Forestry and Land Scotland
Coilltearachd agus Fearann Alba

East Region

Maud

Land Management Plan

Plan Reference No: LMP 19

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.

The mark of responsible forestry

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1.0 Summary of Proposals

This plan is a review of Forest and Land Scotland's management of the Maud Woodland. This plan area is made up of Maud and Carnoch forest blocks.

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 Forestry Standard. A brief longer term vision is also included as forestry rotation takes longer than twenty years.

The **primary objective** for the woodlands is to manage them to provide a sustainable supply of timber. The plan includes details of thinning, clear felling and restocking methods that will benefit the main objective.

Although no priority habitats are present the UKBAP habitat; Watercourses and Riparian zones are applicable. Attempts are being made to create, improve and manage riparian woodlands and connect them where possible. A number of biodiversity action plan species, including badger, red squirrel and birds of prey are present.

The hill of Maud is a clearly prominent and visible low wooded hill in a wide landscape of rolling hills situated on the edge between coastal and upland farmland. It is surrounded by farmland interspaced with small scale forested areas and neighbours privately owned large scale forestry plantation. Designing the forest blocks has taken all of the above mentioned into account and consideration.

2.0 Scottish Forestry Regulatory Requirements

This section provides a summary of the elements of the Land Management Plan (LMP) which are regulated by Scottish Forestry, focussing on relevant operations and activities being carried out in the first ten years of the plan.

2.1 Summary of planned operations

Proposed felling, restock and infrastructure works are shown on Map 4 Management, Map 5 Thinning and Map 6 Future habitats and species.

Table 1 Planned operations over this LMP period

Planned Operations	**2020 – 2029 plan period**
Clearfell	53.3 ha
Thinning	101.6 ha
Restock	124.5 ha
Afforestation	None
Deforestation	10.3 ha
Road construction	None
Road upgrade	None

2.2 Proposed felling in years 2020 - 2029

Proposed felling in phases 1 and 2 are shown in Map 4 Management.

Table 2 Proposed phase 1 and phase 2 felling (total coupe area)

Proposed felling year	Fell area (ha)	% of forest area
2020 - 2024	25.9	7.0
2025 - 2029	27.4	7.4

Table 3 Clearfell details by coupe (ha)

Coupe	SS	MB	LP	SP	L	MOP	Total
19017			8.8			1.6	10.4
19050	11.0	0.1	3.2	1.4			15.7
19019	0.9		6.2	0.9	1.4		9.4
19036	0.4		0.3	1.9	3.6		6.2
19041	5.8		4.6		1.2		11.6
Total	**18.1**	**0.1**	**23.1**	**4.2**	**6.2**	**1.6**	**53.3**

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

Age of trees	Growth stage	% at year 2020	% at year 2029
0 - 10	Establishment	10.6	31.0
11 - 20	Thicket	3.5	10.6
21 - 40	Pole stage	5.8	3.5
41 – 60	Mature high forest	57.7	11.5
61+	Old high forest	0.2	36.6
	Open	3.6	6.8
	Felled	18.6	
Total		**100.0**	**100.0**

2.3 Proposed thinning in years 2020-2029

Proposed thinning coupes in Phases 1 and 2 is shown in Map 5 Thinning.

Table 5 Proposed thinning coupes in Phases 1 and 2 (percentage of forest area)

Proposed thinning year	Total coupe area (ha)	% of forest area	Volume (m^3)
2020 – 2024	101.6	27.6	3,529
2025 – 2029	0	0	0

2.4 Proposed restocking in years 2020-2029

Proposed restocking species is shown on Map 6 Future Habitats & Species

Table 6 Restock details by coupe (ha)

Coupe	SS	SP	MB	Open	Total
19002	2.0		3.4	0.9	6.3
19050	14.5		0.8	0.2	15.5
19014			1.2	0.3	1.5
19022	2.5		2.8	0.3	5.6
19019		9.5			9.5
19010	17.5				17.5
19012	39.4				39.4
19017				10.3	10.3
19031	0.9				0.9
19041	10.9		0.4		11.3
19036	6.5		0.2		6.7
Total	**94.2**	**9.5**	**8.8**	**12.0**	**124.5**

Table 7 Species change over plan period (%)

Species breakdown	Area (ha) 2020	% cover 2020	Area (ha) 2029	% cover 2029
SS	118.2	32.2	191.8	52.0
LP	82.9	22.5	59.8	16.2
SP	37.0	10.0	42.3	11.5
Larch	39.3	10.6	33.1	9.0
Broadleaves	5.3	1.4	14.0	3.8
Other conifers	4.1	1.1	2.5	0.7
Open	13.2	3.6	25.2	6.8
Felled	68.7	18.6		
Total	**368.7**	**100**	**368.7**	**100**

From the table above it is clear that the objective of having 5% native broadleaves and 10% open space will not be achieved in this plan period. However in phase 3 (out with this plan period) a coupe of 21.9 ha is planned to be felled and restocked with native broadleaves and open space which will more than achieve the targets set out in UKFS.

2.5 Access and roading in years 2020 – 2029

There are no proposals for new roads or ATV tracks in the plan period. There are also no proposed road upgrades. The only work on the existing road network will be ongoing maintenance to ensure all parts of the LMP area are accessible for planned operations.

2.6 Departure from UKFS Guidelines

The LMP attempts to follow the UKFS guidelines in all requirements. However it has not been possible in meet all requirements in this plan period due to the current composition of the forest and the coupes planned for felling within the first two phases. Progress has been made towards meeting the requirements and this will carry over into the next iteration of the plan when it is expected to be able to meet the outstanding requirements for native broadleaves and open ground.

2.7 Standards and guidance on which this LMP is based

This land management plan has been produced in accordance with a range of government and industry standards and guidance as well as recent research outputs. A full list of these standards and guidance can be found here: https://scotland.forestry.gov.uk/managing/plans-and-strategies/land-management-plans/links

2.8 Tolerance table

See Appendix 2

3.0 EIA Screening Determination for forestry projects

3.1 Proposed deforestation

10.3ha of deforestation is proposed within the LMP in order to work towards achieving the UKFS guideline of 10% open ground within a plan area.

Forestry Commission Scotland
Coimisean na Coilltearachd Alba

Environmental Impact Assessment
Screening Opinion Request Form

Please complete this form to find out if you need consent from Forestry Commission Scotland, under the **Forestry (Environmental Impact Assessment) (Scotland) Regulations 2017**, to carry out your proposed forestry project. Please refer to Schedule 2 Selection Criteria for Screening Forestry Projects under Applying for an opinion. If you are not sure about what information to include on this form please contact your local Conservancy office.

Proposed Work

Please put a cross in the box to indicate the type of work you are proposing to carry out. Give the area in hectares and where appropriate the percentage of conifers and broadleaves

Proposed Work	select	Area in hectares	% Conifer	% Broad-leaves	Proposed work	select	Area in hectares
Afforestation	☐				Forest roads	☐	
Deforestation	☒	10.3	100		Forest quarry	☐	
Location of work		Maud					

Description of Forestry Project and Location

Provide details of the forestry project (size, design, use of natural resources such as soil, and the cumulative effect if relevant).
Please attach map(s) showing the boundary of the proposed work and other known details.

The retention of permanent open space following clearfell operation in order to work towards achieving the UKFS requirement of 10% open space within a LMP area. See maps 4 & 6 for details of the area.

Provide details on the existing land use and the environmental sensitivity of the area that is likely to be affected by the forestry project.

Currently a poor LP/MOP crop on very poor rocky ground at the top of the hill. Reverting to open ground will visually fit better with the local landscape as the neighbouring hill owned by Seafield estate has a sumit that is open and surrounded lower by conifer woodland.

Description of Likely Significant Effects

Provide details on any likely significant effects that the project will have on the environment (resulting from the project itself or the use of natural resources) and the extent of the information available to assist you with this assessment.

An increase in open habitat on ground that is not very suitable for forestry due to the poor stoney soil.

Include details of any consultees or stakeholders that you have contacted in order to

make this assessment. Please include any relevant correspondence you have received from them.
No comments received form consultation process.

Mitigation of Likely Significant Effects
If you believe there are likely significant effects that the project will have on the environment, provide information on the opportunities you have taken to mitigate these effects.
No significant effects expected.

Sensitive Areas	
Please indicate if any of the proposed forestry project is within a sensitive area. Choose the sensitive area from the drop down below and give the area of the proposal within it.	
Sensitive Area	Area
Select...	
Select...	
Select...	
Select...	
Select...	

Property Details			
Property Name:	Maud and Carnoch		
Business Reference Number:	LMP 19	Main Location Code:	
Grid Reference: (e.g. NH 234 567)	NJ 460 629	Nearest town or locality:	Buckie
Local Authority:		Moray	

Owner's Details				
Title:		Forename:		
Surname:				
Organisation:	Forest and Land Scotland	Position:		
Primary Contact Number:		Alternative Contact Number:		
Email:				
Address:	East Region, Portsoy Rd, Huntly			

Postcode:	AB54 4SJ	Country:	Scotland
Is this the correspondence address?		Yes	

Agent's Details			
Title:	Mr	Forename:	Mark
Surname:	Reeve		
Organisation:	Forest and Land Scotland	Position:	Planning forester
Primary Contact Number:	07990 802879	Alternative Contact Number:	
Email:	mark.reeve@forestandland.gov.scot		
Address:	East Region, Portsoy Rd, Huntly		
Postcode:	AB54 4SJ	Country:	Scotland
Is this the correspondence address?		Yes	

Office Use Only	
GLS Ref number:	

3.2 Proposed forest road works

There are no roadworks in the plan period requiring an EIA determination.

3.3 Proposed forest quarries

There are no operations planned in the quarry at Maud during the plan period. At present there is a stockpile of material for future use within the block.

3.4 Proposed afforestation

No afforestation on previously unplanted land is proposed in the plan period.

3.5 Additional regulatory considerations

No other regulatory consideration during the plan period.

4.0 Introduction

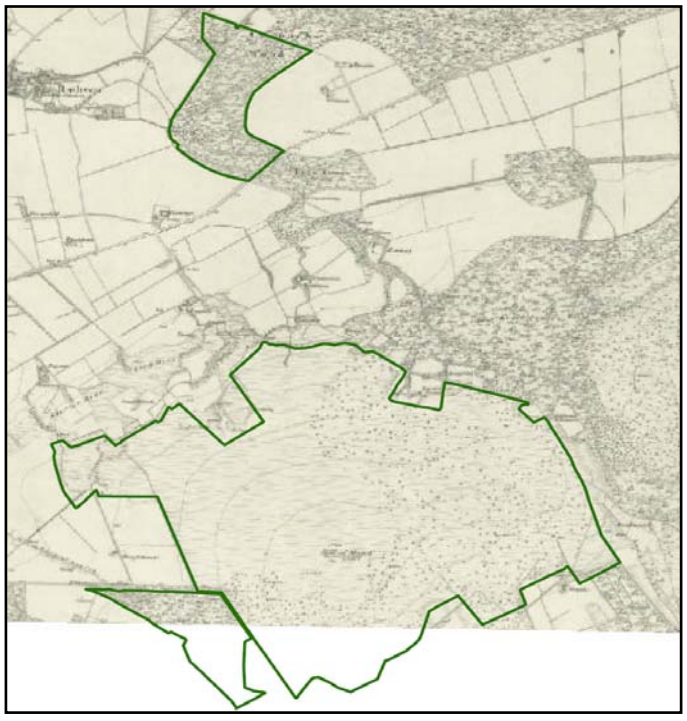
Refer to Map 1: Location

4.1 Setting and context

Maud & Carnoch cover a total area of approximately 368 hectares. The Hill Of Maud forest being 334 ha located at NJ468632, and Carnoch wood 34 ha located at NJ454655. The closest major town to both forests is Buckie to the north-west, with a number of smaller communities including Drybridge, Kirkton of Deskford and Rathven in the surrounding area. The main access to both areas is from the A98, Fochabers to Fraserburgh road.

