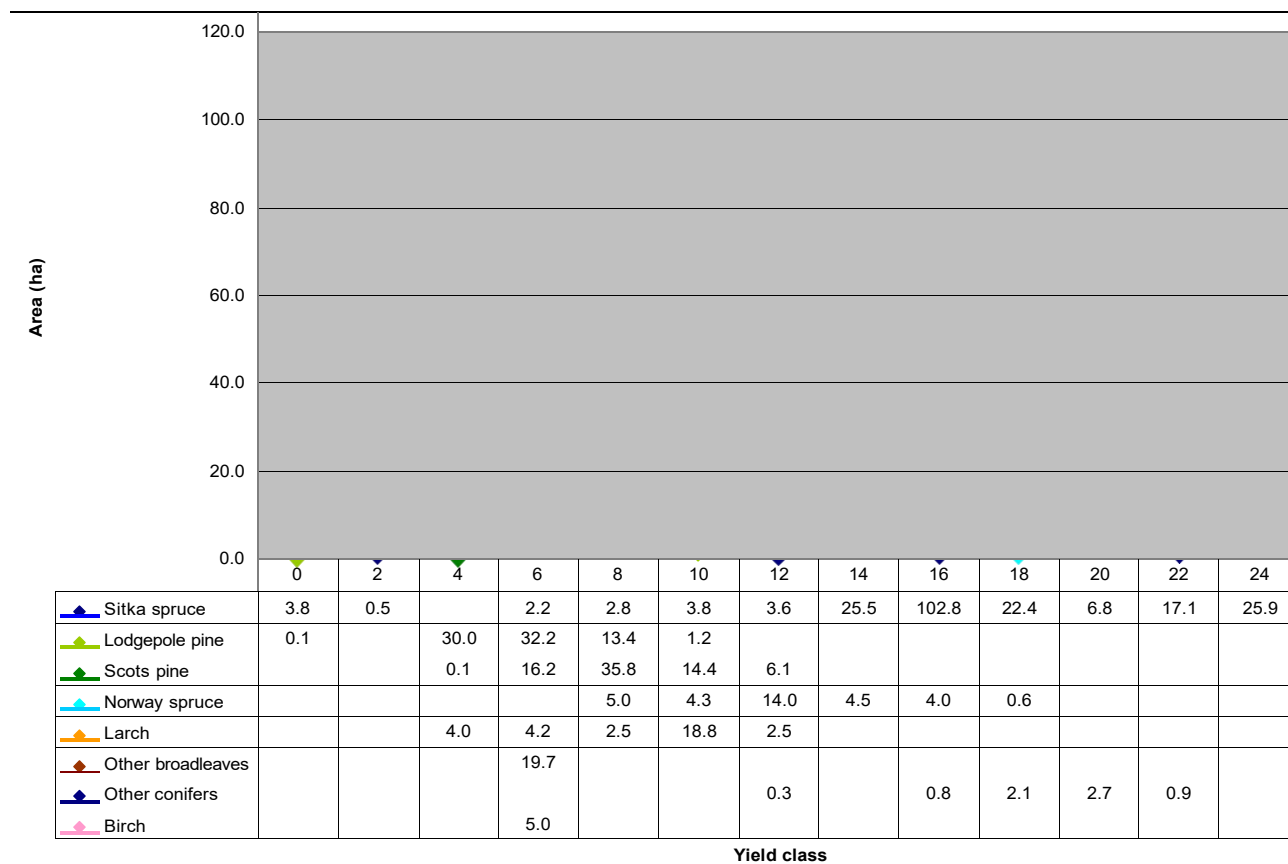
### iii. Yield Class

The average yield class for Midmar is around 12. There is definitely a potential to improve the production despite the poor soils.

Sitka Spruce, the dominant species, has an average yield class of 16 and proves to be the most productive species. Almost 80% of area taken by SS gives a YC 16 and over. Other well performing conifer is Norway spruce. Broadleaves planted on small dispersed areas with poor soils appear to be the least productive of species though they play an important role for biodiversity.



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### 3.3.2 Access

Access to and within the Midmar block is good. There are no formal car parking facilities but there is space at the block entrance for the informal parking of several cars. The road connecting the block with the B9119 is also an access to fields for the neighbour farmer.

The forest road network is good and previous access restrictions to the Craighour Hill have been resolved by a new road extension.

There are no requirements for additional access provision at this time.

### 3.3.3 LISS potential

Currently 93ha or 16% of the plan area is designated for management under low impact silvicultural systems (LISS). These are management systems are defined as:

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'Use of silvicultural systems whereby the forest canopy is maintained at one or more levels without clear felling.'

Within LISS areas there may be small scale clearfells provided they are no larger than 2 ha.

## 3.3.4 Current and potential markets

The current breakdown of the timber being harvested from this design plan area across the range of sites, species and ages is shown in the table below.

Material	End Product	Percentage
Short roundwood	Chip board, Orientated strand board (OSB), Paper	35%
Short log	Pallets and slats	25%
Log	Construction	40%

The vast majority (95%) of this production is sold into markets in the north east of Scotland, with very little travelling more than 50 miles to the processing facilities.

The only change to this in the period of this plan is likely to be the increase in material going into the local fuelwood market.

## 3.4 Landscape and land use

### 3.4.1 Landscape character and value

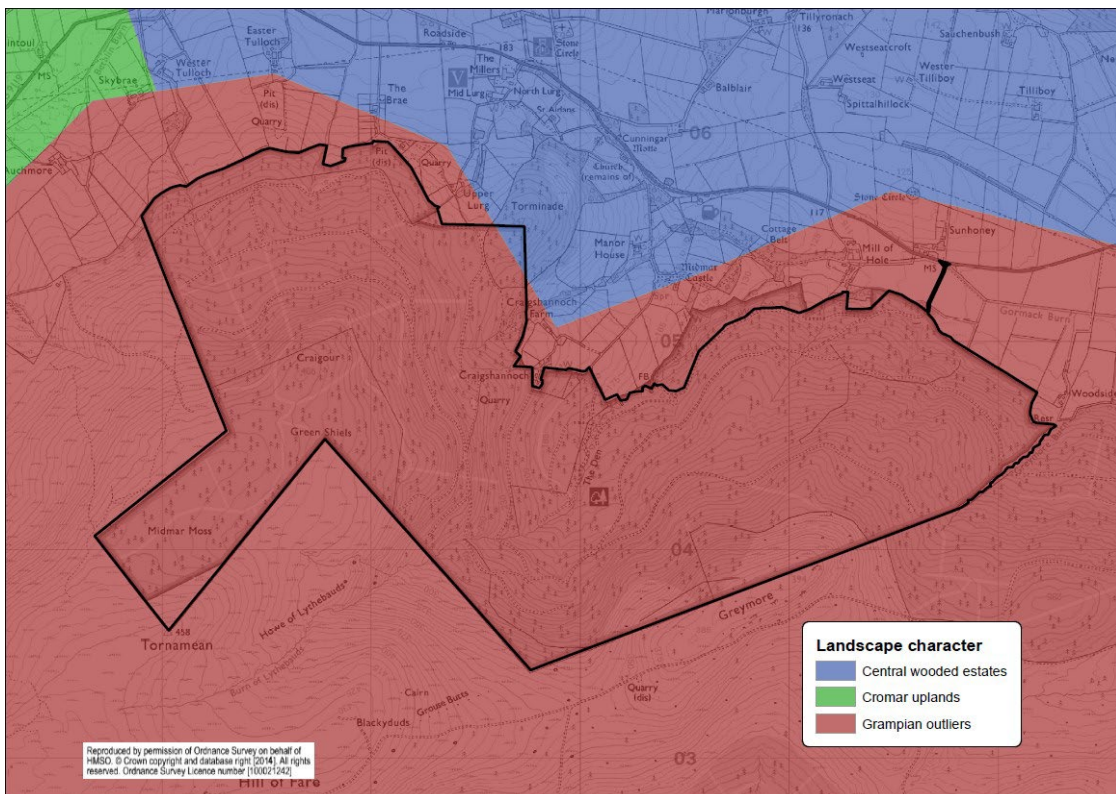
The visual amenity of Midmar is important in the context of the local area.