4.2 History of the forest

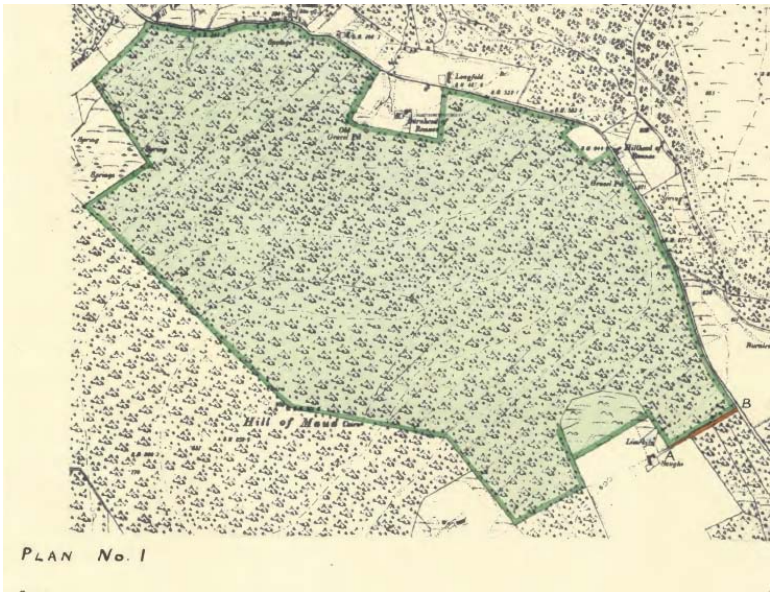
Map A is an exert of the first edition OS maps from 1871, which shows Carnoch as entirely wooded, while much of Maud is open hill with scattered trees.



The western section of Maud was acquired between 1948 and 1955 and afforested shortly afterwards. A short time later, in 1961, the eastern section of Maud and all of Carnoch were taken on a 99-year lease from the Seafield Estate. The lease map with Seafield estate, see Map B, shows the lease boundary at Maud. The lease with Seafield Estate ends in November 2059. As Carnoch was deforested only a short time before the lease agreement an establishment trial was set up in Carnoch to assess suitable species and cultivation techniques. The trail

has been completed and the trees will now be felled along the surrounding crops.

Maud was afforested at around the same time as Carnoch, with much of this original planting still surviving at present. Carnoch was fully afforested in the 1960's and early 1970's, in what turned out to be a very expensive establishment exercise, in part due to the wetness of much of the woodland.



Map B Eastern area of Maud, as highlighted, is leased from Seafield Estate until 2059

The impact of Dothistroma Needle Blight (DNB) led to large scale felling of the infected Lodgepole pine from 2013 onwards. Lodgepole pine was planted on a large scale at Maud and elsewhere in the district as well as nationally. The felling at Maud to stop the disease spreading was part of a National and District wide policy. There are still some stands of Lodgepole pine, which are susceptible to DNB and partially infected, remaining in Maud and they will be felled in due course.

4.3 Plan objectives

The purpose and objectives for managing these blocks of woodland have been identified following a review of:

- The physical context and existing woodland;
- The land management objectives of other statutory bodies;
- The physical capability of the woodland;

Analysis of the available information has led to the **primary objective** is the management of the woodland to provide a sustainable supply of timber.

5.0 Analysis of previous plans

The following table highlights the main priorities set out in the previous plan. It also describes what the proposed management intent is to carry these objectives forward in this plan.

Since the last plans were approved policy themes have been updated and as a consequence previous objectives can't be directly compared with the current aspirations for the National Forest Estate

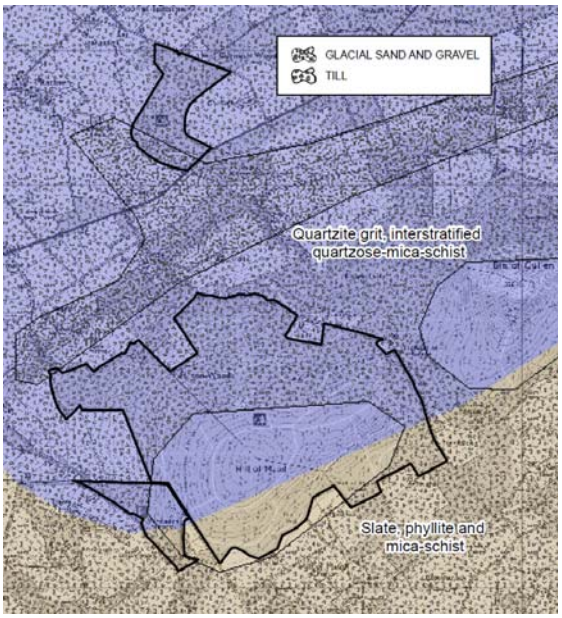
Theme	Priority	Plan Objective	**Proposed action** (in this plan)
Commercial	High	Provide a framework for the ongoing sustainable management of the productive areas of the woodlands	The primary objective was, and still is, the management of the woodland for the production of a sustainable yield of timber. It is noted that the public road adjacent to the Carnoch block has a weight and volume restriction which will affect the timing of felling and timber extraction for this block. (See section 6 3.2)
Commercial	High	Restructure the forest, replacing inappropriate species	The Lodgepole pine and mountain pine stands will be phased out in time and replaced with more appropriate species. Note: Lodgepole pine is still being planted across the National Forest Estate but only Lodgepole from Alaskan origin.
Landscape	Medium	Enhance and further integrate the woodland into the local landscape	Manage the clear felled area and maintain, if possible and practical, a more open habitat around the top of the Hill of Maud.
Species and habitats	Medium	Increase the naturalness of the woodland to improve its ecological value	Plan management regimes and operations to maintain, and where possible to improve, the ecological value of the plan for the priority species and habitats. Where practical and feasible improve the woodland next to watercourses towards riparian woodlands. Increase the % of broadleaves towards UK Forestry Standard, where feasible and practical.
Recreation	Medium	Improve, in the medium to long-term, the accessibility of the woodlands and hilltop.	Maintain the provision of recreation facilities at its current level and standard. Where possible and practical create long term opportunities for continuous accessibility.

6.0 Background information

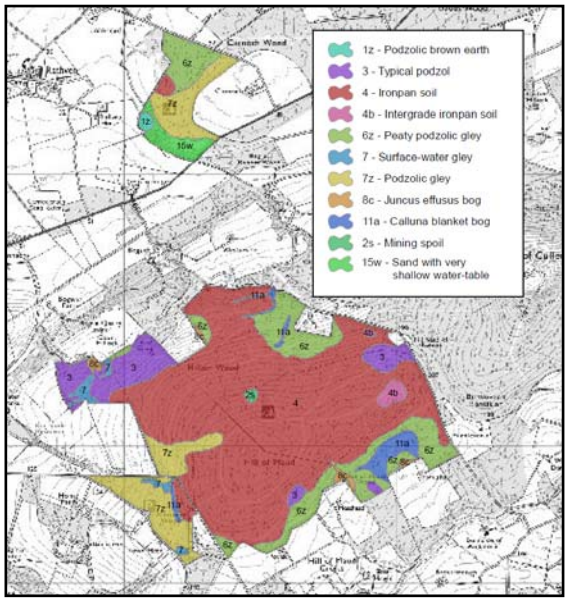
6.1 Physical site factors

Refer to Map 3: Analysis and Concept

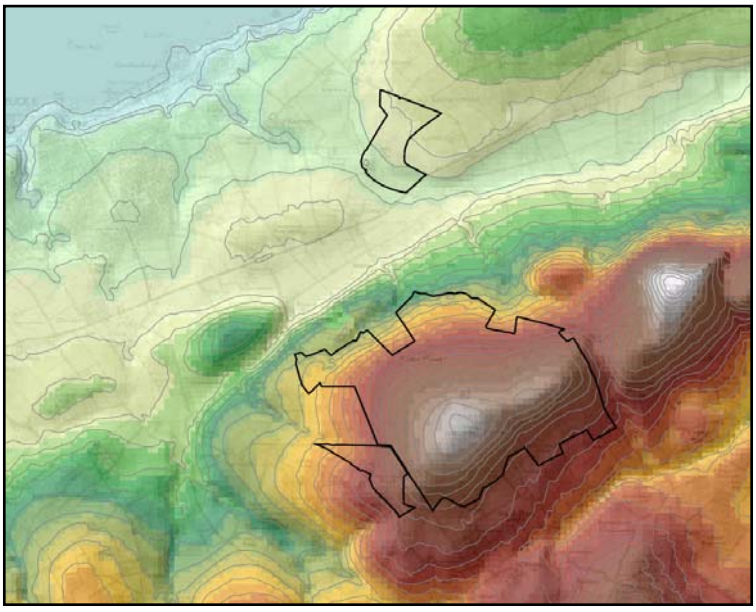
6.1.1 Geology, Soils and Landform



Geology - According to the British Geological Survey, Geological Map of the UK the majority of the plan area is underlain with quartzite grit and interstratified quartzose-mica-schist of the Cullen Quartzite formation which gives rise to soils with low levels of nitrogen availability.
The southern area is slate, phyllite and mica-schist of the Findlater flag formation which produces soils with medium levels of nitrogen availability.

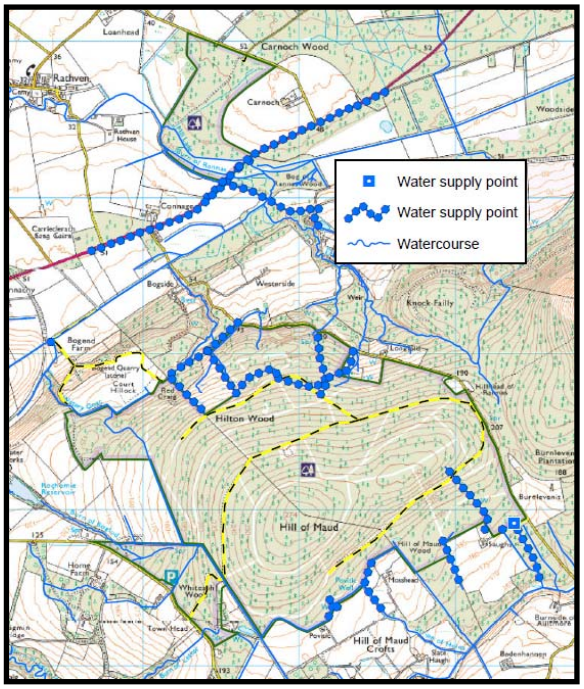


Soils – About 60% of the plan area is ironpan soil, with 14% peaty podzolic gley, 10% surface water gley and the remaining 16% made up of the other soil types. These soils have a wide range of moisture regimes from very wet through to slightly dry and nutrient regimes that run from very poor to rich. These factors influence the species of trees that will grow successfully in these woodlands.



Landform - The elevation of the plan area runs from about 35m above sea level in Carnoch, which is relatively flat, up to 274m at the top of Hill of Maud. Maud is located on the north-west and south-east facing slopes of a short ridge overlooking the coastal plain.

6.1.2 Water



There are number of burns and watercourse within the Maud and Carnoch forest block notably the burn of Rannas which turn into the Burn of Rathven downstream of the forest. The edge of the forest block lies partly within the Banff Coastal catchment where there are flood risk issues. A number of private water supplies are located at the edges of the forest. (See map). These will be protected during all forest operations.

The phasing of felling operations and creating riparian woodlands with a mix of broadleaves and open space any impact on future flood risks will be minimised.

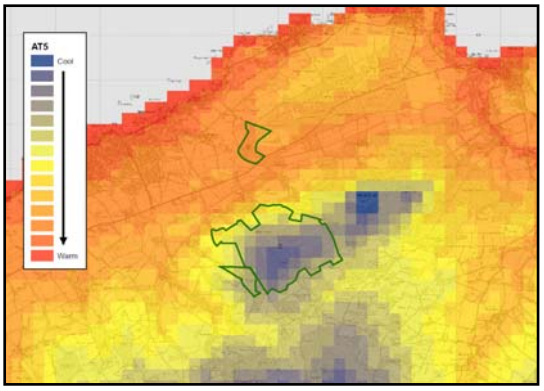
There are no PVA (Potentially vulnerable areas to flooding) down stream of Maud and Carnoch according to the SEPA map. However the watercourse running through the south of Carnoch is highlighted as one that has a high likelihood of flooding downstream of the block

SEPA have been consulted during the preparation of this plan. There correspondence and FLS's response is included in Appendix 1 – consultation record.

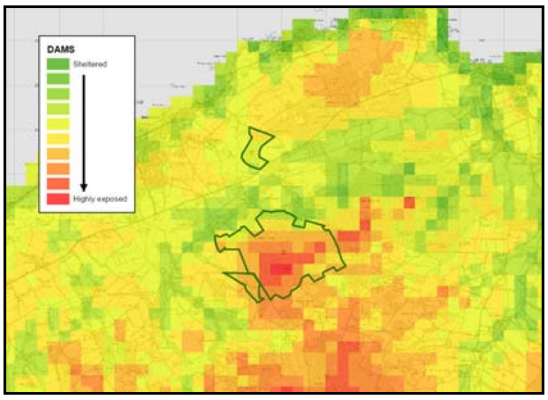
6.1.3 Climate

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.

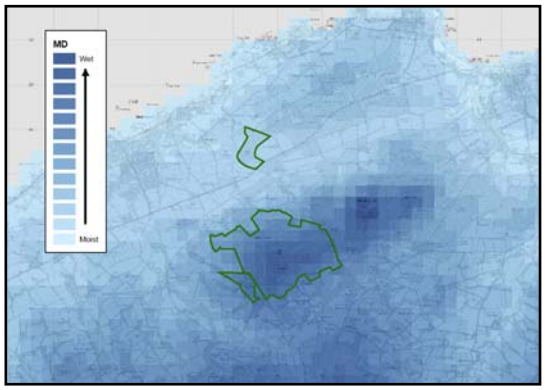
AT5	DAMS	MD
952 - 1216	9 - 16	77 - 135
cool - warm	sheltered – highly exposed	wet - moist



AT5 (Accumulated Temperature) is the accumulated total of the day-degrees above the growth threshold temperature of 5º, which provides a convenient measure of summer warmth. The results for AT5 place the blocks in the “cool” to “warm” zones.



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. Maud and Carnoch vary from “sheltered” to “highly exposed”.



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 these blocks in the “moist” to “wet” zone.

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

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.

6.2 Biodiversity and environmental designations

There are several UK BAP (Biodiversity Action Plan) animal and birds species within these woodlands. In particular badger, red squirrel and bird(s) of prey. The woods will be managed to enhance the habitat for these species and all work will follow the FCS guidance notes for the relevant species.

There is a **UKBAP habitat** applicable; **Watercourses/Riparian zones** apply to this plan

Maintenance of water quality is a priority as well as managing/mitigating flood risk. Maud and Carnoch woods will be managed following the UKFS Forest & Water Guidelines. Improvements to the riparian habitats will be made towards creating and connecting natural riparian woodlands and connecting them together where possible and practical.

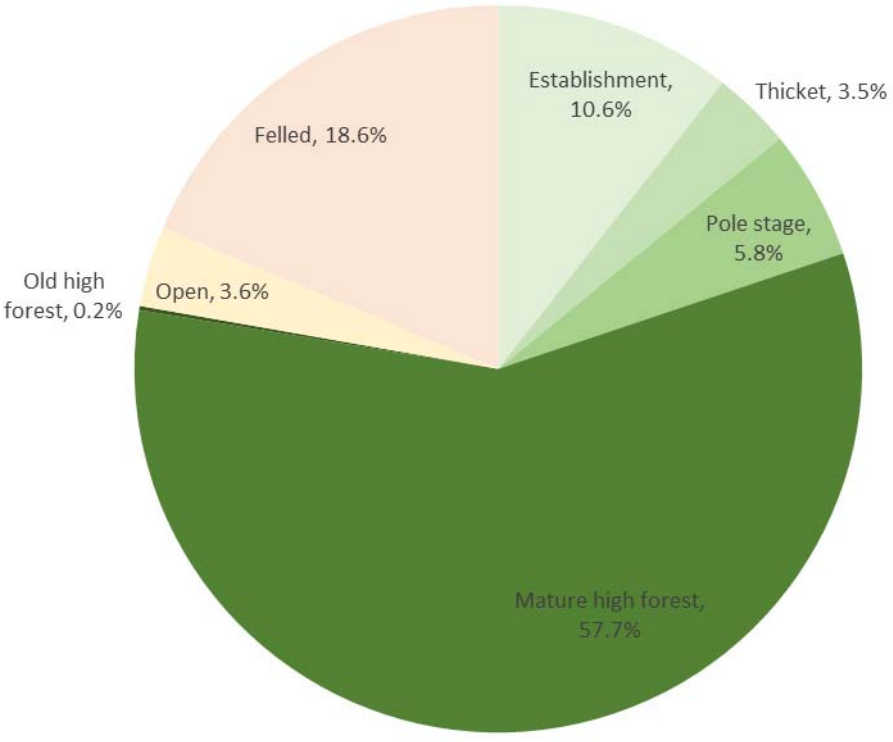
6.3 The existing forest

6.3.1 Age structure, species and yield class

Age Structure

As can be seen from the table and chart below the spread of age classes across the plan area is heavily weighted to mature high forest with a high proportion of felled and establishment stages. This is due to the fact that this area is in its first rotation and only just reaching maturity but there has been an amount of felling of DNB infected LP crops recently. This will obviously lead to a higher percentage of establishment aged crops as restocking is undertaken.

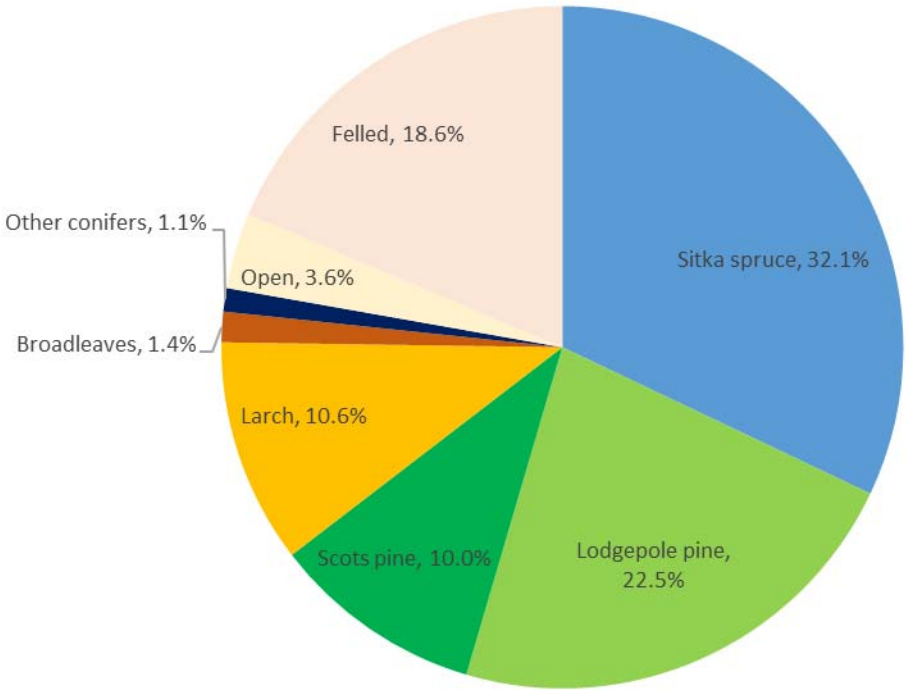
Ages of Trees (years)	Successional Stage	Area (ha)	%
0 -10	Establishment	39.1	10.6
11 – 20	Early Thicket	12.9	3.5
21 – 40	Thicket & Pole Stage	21.2	5.8
41 – 60	Mature High Forest	212.9	57.7
61+	Old Forest	0.7	0.2
	Open	13.2	3.6
	Felled	68.7	18.6
	Total	**368.7**	**100**



Species

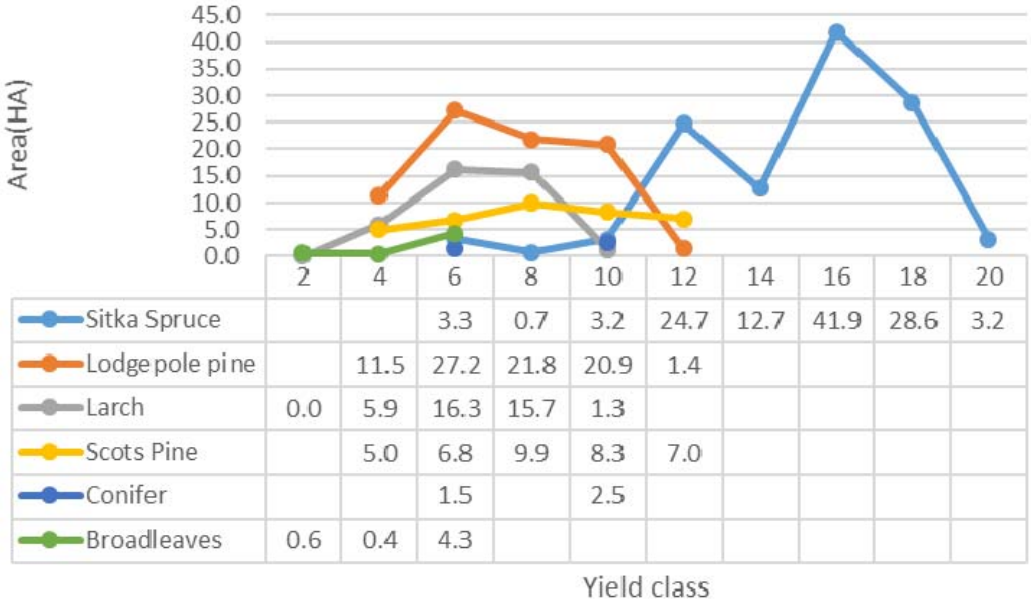
Sitka spruce and Lodgepole pine are the two largest components of the forest area. Lodgepole pine (LP) makes up 23% of the area but this percentage will reduce as LP is removed to reduce the DNB inoculum levels. Broadleaves make up just 1.5% of the area while there is only 3.6% of open ground. Both these figures will need to increase to bring them closer to the UKFS guidelines of 5% and 10% respectively.

Species	Area (ha)	%
Sitka spruce	118.2	32.2
Lodgepole pine	82.9	22.5
Larch	39.3	10.6
Scots pine	37.0	10.0
Conifer	4.1	1.1
Broadleaves	5.3	1.4
Felled	68.7	18.6
Open	13.2	3.6
Total	**368.7**	**100**



Yield Class

The yield classes for all species are lower than average due to the poorer soil conditions. The average yield class of Sitka spruce is below 16 with Lodgepole pine below 8.