Scottish Natural Heritage, in partnership with local authorities and other agencies have carried out a National Programme of Landscape Character Assessment. This programme aims to improve knowledge and understanding of the contribution that landscape makes to the natural heritage of Scotland. It considers the likely pressures and opportunities for change in the landscape, assesses the sensitivity of the landscape to change and includes guidelines indicating how landscape character may be conserved, enhanced or

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restructured as appropriate. These assessments are considered during all Forest Design Plan reviews.

The Midmar design Plan area is covered by Landscape Character Assessment 102 – South and Central Aberdeenshire completed by Environmental Resources Management in 1998.



Picture Landscape Types in Midmar

The vast majority of the Midmar block falls into the Grampian outliers zone of the Moorland plateaux landscape character type. This character area comprises a series of moorland spurs that extend from the central massif of the Grampians into the farmed landscape of Garioch and Formartine. These spurs form an interrelated system of highland ridges and peaks with an almost uniform landcover of heather and forest. When viewed from the surrounding low lying farmland they seem to coalesce into an almost continuous dark backdrop.

The specific guidance for this area includes the diversification of tree species to enhance the visual diversity and interest of the area. Increase the proportion of open space within woodlands to create visual interest and appear more natural.

## 3.4.2 Visibility

Midmar Forest is a prominent feature in the landscape when viewed from the north and east (see picture below). It is situated on the higher ground surrounded by low lying farmland. The height of this area makes it highly visible and it forms the termination of many viewpoints from several approach roads.



Craigour, Midmar seen from the north east.

## 3.4.3 Neighbouring land use

To the north and east the land use is predominately agricultural (see picture above) with scattered clumps of trees or smaller woodlands and scattered houses. To the south is the open moorland of the Hill of Fare that has some scattered Scots Pine and Birch regeneration in places.

Dunecht Estates manage the moorland and muir-burning is carried out for grouse habitat management. They also manage the coniferous woodland

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adjacent to Midmar Forest in the south-east. Land to the west is also open heath, passing through rough grazing to improved farmland on the lower slopes.

## 3.5 Social factors

### 3.5.1 Recreation

There are no official waymarked routes or a car park within Midmar Forest. Cars often park where the access track meets the main road sometimes causing conflict with the neighbouring farmer who requires regular access to the fields. There is space for several cars to park informally beside the main access point.

The wood is popular with walkers and occasionally used by cyclists and horse-riders. The current level of informal access provision will be maintained and there are no plans to increase provision within this plan.



Room for informal parking at main forest entrance.

### 3.5.2 Community

Though the scattered community surrounding the block regularly uses the forest there is no strong involvement in the issues associated with the design and management of the forest.

## 3.5.3 Heritage

There are no Ancient Monuments within the block but there are a number of non-scheduled monuments of regional and local importance that have been located and recorded in the design plan area.

The current list of archaeological sites is recorded in the Forestry Commission S.M.R. sheets and the forests and historic environment guidelines will be followed during all operations.

## 3.6 Pathogens and diseases

Dothistroma needle blight is present within Midmar affecting the pine stands.

Dothistroma needle blight is an economically very important disease affecting a number of coniferous trees, in particular pines. The disease has a world-wide distribution but until recently was mainly of concern in the southern hemisphere. In much of the world, including Britain, it is caused by the fungus *Dothistroma septosporum*. Dothistroma needle blight causes premature needle defoliation, which results in the loss of timber yield and, in severe cases, tree mortality. Since the late 1990s the incidence of the disease has increased dramatically in Britain, particularly on Corsican pine. More recently the disease has caused significant damage and death to Lodgepole pine and can now be found on Scots pine. Due to the extent and severity of the disease on these species there is now a five-year moratorium on the planting of Corsican and Lodgepole Pine on the National Forest Estate. While Scots Pine cannot be planted on or within 550m of DNB infected sites.

The reasons for the increase in the incidence of this disease are unclear but could be due to increased rainfall in spring and summer, coupled with a trend towards warmer springs, optimising conditions for spore dispersal and infection. Such conditions may become more prevalent in Britain over the next 20 years if current trends in climate change continue. On the National Forest Estate disease management is currently focused on silvicultural measures to reduce inoculum loads and the use of alternative, less susceptible species in future rotations.

The extent and severity of RBNB in Midmar has caused no dramatic losses at the present moment. The thinning operations undertaken allow the percentage

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of Lodgepole pine in mixtures to be reduced in order to help control the spread of the disease.

## 3.7 Statutory requirements and key external policies

The Forest Design Plan has been drafted to ensure that planning and operations functions will comply with the following legislation and policies:

### Biodiversity

- Conservation (Natural Habitats) Amendment (Scotland) Regulations 2007
- Nature Conservation (Scotland) Act 2004
- Wildlife and Natural Environment (Scotland) Act 2011
- Land Reform (Scotland) Act 2003
- The Water Environment and Water Services (Scotland) Act 2003
- Water Environment (Controlled Activities)(Scotland) Regulations 2011
- UK Woodland Assurance Standard 2008
- UK Forestry Standard 2012

### Climate Change

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

### Historic Environment

- Ancient Monuments and Archaeological Areas Act 1979
- Planning (Listed Buildings and Conservation Areas)(Scotland) Act 1997
- Treasure Trove Scotland
- UNESCO World Heritage Convention
- European Convention on the Protection of the Archaeological Heritage Valetta 1992

### Forests & People

- Control of Substances Hazardous to Health Regulations 2002
- Employers Liability (Compulsory Insurance) Act 1969
- Equality Act 2010
- Gangmasters (Licensing) Act 2004
- Health and Safety at Work Act 1974
- Management of Health and Safety at Work Regulations 1999