	2	4	6	8	10	12	14	16	18	20
Sitka Spruce			3.3	0.7	3.2	24.7	12.7	41.9	28.6	3.2
Lodgepole pine		11.5	27.2	21.8	20.9	1.4				
Larch	0.0	5.9	16.3	15.7	1.3					
Scots Pine		5.0	6.8	9.9	8.3	7.0				
Conifer			1.5		2.5					
Broadleaves	0.6	0.4	4.3							

Yield class

6.3.2 Access

There is only one access into Carnoch from the public road running along its northern boundary. There is a weight and volume restriction for timber lorries using this public road. (See map 4 Management) Moray council road engineers will be contacted prior to any timber haulage to discuss the planned operation and the restriction.

The main access into Maud wood is via the entrance near Hillhead of Rannas croft. There is another access point at Whitash wood on the West side of the woodland block.

The forest road network is well maintained within Maud forest.

6.3.3 Silvicultural management.

Clear felling and removal of the mountain pine and Lodgepole pine of non-Alaskan origin stands is planned.
The top of the hill of Maud will be managed as open habitat. The riparian woodland with mixed broadleaf species is envisaged to be established by a mixture of planting and tree regeneration management.

Clear felling and restocking as well as regen management will be used to achieve the plans primary objective of producing a quality sustainable timber crop.

6.3.4 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
Small/Short Roundwood	Chip board, Orientated strand board (OSB), Paper, Fuelwood	55%
Fencing	Posts & rails	5%
Short log	Pallets & slats	10%
Log	Construction	30%

Most of this production is sold into markets in the north east of Scotland, and locally to James Jones, BSW, John Gordons, Tullochs and Norbord.

An increasing proportion of mainly roundwood material has gone into the local fuelwood market and this upward trend will likely to continue.

6.4 Landscape and Land Use

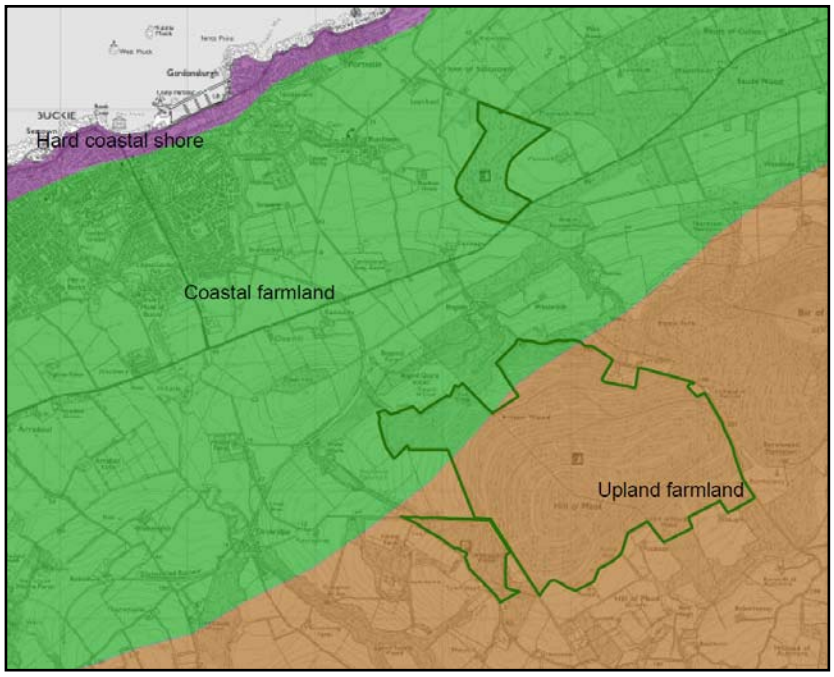
6.4.1 Landscape character and value

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 restructured as appropriate.

These assessments are considered during all land management plan reviews and where appropriate efforts are made to follow the guidance given, where it matches with current FLS policy.

The Maud and Carnoch forest blocks area is covered by Scottish Natural Heritage Landscape Character Assessment No101 Moray and Nairn, produced in 1998.

As can been seen in the map below the area is split between Coastal farmland and Upland farmland.



The assessment of the coastal farmland states that this area is a flat to gently undulating coastal plain that lies at the foot of the hills to the south. The broad expanse of the plain is interrupted by distinctive fluvo-glacial landforms such as parallel mounds of sand and gravel. The fertility of the soil has encouraged an intensive agricultural land use. Extensive long bands of coniferous plantation and shelterbelts create a backdrop to large, smooth, arable fields and create a simple pattern of vegetation. There are no recommendations for the management of the existing conifer plantations.

The upland farmland is described as broad, gently undulating slopes rising in close proximity to the coast which are cut by gently graded valleys and punctuated by distinctive conical hills. Although woodlands are present they cover only a small proportion of the land. Smaller scale geometrically shaped young coniferous plantations are prominent on the higher hill slopes, forming an abrupt edge to the semi improved pastures and moorland. The assessment states that many of the plantations, which tend to be located on the more marginal higher ground, are poorly scaled and shaped with geometric margins inappropriate to the rounded landforms of the area. It suggests that future felling and restocking should be planned and undertaken to ameliorate these visual problems.

6.4.2 Visibility

The Hill of Maud is an important component in the landscape although the Bin of Cullen to the East forms the main focus of the views. The very top of the Hill of Maud is particularly significant in terms the visual aesthetic from many of the key external viewpoints. From the A98 road, the major communication and tourist route, and town of Buckie there are clear views of the Hill of Maud.

6.4.3 Neighbouring land use

As can be seen on the aerial photo below the majority of both blocks are bounded by agricultural land with private forestry on the eastern boundary of Maud. The quarry on the northern boundary of Maud has recently expanded to twice the size on this photo and now dominates the view from the A98 road.

6.5 Social Factors

6.5.1 Recreation

Recreation at Maud and Carnoch is relatively low-key but it is important in the context of Buckie and surrounding area. Visitor numbers have increased during the last 5 years according to local residents. Most visitors arrive by car at the main entrance near Hillhead of Rannas on the East side or at the Whiteash wood entrance on the West side.

The majority of visits are by local residents exercising their dogs although there is a small upward trend in visitors from the wider area. Mountain bikers do use the forest and at Maud in particular the informal path/track to the hilltop. However, numbers are low and the impact of them can best be described as minor.

The potential for more recreational use is clearly present. Whiteash wood has a council owned picnic and car parking area at the side of the public road. The picnic and car parking area are not connected to the main access routes and used sporadically. The potential to create a circular access route, currently not present, is there and could be utilised/upgraded if recreational pressure increases.

The main focus of the recreational users is the hilltop of the Hill of Maud. Since the felling of the DNB infected trees, 2015/16, the view from near the top of the hill has opened up again. This corresponds with the slight rise in number of visitors mentioned in particular those who reside locally.

6.5.2 Community

The burgh town of Buckie has a population of circa 8500 people according to the published results of the last census. It has seen a modest increase in the last decade with regards to the number of houses being built. The council plan for Buckie, published in 2017, has zoned several areas for house building for expansion on the edge of the town for what is described by them as modest growth. The Hill of Maud forest is a significant backdrop to this community which traditionally focusses towards the sea.
A small, but quite noticeable, number of private house plots to the south and west side of Maud have been developed recently close to the forest block boundary.

6.5.3 Heritage

The archaeological legacy at Maud consist of several Cairns, or remains of Cairns, two gravel pits and a well whereas at Carnoch the Mill lade north of the Burn of Rannas is noted. A check of both our own records and the SMR has been undertaken to establish the location, mostly on the boundary edges, and importance of these features. No scheduled sites or features of regional importance are present at Maud or Carnoch therefore no separate map is included in this plan. A map, and more information, can be found via the Aberdeenshire council website, Moray SMR, Maud, Carnoch.
The details and locations of the above mentioned archaeological remains will be included in each work plan that is drawn up for every forestry related operation carried out within this plan area. All operations will follow UKFS and FLS guidance for the management of heritage sites.

6.6 Pathogens and diseases

6.6.1 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 the 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.

6.6.2 Dothistroma needle blight (DNB)

Dothistroma needle blight is a fungal pathogen which is negatively affecting the woods within the East region.
Dothistroma needle blight is an economically important disease affecting a number of coniferous trees, pines in particular. 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 Scots pine.

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.
In recent years, 2015/16, within the Maud and Carnoch block there has been a very significant amount of felling of Lodgepole pine stands to prevent the spread of the disease. The felling, ahead of the planned schedule, has been in accordance with national and district, now regional, policy. More felling of the remaining mountain and lodge pine stands, in particular the top of the hill, is planned to take place for this reason.

7.0 Analysis and Concept

Refer to Map 3: Analysis and concept.

Issue	Analysis	Concept
Timber supply	Despite the poor soil conditions a crop of timber is capable of being grown across much of the plan area.	Optimise thinning and clearfelling to achieve a sustainable yield of timber. Restock with species suited to the site conditions that are capable of producing a future timber crop.
Timber supply	There are areas of DNB infected crop within the block.	Optimise thinning and clearfelling to reduce the level of DNB inoculum and also achieve a sustainable yield of timber.
Timber supply	Large clearfelled areas within the block.	Plan/schedule felling coupes to create diversity of age within the block.
Access & health - Recreation	Formal, and some informal access, is taken place within the block.	Maintain the provision of recreation facilities at its current level and standard. Leave open options to increase when required.
Environmental quality - Soil, water & air quality	Several drains and burns, as well as several private water supplies, run from and through Maud and Carnoch	Plan management regimes and operations to ensure the quality of the drains and burn is not compromised and improved where possible and practical with riparian broadleaf woodlands.
Environmental quality - Landscape; Hill of Maud	The top of the hill of Maud is an important part to the local landscape.	Use clearfell and manage “open” Habitat to enhance the landscape value of the Hill of Maud to fit with the landform.
Biodiversity - Species & habitats	A number of priority habitats and species are present across the plan area; Watercourses and Riparian zones. Badger, red squirrel and birds of prey.	Increase riparian zones with appropriate species. Use management regimes and operations to maintain and improve, when possible and practical, the ecological value of the plan area for the priority habitats and species.
Biodiversity - Habitats, species, landscape, environment, resilience	Absence of a planned or designed forest edge habitat.	Where appropriate, practical, and when possible, establish a resilient forest edge habitat rather than production orientated forest.

8.0 Forest Design Plan Proposals

8.1 Management

Refer to Map 4: Management.

8.1.1 Thinning

Wherever possible within the region we will try to maximise the area managed through thinning. FLS 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.

A small proportion of Maud and Carnoch is not suitable for thinning due to the current standing crops and the site conditions. All areas that are suitable for thinning are thinned when possible minimizing the vulnerability to windblow. Coupes will be assessed initially on a 7 year cycle.

All thinning decisions will be guided by Operational guidance Booklet No 9 'Managing thinning.'

8.1.2 Clearfell

The main silvicultural system employed in our forestry practices is clear felling followed by planting. As an option we will also asses any felled sites for the option to restock by regeneration of the site from seeds left by the previous crop, or surrounding crop.

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

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 forest block. The adoption of a 'fallow' period creates transient open habitat that is exploited by several species such as voles, deer, and raptors. The length the fallow period is determined by the presence and number of Hylobious weevil (see 8.5.3)

Clearfell will be the main silvicultural system employed at Maud and Carnoch. The scale of clearfells will be in keeping with the scale and topography of the local landscape. The first clearfells within the plan period will be concentrated on those crops that are infected with DNB in particular the hilltop.

Following clearfell operations in Carnoch we will remove brash from the functional flood plain to ensure woody debris does not enter the watercourse during a flood event and impact small bridges/culverts downstream and result in the potential blockage of structures and thus increase the risk of flooding to downstream assets.