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- Occupiers' Liability (Scotland) Act 1960
- Provision and Use of Work Equipment Regulations 1998
- Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995
- The Highways Act 1980

## Soils

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

## 4.0 Analysis and Concept

Refer to Map 4: Analysis and concept

Table 10 Analysis and concept

Theme	Issue	Analysis	Concept
Climate change	Renewable energy	Potential to identify available sources of woodfuel material.	Utilise lower quality timber and coppice material; there are existing potential users within the local area.
	Adapting to climate Change	Use LISS to help sustain woodland cover, and plan restock to create diverse range of species and resilient forest structure.	Restock with varied species appropriate to predicted site conditions to create diversity of timber supply and ensure forest resilience.
	Flood & catchment management	Three watercourses emerge from Kirkhill and eventually reach the river Don.	Following current guidelines and manage developing riparian zones to have a positive impact on water quality.
	Carbon sequestration	Crop and site characteristics make LISS to be an appropriate management system in some of this plan area.	Increase the area managed under LISS to minimise inputs and increase rotation lengths.
Timber	Timber supply	Current crop age and condition allows a planned programme of production to be undertaken across the area.	Following on from clearfelling select and plant species appropriate to the site conditions to maintain the overall productivity of the area.

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	Timber quality	The ground conditions allow thinning to be undertaken across most of the area.	Undertake thinning to improve timber quality wherever possible with subsequent conversion to LISS if appropriate.
	Hardwood timber	There are few areas of existing broadleaves or areas with good site conditions suitable for their planting.	Take any opportunity to plant appropriate broadleaves at a commercial spacing and manage them for hardwood production.
Business development	Tourism	The plan area provides a positive contribution to the local landscape.	Plan and undertake all operations to increase the positive contribution by increasing the diversity of species and age class.
Community development	Community engagement	Local communities are the main users of the forest though they don't show a high level of involvement in design process.	Continue current level of involvement with the various user communities to maintain their interest in the area, include both statutory and non-statutory consultees during FDP process.
Access & health	Recreation	There are currently no formal facilities for recreation activities in the plan area.	Investigate options of introducing facilities for recreation.
Environmental quality	Soil, water & air quality	Much of the soil across the plan area has a "very poor" nutrient regime.	Continuing LISS on appropriate areas, increasing the broadleaf element within the woodland and plant species suitable to the sites that will have a positive impact on environmental quality.
	Landscape	The plan area provides a positive contribution to the local landscape.	Increase landscape value by increasing species, age and structural diversity, favoring native species where appropriate.

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Biodiversity	Species & habitats	A number of priority species are present across the plan area (red squirrel, wild cat).	Develop permanent habitat networks of increased biodiversity value. Consider the requirements of priority species while designing and managing the forest. Comply with appropriate regulations and action plans.
	Deer management	The current deer population is a potential hazard to the successful establishment of broadleaves and natural regeneration.	Undertake an appropriate deer control/management programme to allow successful establishment of broadleaves and natural regeneration (culling, fencing, and individual protection).

## 5.0 Forest Design Plan Proposals

### 5.1 Management

Refer to Map 5: Management.

#### Thinning

Operational Guidance Booklet no 9, 'Thinning', advises that thinning options are dependant on the wind hazard of the site using a DAMS score. See section 3.1.3 for more details and a map.

#### **Sheltered sites**

On well-drained sites with soils that allow deep rooting, where windiness (DAMS) scores are <13, the opportunities for thinning are varied, and wind damage is unlikely to be a problem except in extreme storms. Most of the Midmar plan area falls into this category and can therefore be included in the thinning regime. This fact also helps determine the potential for LISS management.

#### **Medium exposure sites**

On sites with windiness (DAMS) scores between 13 and 16 the decision of when, how often and to what extent thinning should take place, needs careful thought. The lower slopes of Craigour and Greymore hills have those DAMS scores.

#### **High exposure sites**

Where the windiness (DAMS) score is 17 or more, with less well-drained or shallow soils, the opportunities for thinning are limited. On these sites, no-thin is often the best management approach. The top of Craigour and Midmar Moss are the areas with the highest DAMS scores within the plan area. These areas have already suffered from windblow damage.

Wherever possible the district will continue to maximise the area managed through thinning and utilise the staff and contractor base to further develop professionalism and thinning expertise. FCS policy assumes that all productive conifer crops will be thinned. The only exceptions are where:

- Thinning is likely to significantly increase the risk of windblow;
- A single thinning operation is likely to require an unacceptably large initial investment in relation to the potential benefits due to access or market considerations; and
- Thinning is unlikely to improve poorly stocked or poor quality crops.

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Well thinned Scots pine and larch crop in Midmar.

The Midmar block is split into two thinning coupes, which will be worked on a 7 year cycle. See Map 6 – Thinning. Most of the area can be thinned in order to improve timber quality. However there may be commercial areas that may not be thinned. These include those with terrain issues, where the thinning window has been missed, the crop is too young or the basal area is below the threshold figure.

Most broadleaf stands will be thinned with the aim of producing quality timber in the long term.

Mixtures will be treated with special attention when planning thinning operations keeping in mind the objectives for the stand in terms of timber production and species diversity.

Where Lodgepole pine occurs in mixtures with other crops it will be targeted for removal during thinning operations.

## Low Impact Silvicultural Systems (LISS)

LISS is defined as the use of silvicultural systems whereby the forest canopy is maintained at one or more levels without clearfelling. Clearfelling is defined as the cutting-down of all trees on an area of more than 2.0ha.

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The attraction of LISS is the fact that these approaches are suited to an era of multi-purpose forestry where environmental, recreational, aesthetic and other objectives are as important as timber production. In particular LISS is seen as a means of reducing the impact of clearfelling and the associated changes that this produces in forest landscapes and habitats. It can also help to create a diverse forest structure which will increase its biodiversity potential. LISS will help reduce the potential issue of soil erosion and subsequent siltation. Finally it will reduce the scale and visual impact associated with the clearfell system in appropriate areas.

In the previous plan about 93 hectares were selected for LISS management. These will continue to be managed with as LISS. Many factors have been taken into account in reaching this decision. These include:

- Does LISS meet the objectives for the forest;
- Do we have sufficient site suitability information available (soils, wind hazard data, thinning history);
- What is the level of vegetation competition for natural regeneration;
- Are the existing species suitability for the site;
- Is any natural regeneration present.

Areas selected for LISS management are highlighted on the Management map.

A prescription has been prepared for the area and attached as Appendix 4.

Restocking by natural regeneration will be the aim in these areas. However where this is not successful enough to create a fully stocked crop enrichment planting will be undertaken with appropriate species.