Felling of Trees in Exceptional Circumstances

FLS will normally seek to map and identify all planned tree felling in advance through the LMP process.

However, there are some circumstances requiring small scale tree felling where this may not be possible and where it may be impractical to apply for a separate felling permission due to the risks or impacts of delaying the felling. Felling permission is therefore sought for the LMP approval period to cover the following circumstances:

- Individual trees, rows of trees or small groups of trees that are impacting on important infrastructure (as defined below*), either because they are now encroaching on or have been destabilised or made unsafe by wind, physical damage, or impeded drainage.

*Infrastructure includes forest roads, footpaths, access (vehicle, cycle, horse walking) routes, buildings, utilities and services, and drains.

The maximum volume of felling in exceptional circumstances covered by this approval is 40 cubic metres per Land Management Plan per calendar year. A record of the volume felled in this way will be maintained and will be considered during the five year Land Management Plan review.

8.2 Future Species

Attached Map, number 6, shows the future tree species planned for Maud and Carnoch. Commercial tree species will be established, after clearfell, by a combination of regeneration and planting. The riparian zones contain broadleaf species such as Alder and birch will be partially planted but may also partially regenerate naturally from seed from desirable trees already present and left after clearfell where practically possible. More resilient forest edges near roadsides are to be established, where practical, after clearfell by leaving an edge clear of brash after clearfell. This is to be followed by a combination of

some planting and some successional regrowth. If tree tubes are used for establishment they will be removed after several years. Open habitat for the Hilltop of Maud is to be maintained after the clearfell of the Mountain pine and Lodgepole pine which are infected by DNB (see 8.2.2)

8.2.1 Restocking

The restocking of felled areas is guided by the main objective of the plan area which is the production of a sustainable crop of timber.

The actual species choice for restocking has been guided by the ESC results for this climatic area and soil types (see section 3.1). This limits the species choice in most of the area due to the soil and climatic conditions encountered at Maud and Carnoch. However in areas where possible efforts will be made to select as wide a range of species as possible to create a more diverse woodland.

The areas that have been felled in the recent past to remove DNB infected Lodgepole pine are programmed to be replanted with Sitka spruce in the first two years of the new plan period. All conifer restocking will be managed to achieve a minimum of 2500 stems per hectare at year five.

All areas identified for restocking by natural regeneration will been recorded and programmed for inspect on a five yearly basis. At each inspection an assessment will be made to establish if the natural regeneration is, or is likely, to achieve the objectives for the site. If it is decided that the objectives are not being met then replanting with an appropriate species will be undertaken. If natural regeneration is occurring but not yet at the required density then the option to review the site in a further five years may be taken. If after two such inspections, that is ten years following felling, it is felt appropriate to wait a further period for natural regeneration then a discussion and agreement will be reached with the Conservancy woodland officer.

Enrichment planting will be used to ensure the target stocking density of 2500 stems per ha is reached if there is insufficient natural regeneration.

The generally poor soils at Maud and Carnoch limit the planting of productive broadleaves. Native broadleaf planting will have the biggest impact on the biodiversity and environmental value of the forest especially within the riparian zones. Therefore all broadleaf planting in this plan period (8.8ha - see section 2.4) will have the main objective of improving the biodiversity of the LMP area and moving towards the UKFS requirement of each LMP having 5% of the area being native broadleaves. The broadleaf replanting, or natural regeneration, will be managed to achieve 1600 stem per ha in the fully stocked areas. Up to 26% of the coupe area will be retained as open ground, again moving the UKFS requirement for 10% open ground. Details of the breakdown of the mix of broadleaves and open ground are included in table 6, section 2.4. The fully stocked broadleaf areas will be planted in the most

appropriate locations within the coupe. This decision will be taken by the forester on the ground once the preceding crop has been felled and the full suite of site conditions can be properly assessed. Therefore there has been no attempt to map these areas as part of this plan.

8.2.2 Management of open land & non-commercial areas

Areas not considered for commercial forestry management include permanent woodland, riparian zones, designed “open” areas, quarries, road and rides. These areas will require monitoring to ensure they deliver the required objectives. Non-desirable species, such as non-native conifer regeneration, will be removed if it threatens to prevent the objective of the area being met.

This plan seeks to increase the area of open ground to meet the UKFS requirement for 10% open ground in a management area. The top of Maud hill has been identified as the most appropriate place for this. The soils here are poor, very thin and stony and is the least favourable area for tree growth. If tree regeneration does occur this will be controlled to ensure it does not exceed 20% of the area.

8.3 Species tables

Species	Current species (%)	Projected species 2029 (%)
Sitka spruce	32.2	52.0
Lodgepole pine	22.5	16.2
Scots pine	10.0	11.5
Larch	10.6	9.0
Other conifers	1.1	0.7
Broadleaves	1.4	3.8
Open	3.6	6.8
Felled	18.6	
Total	**100**	**100**

As can be seen from the figures above there are some changes in the overall proportions of species across the plan area. The broadleaves percentage has increased during this plan period however it is not possible to reach the UKFS requirement for 5%. There is a coupe that is situated on the western boundary of Maud that is planned to be felled in phase three that is suitable for restocking with broadleaves as it has better site conditions for the growth of broadleaves. Converting the majority of this coupe from conifers to

broadleaves will allow us to meet the 5% minimum broadleaf requirement under UKFS. (See map 4)

8.4 Age Structure

Age of Trees (years)	Succession Stage	Current Distribution (%)	Projected Distribution 2029 (%)
0 -10	Establishment	10.6	31.0
11 – 20	Early Thicket	3.5	10.6
21 – 40	Thicket & Pole Stage	5.8	3.5
41 – 60	Mature High Forest	57.8	11.5
61+	Old Forest	0.2	36.6
	Open	3.6	6.8
	Felled	18.6	
Total		**100**	**100**

The age structure across the plan period and area sees large changes. This is a reflection of the fact that much of the area was felled due to DNB in the previous plan period.

The very poor and diseased Lodgepole and Mountain pine on the very hill top will be removed during the plan period. Due to very thin and poor soils this area will not be replanted and will be left as managed “Open” ground.

8.5 Management of Environmental Assets

8.5.1 Deer Management

Wild deer on the National Forest Estate (NFE) are managed in accordance with the Scottish Government’s strategy “Scotland’s Wild Deer a National Approach” and under the auspices of the Code of Practice on Deer Management.

The strategy and Code of Practice 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.

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

It is therefore FLS 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 deer per 100 hectares.

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

8.5.2 Access

Access for forestry operations within the Maud forest is good and manageable at Carnoch. Maintenance of the existing road network will be required to ensure operations can be successfully undertaken.

8.5.3 Pathogens

The **large pine weevil** (*Hylobius abiatis)* can cause extensive feeding damage to young trees used to restock clearfell sites but damage is often highly variable. 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 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.

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 Support System will be used along with past results and experience to determine the optimal time to restock while minimising the use of chemicals.

Restocking 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 abiatis.* Due to the expected high level of Hylobius and the adopted policy for environmental management to "reduce the use of Insecticides where feasible" restocking is planned to take place at the end of year 4. Restocking will take place before then if monitoring, using MSS shows that it is safe to do so.

Dothistroma Needle Blight (DNB)

Dothistroma Needle Blight will be addressed differently depending on 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 level of mortality is the key concern as once dead the integrity of the tree quickly deteriorates to a state where it cannot successfully be harvested. Categorisation of the infected crop will allow us to prioritise the harvesting of such areas.

The following Crop Condition Survey (CCS) protocol has been developed by Forest Research. The crop is graded using a seven point scale based on a visual assessment of needle retention, mortality, crown density, bark condition and light levels/ground vegetation abundance.

Assessment score	Assessment details
1	Healthy Crop. No evidence of infection.
1/2	Intermediate between 1 and 2.
2	Evidence of early stages of infection (e.g. some needle loss, thinning of crowns, early signs of mortality).
2/3	Intermediate between 2 and 3.
3	Clear evidence of infection (e.g. significant needle loss, 'lion's tail' effect, clear sight lines through the crop, presence of vegetation cover on forest floor, possible bark splitting, mortality is evident).
3/4	Intermediate between 3 and 4.

4	Crop is dead or is very likely to die (e.g. will die within the next few months, high mortality and is unlikely to recover).

This has led to the following action plan for dealing with DNB:

- Prioritise infected areas to be felled by swapping felling coupes of non-infected crops in the current program;
- Include in thinning operations the felling of any infected crops within the area to minimise costs. Amendments to the land management plan will be required as specified in the tolerance table for felling such areas;
- Reassess badly affected blocks and consider if a full review of the land management plan is required;
- Planting programs will need to be amended to include replacement species suitable for the site.

In the plan area there are currently a number of pine stands confirmed as having DNB infection in the range of 1/2 to 3/4 on the above scale. One of the aims of this plan is to reduce the percentage of Lodgepole pine crops within the blocks. By the end of the plan period the percentage will have reduced from 22.5% to 16.2%. It has not been possible to reduce it further in this plan as to do so would of lead to excessive amounts of clearfelling in small block and issues with adjacency. The remaining areas of Lodgepole pine will be targeted in the early felling phases of future plans In the meantime we will attempt to reduce the impact of DNB by undertake heavier than normal thinning to allow more air movement within the crop and the targeting removal of Lodgepole and Corsican pine during thinning operations where it is part of a mixture with other species. Both Lodgepole and Corsican pine are more susceptible to DNB than Scots pine and it is hoped these actions will reduce the overall inoculum loading in the block and therefore improve its chances of surviving the DNB infestation.

In east region there has been a reduction of DNB infection but at this stage it is not clear whether this is due to the proactive management of the disease that has been undertaken or simply due to environmental factors. The progress of the disease will continue to be monitored closely.

8.5.4 Critical Success Factors

- Undertake the planned thinning and felling programme in order to increase the quality of the timber within the plan area and to meet the production targets.
- Establish and maintain the planned mixed broadleaf riparian zones, monitor the progress and undertake appropriate action if and when required.
- Continue with the maintenance of the forest road network, and expand, to allow forest operations to be successfully completed.

- Control of deer populations to allow tree regeneration and limit damage to young plantations.

8.6 Long term vision

8.6.1 Why?

Looking beyond the short (5-10 years) or medium term (10-30 years) to a long term vision is appropriate for every forest block. Even the shortest forestry crop rotations take a long time compared to for example agriculture or gardening. To get the end of a short forestry crop rotation takes 40 years minimal. Longer forest crop rotations, for example broadleaves like Oak (100 plus years), demand a long term vision. "If only considering short or medium term visions are used our forests would not be managed for the benefit for all in our society"

Forestry management decisions are made with experience, current forestry knowledge, scientific knowledge available, money, labour and machinery availability, government and organisational policy. These decisions will be questioned and influenced during a crop rotation before it comes to its end. A forest block consists of many parts, or coupes, at different stages in a rotation. During the management of a rotation period a forest crop will be "thinned", most likely several times, but there are many other influences. Some of these influences we have some control over, when to thin or not, but other influences such as changes in timber prices, tree diseases, large storms and floods we do not. Large global events such as stock market crashes and (world) wars all may happen during a rotation time of a forest. A long term vision looks ahead across several forest crop rotations.

8.6.2 How?

A long term vision for a forest is a helpful tool to a forest manager but also to a neighbour, a business person, a politician or to any visitor to the forest. Some explanation of how forest managers decided, or arrived, on this vision for this forest will be helpful for many in particular future forest managers. A decision to change course at the end, or before the end, of a rotation should take the long term vision into consideration. A change away from the considered, and agreed, vision will have many knock on effects.