## Clearfell

As stated above clearfell is the main silvicultural system employed in British forestry. This involves 'patch' clear-felling followed by planting, or occasionally natural regeneration. There are areas of woodland in the plan that are stocked with fast growing conifers on soils which are not stable enough for LISS. In order that the timber in these areas is harvested before the onset of windblow, clearfell will remain an appropriate silvicultural system.

Although clear-felling can appear to have a negative impact on landscape and habitat it is still an important management system.

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Clear-felling, to a degree, mimics natural disturbances such as fire or windblow in a forest and as such allows the forester to alter the even aged structure of the canopy over a relatively short period of time. The adoption of a 'fallow' period before restocking (replanting) creates transient open habitat that is exploited by several species such as voles, deer, goshawk and buzzard amongst others.

The scale of clearfells will be in keeping with the scale and topography of the local landscape.

Four coupes of an area of just over 60 ha are planned to be felled within this plan duration. See Map 5 – Management for details.



Clearfell site showing the potential for natural regeneration to supplement any planted stock.

## Natural Reserves

Current guidelines states that FES will identify 1% of plantation forest as Natural Reserves (NR). This does not preclude a greater area being managed by minimum-intervention (MI) but it does preclude greater area being formally



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designated, as the NR designation eliminates the possibility of active management in the future. NRs are areas of woodland that have been set aside where biodiversity is the prime objective. NRs will be predominantly wooded, permanently identified and in locations which are of particularly high wildlife interest or potential. They will be managed by minimum intervention unless alternative management has a higher conservation or biodiversity value.

The function of NRs is to provide a continuity of habitat to allow sedentary species to establish and thrive. NRs provide reservoirs of permanent habitat from which more mobile species can expand into adjacent managed forests. NRs can be derived from semi-natural native woodland, planted native woodland and non-native plantations.

Within NRs, natural processes will normally predominate. Intervention should only take place to protect the NR or adjoining areas of forest.

Once a NR is set up, intervention will normally be limited to:

- ◆ wildlife management;
- ◆ removal of invasive exotics that could reduce value for biodiversity or colonise surrounding stands;
- ◆ actions to benefit specific species of conservation priority;
- ◆ fire fighting;
- ◆ ensuring tree safety along access routes.

There is one NR within Midmar of about 10 ha with open grown mature Norway spruce, Scots pine, Sitka spruce, Japanese larch and Grand fir forming a moorland interface. (See Map 5 – Management)

## Long Term Retention

Six coupes totalling approx 22ha within Midmar have been designated as Long Term Retention (LTR). It is desirable to retain these stands beyond normal economic maturity for environmental benefits but there is no imperative to retain permanent woodland cover on the sites once the existing stand has fulfilled its objectives. (See Map 5 – Management)

LTRs are retained for their environmental benefits. This could be to provide age class diversity, to provide a refuge for rare and protected species or retain “Cathedral like stands” around recreation facilities that have high environmental benefits as well as being just attractive places to visit.

A range of management options are appropriate in LTRs depending on stand characteristics and objectives. It is generally desirable to thin cautiously, promoting crown development and stand stability. However, thinning will be inappropriate in less stable upland LTRs and impractical in very small stands, particularly where they are isolated from adjacent thinnable stands.

## 5.2 Future Habitats and Species

Refer to Map 7: Future habitats and management.

### 5.2.1 Restocking

The choice of restock species in this plan has been guided by the ESC results for this climatic area and soil types. The standard ESC model has been adjusted to reflect the improvements in the soil conditions brought about by undertaking ground preparation prior to restocking. However there is still a limited species choice in some areas due to the "very poor" soil nutrient regimes. In areas where more choice is available efforts have been made to select as wide a range of species as possible to create a diverse woodland rather than a more limited species mix, with potentially more susceptibility to pathogens such as DNB.

In common with the majority of the national forest estate, most restocking in the design plan area has traditionally taken place within two years of sites being clearfelled. However, many seedlings were badly damaged or killed by an endemic forest pest known as the Large Pine Weevil, *Hylobius abietis*. This species lays its eggs in deadwood/stumps on clearfell sites and the emerging adults feed on the bark of young trees, often with devastating effect on newly planted conifer crops.

Previously this damage was countered by the planting of seedlings treated with insecticide, followed by 'top-up' spraying of the trees during spring and summer. However, Forestry Commission is committed to a policy of chemical reduction on the national forest estate, in line with current European Union directives on chemical use, which has had a significant effect on the way we manage this pest.

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From 2008 Moray and Aberdeenshire forest district introduced a default four-year fallow period for clearfell sites. This allows for the Hylobius population to peak and then drop to acceptable levels before restocking is carried out.

## Productive broadleaves

Growing broadleaves as commercial crops requires long term commitment and more attention to detail than growing conifers. Higher establishment costs are inevitable, however the approach will be introduced into Midmar not only for economic benefits (high demand for hardwoods) but also due to the environmental advantages (wood fuel, alternative for replacing conifers struggling with diseases, support for unique fauna and flora species).

Areas suitable for growing productive broadleaves have been identified within the forest (see map 7). They include pure birch stands.

To be successful the general prescription will be:

- undertake the appropriate ground preparation,
- choose good quality planting material of the best available provenance,
- select the appropriate planting density (densities for broadleaves will be 4000-5000 stems/ha),
- undertake appropriate weed control,
- provide more attention and effort in the early stages of stand development to increase the value of the final crop. Operations to be considered will include respacing (usually when 1.5-2m tall), early and regular thinning operations (every 5-10 years for first half of the rotation and every 10-15 years later), pruning,
- appropriate protection from mammals: voles, squirrels, rabbits and deer.

## 5.2.2 LISS coupes regeneration

According to ESC most of the existing species in the LISS area are suitable for the site so they are expected to regenerate naturally. The aim of thinning will be to maintain seed trees with the best characteristics. Thus there is a better chance that seeds from the best specimens will regenerate and create the next generation. New crops should be better adapted to the local site condition enriched with their parent's genetic information.

During the natural process of forest development it is expected that the species proportions will change. Some species have more chances to regenerate than others. There are many factors that affect which species will

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regenerate more successfully and increase their area with future generations.

These include:

- reaching their max seed production age earlier than other species,
- producing larger numbers of seeds,
- having short intervals between good seed crops,
- producing seeds that disperse more readily,
- having a wider tolerance for different light levels and site conditions.

Therefore when dealing with mixtures many factors need to be taken into consideration and the emphasis will be put on treating each stand individually.

If natural regeneration is unsuccessful underplanting will be undertaken. This would provide an opportunity to widen the species range by introducing new species to the stand.



Advanced natural regeneration in LISS area.