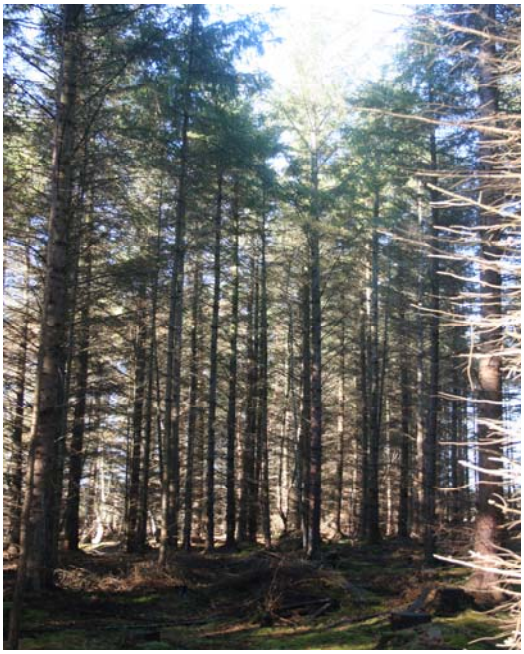
8.6.3 Vision statements

Maud: *Integrate this low hill clad with productive forest of pine, spruce and larch around a more open hilltop within its landscape setting. The long term aim is to manage a more open, low hilltop itself that permits views to Buckie on the coastal plain. The productive conifer woodlands that clad the side of the hill of Maud to be managed by thinning, felling, regeneration and planting. The lower slopes of the Hill of Maud have gullies that are aimed to be developed/filled, in time, with riparian broadleaf woodland complimenting the network of watercourses. By felling, planting and allowing succession to take place we aim to develop more resilient edges of broadleaved trees and shrubs forming the boundary with roads.*

Carnoch: *We aim to manage, by felling and thinning, for a riparian broadleaf woodland complementing several important watercourses within the wider landscape for the south part of Carnoch. The riparian woodland will be border with production conifer forest to the north. Continuing the productive conifer forest of pine and spruce, by thinning felling and regenerating. Develop the woodland, by felling, planting and regen management. Create more resilient edges of broadleaved trees and shrubs that form the boundary with the roadsides.*

8.6.4 Example Pictures and diagram

Every person will interpret a written vision for a forest different from each other. Visualisation of the long term vision with aid of pictures/drawings will be helpful.



Riparian woodland with broadleaf trees Productive conifer woodland

Gully with riparian broadleaves down in the gully and conifer woodland higher up the slope

Gully with riparian broadleaves trees at bottom and productive conifer trees on higher ground.

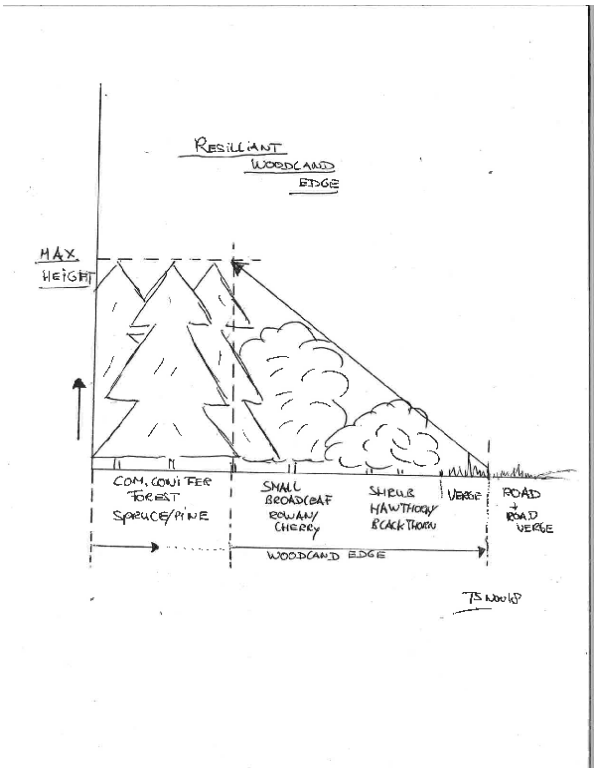


Diagram of a resilient Woodland edge between commercial conifer crop and roadside.

(Diagram. T. Simpson)

Appendix 1 – Consultation record

Consultee	Date of contact	Response Received	Issues Raised	Forest District Response to Issues
Aberdeenshire Council	15/8/2018	12/9/2018	Replied that they have received letter.	
RSPB East Scotland Regional office	15/8/2018	12/9/2018	Replied that they do not hold any relevant information for this area and have therefore no comment to make on this plan.	
Scottish Natural Heritage (SNH)	15/8/2018	28/8/2018	Replied that as there are no protected area affected by the plan they have no further comments to make.	
Seafield Estate Will Anderson	15/8/2018	24/82018	Replied he had received our letter. No immediate neighbour issues that would require strategic planning. Request for possible joint access to North part of Maud. Planning team manager to answer formally.	
Scottish Environmental Protection Agency (SEPA)	15/8/2018	10/9/2018	See letters below	See response below

Mail drop to neighbours	20/8/2018	Replies listed below	In addition to sending letter to all listed consultees a mail drop was done to all immediate neighbours, TS and CH, of Carnoch and Maud. 45 Letters in total.	
Mr A. Burgess	20/8/2018	21/8/2018	Mr Burgess, Saugh (name of house) South east of Maud, is concerned that when our trees are felled, in due courses, near his property that his property will be left very exposed.	FC policy is that Harvesting Forester will contact neighbours, including Mr. Burgess, before felling machines go in. Small compromises could be made at this point by either retaining or cutting trees near a boundary. Note: The Saugh property is possible on mains water and not a private supply. (FLS staff could not find it!)
Mr. J. Simpson	21/08/2018	24/0/2018	Mr J. Simpson of 5 Corries Cottages phoned to ask how The plan would affect his house.	As above Mr Simpson was reassured by our policy of contacting neighbours before felling.
Danielle Pitt	7/09/2018	7/09/2018	Danielle's parent own the property of Hillhead of Rannas, close to main entrance, east side. Asked if any felling nearby and firewood availability.	Responded by email. Explained LMP process and timescales. Probably no felling soon. Firewood request passed on to Forester responsible.

Mrs S. James	19/9/2018	19/9/2018	Mrs James lives with her husband at West Scotstown property to the north of Carnoch. She phoned to express concern that if we cut all the trees the red squirrels would stop coming to her garden. Did we know there are pine martens, badgers and quite a lot of deer too?	Responded that we will probably cut some trees at some point but never all at once. We are aware of the wildlife present through our wildlife and environment rangers. She is happy with FLS working practises and that the trees are a crop that will be felled at some point. She is aware that there is an area of ground between her house and Carnoch wood that is not managed by FLS. Mrs James accepts that if trees are felled it will take a while for other trees to grow and this may mean that squirrel may not come to visit her garden.
Mr A Burgess	18/10/ 2018	18/10 /2018	Mr. Burgess met TS and R. Jephcott when TS and RJ met at forest entrance to discuss landscape planning for block. Mr Burgess was concerned about the fallen trees inside the block (minor concern as confirmed by Paul Raisback, harvesting forester) However, Mr. Burgess went over his concern he voiced to TS in August, see above.	Same answer as before and Mr. Burgess said he was satisfied with that.

Initial response from SEPA.

SEPA
Scottish Environment Protection Agency
Buidheann Dìon Àrainneachd na h-Alba

Our ref: PCS/166990
Your ref: Maud & Carnoch

If telephoning ask for:
Judith Montford

6 September 2019

Mark Reeve
Forestry and Land Scotland
Portsoy Road
Huntly
AB54 4SJ

By email only to: mark.reeve@forestryandland.gov.scot

Dear Mr Reeve

Forest Plan
Review of Maud and Carnoch Land Management Plan
Maud and Carnoch Forest located South East of Buckie, Moray

Thank you for your consultation email which SEPA received on 7 August 2019. We have reviewed the finalised Maud Land Management Plan April 2019 (by Forestry and Land Scotland) and unfortunately, we object to this plan on the grounds of lack of information. We will review this objection if the issues detailed in Sections 1, 2 and 3 below are adequately addressed.

Please note the advice provided below.

Advice for Forestry Commission Scotland

1. Flood risk

1.1 We stated in our previous response (letter of 10 September 2018, our reference; PCS/160799) that *'Parts of the site lies within the Rathven Burn - Banff Coastal catchment where there are flood risk issues. The plan should consider impact of the works on flood risk to downstream receptors. For example, impact on flows, sediment transport, capacity of culverts and potential blockage of culverts need to be considered. Measures may need to be put in place to prevent increase in runoff or woody debris from entering watercourses. Monitoring before, during and after works may need to be implemented on this catchment.'*

1.2 We have reviewed the "Maud Land Management Plan" April 2019 (by Forestry and Land Scotland) and parts of the site (i.e. the two areas of woodland known as Maud and Carnoch which are considered in the Plan) lies within the medium likelihood (0.5% annual probability or 1 in 200 year) flood extent of the SEPA Fluvial and Surface Water Flood Map, and may therefore be at medium to high risk of flooding. There are also a number of minor watercourses flowing through or adjacent to the application site which have catchments smaller than 3km². As the SEPA Flood Maps have been produced following a consistent,

Chairman
Bob Downes
Chief Executive
Terry A'Hearn

SEPA Aberdeen Office
Inverdee House, Baxter Street
Torry, Aberdeen AB11 9QA
tel 01224 266600 fax 01224 896657
www.sepa.org.uk • customer enquiries 03000 99 66 99

nationally-applied methodology for catchment areas equal to or greater than 3km^2, the fluvial flood risk from such minor watercourses has not been modelled or shown on the SEPA Flood Map. Consequently these areas may also be at risk of flooding.

1.3 In addition there are areas downstream of both woodlands where there would appear to be extensive out of banks flow and receptors to any increase in flood risk. North-west of Carnoch woodland the Burn of Rannas (which becomes the Burn of Rathven) flows close to the village of Rathven with several properties lying within and close to the 1 in 200 year flood extent. Within this village there are also a number of small road bridges over the Burn.

1.4 Although we hold no records of flooding, a Flood Risk Assessment (planning application 11/00206/PPP) indicated properties within Ruthven lay adjacent to the estimated 1 in 200 year (0.5% annual probability) flood extent outline and we would like to highlight that for planning purposes the functional flood plain will generally have a greater than 0.5% (1:200) probability of flooding in any year and Scottish Planning Policy states in paragraph 256 that ***"the planning system should prevent development which would have a significant probability of being affected by flooding or would increase the probability of flooding elsewhere. Piecemeal reduction of the functional floodplain should be avoided given the cumulative effects of reducing storage capacity."***

1.5 In addition close to the northern boundary of the Maud woodland there are large areas of surface water flooding adjacent to the small watercourses just to the north of "Bogside". A small road bridge also crosses this watercourse in this vicinity. The presence of surface water flooding on minor watercourses can be seen as an indication of fluvial flood risk. Therefore it is likely that there is a risk of flooding within this area which should be taken cognisance of.

1.6 It is acknowledged within the Plan (Section 6.1.2) that the burns and watercourses "*may be affected by some of the forestry operations in particular clear felling*". In addition continuing in Section 6.1.2 it is stated that "*the likelihood of an area to flood, published by SEPA, shows that the south part of the Carnoch forest block is in a high risk area*". Apart from these statements raising awareness of possible flooding no further consideration is given to the impact of the proposed forestry on the possible change in flood risk to the localised areas or downstream receptors.

1.7 It would appear that because these possible localised changes in flood risk are not identified in both the Findhorn, Nairn and Speyside Flood Risk Management Plan and North East Flood Risk Management Plan, no further consideration of local impacts or possible necessary mitigation measures should be made. However as stated above, parts of the two areas of woodland lie within the 1 in 200 year flood extent and SPP states that *the planning system should prevent development which would have a significant probability of being affected by flooding or would increase the probability of flooding elsewhere.*

1.8 Again we reiterate that receptors to flood risk should be considered and this Plan should therefore assess the impacts of the proposed works on flood risk to both the site and downstream. For example, the impact on flows, sediment transport, capacity of culverts and potential blockage of downstream structures need to be considered. Monitoring before, during, and after works may need to be implemented on this catchment, from clear-felling, ground preparation to tree maturity. This should be considered at the working plan stage.

1.9 With regards to the clear-felling and restocking there is the potential for an increase in the volume of woody debris and sediment available to the channel thereby increasing the risk of blockages within the channel or to existing structures downstream. We therefore

recommend the provision of buffer strips adjacent to watercourses and in general would advise against the planting of trees in these buffers or in functional flood plains, in order to prevent the increased potential for blockages occurring due to in-channel debris. The width of these buffer strips may require to be increased considerably in steeply incised watercourse catchments to prevent any wind-blown trees falling directly into the watercourse channel.

1.10 In Section 8.6.3 "Vision Statements" it is stated for the Maud forest that "*The lower slopes of the Hill of Maud have gullies that are aimed to be developed/filled, in time, with riparian broadleaf woodland complimenting the network of watercourses*" and for Carnoch woodland *"We aim to manage, by felling and thinning, for a riparian broadleaf woodland complementing several important watercourses within the wider landscape for the south part of Carnoch"*.

1.11 These proposals should generally improve the habitat around Rathven Burn as this area in Carnoch will be regenerated with broadleaved trees however, we are unclear what these statements mean in practice for the drainage networks in these areas, but we request consideration should be given to limiting the replanting of trees near watercourses and we would recommend that only smaller tree species are planted adjacent to these buffer strips to minimise the volume of material that could potentially enter watercourses. Similarly, during harvesting, woody material should be stored away from watercourses and outwith the buffer strips so that this cannot be washed into the channel during a storm event. We would also recommend that an inspection and maintenance regime is implemented to ensure any material which does enter the watercourses can be removed as soon as possible.

1.12 In addition there should be no increased runoff as a result of the works and if not managed appropriately downstream flood risk may be exacerbated potentially increasing risk to the properties at Ruthven and several road crossings downstream of the sites. We would note that by employing good forestry management practices such potential impacts can be mitigated.

1.13 We would recommend that any significant works such as changes in drainage, planting, or harvesting activities are notified to Moray Council and if necessary a method statement of works or mitigation agreed. We would also advise that ploughing of furrows for planting occurs across the slope, rather than up and down, has the potential to reduce runoff from the hillside.

1.14 We would advise that the removal of trees during a harvesting period could have varying degrees of associated hydrological impacts. For example, there may be short term impacts with changes to surface water run off rates and debris which could be mobilised during a flood event and the destabilisation of soils can lead to erosion and gully formation following heavy rain. This can lead to increased runoff rates and volumes for subsequent (including non-extreme) rainfall events which may have otherwise been subject to greater interception by the tree canopy and localised flooding issues may arise. We would therefore assume that relevant good practice guidance will be adopted to minimise this.

1.15 Before replanting, any necessary drainage works should be undertaken to intercept and slow overland flow velocities to maximise the available depression storage and increase soil infiltration times available for floodwaters for example interceptor trenches and cut-off ditches. These drainage works should be maintained in the long term to ensure that they continue to provide adequate storage for surface water runoff and that this is not gradually lost through the deposition of sediments.

1.16 In light of all the various comments made above we would request clarification why the statement in Section 6.1.2 as follows would improve the various flood risk issues highlighted - *"by phasing the operations and transforming some tree stands, at Carnoch and Maud, towards riparian woodlands with more appropriate tree species including broadleaves flood risk issues are being addressed positively for the long term".*

1.17 As summarised above possible changes in flood risk associated with these proposed works have not been considered as an issue therefore we request that it is given due consideration with details of any appropriate mitigation measures within the Plan and ask that the revised plan with the details above is provided.

2. Activities which may have adverse effects on the water environment

2.1 Site is within Nitrate Vulnerable Zones and the South West of Hill of Maud site is within Bathing Water catchment. Also the Rathven Burn (ID: 23049) which is at moderate status, can be found within the plan area. It is stated that the plan will adhere to the Forestry and Water Guidelines (and therefore the requirements of the Water Environment (Controlled Activities) (Scotland) Regulations 2011 (CAR)) to ensure that these features and the Ruthven Burn are protected however details have not been provided as to how this will happen considering the sensitive nature of the water environment in this area. We therefore ask that further detail is provided. Further information should also be provided stating how private water supplies would be protected. Please refer to Appendix 1, section 2 of our letter of 10 September 2018 (our reference; PCS/160799) for further advice.

3. Use of waste on site, including felling waste

3.1 For the proposed activities in this land management plan, it stated that the primary objective is to sustainably supply timber for commercial purposes (i.e. thinning, clear felling and restocking), however it is not clear how any felling waste will be dealt with. Could this information be provided?

3.2 As stated in our letter of 10 September 2018 (our reference; PCS/160799) proposals to make use of any waste wood on the site should be outlined in the plan. The proposals should comply with our SEPA Guidance: Management of Forestry Waste. There must be a clear beneficial use identified for any material left on site.

4. Good practice guidance and regulatory requirements

4.1 Authorisation is required under The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (CAR) to carry out engineering works in or in the vicinity of inland surface waters (other than groundwater) or wetlands. Inland water means all standing or flowing water on the surface of the land (e.g. rivers, lochs, canals, reservoirs).

4.2 Management of surplus peat or soils may require an exemption under The Waste Management Licensing (Scotland) Regulations 2011. Proposed crushing or screening will require a permit under The Pollution Prevention and Control (Scotland) Regulations 2012. Consider if other environmental licences may be required for any installations or processes.

4.3 A Controlled Activities Regulations (CAR) construction site licence will be required for management of surface water run-off from a construction site, including access tracks, which:

- is more than 4 hectares,

1.16 In light of all the various comments made above we would request clarification why the statement in Section 6.1.2 as follows would improve the various flood risk issues highlighted - *"by phasing the operations and transforming some tree stands, at Carnoch and Maud, towards riparian woodlands with more appropriate tree species including broadleaves flood risk issues are being addressed positively for the long term".*

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4.3 A Controlled Activities Regulations (CAR) construction site licence will be required for management of surface water run-off from a construction site, including access tracks, which:

- is more than 4 hectares,

- is in excess of 5km, or
- includes an area of more than 1 hectare or length of more than 500m on ground with a slope in excess of 25°

See SEPA's Sector Specific Guidance: Construction Sites (WAT-SG-75) for details. Site design may be affected by pollution prevention requirements and hence we strongly encourage the applicant to engage in pre-CAR application discussions with a member of the regulatory services team in your local SEPA office.

4.4 Below these thresholds you will need to comply with CAR General Binding Rule 10 which requires, amongst other things, that all reasonable steps must be taken to ensure that the discharge does not result in pollution of the water environment. The detail of how this is achieved may be required through a planning condition.

4.5 Details of regulatory requirements and good practice advice for the applicant can be found on the Regulations section of our website. If you are unable to find the advice you need for a specific regulatory matter, please contact a member of the regulatory services team in your local SEPA office at: 28 Perimeter Road, Pinefield, Elgin, IV30 6AF, Tel: 01343 547663.

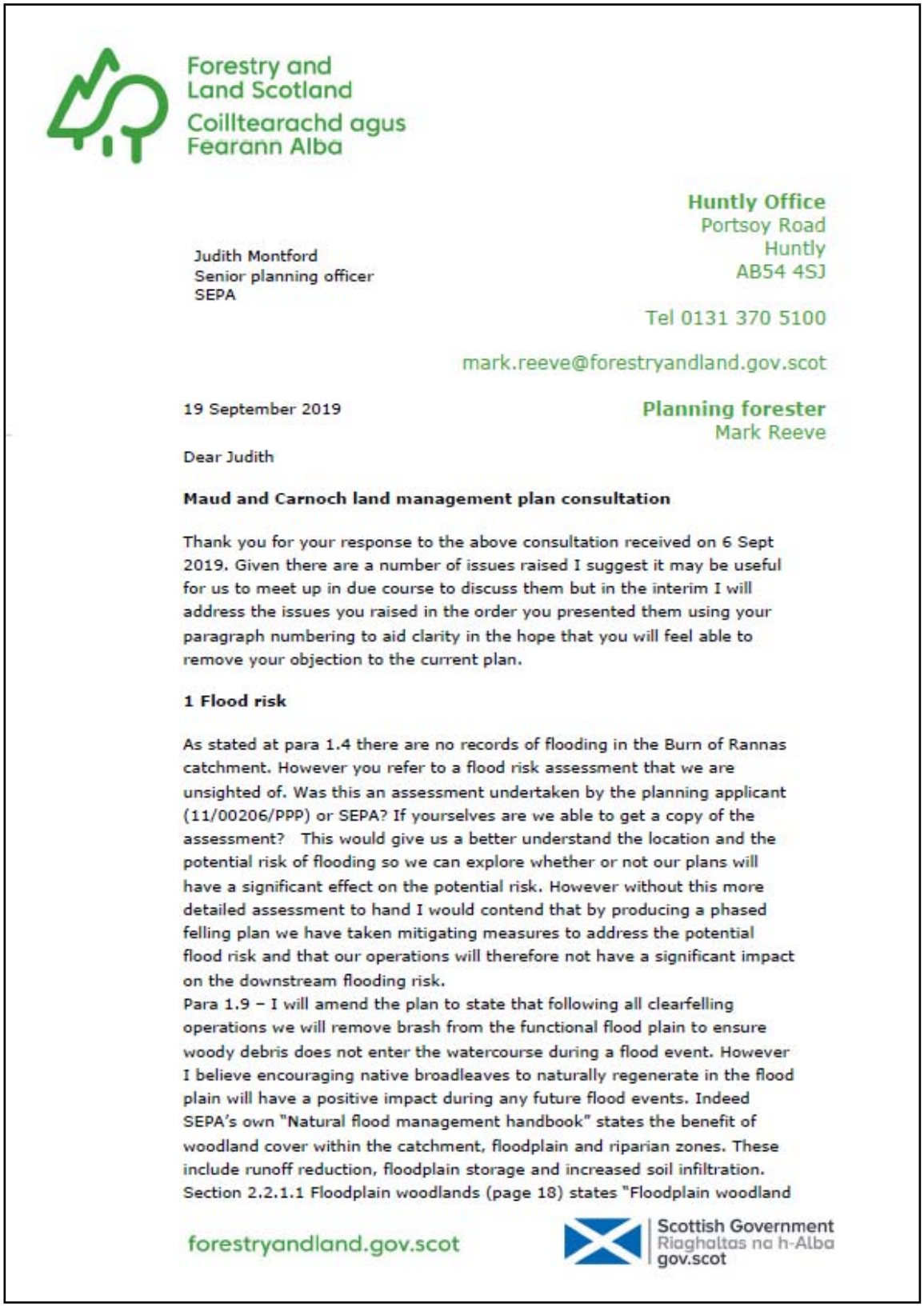
If you have any queries relating to this letter, please contact me by telephone on 01224 266604 or e-mail at planning.aberdeen@sepa.org.uk

Yours sincerely

Judith Montford
Senior Planning Officer
Planning Service

Disclaimer
This advice is given without prejudice to any decision made on elements of the proposal regulated by us, as such a decision may take into account factors not considered at this time. We prefer all the technical information required for any SEPA consents to be submitted at the same time as the planning or similar application. However, we consider it to be at the applicant's commercial risk if any significant changes required during the regulatory stage necessitate a further planning application or similar application and/or neighbour notification or advertising. We have relied on the accuracy and completeness of the information supplied to us in providing the above advice and can take no responsibility for incorrect data or interpretation, or omissions, in such information. If we have not referred to a particular issue in our response, it should not be assumed that there is no impact associated with that issue. For planning applications, if you did not specifically request advice on flood risk, then advice will not have been provided on this issue. Further information on our consultation arrangements generally can be found on our website planning pages.