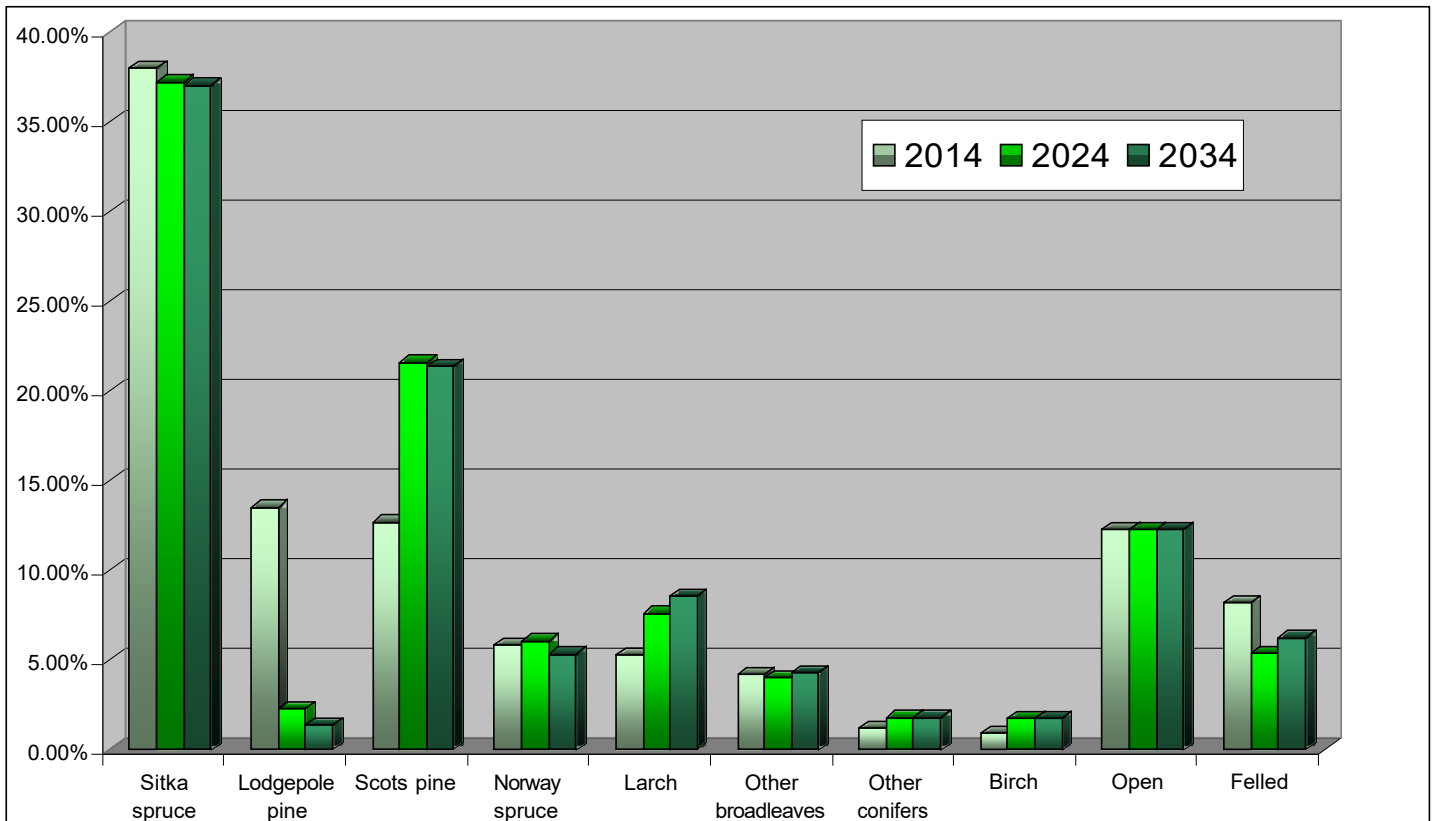
## Non Commercial Areas

Areas not considered for commercial management include permanent woodland and open habitats, all of which will require monitoring to ensure they deliver the required objectives. Non-desirable species, such as non-native conifer regeneration, will be removed. These areas are concentrated along the watercourses with the aim of creating a habitat network linking existing open habitats.

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## 5.2.4 Species table

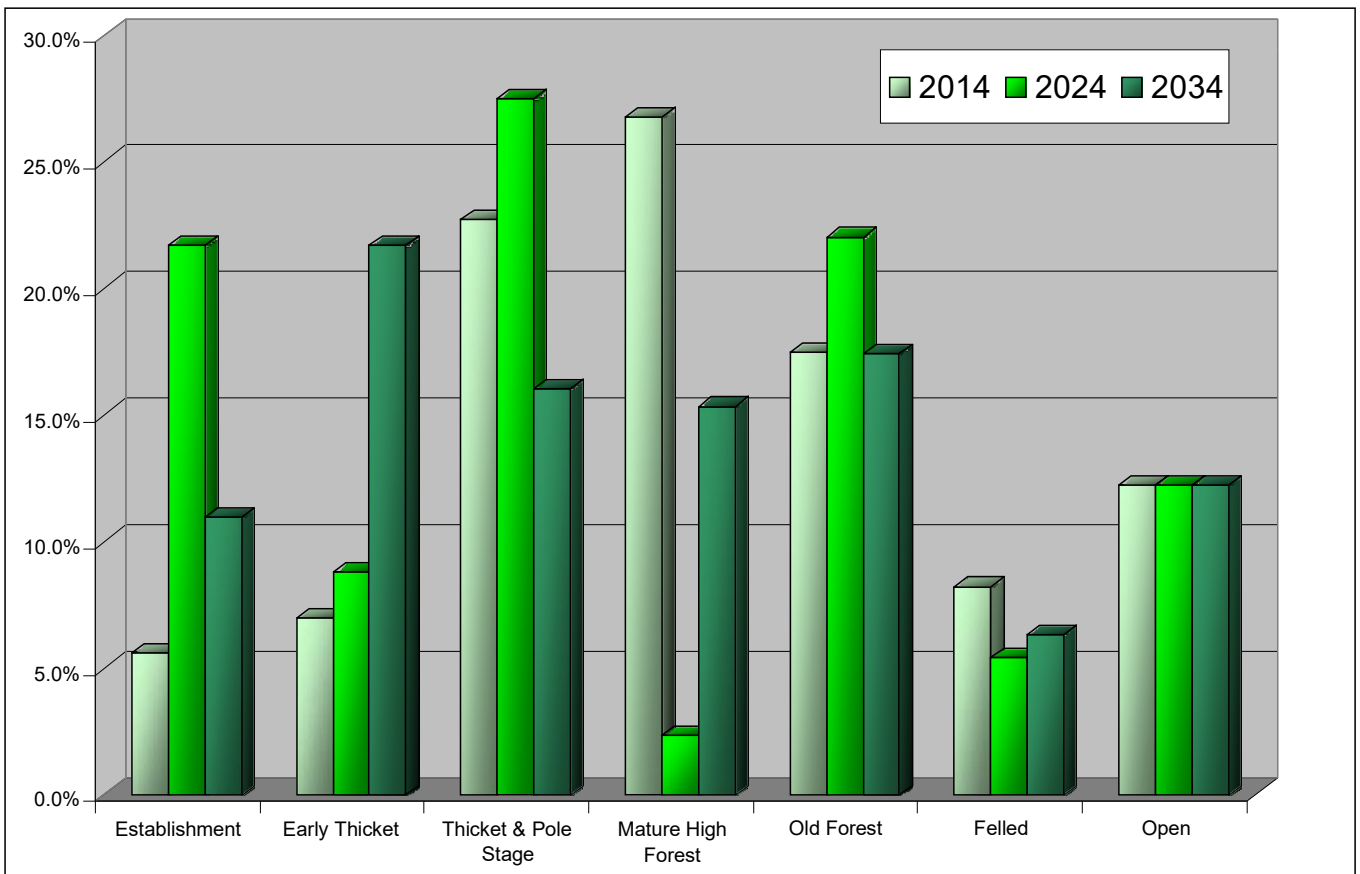
Species	Current distribution 2014 (%)	Projected distribution 2024 (%)	Projected distribution 2034 (%)
Sitka spruce	38.0	37.2	37.0
Lodgepole pine	13.5	2.3	1.3
Scots pine	12.7	21.6	21.4
Norway spruce	5.8	6.0	5.3
Larch	5.3	7.6	8.5
Other broadleaves	4.2	4.0	4.3
Other conifers	1.2	1.8	1.8
Birch	0.9	1.7	1.7
Open	12.3	12.3	12.3
Felled	8.2	5.4	6.2



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## 5.2.5 Age structure

Ages of Trees (years)	Successional Stage	2014	2024	2034
0 -10	Establishment	5.6%	21.7%	11.0%
11 - 20	Early Thicket	7.6%	8.8%	21.7%
21 - 40	Thicket & Pole Stage	22.2%	27.5%	16.0%
41 - 60	Mature High Forest	28.6%	2.4%	15.3%
61+	Old Forest	15.6%	22.0%	17.4%
	Open/felled	20.4%	17.7%	18.5%



## 5.2.6 PAWS restoration

The area of PAWS on the eastern boundary of the block adjacent to the Greymore Burn is planned for full restoration to a W17/W18 (Upland birchwood/Native pinewood) woodland type. This will be undertaken over an extended time period by taking advantage of planned operations. For example by favouring Scots pine and birch during thinning operations and by clearfelling the area of Sitka spruce when it reaches a marketable size and restocking the area with Scots pine and other suitable species. No additional operations specific to the restoration of the PAWS area are planned in this plan period.

The second smaller area along the Gormack burn is planned for full restoration to W17 (Upland birchwood). The process for undertaking this work will be similar to that described above, taking advantage of planned operations with no specific operations in this plan period.

## 5.2.7 Management of open land

All existing areas of open ground have been considered in order to decide if they should be retained in the new plan.

Managed open space fulfils various functions within the forest and delivers many benefits, including:

- improving biodiversity by creating habitats for different fauna and flora,
- providing access
- protecting archaeology,
- contributing to landscape diversity, for both external and internal views.



Moorland forest interface where additional open ground and low density planting will improve its biodiversity interest.

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Management of open ground is detail in the table below.

*Table 16 Open ground*

<b>Description</b>	<b>Role</b>	<b>Management</b>
Open space within broadleaf restock coupes and along watercourses	<ul style="list-style-type: none"> <li>- along with broadleaf species of various proportions it creates mosaic habitats protecting watercourses</li> </ul>	<ul style="list-style-type: none"> <li>- accept all broadleaf regeneration</li> <li>- remove conifer regeneration when it exceeds 10%</li> <li>- monitor habitat development and reclassify under MI or NR if appropriate</li> </ul>
Open space associated transition from forest to moorland	<ul style="list-style-type: none"> <li>- improves biodiversity value of this important interface habitat</li> <li>- improves internal and external views</li> </ul>	<ul style="list-style-type: none"> <li>- accept a proportion of broadleaf and conifer natural regeneration</li> <li>- protect during forest operations</li> <li>- reduce natural regeneration when it exceeds 20%</li> </ul>
Open space associated with access (i.e. buffer along roads and rides)	<ul style="list-style-type: none"> <li>- improves biodiversity value</li> <li>- improves internal views</li> <li>- benefits forest road maintenance and recreational use</li> </ul>	<ul style="list-style-type: none"> <li>- suitable natural regeneration will be accepted up to 20%</li> </ul>

There will also be a network of transitional open space between the felling and establishment operations. These provide a suitable habitat for several species.

## 5.2.8 Deer management

Wild deer are managed in accordance with the 2014 Deer Management on the National Forest Estate; current practice and future directions document.

The strategy takes recognition of the fact that Wild deer are an asset, an integral part of Scotland's biodiversity and provide healthy food and recreational opportunities. The challenge of managing wild deer originates in a need to balance the environmental, economic and deer welfare objectives of the Scottish nation with the objectives of private landowners for forestry, agriculture, sporting and other forms of land use.



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The principal legislation governing the management of deer in Scotland and hence on the NFE is the Deer (Scotland) Act 1996.

It is therefore FCS deer policy to;

- Prevent adverse deer impacts on commercial tree crops and the wider habitat. In doing so to carry out deer culling in an exemplary and humane way.
- Work closely with relevant organisations and neighbours to make sure that there are integrated deer management plans which seek to recognise the interests of all parties.
- Take opportunities to optimise income from venison from sporting where this does not conflict with our primary objective of maintaining deer impacts at an acceptable level, in line with Quality Meat Scotland accreditation in the form of The Scottish Quality Wild Venison (SQWV) Assurance Scheme
- Take all practicable steps to slow down the expansion of deer species into areas where they are not currently present.

All deer management will be carried out in accordance with OGB 5 - Deer management.

The aim is to manage deer density safely and humanely at a level which is consistent with acceptable impacts on forests and other habitats. This is likely to be at a density level of 5 to 7 deer per 100 hectares.

Deer cull plans are prepared for each Deer Management Unit and are the responsibility of the Wildlife Ranger Manager.

## 5.2.9 Pests and pathogens

### Hylobius

Hylobius can cause extensive feeding damage to young trees used to restock clearfell sites but damage is often highly variable. Previously it has not been possible to predict damage and so insecticides have been routinely used to protect the trees to try to safeguard this valuable young crop. However, on clearfells where Hylobius numbers are low this treatment may be unnecessary and conversely when numbers are very high the treatment may be unable to protect the trees. Both of these situations result in losses in valuable resources.

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The Hylobius Management Support System (MSS) is based on a simple monitoring protocol using billet traps to measure Hylobius numbers on individual clearfell sites. The numbers recorded are used, with other information entered into the Hylobius MSS software, to determine the best way to manage clearfell sites for successful, cost effective and environmentally friendly restocking. This Decision Support System will be used on the vast majority of all restock sites with certain limited exceptions.