FLS reply to SEPA.



Forestry and Land Scotland
Coilltearachd agus Fearann Alba

Huntly Office
Portsoy Road
Huntly
AB54 4SJ

Tel 0131 370 5100

mark.reeve@forestryandland.gov.scot

Planning forester
Mark Reeve

Judith Montford
Senior planning officer
SEPA

19 September 2019

Dear Judith

Maud and Carnoch land management plan consultation

Thank you for your response to the above consultation received on 6 Sept 2019. Given there are a number of issues raised I suggest it may be useful for us to meet up in due course to discuss them but in the interim I will address the issues you raised in the order you presented them using your paragraph numbering to aid clarity in the hope that you will feel able to remove your objection to the current plan.

1 Flood risk

As stated at para 1.4 there are no records of flooding in the Burn of Rannas catchment. However you refer to a flood risk assessment that we are unsighted of. Was this an assessment undertaken by the planning applicant (11/00206/PPP) or SEPA? If yourselves are we able to get a copy of the assessment? This would give us a better understand the location and the potential risk of flooding so we can explore whether or not our plans will have a significant effect on the potential risk. However without this more detailed assessment to hand I would contend that by producing a phased felling plan we have taken mitigating measures to address the potential flood risk and that our operations will therefore not have a significant impact on the downstream flooding risk.
Para 1.9 – I will amend the plan to state that following all clearfelling operations we will remove brash from the functional flood plain to ensure woody debris does not enter the watercourse during a flood event. However I believe encouraging native broadleaves to naturally regenerate in the flood plain will have a positive impact during any future flood events. Indeed SEPA's own "Natural flood management handbook" states the benefit of woodland cover within the catchment, floodplain and riparian zones. These include runoff reduction, floodplain storage and increased soil infiltration. Section 2.2.1.1 Floodplain woodlands (page 18) states "Floodplain woodland

is thought to offer the greatest potential for downstream flood mitigation...". Therefore I don't believe your request for limiting the replanting of trees near watercourses is appropriate.

Para 1.11 – You state you are unclear what impact the proposal will have on the drainage networks in the area. As stated in the land management plan we will adhere to the UK forest standards (UKFS) and the associated water guidelines it containes. This is the industry best practise so by following these standards there will be no detrimental impact on the drainage network. Additionally following the UKFS will also address the issues you raise in paras 1.12, 1.13, 1.14 and 1.15.

Para 1.16 – I believe that by phasing our felling proposals, keeping individual felling coupes to a small size and encouraging natural regeneration of native broadleaves in riparian zones we are not only mitigating the potential impact of any future flooding event may have but as stated in SEPA's own Natural flood management handbook "Floodplain woodland [has] ... the greatest potential for downstream flood mitigation...". Therefore the statement in Section 6.1.2 of the draft land management plan is a valid statement.

2 Activities which may have adverse effects on the water environment

As you state we have committed to adhering to the UKFS and the associated water guidelines. This document is comprehensive in its requirements so I not clear what additional information you require. As we've committed to the industry best standards I'm not sure that detailing how we are going to achieve these in every operation that could potentially be undertaken in the forests in the ten year period of the plan is realistic at this stage of the planning process. We address this level of detail in our work planning process where we undertake the detailed planning of individual operation closer to their start time.

3. Use of waste on site, including felling waste

As stated in SEPA's "Management of forestry waste" in the "Felling from traditional forestry operations" section "Material may be retained on the site to protect the soil from compaction or erosion, to avoid soil disturbance and diffuse pollution; and to facilitate the recycling of nutrients back into the soil". This is what we will be doing. As stated previously we will remove the brash from the functional floodplain but retain it on site in an alternative appropriate location so provide the benefits listed above.

4. Good practice guidance and regulatory requirements

We have no plans to undertake any of the operations detailed in section 4. In plans where any of these are proposed it would be clearly stated.

I hope this successfully addresses all the concerns you raised and if I make the changes detailed in this letter to the draft plan you are able to remove your objection to the plan. If there points I have not addressed to your satisfaction please detail what changes you require to the plan or additional information you need from me and I will do my best to provide what you need.

As mentioned previously I would like to invite you to an site visit, either at Maud and Carnoch or another forest where we have water issues we are addressing. I think this would give us (Forest and Land Scotland) an opportunity to demonstrate our commitment to water and the wider environment and show you the standards we work to across all our sites. It would also provide an opportunity for us to have a discussion around what you are looking for from us thus building a productive working relationship and easing the progress of future land management plan consultations. I hope this is something you think would be a useful way forward.

Yours sincerely

Mark Reeve

Planning forest
East Region
Forest and Land Scotland

Second response from SEPA.

SEPA
Scottish Environment Protection Agency
Buidheann Dìon Àrainneachd na h-Alba

Our ref: PCS/167779
Your ref: Maud & Carnoch

If telephoning ask for:
Judith Montford

21 October 2019

Mark Reeve
Forestry and Land Scotland
Portsoy Road
Huntly
AB54 4SJ

By email only to: Mark.Reeve@forestryandland.gov.scot

Dear Mark Reeve

Review of Maud and Carnoch Land Management Plan
Maud and Carnoch Forest located South East of Buckie, Moray

Thank you for your email which SEPA received on 23 September 2019 which was in response to our objection to the proposed Maud Land Management Plan April 2019 (by Forestry and Land Scotland) in our letter of 6 September 2019, our reference: PCS166990. We have reviewed the letter and are in a position to **remove our objection** to the Plan.

Please note the advice provided below.

Advice for Forestry and Land Scotland

1. Flood risk

1.1 We welcome the comments in your letter of 23.9.2019, that in general there is a commitment to the water and wider environment and we provide the following further comments in response to your letter

1.2 In Paragraph 1.4 of our previous response, the flood risk assessment (FRA) referred to was produced in support of the planning application (11/00206/PPP), by the applicant and not SEPA. In the FRA an estimated 1 in 200 year event flood outline was produced to facilitate the proposed development within the site boundary and locate the housing outwith the functional floodplain. But within this area there are two small crossings of the Burn of Ruthven, which could be easily blocked by an increased load of debris within the Burn. Therefore as previously highlighted we were concerned that the proposed forestry operations upstream would result in an increase in woody material within the channel, which would impact on small bridges/culverts and result in the potential blockage of structures. The potential to increase flooding elsewhere goes against Scottish Planning Policy as stated in paragraph 256.

Chairman
Bob Downes
Chief Executive
Terry A'Hearn

SEPA Aberdeen Office
Inverdee House, Baxter Street
Torry, Aberdeen AB11 9QA
tel 01224 266600 fax 01224 896657
www.sepa.org.uk - customer enquiries 03000 99 66 99

1.3 In answer to the points made in response to Paragraphs 1.9, 1.11 and 1.16 of our previous response, we welcome the stated commitment to adhering to the UK Forest Standards. To counteract the washing of woody debris into the adjacent watercourse during operations it is stated in the letter "*I will amend the plan to state that following all clearfelling operations we will remove brash from the functional flood plain to ensure woody debris does not enter the watercourse during a flood event*". We warmly welcome this proposal and this adjustment to the plan will address many of the concerns we highlighted in our original response. The removal of potential material which may be washed into the adjacent watercourses, will reduce the risk of blockages within the channel or to existing structures downstream. Therefore it would be more unlikely that flood risk would be increased downstream as a result of this proposed forestry activity.

1.4 With regard to the comments about replanting and regenerating in the floodplain, although SEPA's "Natural Flood Management Handbook" may promote woodland cover within the floodplain and riparian zones to increase infiltration and reduce catchment runoff, each development must be considered on a case by case basis and will depend on the localised receptors to flood risk downstream. Although woodland provides great potential for flood mitigation, if there is a potential to increase flood risk and a possible danger to human health downstream of a particular proposal, then this would go against current Scottish Planning Policy and the development would not be permissible. Therefore in this case we would continue to recommend a minimal buffer strip of no planting adjacent to any watercourse, to minimise the potential of any debris washing into the adjacent burn resulting in future potential blockages of bridges and culverts downstream. However as highlighted above as the forest plan will be updated to state brash - a significant potential source of debris will be removed from the functional floodplain and a minimum buffer adjacent to any watercourses is recommended, we are now of the view that consideration has been given to the flood risk associated with the proposed plan.

2. Activities which may have adverse effects on the water environment

2.1 We stated previously that the plan area is within Nitrate Vulnerable Zones and the South West of Hill of Maud site is within Bathing Water catchment. Also the Rathven Burn (ID: 23049) which is at moderate status, can be found within the plan area and therefore due to the sensitive nature of the water environment in this area, adequate protection from forestry activity is required.

2.2 You state you will adhere to the UKFS and the associated water guidelines which is comprehensive in its requirements. You also state you will address the level of detail in regard to how you are adhering to the UKFS and the associated water guidelines to protect this sensitive water environment in your work planning process where you undertake the detailed planning of individual operation closer to their start time. As you confirm you will adhere to this guidance and will outline/highlight the methodology when it is required, we have no further comments.

3. Use of waste on site, including felling waste

3.1 You state that material (the brash removed from the functional floodplain) will be retained on the site to protect the soil from compaction or erosion and as well to avoid soil disturbance and diffuse pollution. In line with our guidance - SEPA Guidance: Management of Forestry Waste this will enable the recycling of nutrients back into the soil. In that regard we have no further comments.

4. Good practice guidance and regulatory requirements

4.1 We note your comments that where any activity regulated under our regulatory requirements will be proposed it will be highlighted in the plan. We refer you to the Regulations section of our website for details of our regulatory requirements and good practice advice. Also please contact a member of the regulatory services team in your local SEPA office at: GS@sepa.org.uk for advice you need for a specific regulatory matter.

If you have any queries relating to this letter, please contact me by telephone on 01224 266604 or e-mail at planning.aberdeen@sepa.org.uk

Yours sincerely

Judith Montford
Senior Planning Officer
Planning Service

Appendix 2 – Tolerance table

	Adjustment to Felling period	Adjustment to felling coupe boundaries	Timing of restocking	Change to species	Changes to road lines	Designed open space	Windblow clearance
FC Approval not normally required	Fell date can be moved within 5 year period and between phase 1 and phase 2 felling periods where separation or other constraints are met	Up to 10 % of coupe area	Normally up to 2 planting seasons after felling. Where hylobius levels are high up to four planting seasons after felling subject to the wider forest and habitat structure not being significantly compromised.	Change within species group e.g. conifers, broadleaves.		Increase by up to 5% of coupe area	
Approval by exchange of letters and map		Up to 15 % of coupe area	Between 2 and 5 planting seasons after felling subject to the wider forest and habitat structure not being significantly compromised.		Additional felling of trees not agreed in plan Departures of more than 60m in either direction from centre line of road.	Increase by up to 10%. Any reduction in open ground within coupe area.	
Approval by formal plan amendment may be required	Advanced felling (phase 3 or beyond) into current or 2nd 5 year period	More than 15% of coupe area	More than 5 planting seasons after felling subject to the wider forest and habitat structure not being significantly compromised.	Change from specified native species. Change between species group.	As above depending on sensitivity.	More than 10% of coupe area. Colonisation of open areas agreed as critical.	All windblow clearance requires felling approval.