In common with the majority of Forest Enterprise Scotland estate, most restocking in the design plan area has traditionally taken place within two years of sites being clearfelled. However, many seedlings were badly damaged or killed by the Large Pine Weevil, *Hylobius abietis*. This species lays its eggs in deadwood/stumps on clearfell sites and the emerging adults feed on the bark of young trees, often with devastating effect on newly planted conifer crops.

From 2008 Moray and Aberdeenshire forest district introduced a default four-year fallow period for clearfell sites. This allows for the Hylobius population to peak and then drop to acceptable levels before restocking is carried out. Fallowing has been shown in studies to be the most effective method of establishing trees without intensive chemical input. Although the default fallow period is four years, restocking may take place before then if monitoring, using the Forest Research Hylobius Management Support System shows that it is safe to do so. Please refer to the district fallow policy for details.

## Dothistroma Needle Blight

Dothistroma Needle Blight will be addressed differently according to the level of current infection in the crop. The severity of infection and crop symptoms produced range from the dropping of a couple of yield classes to high levels of mortality within the stand. The levels of mortality is the key concern as once dead the integrity of the tree quickly deteriorates to a state where it can not successfully be harvested. Categorisation of the infected crop will allow us to prioritise the harvesting of such areas.

The following scale and categorisation has been agreed upon.

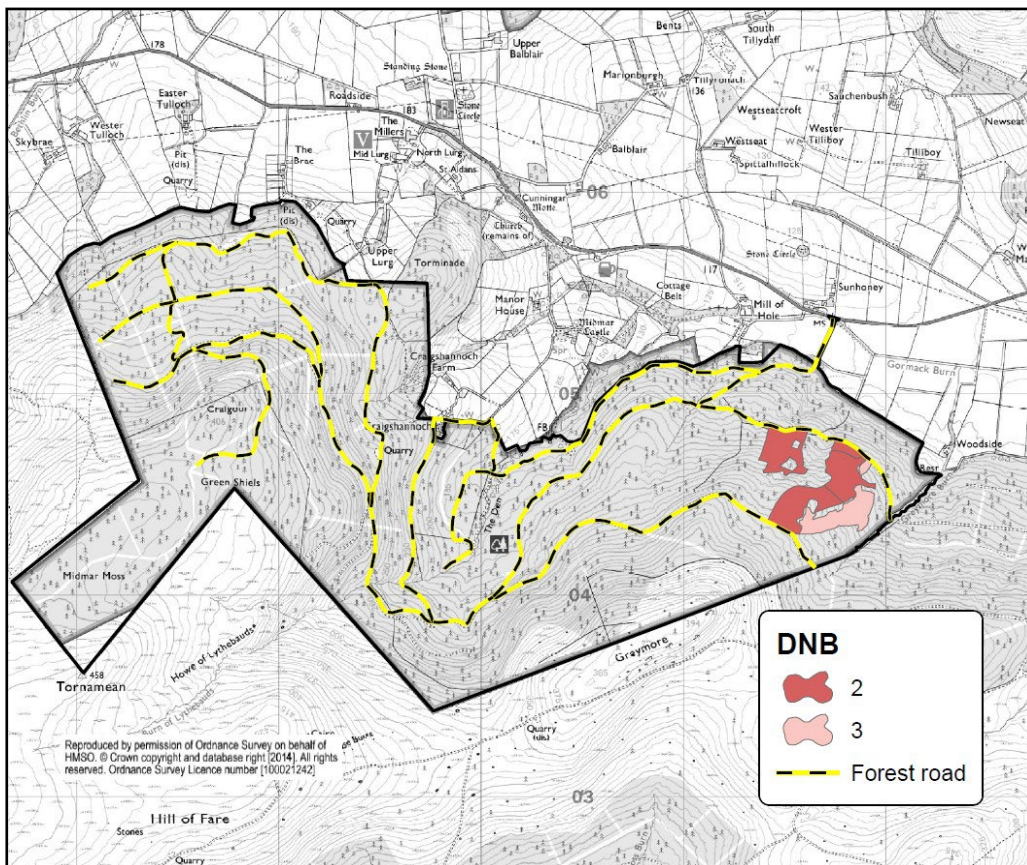
*Table 17 DNB categories*

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Needle retention (years)	Defoliation (%)	Mortality %		
		<20	20 - 40	>40
>2.25	0 - 25	1	2	4
1.51 - 2.25	26 - 50	2	3	4
0.76 - 1.50	51 - 75	3	4	4
<0.75	>75	3	4	4

This has led to the following action plan for dealing with Dothistroma Needle Blight infection:

- Prioritise infected areas to be felled by swapping felling coupes of non infected crops in the current program.
- Include into thinning operations the felling of any infected crops within the area to minimise costs. Amendments to the forest design plan will be required as specified in the tolerance table for felling such areas.
- Reassess badly affected blocks and consider if a full review is required.



14.3 ha of the forest is currently affected by DNB in Midmar. See map above. The majority is a mixture of LP and SP in categories 2 and 3. The affected areas are not large therefore removing infected trees during thinning operations will be the main way of controlling the disease on these sites.

## 5.2.11 Critical Success Factors

- Undertake the planned thinning programme in order to increase the quality of the timber within the plan area.
- Continue to attempt to manage the spread of Dothistroma Needle Blight through the removal of infected Lodgepole pine during thinning operations.
- Undertake the thinning planned for the LISS areas in order to manage the light levels to allow the development of the appropriate ground vegetation and natural regeneration.
- Continue with the maintenance of the forest road network to allow forest operations to be successfully completed.

## Appendix 1 – Consultation record

Statutory Consultee	Date contacted	Date response received	Issue raised	Forest District Response
Aberdeenshire Council Archaeology Service	20/12/2012 By email	20/12/2012 By email	"Please find attached details of archaeological sites recorded on the SMR within the Forest Plan area."	Details recorded and used during preparation of FDP.
SNH (Julia Galley)	20/12/2012 By email	4/01/2013 By email	"The only comments we have are that it may be appropriate that a forest of this scale and stage of growth would benefit from a Deer Management Plan..."	Details of deer management are included in section 5.2.8 of the FDP.
RSPB ( Ian Francis)	20/12/2012 By email	4/01/2013 By email	"Nothing much to say here. You'll be aware of Goshawks. You may not be aware that there is an Osprey nest (3 young last year) just on the edge of the forest..."	The work plan process will be used to ensure the relevant time constraints and buffer zones are observed during all planned operations.

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SEPA	20/12/2012 By email	16/01/2013 By email	"We would like to see the issues outlined below addressed in the Plan. The issues are discussed in general terms, and may not all be relevant for the Midmar Forest."	The issues raised that are relevant to the actual Midmar plan area have been taken into account during the preparation of the FDP.
Aberdeenshire Council	20/12/2012 By email	23/01/2013 By email	"Having had a look at the area for this review I do not have any comments at this stage."	

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## Appendix 2 – Tolerance table

	Adjustment to felling coupe boundaries	Timing of restocking	Change to species	Windthrow response	Changes to roadlines	Designed open space
FC Approval	0.5 ha or 5% of coupe – whichever is less.	Up to four planting seasons after felling.		Up to 0.5 ha in areas of high sensitivity.  Up to 2 ha in areas of low sensitivity.		Location of temporary open space e.g. deer glades if still within overall open space of design.
Approval by exchange of letters and map	0.5ha to 2ha or 10% of coupe whichever less.		Change within species group e.g. conifers, broadleaves.	0.5 ha to 2 ha in areas of high sensitivity.  2ha to 5ha in areas of low sensitivity.	Additional felling of trees not agreed in plan  Departures of >60m in either direction from centre line of road.	Increased of 0.5ha to 2ha or 10% whichever is less
Approval by formal plan amendment	2ha or 10% of coupe.	Over four planting seasons after felling.	Change from specified native species. Change between species groups.	>2 ha in areas of high sensitivity.  >5 ha in areas of low sensitivity.	As above depending on sensitivity.	More than 2ha or 10%. Any reduction in open space in sensitive areas. Colonisation of agreed open space

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## Appendix 3 – FDP Brief

**As part of the national forest estate this plan will contribute to the seven key national themes in the Scottish Forest Strategy. The objectives for this plan area are:**

National theme	District strategic plan	Forest Design Plan Objective
Climate change	Renewable energy	<b>Woodfuel</b> – Utilise lower quality timber and coppice material if available. Aberdeen Royal Infirmary, Marshall College, Bancon Estates are all local users, or potential users, of woodfuel supplies.
	Adapting to climate Change	<b>Restore moorland areas</b> – Potential for limited small scale expansion of moorland area on hill tops to improve forest boundaries. <b>Forest habitat networks</b> – Manage riparian zones to maintain and improve existing habitat networks and take opportunities to extend the area where appropriate.
	Flood & catchment management	<b>River catchments</b> – Situated in the river Dee catchment. All management to be undertaken with the appropriate sensitivity and according to “Forests & Water Guidelines”. <b>Riparian woodland</b> – See “Forest habitat networks” above.
	sequestration	<b>LISS</b> – Manage sites and plant appropriate species for site type to allow the adoption of low impact silvicultural systems (LISS) where practicable to mitigate the effects of climate change.



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Timber	Timber supply	<b>Thinning</b> – Achieve the required stocking densities for planting and regeneration, and undertake thinning of all sites, to produce a sustainable supply of quality timber.
	Timber quality	<p><b>Species choice</b> – Select and plant appropriate species for site type guided by the results of ESC assessments.</p> <p>Select good phenotypical specimens to produce seed for natural regeneration.</p> <p>Increased rotation ages to produce larger diameter high value timber.</p> <p>Where planting is require the use of improved planting stock to be considered. This applies equally to the selection of broadleaved plants.</p> <p>Appropriate stocking densities to achieve good quality timber must be maintained.</p> <p><b>Thinning</b> – Undertake thinning where possible to produce a high quality timber supply.</p>
	Timber transport	<p><b>Transport</b> – Use preferred timber haulage route to minimise potential damage to public roads.</p> <p>No requirement for new forest roads.</p>
	Hardwood timber	<p><b>Niche marketing</b> – Increase coppice and short rotation forestry encouraging niche markets and local woodfuel supplies where appropriate.</p> <p><b>Commercial hardwoods</b> – Optimise the current hardwood resource and plant appropriate species at commercial spacing on appropriate broadleaf sites.</p>

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Business development	Skills	<p><b>Volunteers</b> – No current volunteer base.</p> <p><b>Local contractors</b> – Work with the current base of local contractors, to help maintain this sector and allow it to expand as appropriate, within the requirements of the FC contracting rules.</p>
	Tourism	<p><b>Landscape value</b> – Deliver a positive contribution to the landscape of the area by increasing the diversity of species and age class in accordance with SNH landscape character assessments.</p>
	diversification	<p><b>Woodfuel</b> - Seek opportunities for woodfuel, see Renewable Energy section above.</p> <p><b>Non-forest enterprises</b> – None at present.</p>
Community development	Community engagement	<p><b>FDP process</b> – Consult with both statutory and non-statutory consultees during FDP process.</p> <p><b>Local communities</b> - Engage communities in the forest design plan process and other local issues.</p>
Income	Learning	<p><b>Forest visits</b> - Use the forests in this design plan area for “What’s on events” as appropriate.</p>
		<p><b>Partnerships</b> – None at present.</p>
Access & Health	Recreation	<p><b>Planned maintenance</b> – None at present</p>
Partnerships	access easier	<p><b>Core paths</b> – Work with Aberdeenshire Council to maintain any core paths present.</p> <p><b>Appropriate access provision</b> – Continue to allow access via the forest roads and informal routes as required by the Scottish Outdoor Access Code.</p>
		<p><b>SAMH</b> – Programme now closed.</p>

# Midmar Woods Forest Design Plan 2014-23

Environmental quality	Soil water & air quality	<p><b>LISS</b> – Adopt LISS where appropriate to mitigate the effects of erosion or siltation. Undertake all operations in accordance with FCS Forest and Water Guidelines to meet EU water framework directive objectives.</p>
		<p><b>LISS</b> – Adopt LISS where appropriate to reduce the landscape impacts associated with clearfell and restock.</p> <p><b>Increase nativeness of woodlands</b> – Increase the percentage of native woodland where appropriate, taking into account site, species and silvicultural context.</p>
Biodiversity Landscape	Species & habitats	<p><b>Forest habitat networks</b> – Incorporate provision for forest habitat networks (riparian zones) to improve biodiversity and assist species movement where appropriate. Deliver targeted improvement works as resources allow, through partnership working wherever possible.</p> <p><b>Priority species</b> – Midmar is designated a stronghold wood for Red Squirrel. Address the needs of red squirrel by utilising prescriptions from habitat action plans and species action plans.</p> <p><b>UK &amp; LBAP species</b> - Incorporate management appropriate to UK and local biodiversity action plans.</p>
	Invasive species	<p><b>Restrict/eradicate</b> – Plan control operations where necessary.</p> <p><b>Control grey squirrels</b> – Not appropriate at present.</p>
		<p><b>Deer management</b> – Review deer management in order to maintain deer numbers low enough to allow timber production and ecological objectives to be met.</p>
	Designated sites	<p><b>Management plans</b> – None present.</p> <p><b>PAWS plans</b> – Manage all plantations on ancient woodland sites in accordance with agreed management plans and create buffer zones where appropriate.</p>

# Midmar Woods Forest Design Plan 2014-23

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	awareness and improving knowledge	<b>Interpretation</b> – None proposed at present.
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Increasing